Competence of Low-High Academic Control Focus and Its Place in Academic Success

Şükrü Ada[1]

[1]*Uludağ University, Bursa, Turkey*

ABSTRACT

The main purpose of the study is the role of internal and external academic control focus on the success of prospective teachers. The study, which was designed to determine the role of academic control focus in general academic success (GPA) and competence, was carried out with 180 pre-service teachers, 44 of which are male and 136 are female. In order to make the focus of internal and external academic control categorically low and high, the median values are divided into two, and low and high internal and external academic control focus groups are obtained. Correlation analysis to examine the relationship between variables, t-test to determine whether GPA and competency variables differ from low and high internal and external academic control focus groups, to determine whether the t-test, GPA and competency variables predict low and high internal and external academic control focus groups. Binomial Logistic Regression analysis was performed. As a result of the analysis, it is seen that the external academic control focus has a negative relationship with GPA and competence, and the internal academic control focus has a positive relation with competence. According to the results of the t-test, GPA and competency were higher in the external academic control focus groups, while competence was higher in the internal academic control focus group. According to the results of the Binomial Logistic Regression analysis, it was seen that competence predicted both internal (towards high group) and external (towards low group) academic control focus, while GPA did not predict both internal and external academic control focus groups. It is seen that being in the low and high internal and external academic control focus group in the research results, the pre-service teachers differed in their belief in success and their academic success.

Keywords:
Academic Locus of Control, Self-efficacy, GPA

1. Introduction

Some of the most important determinants of our success in academic life are our references to the source about the events that happened to me as much as our belief in our ability. The concept of locus of control has been defined by Rotter (1966) as a personality trait that expresses the responsibility of individuals, whether they are responsible for the good or bad situations and events they encounter in their daily lives. In the inner dimension of the locus of control, which has two dimensions, internal and external, people tend to blame others or luck and fate for the results they encounter in the external locus of control, while believing that they are responsible for the consequences such as success or failure. (Yeşilyaprak, 2004; Şeker, Yavuzer, 2017).

[1] Corresponding author's address: Department of Educational Sciences, Faculty of Education, Uludag University, 16059 Bursa, Turkey
Telephone: +90-532-402-1220
e-mail: sukruada@uludag.edu.tr

The Academic Check Focus gives a general idea of students' academic expectations and uploads. Academic internal control focus is the students' beliefs that their academic success or failure arises from their own behavior or personality traits (Akın, 2007).

Academic external control focus is the success or failure of the students; their beliefs that they are caused by factors (such as luck, difficulty of task) outside their control.

When the literature on academic control focuses of teachers and prospective teachers is examined, gender differences (Wehmeyer, 1993; Sarıcam, Duran, & Çardak, 2012), equality of education opportunity (Coleman, 1966), coping strategies and emotional well-being (Elfström and Kreuter, 2006), academic achievement (Hsieh and Dwyer, 2009), and problem-solving skills (Yalçın, Tetik and Açıkgöz, 2010; Şara, 2012).

Self-efficacy, one of the concepts of Social Learning Theory and brought to the field by Bandura (1997); It is defined as a quality that is effective in the formation of behaviors and the individual's own judgment about the capacity to organize and successfully perform activities necessary to perform a certain performance (Zimmerman, 1995; Bandura, 1997). Self-efficacy can also be defined as a product of individuals' judgments about what they can do using their skills, not as a function of their skills (Gürcan, 2005). Studies conducted by Bandura show that the person's perceptions about their skills are not limited to their behaviors, but also their motivation and success (Saracaloğlu, Yenice, Özden, 2013).

Teachers' self-efficacy beliefs and teacher self-efficacy (Friedman & Kass, 2002), interpersonal relationship competence and burnout in teaching (Friedman, 2003), self-concept and academic performance (Choi, 2005), classroom management (Ekici, 2008), academic motivation (Saracaloğlu & Dinçer, 2009), self-efficacy belief (Taşkın & Hacıömeroğlu, 2010) and professional self-efficacy belief (Güvenç, 2011).

In this study, it was determined as the main aim to investigate the role of internal and external academic control focus on the success and competencies of teacher candidates.

2. Method
2.1. Participants

The study group consists of 180 students at Muğla Sıtkı Koçman University. 44 of the participants are men (24.4%) and 136 are women (75.6%). The ages of the participants vary between 17 and 29 and the average age is 20.5 (SS: 1.64).

2.2. Scales

General Academic Grade Averages (GANO) were used to determine the academic success of university students, Academic Control Focus Scale was used to determine academic control foci, and Self-Efficacy Scale was used to determine their competencies.

2.2.1. Academic Locus of Control Scale (ALCS): The scale developed by Akın (2007) is a 5-point Likert type and consists of 17 items and 2 sub-dimensions. The answers to the items in the scale are arranged as strictly disagree (1), disagree (2), indecisive (3), agree (4) and strongly agree (5). It was stated that as the scores obtained from the internal and external sub-dimensions of the SPS increase, the student has a high level of characteristics related to the relevant dimension. Exploratory and confirmatory factor analyzes were conducted to determine the factor structure of the scale and it was observed that the scale items were collected in two factors. The internal consistency reliability coefficients for the sub-dimensions of the scale were found to be .94 for the academic internal control focus and .95 for the academic external control focus.

2.2.2. Self-efficacy Scale (SeS): It was developed by Schwarzer and Jerusalem (1995) and adapted to Turkish by Yeşilay (1996). The high scores obtained from the items of the scale containing 10 items indicate that the self-efficacy perception is high. As a result of the factor analysis conducted for the validity of the scale, the factor loads of the scale vary between 0.63 and 0.76. Cronbach Alpha reliability values obtained in various studies varying between 0.94 and 0.75 increase the reliability of the scale.

2.3. Data Analysis

Pearson moments correlation coefficient was calculated to determine the relationship between internal academic control locus, external academic locus of control, competence and GANO variables. In order to determine whether the competency and GANO variables change according to the levels of the students' internal-external academic control focus, t-test was performed. In order to determine the magnitude of the possible significant difference in the t-test, cohen's d value was calculated. In order to understand whether GPA and competency predict low-high internal-external academic control focus, Binomial Logistic Regression analysis was performed. In order to determine the cutoff scores of the internal-external academic control locus, the median value of both variables was calculated and the median of the external control locus was found 27, and the score below 27 was considered as low and above. The median of internal control locus was found 26 and below 27 points was considered as low above high. Jamovi (2019) program was used for data analysis. Jamovi is a free program that uses R (2018) packages that have determined the philosophy of open science. Jamovi program "car: Companion to Applied Regression" (Fox and Weisberg, 2018) and "MASS: Support Functions and Datasets for Venables and Ripley's MASS" (Ripley, Venables, Bates, Hornik, Gebhardt and Firth, 2018) were used in the analyzes.

3. Results

3.1. Descriptive statistics

Descriptive statistics of internal academic control locus, external academic locus of control, competence and GANO variables were calculated. Analysis results are given in table 1.

Table 1. Descriptive statistics

	Group	Internal Academic Locus of Control		External Academic Locus of Control	
		GPA	Self-Efficacy	GPA	Self-Efficacy
Mean	Low	2.43	27.30	2.57	29.10
	High	2.56	29.7	2.37	27.3
Median	Low	2.49	27.0	2.60	29.0
	High	2.59	30.0	2.43	27.0
Mode	Low	2.50	27.0	2.50	32.0
	High	2.50	32.0	2.50	26.0
Standard deviation	Low	0.60	4.56	0.55	5.43
	High	0.61	5.79	0.66	4.84
Skewness	Low	-0.09	0.19	-0.20	-0.21
	High	-0.22	-0.39	0.05	0.22
Std. error skewness	Low	0.24	0.24	0.25	0.24
	High	0.28	0.27	0.28	0.27
Kurtosis	Low	-0.52	-0.11	-0.20	0.34
	High	0.02	0.28	-0.41	-0.28
Std. error kurtosis	Low	0.48	0.47	0.49	0.48
	High	0.56	0.54	0.55	0.54
Shapiro-Wilk	Low	0.68	0.38	0.46	0.31
	High	0.49	0.21	0.89	0.27

When Table 1 is analyzed, the average, median and peak values are close to each other in both the high and low groups of internal academic control locus of GPA; Similarly, it is seen that the competence variable is close to average, median and peak values. This can be accepted as evidence that the variables show normal distribution. In addition, when looking at the Shapiro-Wilk value, which is one of the normality indicators, it is seen that there is a normal distribution in the low and high groups in both internal control and external control focus scores. When the significance tests of the normal distribution are decided, it is stated that the small differences between the observed and expected distributions, as the sample size increases, tend to be significant, and should be used in conjunction with graphical or descriptive methods (Çokluk. Et al. 2010; Hair. Et al. 1998; Sprent and Smeeton 2007). Based on this view, the histograms of the variables are drawn with the Jamovi program and are given in figure 1.
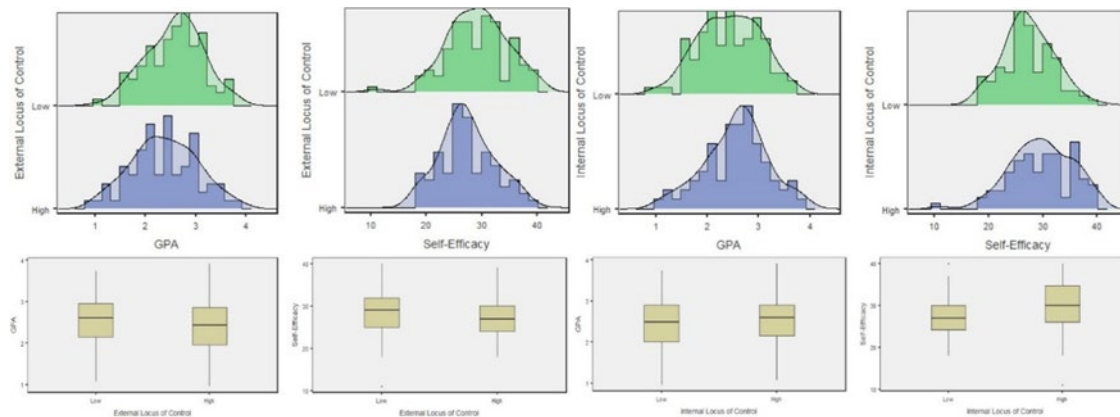
Figure 1. High-Low Internal-external academic control focus competence and histograms and boxplots of GANO variables

When the histograms in Figure 1 are examined, it is seen that the low external academic control focus is skewed from the left in the GPA, while other variables and groups show normal distribution. When the histograms of the competency variable are analyzed, it can be seen that the external academic control focus is in competence, and the internal academic control focus is gathered at average close values where the GPA is sharp. When the boxplots are examined, it is seen that all the boxplots are close to average, and the high group of competent internal academic control focus is above average. Based on these data, we assume that all variables are normally distributed.

3.2.Relationship Between Variables

In this part of the study, the relationship between competence and GANO variables was tried to be determined in the focus of internal-external academic control. Correlation values of competence and GANO variables in the internal-external academic control focus are given in table 2.

Table 2. Relationship between competence and GANO variables in internal-external academic control focus

			Pearson's r		p	Lower 95% CI	Upper 95% CI
GPA	-	EALC	-0.198	**	0.009	-0.338	-0.050
GPA	-	IALC	0.125		0.103	-0.025	0.270
GPA	-	Self-Efficacy	0.070		0.361	-0.081	0.218
EALC	-	IALC	-0.204	**	0.006	-0.340	-0.060
EALC	-	Self-Efficacy	-0.185	*	0.013	-0.323	-0.040
IALC	-	Self-Efficacy	0.255	***	<.001	0.113	0.387

*p<.05, **p<.01, ****p<.001, GPA= Grade Point Average, EALC= External Academic Locus of Control, IALC= Internal Academic Locus of Control

When Table 2 is analyzed, negative and significant between GPA and EALC (r = -0.198. P <0.05), EALC and IALC (r = -0.204. P <0.01), EALC and self-efficacy (r = -0.185. P <0.05) It is seen that there is a positive and significant relationship between IALC and self-efficacy (r = 0.255. P <0.001). There is no significant relationship between GPA and IALC (r = 0.125. P <0.05) and GPA and self-efficacy (r = 0.070. P <0.05).

3.3. t-test Results

At this stage of the study, a t-test was performed to determine whether the Competency and GANO variables differed by high-low internal-external academic control focus groups. The averages of the groups were first examined to determine whether they differ from competence and GPA high-low internal-external academic control focus groups. Values for the averages are given in Table 3.

Table 3. Estimated Marginal Means

		Group	N	Mean	Median	SD	SE
EALC	GPA	Low	96	2.57	2.60	0.55	0.06
		High	75	2.37	2.43	0.66	0.08
	Self-Efficacy	Low	96	29.17	29.00	5.45	0.56
		High	75	26.98	27.00	4.70	0.54
IALC	GPA	Low	98	2.43	2.49	0.60	0.06
		High	73	2.56	2.59	0.61	0.07
	Self-Efficacy	Low	98	27.21	27.00	4.50	0.45
		High	73	29.54	29.00	5.86	0.69

EALC= External Academic Locus of Control, IALC= Internal Academic Locus of Control

Looking at Table 3, it is seen that GPA's average of EALC low group is 2.57, average of low group is 2.37, competency is average of EALC low group is 29.17 and average of high group is 26.98. GPA's IALC low group's mean is 2.43, low group's average is 2.56, competency's IALC's low group's average is 27.21, high group's average is 29.54. When Table 3 is examined, it is seen that there is a difference between the averages in terms of both variables. The results of the t-test to understand whether the differences are meaningful are given in table 4.

Table 4. t-test results regarding whether GPA and competence change according to low and high intrinsic-external academic control focus level.

		Statistic	df	p	Mean difference	SE difference	95% CI Lower	95% CI Upper	Cohen's d
EALC	GPA	2.13	169	0.03	0.20	0.09	0.01	0.80	0.33
	Self-Efficacy	2.76	169	0.01	2.19	0.79	0.62	3.75	0.43
IALC	GPA	-1.40	169	0.16	-0.13	0.09	-0.32	0.05	-0.22
	Self-Efficacy	-2.94	169	0.00	-2.33	0.79	-3.89	-0.76	-0.45

EALC= External Academic Locus of Control, IALC= Internal Academic Locus of Control, CI= Confidence Interval

When GPA is examined in Table 4, it is seen that it differs between low EALC group and high EALC group in favor of low EALC (t = 2.13, p <.05) and it is understood that the difference is moderate by cohen's d value (d = .33). It is understood with the cohen's d value that the competence is higher in the low EALC group compared to the high EALC group and this difference is statistically significant (t = 2.76, p <.05) (d = .43). When GPA is examined in terms of IALC variable, there is no statistically difference between high IALC group and low EALC group (t = -1.40, p> .05). It is understood with the cohen's d value that the competence is higher in the high IALC group compared to the low EALC group and this difference is statistically significant (t = -2.94, p

<.05) (d = .45). The difference between the low and high intrinsic-exogenous academic control focus groups of GPA and competency variables is given in Figure 2.
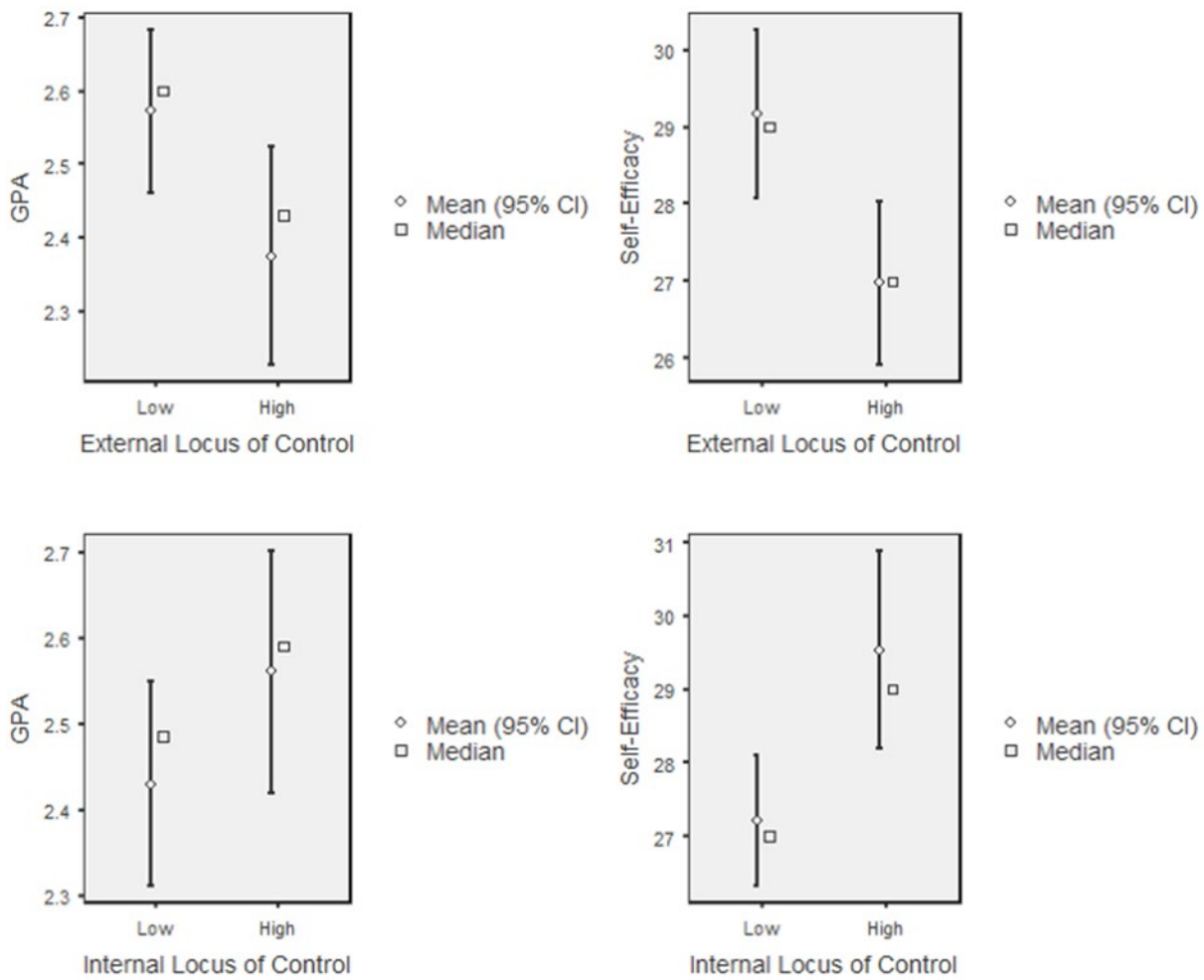
Figure 2. Graph of the change of GPA and competency scores according to low and high internal-external academic control focus groups.

In Figure 2, there is a visualized form of the t-test results. EALC low group has higher GPA and competency scores than high group. In other words, those in the low EALC group have both high GPA and high competency scores. In terms of IALC, the competencies in the high IALC group are higher than in the high IALC group. However, there is no difference in terms of low and high IALC in terms of GPA.

3.3.Binomial Logistic Regression

Binomial Logistic Regression analysis was performed to determine whether GPA and competency predict low-high internal-external academic control focus. The results for the Binomial Logistic Regression analysis are given in table 5.

Table 5. Model Coefficients – External-Internal Locus of Control

	Predictor	Estimate	SE	Z	p	Odds ratio	95% CI Lower	95% CI Upper
EALC	Intercept	385.758	-308.263	2.98	0.003	26.995	3.092	235.715
	GPA	0-.5153	0.268	-1.92	0.055	0.597	0.353	1.010
	Self-Efficacy	-0.081	0.032	-2.54	0.011	0.923	0.867	0.982
	Model X²	11.4	P<.05					
	R² McF	0.0485						
IALC	Intercept	-3.6269	1.1384	-3.19	0.001	0.0266	0.0029	0.2480
	GPA	0.3327	0.2683	1.24	0.215	1.3948	0.8244	2.3600
Self-Efficacy		0.0881	0.0320	2.75	0.006	1.0921	1.0257	1.1630
Model X²		10.1	P<.05					
R² McF		0.0432						

EALC= External Academic Locus of Control, IALC= Internal Academic Locus of Control, CI= Confidence Interval

When Table 5 is examined, low group is taken as reference in our dependent variable, high and low EALC, as well as high and low IALC. When EALC is examined, it creates a significant difference between low and high EALC groups in terms of competency and the probability of falling to low EALC group increases 0.923 times as competence increases (p <.05). However, it is seen that GPA cannot predict low-high EALC (Odds = 0.597, p> .05). When the IALC is examined, it makes a significant difference between the low and high EALC groups in terms of competence, and as the competency increases, the probability of falling into the high EALC group increases 1.0921 times (p <.05). However, as in EALC, it is seen that GPA cannot predict low-high IALC (Odds = 1.3948, p> .05).

4. Discussion

The main purpose of this study was to examine the role of internal and external academic control focus on the success of teacher candidates. Looking at the results of the research conducted to determine the role of academic control focus in general academic achievement (GPA) and competence, it was found that pre-service teachers' GPA's were higher in the low academic control focus than in the lower group. In other words, prospective teachers decrease their grades as they search for the source of the events that happen to them academically, but if they decrease this trend, their grades increase. But the same cannot be said for the focus of internal academic control. Considering the research findings in terms of competency, it gives similar results in both internal and external academic control groups. These results coincide with the findings of Duke and Nowicki (1974), who suggested that there was a positive relationship between the focus of internal control and academic achievement. In addition, academic self-efficacy is effective in achieving students' grade targets directly and indirectly. Prospective teachers are in the high competence group when they search for the source of the events that happen to them academically, and they are in the low competence group when they look for the source of the events that happen academically. This result is also seen in Binomial Logistic Regression analysis. As Bandura (1995) mentioned about the effects of perceived self-efficacy on perseverance, it can be assumed that students who have a high sense of competence in realizing a responsibility will work more than low ones. This emphasizes the importance of internal academic control and self-efficacy for students.

The limitation of the research is that it has been carried out with a limited number of students, so it may be suggested that researchers carry out this study with a larger number of prospective teachers.

References

Akın, A. (2007). Akademik Kontrol Odağı Ölçeği: Geçerlik ve güvenirlik çalışması. Çukurova Üniversitesi *Eğitim Fakültesi Dergisi, 34*(3), 9-17.

Bandura, A. (1995). Self-efficacy in changing societies. New York: Cambridge University Press.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York

Choi, N. (2005). Self-efficacy and self-concept as predictors of college students' academic performance. *Psychology in the Schools, 42*(2), 197-205.

Coleman, J. S. (1966). Equality of education opportunity. Washington D.C, United States Government Printing Office

Duke, M., Nowicki, S. (1974). Locus of control and achievement: The confirmation of a theoretical expectation. *Journal of Psychology, 87*, 263-267.

Ekici, G. (2008). Sınıf yönetimi dersinin öğretmen adaylarının öğretmen özyeterlik algı düzeyine etkisi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 35*, 98–110.

Elfström L. M. & Kreuter, M. (2006). Relationships Between Locus of Control, Coping Strategies and Emotional Well-Being in Persons With Spinal Cord Lesion. *Journal of Psychology in Medical Settings, 13*(1), 89-100. doi:10.1007/s10880-005-9001-8

Fox. J., & Weisberg. S. (2018). Companion to Applied Regression. [R package]. Retrieved from https://cran.r-project.org/package=car.

Friedman, I. A., & Kass, E. (2002). Teacher self efficacy: A classroom organization conceptualization. *Teaching and Teacher Education, 18*, 675-686.

Friedman, I. A. (2003). Self-efficacy and burnout in teaching: the importance of interpersonal relations efficacy. *Social Psychology of Education, 6*, 191-215.

Gürcan, A. (2005). Bilgisayar öz yeterliği algısı ile bilişsel öğrenme stratejileri arasındaki ilişki. *Eğitim Araştırmaları, 19*, 179-193.

Güvenç, H. (2011). Öğretmen adayı öğrencilerin mesleki öz yeterlilik algıları ile öğrenci başarısı sorumluluk algıları. *e-Journal of New World Sciences Academy Education Sciences, 6*(2), 1410-1421.

Hsieh, P. & Dwyer, F. (2009). The instructional effects of online reading strategies and learning styles on student academic achievement. *Educational Technology & Society, 12*(2), 36-50.

R Core Team (2019). R: A Language and environment for statistical computing. (Version 3.6) [Computer software]. Retrieved from https://cran.r-project.org/.

Ripley, B., Venables W., Bates. D. M., Hornik. K., Gebhardt. A., & Firth. D. (2018). MASS: Support Functions and Datasets for Venables and Ripley's MASS. [R package]. Retrieved from https://cran.r-project.org/package=MASS.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80*, 1–28.

Saracaloğlu A.S. & Dinçer B. (2009). A study on correlation between self-efficacy and academic motivation of prospective teachers. *Procedia Social and Behavioral Sciences, 1*, 320–325.

Saracaloğlu, A. S. Yenice, N., & Özden, B. (2013). An analysis of prospective science, social sciences and primary school teachers' self-efficacy perceptions and focus of academic control. *Pamukkale University Journal of Education, 34*(2), 227-250.

Sarıçam, H., Duran, A. & Çardak, M. (2012). The Examination of Pre-school Teacher Candidates' Academic Locus of Control Levels According to Gender and Grade. *Mevlana International Journal of Education, 2*(2), 67-74.

Schwarzer, R. & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), Measures in health psychology: A user's portfolio. Causal and control beliefs (pp. 35-37). Windsor, UK: NFER-Nelson

Şara, P. (2012). Sınıf öğretmeni adaylarının öğrenme ve ders çalışma stratejileri, problem çözme becerileri ve denetim odağı düzeylerinin çeşitli değişkenler açısından incelenmesi. Yayımlanmamış Doktora Tezi, Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü, İzmir.

Şeker, G., & Yavuzer, Y. (2017). Academic Locus of Control as a Predictor of School Burnout in Adolescents. *Mersin University Journal of the Faculty of Education, 13*(3), 919 – 935.

Taşkın, Ş. Ç., & Hacıömeroğlu, G. (2010). Öğretmen özyeterlik inanç ölçeğinin Türkçe'ye uyarlanması ve sınıf öğretmeni adaylarının özyeterlik inançları. Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi, 27, 63-75.

The jamovi project (2020). jamovi. (Version 1.2) [Computer Software]. Retrieved from https://www.jamovi.org.

Wehmeyer, M. L. (1993). Gender differences in locus of control scores for students with learning disabilities. *Perceptual and Motor Skills, 77*, 359-366.

Yalçın, B., Tetik, S. & Açıkgöz, A. (2010). Yüksekokul öğrencilerinin problem çözme becerisi algıları ile kontrol odağı düzeylerinin belirlenmesine yönelik bir araştırma. *Organizasyon ve Yönetim Bilimleri Dergisi, 2*(2).

Yeşilyaprak, B. (2004). Denetim odağı. Y. Kuzgun ve D. Deryakulu (Yay. haz.). Eğitimde Bireysel Farklılıklar içinde (s. 239-258). Ankara: Nobel Yayın Dağıtım.

Zimmerman, B.J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal, 29*, 614-623.

Zimmerman, B. J. (1995). Self-efficacy and educational development, In A. Bandura (Ed.), Selfefficacy in changing societies.(pp. 46-68). New York: Cambridge University Press.

PES

The Validity and Reliability Study of Therapeutic Alliance Scale: Psychological Counselor Version

Mehmet Kandemir[1]

[1]Kırıkkale University, Turkey

ARTICLE INFO

ABSTRACT

This study aimed to design a measurement tool for measuring the therapeutic alliance skills of the experts providing psychological counseling services. For the preliminary validity and reliability study of the Therapeutic Alliance Scale, 224 people working as psychological counselors were reached. After the preparation of the data for analysis and establishing the hypotheses, exploratory factor analysis was conducted in the study. As a result of the analysis, the Kaise-Meyer-Olkin (KMO) value was found as 0.90, and the Barlett test was determined as $\chi2 = 1343.61$ (p <.00). The scale was found to have a three-factor structure as a result of the exploratory factor analysis and varimax rotation techniques carried out. In the factor analysis conducted to determine the construct validity of the therapeutic alliance scale, which could measure the three-factor dimension. For reliability, Cronbach's alpha internal consistency coefficients were analyzed, and as a result, the coefficients for the first, second, and third factors were found as .86, .87, and .68, respectively. After that, first and second level confirmatory factor analysis were done. As a result of the first analysis, the values were found as Chi-Square/Degree of Freedom (563, 114 / 167) = 3.72 and RMSEA= .08. Also, the fit coefficients obtained for the tested model were CFI = .91, GFI = .91, IFI = .90, NFI = .89, and TLI = .91. Similar results were obtained in the second level confirmatory factor analysis.

Keywords:
Therapeutic Alliance, Psychological Counselor, Confirmatory Factor Analysis, Exploratory Factor Analysis

1. Introduction

In recent years, it has been observed researchers working in the field of psychological counseling focus on the main factors contributing to the well-being of the clients in the psychological help process (Hill & Lambert, 2004). It is observed that the evidence-based researches especially on the psychological counseling process and its result focus on this issue. In this context, the importance of the common factors used in all approaches for the consultation process and the client's well-being has become apparent (Bolsinger, Jaeger, Hoff & Theodoridou, 2020). The therapeutic alliance concepts and components, which are at the center of these factors, are evaluated on the basis of therapeutic relationship. Researches on the psychological counseling process and outcome have considerable contributions to the definition of these important variables. Research into the psychological counseling process and outcome has considerable contributions to identifying these significant variables. Evidence-based information on how to provide more effective relief in process and outcome research and psychological counseling practices is provided to practitioners (Ollendick, 2014). While outcome research investigates instant or permanent changes that occur as a result of the psychological counseling and psychotherapy process in the field of psychological relief (counseling, therapy), process research looks into what happens in counseling or psychotherapy sessions (Krieger,

Moritz, Weil, & Nage, 2018). Hill (1991) listed the variables discussed in the process research related to therapeutic relief relationship under seven headings. These headings included; nonverbal relief behaviors, verbal intervention behaviors involving language and grammatical structure, latent behaviors involving the goals of the psychological counselor and the client's responses, conversational content of the therapeutic process, strategies and methods such as transference employed in the therapeutic process, interpersonal styles including factors such as psychological empathic understanding or participation, and therapeutic relationship that involves factors such as therapeutic alliance and relational control. When the classification is examined, the therapeutic relationship can be seen to be an important variable for process research. Lambert, Bergin, and Garfield (2004) claimed that the therapeutic relationship contributed to the well-being of the client more than the methods and techniques used in counseling. According to Gaston (1990), maintaining the therapeutic relationship at a positive level is one of the most important factors in the therapeutic process, and it increases the healing effect of the strategies used in the process. Considering these explanations, it is possible to say that the therapeutic relationship and its dimensions are an important field of study of process and outcome studies. One of the most remarkable features of the concept of the therapeutic relationship is the therapeutic alliance (Gelso & Carter, 1985). Studies conducted in this context are observed to emphasize that therapeutic alliance in the psychological counseling process significantly affects the outcomes of the counseling process (Clarkin & Levy, 2004; Cuijpers, Cristea, Karyotaki, Reijnders & Hollon, 2019). The concept of the therapeutic alliance, which Wexler (2006) states is related to the structure of the relationship between the psychological counselor and the client, was primarily conceptualized by Zetzel (1956), who came from the psychodynamic approach. Bordin's (1979) reconceptualization of the therapeutic alliance concept with an approach that is above-theoretical level caused an increase in the number of process studies.

According to Sprenkle and Blow (2004), this conceptualization cares about the positive cooperation of the client with the psychological counselor. Bordin (1994) thinks that the therapeutic alliance consists of three interrelated and integral components. These include the consensus of the counselor and the client regarding the goals of counseling or therapy. According to Rogers (2009) and Lambert, (1992), the consensus between the client and the psychological counselor means that the parties have a common understanding of the goals set for the change. The second component is a consensus on the task and responsibility required to achieve the goals. Another important component is the establishment of an emotional bond including the development of respect, trust and personal attachment in the relationship between the psychological counselor and the client. According to Bordin (1979), the therapeutic alliance reflects trust, respect, and mutual interest between the client and the psychological counselor, as well as consensus-based emotional duties about therapeutic goals and objectives. This alliance combines the rational and self-observing aspects of the client and the therapeutic quality of the therapist (Goldfried & Davila, 2005; Safran, Muran & Rothman, 2006). According to Horvath and Symonds (1991), the unity of goal and task (responsibility) between the psychological counselor or therapist and the client constitutes the cognitive dimension of the therapeutic alliance, whereas the bond or attachment makes up the affective dimension. According to Soygüt and Işıklı (2008), the meaning of "above-theories" that Bordin attaches to the therapeutic alliance has carried the contribution of the interpersonal relationship factor to the consultation to an important level regardless of the approaches and methods used in psychological counseling. At the same time, according to them, the concept of the alliance is of interest due to its strong contribution to change in today's psychotherapy research. The examination of the literature shows that the therapeutic alliance has begun to be seen as a variable that combines the necessary techniques and methods for counseling that are offered by counseling approaches and which help the counseling to gain integrity (Castonguay & Beutler 2006). According to Bordin (1994), the quality of the therapeutic alliance, which is associated with the harmonious functioning of the goal, task, and bond components, is an important predictor of successful therapeutic results (Wampold, 2010). In this context, Florsheim, Shotorbani, Guest-Warnick, Barratt, and Hwan (2000), claimed that establishing a positive therapeutic alliance should be the primary goal of therapy. Goldfried and Davila (2005) stated that a strong, positive, and safe relationship could provide the power to the counselor to show patience to the client and have an effect to get feedback from the client.

In the psychological aid process, the therapeutic alliance skill that psychological counselors have developed with their clients is very valuable and important, as stated in the explanations above. For this reason, the therapeutic alliance skills that psychological counselors have developed with their clients need to be analyzed and the nature of this skill and which variables it is associated with should be analyzed. For analysis of the therapeutic alliance, it is possible to say that a proper measurement tool is needed for measuring the therapeutic alliance skills of psychological counselors and that there is a limited number of measurement tools. Considering all this, this study tried to develop a "Therapeutic Alliance Scale" for determining the skills that psychological counselors develop with their clients and the levels of these skills.

2. Method

2.1. The Study Group

Three different study groups were included in the study for the validity and reliability study of the Therapeutic Alliance Scale. The purposive sampling method was used to make up the study groups, which were selected according to criteria fitting the purpose of the study. In the first study group created, 224 psychological counselors who worked in the field for at least 1 year and carried out at least 1 psychological counseling service per week were reached. Of the psychological counselors reached, 118 were female and 106 were male. The age of the study group ranged from 22 to 56 and the mean age was 29.79 years. At the same time, the service year of the study group varied between 1 and 32 years, and the mean year of service was 7.01 years. Also, the number of weekly counseling of this group ranged from 1 to 40, and the mean weekly counseling was 5.94. Finally, of the participants in the study group, 192 were graduates of the guidance and psychological counseling department, 12 were graduates of the psychology department, and 8 were graduates of the department of the psychological services in education. In the first study group, construct validity and internal consistency reliability analyses were done. The second study group consisted of psychological counselors working in institutions affiliated to the Ministry of National Education. In this group, there were a total of 438 psychological counselors (265 female, 153 male). The age of the participants was between 22 and 63, their professional experience ranged from 1 to 25 years, and the number of psychological counseling a week varied from 1 to 20. In the second study group, confirmatory factor analysis of the scale structure determined by exploratory factor analysis was conducted. Besides, data were collected from 180 psychological counselors working in institutions affiliated to the Ministry of National Education to do reliability calculations of the scale using the test-retest and split-half analyses. Of the psychological counselors reached, 111 were female and 69 were male. The age of the study group varied between 22 and 52 and the mean age was 29.02 years. At the same time, the professional seniority of the study group varied between 1 and 28 years, and the mean year of service was 6.10 years.

2.2. Data Collection Tools

2.2.1. Personal Information Form

Within the scope of the study, a personal information form was created for a demographic evaluation of psychological counselors working in schools affiliated to the Ministry of National Education. The form aimed to collect information about psychological counselors' gender, age, professional seniority, and the number of their counseling services carried out.

2.2.2. Expert Opinion Form for the Therapeutic Alliance Scale

In the context of the validity and reliability study of the Therapeutic Alliance Scale, this form was created to submit the item pool, prepared for the therapeutic alliance skills of psychological counselors, to the expert opinion. The Expert Opinion Form for the Therapeutic Alliance Scale involved a 0-to-10-rating system for the evaluation of the appropriateness of the items by the experts, as well as asking for explanations regarding the therapeutic alliance and its dimensions.

2.2.3. Therapeutic Alliance Scale-Psychological Counselor Form

Different forms of this scale, which were created to determine the therapeutic skills of psychological counselors, were used during the validity and reliability study. In addition to the validity and reliability of the scale, psychometric evaluation results were presented in the findings section of the paper. The preliminary validity and reliability analyses of the scale were carried out by Kandemir (2017) and Kandemir and İlhan (2019). Previous analysis of the scale, psychometric analysis studies with new data, and reporting of the whole scale were carried out in this study.

2.3. Data Collection Process and Preparation of Data for Analysis

Before collecting data from the school psychological counselors in the study, they were informed about the general objectives of the study, data collection tools, and the average application time. The study groups were observed to fill out the forms and scales within an average of 10 minutes. After the collected data were entered on IBM SPSS 21 statistical software package, some preliminary evaluations were done to prepare the data for analysis. Before starting exploratory factor analysis (EFA), extreme value analyses were conducted. Within the scope of this analysis, the Z scores of 6 data were outside the +3 and -3 range and were therefore removed from the data set. One of the prerequisites of EFA is that there is no multicollinearity/singularity problem in the data. According to Tabachnick and Fidel (2001), such data should be excluded from the analysis when such a problem occurs. In this context, a correlation test was carried out and the correlation coefficients between the items were found to vary between .10 and .64. Accordingly, the data group could be said to have no multicollinearity/singularity problem.

3. Results

In the process of developing the therapeutic alliance scale, primarily the therapeutic alliance, the features and dimensions of the therapeutic alliance, its relationships with similar concepts, and its theoretical foundations were examined in the literature. Later, within the scope of the related literature, a 42-item therapeutic alliance scale item pool was created. The items were created under the therapeutic alliance literature (Bordin, 1979) and the rules of writing items as much as possible. The item pool created in the next stage was submitted to the opinions of 14 experts working in the field. Ten of these experts stated their views on the scale. Concerning the evaluations from experts, 1 item was removed from the scale and 16 items were modified. At the same time, the scores that the experts gave to the scales were observed to range between 5 and 10 and the mean score was 8.2. With the data obtained, necessary amendments were made and the scale was finalized for its administration to the study group. Then, the data collection process was initiated from the study group to determine the construct validity and reliability of the scale, which had 41 items and a 7-point Likert type evaluation design. After the analysis of the data collected from the first research group for preliminary validity and reliability analysis of the scale, the Kaiser-Meyer-Olkin (KMO) value was found to be .90 and the Bartlett test result was $\chi2 = 1343.61$ (p <.00). The high KMO value indicated that the variables increased the predictability of other variables on the scale, and the result, which was greater than .90, meant that the sample size was perfect (Sharma, 1996). The Bartlett test was found to be significant and this could be interpreted that the sample size was appropriate for factor analysis and that the correlation matrix was suitable. According to the results of both tests, the data matrix was found to be suitable for EFA. According to Tabachnick and Fidel (2001), the rotation was necessary to ensure clarity and significance in evaluations. The rotation was also necessary to decide which item would be included under which factor. In cases where factors are unrelated, the orthogonal rotation should be conducted (Hair, Black, Babin, Anderson, & Tatham, 2005). The orthogonal rotation method was used in this analysis since the dimensions of the concept of therapeutic alliance included different features (Bordin, 1994). The analysis was carried out by using, varimax method, one of the orthogonal rotation methods, and by determining the item load values as .30. As a result of EFA, the variance explanation rates of each item on a common factor were examined, and as a result of the analysis, the items with a value below .30 were removed from the data set and the analyses were repeated. Çokluk, Şekercioğlu, and Büyüköztürk (2012) stated that items on a scale should not be removed according to the common variance values, but that other criteria were also important for the

removal of items. Therefore, items with a value close to 30 were kept in the analysis. As a result of the analysis done after this process, the eigenvalues regarding how many factors the scale might have were examined, and three factors were determined to be above 1. The eigenvalues of the factors were found to be 7.28, 1.81, and 1.31, respectively. Regarding the results of factor structures, Cattel's "scree plot" test (Kline, 1994) was done. According to Kline (1994), this test is used to determine the maximum number of significant factors. As a result of the analysis, the following figure was obtained (Figure 2).
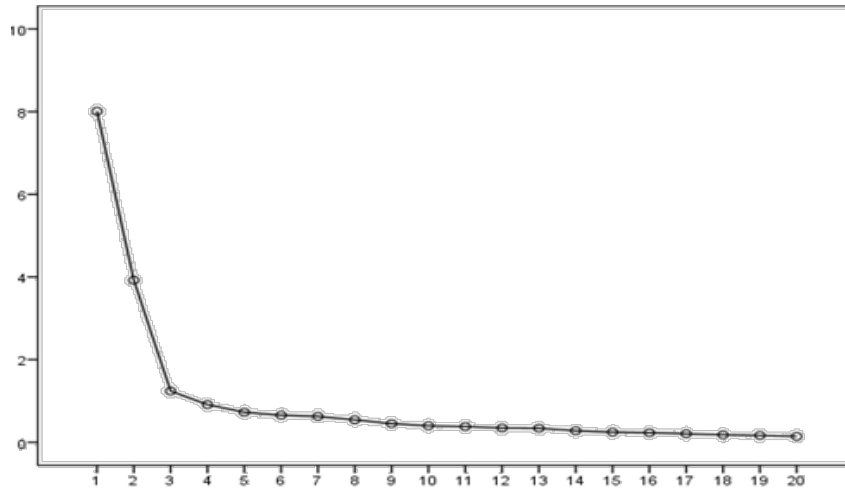
Figure 1. The Scree Plot related to the Therapeutic Alliance Scale

According to the graph in Figure 1, it turned out that the scale had two different breaking points. After the analysis using the varimax rotation technique, the three-factor dimension of the scale was determined. In this context, although the scree plot of the Therapeutic Alliance Scale gave an impression of a two-dimensional structure, the theoretical basis of the concept of alliance and the evaluations obtained from the experts supported the three-dimensional structure. At the same time, as a result of EFA, the eigenvalues of the second and third dimensions of the scale were observed to be greater than 1. Therefore, the Therapeutic Alliance Scale was reported as a three-dimensional structure. Items with a loading value of less than 0.30 were removed from the analysis. The EFA results of the Therapeutic Alliance Scale are shown in Table 1.

Table 1. EFA Results of the Therapeutic Alliance Scale

Items	Factors			Common Variance Values
	1st Factor	2nd Factor	3rd Factor	
item18	.848			.750
item19	.786			.696
item20	.685			.562
item16	.649			.522
item25	.616			.597
item15	.607			.511
item23	.518			.386
item9		.808		.694
item4		.681		.515
item8		.679		.602
item5		.663		.562
item3		.611		.476
item7		.611		.593

item13	**.498**		.373
item33		**.699**	.531
item32		**.651**	.430
item41		**.607**	.455
item40		**.602**	.407
item36		**.545**	.372
item28		**.512**	.455
Explained Variance Values	%36.39	% 9.02	%6.55
Total Variance Explained			%51.98
Eigenvalues of the factors	7.280	1.805	1.311

As seen in Table 1, the factor loading values for each item of the therapeutic alliance scale ranged from 0.50 to 0.85. The first factor explained 36.39% of the variance; the second factor explained 9.02% of the variance; and the third factor explained 6.55% of the variance. They were found to explain 51.98% of the variance in total. According to Henson and Roberts (2006), an explained variance rate of greater than 50% should be considered as a high level. According to Scherer, Wieb, Luther, and Adams (1988), in factor analysis in social science, explained variance levels varying between 40% and 60% are satisfactory. Based on this evidence from the literature, it can be said that the variance value obtained as a result of the analysis was quite good and the measuring capacity of the resulting factor structures was high. After these analyses, each factor was named considering the theoretical information in the literature. Accordingly, the factors were named as "goal alliance", "task and responsibility alliance", and "emotional bond alliance", respectively.

To determine the reliability of the results obtained from EFA, Cronbach's alpha internal-consistency values obtained from item analysis were analyzed. The coefficient value obtained from the analysis was found as 0.86 for task and responsibility, 0.87 for goal, and 0.68 for the emotional bond. Özdamar (1999) defined the reliability coefficients between 0.61 and 0.80 as moderate, and those between 0.81 and 100 as high levels of reliability. On the other hand, Nunnally (1978) stated that an internal consistency coefficient value of 0.60 was the lower limit for reliability. Considering these explanations, it is possible to say that the first and second factors of the scale reached a very high-reliability level, while the third factor reached an acceptable reliability level. Confirmatory Factor Analysis (CFA) was conducted to test the validity of the determined factor structures. To do this, data were collected from a new study group. The therapeutic alliance scale was exposed to CFA using the new data collected from 421 psychological counselors working in the field. This analysis is based on the trial of an assumption that variables will predominantly exist on predefined structures based on an approach. Therefore, the related variables are chosen according to the assumptions of the approach or the theory, and the level by which variables go under the determined factors is examined.

Relationships emerging between CFA and dimensions of the scale can be tested using comparative hypothesis models and the degree of goodness of models can be determined (Sümer, 2000). It is noteworthy that the use of CFA studies has recently increased in scale development and adaptation-based research (Çapa, Çakıroğlu & Sarıkaya, 2005). In addition to identifying the representative loadings of the items, CFA is utilized to determine the relationship values of the items with the factors. A first-level CFA was primarily implemented in the analysis of the model consisting of 3 latent variables (goal, responsibility and emotional bond) determined with EFA and 20 observed variables of the therapeutic alliance scale. Accordingly, the basic structure of the scale was subjected to CFA in the model, and the fit values were obtained. According to the results obtained, Chi-Square/Degrees of Freedom (563,114 / 167) was 3.72, and RMSEA was .08. The coefficients of fit which were obtained for the tested model were CFI = .91, GFI = .91, IFI = .90, NFI = .89, and TLI = .91. The fit values such as CFI, GFI, IFI, NFI, and TLI were observed to be equal or close to 0.90. The proposed hypothesis model can be considered to have adequate goodness of fit when chi-square and RMSEA values are .08 or below this value (Şimşek, 2007). Therefore, the analysis of the improvement indices was not needed. Figure 2 presents the findings of CFA regarding the standardized coefficients of the relationship values between a given item and the factor it belongs to.
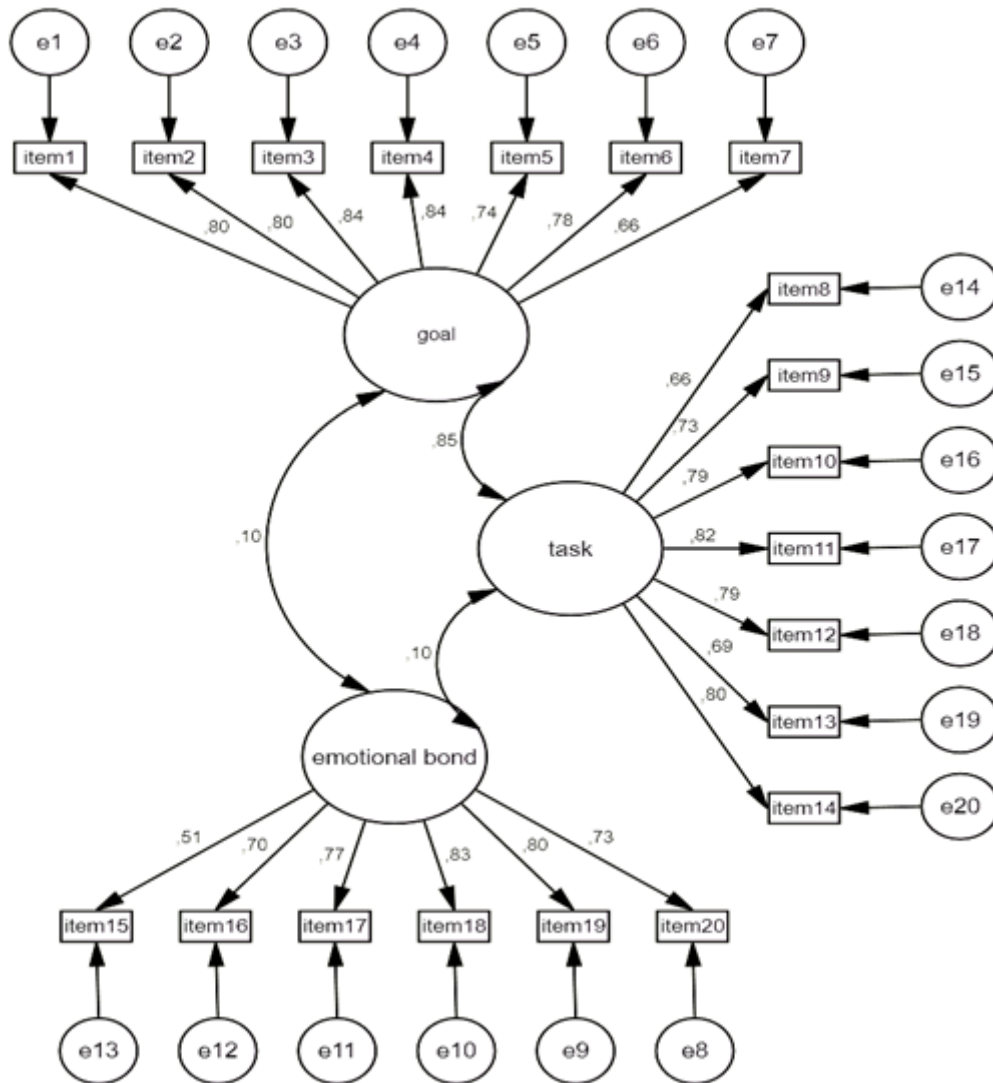
Figure 2. The Diagram of the First Level CFA Results for the Therapeutic Alliance Scale

A second-level CFA was conducted to demonstrate that the goal, responsibility, and emotional bond factors, whose relationships regarding the Therapeutic Alliance Scale were determined with the first-level CFA, represent the theoretically proposed therapeutic alliance factor. In other words, to determine the structural relationships of the determined three-factor structure with the "therapeutic alliance" high-level variable, a second level CFA factor model was created and analyzed. According to the results obtained at the second-level CFA, Chi-Square/Degrees of Freedom (581,199 / 167) was 3.48, and RMSEA was 0.07. As a result of the analysis, the Chi-Square and RMSEA values were found to be less than 0.08. The coefficients of fit which were obtained for the tested model were CFI = .93, GFI = .93, IFI = .93, NFI = .91, and TLI = .92. The proposed hypothesis model is considered to have sufficient goodness of fit when fit values such as CFI, GFI, IFI, NFI, and TLI are equal or close to .90 and the chi-square and RMSEA values are equal to 0.08 or less than this value (Şimşek, 2007). Therefore, it was not necessary to examine the improvement indices. Figure 3 presents the findings of CFA regarding the standardized coefficients of the relationship values between a given item and the factor it belongs to.
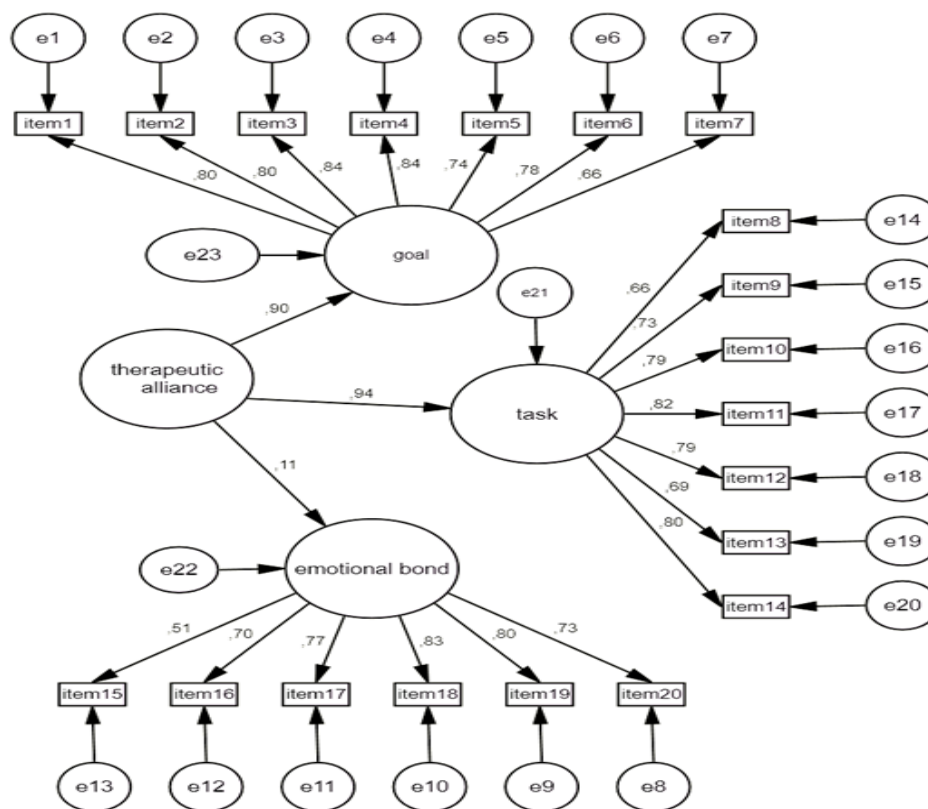
Figure 3. The Diagram of the Second Level CFA Results for the Therapeutic Alliance Scale

A new reliability analysis was conducted with the test-retest method on a new data set created after the above studies. After the analysis, the coefficients were found to be 0.88 for the entire scale, 0.91 for the goal factor sub-dimension, 0.89 for the taskfactor sub-dimension, and 0.87 for the emotional bond factor. At the same time, the item-total correlation was calculated for the items in the therapeutic alliance scale, whose reliability study was conducted. With this analysis, the correlation coefficient of each therapeutic alliance item was calculated. The therapeutic alliance score obtained from each item and the total therapeutic alliance score was handled regarding the relationship between them. The results of the analysis are given in Table 2.

Table 2. Statistics of the Therapeutic Alliance Items

	$\bar{x}$	Ss	Item-Total Correlation	Reliability Coefficient for Item Removal
m1	5.457	1.245	.516	.861
m2	5.295	1.165	.618	.858
m3	5.352	1.198	.592	.859
m4	5.467	1.187	.607	.858
m5	5.112	1.211	.539	.863
m6	5.233	1.152	.575	.859
m7	5.186	1.144	.595	.859
m8	4.857	1.157	.554	.862
m9	5.252	1.181	.512	.861
m10	5.295	1.123	.572	.863
m11	5.576	1.066	.529	.861
m12	5.391	1.145	.578	.859
m13	5.733	1.224	.456	.863
m14	5.505	1.116	.566	.862
m15	4.086	1.646	.467	.863
m16	3.043	1.918	.316	.871

m17	2.614	1.809	.376	.867
m18	2.557	1.919	.309	.871
m19	3.324	1.764	.271	.872
m20	2.876	1.762	.364	.868

After the analyses, it is possible to say that the Therapeutic Alliance Scale has the capacity to reliably measure the ability of psychological counselors to establish a therapeutic alliance.

4. Discussion, Conclusions and Recommendations

As a result of the validity and reliability study of the Therapeutic Alliance Scale designed to measure the therapeutic alliance skills that psychological counselors establish with their clients, a three-dimensional structure emerged. The goal, task/responsibility, and emotional bond dimensions that emerged after exploratory factor analysis were also confirmed by confirmatory factor analysis and different reliability estimations. The structure of the scale emerging as a result of the study can be said to be in parallel with the alliance theory of Bordin (1979). According to Bordin (1979), the therapeutic alliance consists of the goal, task, and emotional bond components, and the goal and task components are a kind of cognitive alliance, while the emotional bond component is an affective alliance. Also, the therapeutic alliance scale developed by Andrusyna, Tang, DeRubeis, and Luborsky (2001) appears to have goal, task, and emotional bond components. Andrusyna et al. (2001) refer to the "emotional bond" dimension of the therapeutic alliance also as the "relationship" dimension. It is possible to say that the structure obtained as a result of the study fits the theoretical framework and structure of the therapeutic alliance concept. As a result of first and second-level confirmatory factor analyses of the scale, fit indices were found to be at an acceptable level. Accordingly, it can be said that each factor in the scale can be used separately or the total score of the scale can also be taken into consideration. This may add depth and different aspects to studies on the alliance. According to the results obtained, it can be said that the Therapeutic Alliance Scale can be used in areas where the concept and structure of the therapeutic alliance and psychological counseling process are conceptualized and where there is a need for understanding the process-result relationship related to the therapeutic processes.

While preparing the Therapeutic Alliance Scale, a pool of items was created with the support obtained from the literature related to the therapeutic alliance, and validity and reliability analyses were carried out on the data collected from psychological counselors. This situation can be said to be among the limitations of the study. We could have collected opinions of psychological counselors during the preparation of the scale items and for supporting the psychometric analysis. Alliance is a bilateral concept. Accordingly, to better understand the concept of the therapeutic alliance, obtaining data and opinions not only from psychological counselors but also from clients could have made the results of the study more meaningful. Accordingly, the study was in the form of developing a measurement tool for measuring the therapeutic alliance skills of psychological counselors. Considering the bilateral aspect of the concept of the alliance, the need for developing measurement tools to determine the therapeutic alliance levels of the person receiving the psychological help, namely the clients, was felt during the study process. Bordin (1979) stated that the concept of the therapeutic alliance also had cognitive and affective structures in addition to the goal, task, and emotional bond dimensions. According to Bordin, the goal and task components of the alliance contain a cognitive aspect, while the emotional bond component involves an affective characteristic. Considering this, it can be said that besides the triple structure that emerged in the study, scale studies, in which the cognitive and affective alliance dimensions that Bordin referred to are tested, are also needed.

References

Andrusyna, B. A. , Tang, T. Z., DeRubeis, R. J., & Luborsky, L. (2001). The factor structure of the Working Alliance Inventory in cognitive-behavioral therapy. *Journal of Psychotherapy Practice and Research, 10,* 173-178.

Bolsinger, J., Jaeger, M., Hoff, P., & Theodoridou, A. (2020). Challenges and opportunities in building and maintaining a good therapeutic relationship in acute psychiatric settings: A narrative review. *Systematıc Revıew, 15.* doi: 10.3389/fpsyt.2019.00965.

Bordin, E. S. (1979). The Generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research and Practice, 16*, 252- 260.

Bordin, E. S. (1994). Theory and research on the therapeutic working alliance: New directions. In A. O. Horvath and L. S. Greenberg (Eds.), *The Working Alliance: Theory, Research and Practice* (p. 13-38). New York: Wiley.

Castonguay,L.G., & Beutler,L.E. (2006). *Principles of therapeutic change that work.* New York: Oxford University Press.

Cuijpers, P., Cristea, I.A., Karyotaki, E., Reijnders, M., & Hollon, S.D. (2019). Component studies of psychological treatments of adult depression: a systematic review and meta-analysis. *Psychother. Res.* 29(1):15–29. doi: 10.1080/10503307.2017.1395922

Clarkin, J.F., & Levy, K.N. (2004*). The influence of client variables on psychotherapy*. In M.J., Lambert (Eds.), Bergin & Garfield's Handbook of psychotherapy and behavior change (5th ed., pp.194-226). New York: John Wiley & Sons.

Çapa, Y., Cakiroglu, J., & Sarikaya, H. (2005). The development and validation of a Turkish version of teachers' sense of efficacy scale. *Egitim ve Bilim, 30, 137*, 74-87

Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş.(2012). *Sosyal bilimler için çok değişkenli SPSS ve LİSREL uygulamaları*. Ankara: PegemA Yayıncılık.

Florsheim, P., Shotorbani, S., Guest-Warnick, G., Barratt, T., & Hwang, W. (2000). Role of the working alliance in the treatment of delinquent boys in community-based programs. *Journal of Clinical Child Psychology, 29*, 94-107.

Gaston, L. (1990). The Concept of the alliance and its role in psychotherapy: Theoretical and empirical considerations. *Psychotherapy, 27*, 143-153.

Gelso, C. J., & Carter, J. (1985). The Relationship in counseling and psychotherapy. *The Counseling Psychologist, 13*, 155-243.

Goldfried, M. R., & Davilla, J. (2005). The role of relationship and technique in therapeutic change. *Psychotherapy Theory, Research, Practice, Training, 42*, 421–430.

Hair, J., Black, B. Babin, B., Anderson, R., & Tatham, R. (2005). *Multivariate data analysis* (6th edition). Upper Saddle River, NJ: Prentice-Hall.

Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research. *Educational and Psychological Measurement, 66 (3)*, 393-416.

Hill, C. E. (1991). Almost everything you ever wanted to know about how to do process research on counseling and psychotherapy but didn't know who to ask. In C. E. Watkins and L. J. Schneider (Eds.), *Research in Counseling*, 85-118.

Hill, C.E., & Lambert, M.J. (2004). Methodological ıssues in studying psychotherapy processes and outcomes. In M. J. Lambert (Eds.), *Handbook of Psychotherapy and Behavior Change* (p.84-135). New York: Wiley.

Horvath, A. O., & Luborsky, L. (1993). The role of therapeutic alliance in psychotherapy. *Journal of Consulting and Clinical Psychology, 61*, 561- 573.

Horvath, A. O., & Symonds, B. D. (1991). Relation between working alliance and outcome in psychotherapy: A Meta-analysis. *Journal of Counseling Psychology, 38*, 139-149.

Kandemir, M., & İlhan, İ. (2019). *Terapötik ittifak ölçeğinin geçerlik ve güvenirlik çalışması: Psikolojik danışman formu*. 28. Uluslarası Eğitim Bilimleri Kongresi Kongresi, Ankara, 25-28 Mayıs.

Kandemir, M. (2017). *Psikolojik danışmanlar açısından terapötik ittifakın incelenmesi*. Gaziosmanpaşa Üniversitesi, Eğitim Bilimleri Enstitüsü. Yayımlanmış Doktora Tezi. Tokat.

Kline, P. (1994). *An easy guide to factor analysis*. London, Routledge.

Krieger, E., Moritz, S., Weil, R., & Nagel, M. (2018). Patients' attitudes towards and acceptance of coercion in psychiatry. *Psychiatry Res 260,*478–85. doi:10.1016/j.psychres.2017.12.029.

Lambert, M. J. (1992). *Psychotherapy outcome research: Implications for integrative and eclectic therapists*. In J. C. Norcross & M. R. Goldfried (Eds.), Handbook of psychotherapy integration, (pp. 94-129). New York: Basic

Lambert, M. J., Bergin, A.E., & Garfield, S.L. (2004). Introduction and historical overview. In M. J. Lambert (Eds.), *Handbook of Psychotherapy and Behavior Change* (p.3-16). New York: Wiley.

Nunnally, J.C. (1978). *Psychometric theory.* New York: McGraw-Hill.

Ollendick, T.H. (2014). Advances toward evidence based practice: Where to from here? *Behavior Therapy, 45,* 51-55.

Orlinsky, D. E., Rønnestad, M. H., & Willutzki, U. (2004). *Fifty years of psychotherapy process-outcome research: Continuity and change.* In M. J. Lambert (Eds.), *Handbook of Psychotherapy and Behavior Change* (p.307-390). New York: Wiley.

Rogers, D. (2009). The working alliance in teaching and learning: Theoretical clarity and research implications. *International Journal for the Scholarship of Teaching and Learning, 3,* 1-9. doi: 10.20429/ijsotl.2009.030228

Safran, J. D., Muran, J. C., & Rothman (2006). Has the concept of the therapeutic alliance outlived its usefulness? *Psychotherapy: Theory, Research, Practice, Training, 43(3)*, 286-291.

Scherer, Robert F., Wiebe, F. A., Luther, D. C., & Adams J. S. (1988). Dimensionality of coping: Factor stability using the ways of coping questionnaire. *Psychological Reports, 62*, 763-770.

Sharma, S. (1996). *Applied multivariate techniques*. United States: John Wiley & Sons.

Soygüt, G., & Işıklı, S. (2008).Terapötik ittifakın değerlendirilmesi: Terapötik ittifak ölçeğinin güvenilirlik ve geçerlik çalışması. *Türk Psikiyatri Dergisi, 19 (4)*, 398-408.

Sprenkle, D., & Blow A. (2004). Common factors and our sacred models. *Journal of Marital and Family Therapy, 30*, 113–129.

Sümer, N. (2000). Yapısal eşitlik modelleri: Temel kavramlar ve örnek uygulamalar. *Türk Psikoloji Yazıları, 3, 6,* 49-74.

Şimşek, Ö. F. (2007). *Yapısal eşitlik modellemesine giriş, temel ilkeler ve lisrel uygulamaları*. Ekinoks Yayınları, Ankara.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon.

Wampold, B. E. (2010). *The basic of psychotherapy: An introduction to theory and practice*. Washington DC: American Psychological Association.

Wexler, J. (2006). *The relationship between therapist mindfulness and the therapeutic alliance.* Unpublished Doctoral Dissertation, University of Baston, Massachusetts.

Zetzel, E. R. (1956). Current concepts of transference. *International Journal of Psychoanalysis, 37*, 369-376.

Pre-Service Mathematics Teachers' Concept Definitions and Examples Regarding Sets[1]

Muhammet Doruk[2], Alper Çiltaş[3]

[2]*Hakkari University, Turkey*, [3]*Atatürk University, Turkey*

ARTICLE INFO

ABSTRACT

The purpose of this study is to reveal the concept definitions and examples of pre-service elementary mathematics teachers regarding sets. In this context, students' formal definitions, personal definitions and examples in sets were investigated. Concept of equal sets, subsets, union, intersection, compliment, and difference were considered as basic concepts of sets in this study. The participants of the study consisted of 79 freshmen studying in the department of elementary mathematics teacher training at a state university of Turkey. The study adopted qualitative research approach and is a sample of a case study. The data of the study was collected from Definition Knowledge Form for Sets and unstructured interviews. The results of the study indicated that most of the pre-service teachers had difficulty in giving notational definitions and daily-life examples while they gave successfully verbal definitions of the basic concepts in sets. It was revealed that verbal definitions, notational definitions, prototype examples with schema, symbols and operational properties were parts of some pre-service teachers' concept images. Furthermore, some pre-service teachers confused equal sets with equivalent sets and difference with symmetric difference. They also did not consider the universal set in defining the compliment. It was found that most of the pre-service teachers had difficulty in expressing their thoughts using mathematical language throughout the study.

Keywords:
Sets, concept definition, concept image, mathematics education

1. Introduction

The concept is abstract and general design of an object or thought in mind (Turkish Language Society [TDK], 2015). Mathematical concepts are composed of mathematical (mental) objects and relationships between them (Simon, 2017). Some mathematical concepts need to be defined, while others are accepted undefined. Concepts specified by definitions are expressed with the help of concepts accepted without definition and predefined concepts (Baykul, 2014). Baykul (2002) describes the properties of mathematical definitions; "based on previously defined or undefined concepts, being meaningful and meaningful with concept it describes, covering all possible situations related to the concept it describes and excluding other situations measuring definitions must be operational (p.21)."

The level of knowledge and understanding of Bloom Taxonomy comes to the fore in cognitive skills of students for concept definitions. At knowledge level, students have a superficial knowledge of rules, facts and relationships (Baki, 2014). At this level, remembering and recognizing behavior is at forefront (Demirel, 2015). For example, it can be said that a student who can express definition of a mathematical concept in

---

textbook or as teacher presents it is at knowledge level. Students at level of understanding require skills such as transporting, interpreting, summarizing, sampling, estimating (Baki, 2014; Demirel, 2015). Accordingly, it can be said that students who can explain, interpret or give examples of a mathematical definition in their own sentences are at level of understanding for relevant definition.

Concept definition-concept image (CD&CI) theoretical framework is also used to comprehend concepts specified by mathematical definitions. The conceptual framework used to guide this research was based on CD & CI framework of Tall and Vinner (1981). Concept images are all cognitive structures in a person's mind regarding a given concept (Tall & Vinner, 1981). Concept images are all cognitive structures in a person's mind regarding a given concept (Tall & Vinner, 1981). The concept image is the mental picture associated with the concept name and all properties that characterize the concept in the student's mind. With mental picture, it means any representation-picture, symbolic form, diagram, graph etc. (Vinner & Dryfus, 1989). Concept definition consists of formal and personal definitions (Tall & Vinner, 1981). Formal concept definition is accepted by mathematical communities and generally included in textbooks (Tall & Vinner, 1981). Personal concept definition is the restructuring of a definition in the mind and is a collection of words that one uses to explain concept image (Tall & Vinner, 1981). This definition can be different from the formal definition (Tall & Vinner, 1981).

Studies conducted on CD&CI in the literature of mathematics education were examined and it was found that studies were carried out with pre-service teachers and teachers regarding concept images in function (Vinner, 1983; Vinner & Dreyfus, 1989), limit, continuity, derivatives and integral (Erdogan, 2017; Kabael, Barak & Ozdas, 2015), geometric concepts (Karakuş, 2018; Yilmaz, 2015), slope (Aydeniz, 2011; Dündar, 2015), complex numbers (Nordlander & Nordlander, 2012), algebraic expression and equation (Tekin Sitrava, 2017), period (Öner & Ertekin, 2015) and rational numbers (Macit & Nacar, 2019). In a small number of studies with pre-service teachers, difficulties of understanding basic concepts of sets were focused (Baki & Sahin, 2002; Fiscbein & Baltsan, 1999; Zehir, Işık & Zehir, 2008). Especially, pre-service teachers' skills of giving definition on sets, universal set, subset, equal sets, finite set, infinite set, empty set concepts were considered in a few studies (Baki & Şahin, 2002; Yazıcı, 2017). There was no study examining concept definitions and examples that are part of the concept image of pre-service teachers in sets. For this reason, it is thought that studies to be done on this subject would contribute to the field.

Concept definitions are seen as the basis of mathematics and mathematics education (Zavlavsky & Shir, 2005). Teachers need to have a deep understanding of the subjects they will teach, to master different mathematical definitions of these concepts, as well as to make instructional assessments about concept definitions (Çakıroğlu, 2013). In this way, individuals who can use mathematical language and understand concepts, express them in different ways and use them in daily life can be raised as aimed in middle school mathematics course curriculum (Ministry of National Education [MEB], 2018a). In summary, mathematics teachers are expected to have a correct understanding of the subjects they undertake their education on. In order to do this, it is necessary to identify deficiencies of pre-service teachers in these subjects and to make remedial applications for elimination of these deficiencies. In this study, concept definitions and examples of pre-service teachers for set concepts would be tried to be revealed. As a result of the study, in addition to contributing literature, pre-service teachers' giving notational and verbal definitions and daily-life examples skills related to set concepts would emerge. It was thought that results obtained from the study would contribute to the teachers and academicians involved in the teaching of the subject to understand the way students' thought. For this purpose, answers to following research questions were sought.

1.   What are the mathematical (formal) definitions of the pre-service teachers for set concepts?

2.   What are the verbal (personal) definitions of the pre-service teachers for set concepts?

3.   What are daily-life examples of the pre-service teachers for set concepts?

2. Method

2.1. Research Design

The study adopted qualitative research approach and is a sample of case study. Case studies are in-depth explanation and examination of limited system (Merriam, 2013).

2.2. Research Group

Research group consisted of 79 freshmen studying in the department of elementary mathematics teacher training at a state university in Turkey. Criterion sampling method was used in selecting of the research group from purposeful sampling methods. In addition, unstructured interviews were conducted with 10 pre-service teachers. Names of interviewed pre-service teachers were coded as P1, P2 ... P10.

Pre-service mathematics teachers in Turkey encountered set concepts at middle school, high school and university level. Middle school students encounter set concepts in sixth grade of middle school. Union and intersection concepts are included (MEB, 2018a). In the course book (Kucukkeleş & Aktas, 2018, p.72), union and intersection definitions are given verbally. Along with the verbal definition, examples are presented using diagram. In the first year of high school, equal set, subset, union, intersection, difference and complement concepts are included (MEB, 2018b). The definition of concepts is presented with mathematical definition, example of concept with diagram, along with the verbal definition (Uçak, Emir, Uçkun, Kutlu & Kahraman, 2018, p.64). In university level, pre-service teachers came across set concepts in Basic Mathematics I and Abstract Mathematics courses. While the Basics Mathematics I course focuses on the operational properties, mathematical definitions and proof activities of set concepts are more in Abstract Mathematics course (Council of Higher Education [YOK], 2018). In most of the course books, presentation types of concept definitions are similar to high school (Balci, 2005; Çallıalp, 2009; Çelik, 2018).

2.3. Data Collection Process

The data of the study was collected from students writing responses in the form Definition Knowledge Form for Sets [DKFS]) developed by the researchers, and interviews were carried out with 10 pre-service teachers selected from the research group. In DKFS, it was aimed to obtain three types of information on concepts of "equal set, subset, union, intersection, difference and complement" labeled as basic set concepts in the study. First, the pre-service teachers were asked to explain these concepts using mathematical symbols. Secondly, pre-service teachers were asked to explain concepts using their own sentences. Pre-service teachers were finally asked to give daily-life example of concepts. DKFS was applied to the pre-service teachers within one hour. There was no time limit for them to fill out DKFS. In interviews, answers given to DKFS were examined together with them. DKFS was presented as an appendix.

2.4. Data Analysis

Content analysis was used to analyze the written answers of the pre-service teachers. After the researchers reached consensus on the categories, opinion of an academician specializing in abstract mathematics was taken about the categories. The expert academician stated that the categories were compatible with each other with the answers. He confirmed that mathematical interpretations were totally correct. The data obtained from interviews are presented descriptively.

3. Results

Mathematical Definitions of the Pre-service Teachers for Set Concepts

Pre-service teachers were asked to define basic set concepts using mathematical symbols. As a result of the analysis, mathematical definitions of the pre-service teachers were collected under eight categories. Figure 1 presents information about these categories.
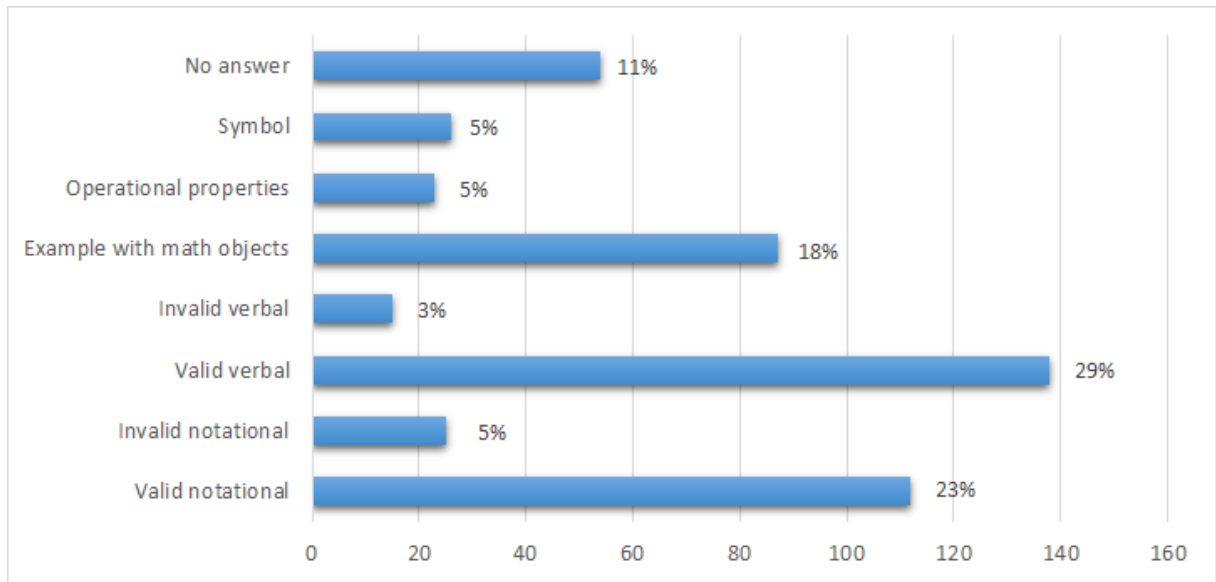
Figure 1. Mathematical definition types of the pre-service teachers

When Figure 1 was examined, it was found that 23% of definitions were valid definitions using mathematical notations. It was determined that approximately one fifth of the definitions are compatible with the formal definition in the textbooks. Accordingly, it can be said that most of the pre-service teachers had difficulty in making notational definition of set concepts. In 5% of the definitions, concepts tried to be defined using mathematical symbols, but failed. These pre-service teachers were evaluated in invalid notational definition category. Figure 2 presents samples of valid notational definition for union and invalid notational definition for intersection.
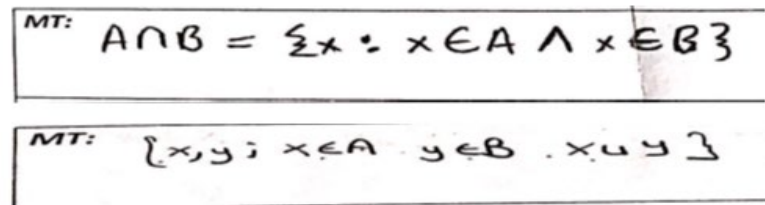

Figure 2. Valid and invalid notational definition

It was found that the pre-service teachers made verbal definitions of concepts at the most rate. Twenty-nine percent of the verbal definitions were mathematically valid. Accordingly, it could be said that the pre-service teachers prioritized verbal definitions rather than notational definitions. Three percent of the definitions were verbally explained, but mathematically was not valid. Figure 3 includes valid verbal definition for subset and invalid verbal definition for equal set. In the invalid verbal definition, it was observed that equivalent was defined instead of equal set.

Figure 3. Valid and invalid verbal definition

It was found that 18% of the definitions were mostly valid examples given by diagram or list method. These definitions were evaluated in examples with mathematical objects category. Accordingly, it could be said that some pre-service teachers considered examples with mathematical objects as mathematical definitions. Figure 4 shows the sample definitions for complement in this category.
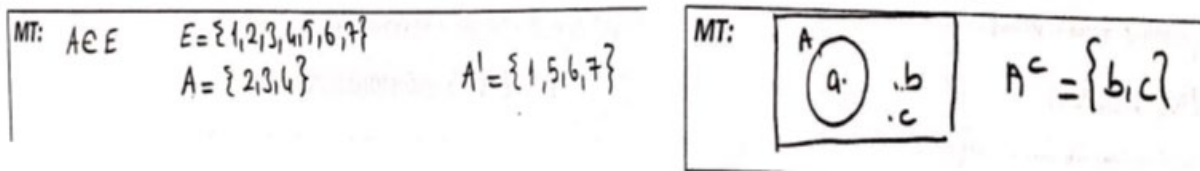
Figure 4. Definitions made using examples

In 10% of the definitions, the pre-service teachers either specified operational properties or symbols of concepts. Samples of these definitions are presented in Figure 5.
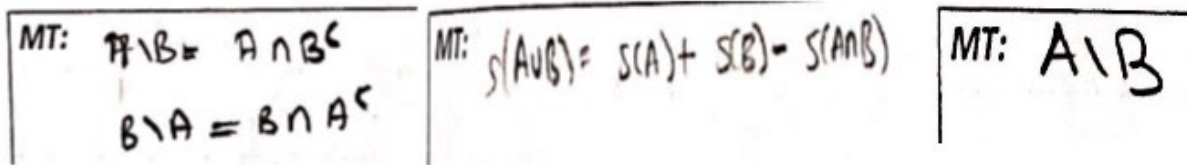
Figure 5. Definitions in operational properties and symbols categories

The mathematical definition categories were evaluated according to the concepts. The information is presented in Figure 6.
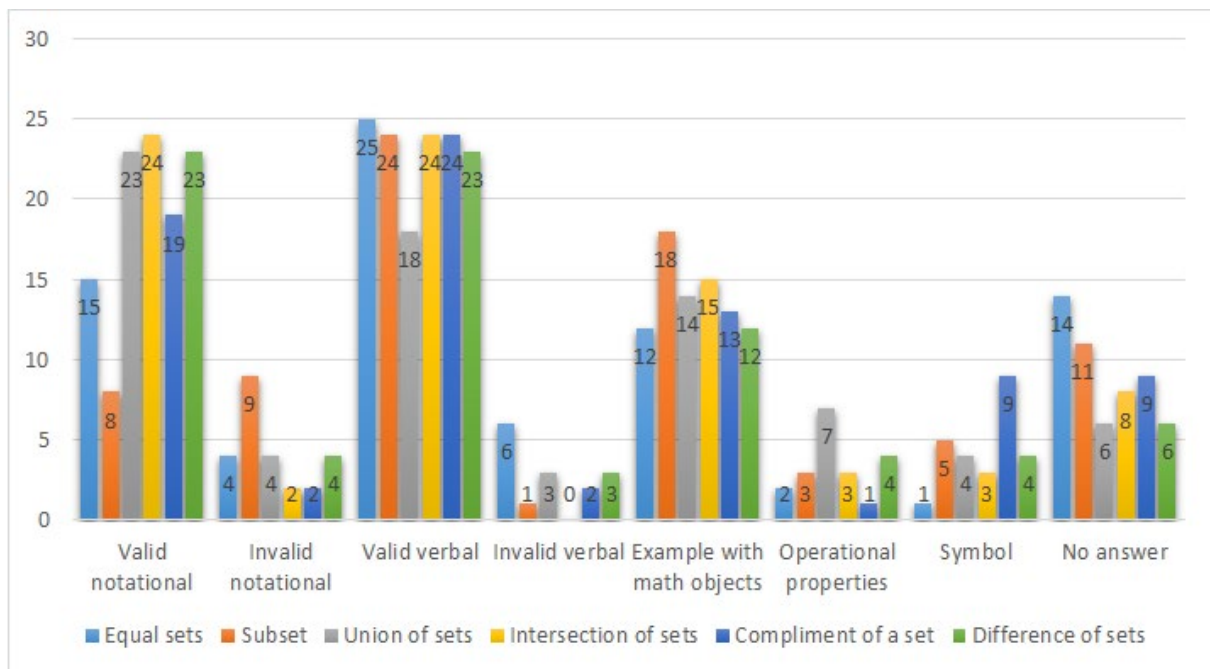
Figure 6. Mathematical definition types of the pre-service teachers according to the concepts

When the mathematical definitions were evaluated according to the concepts, it was found that the pre-service teachers were most successful in making notational definitions of union, intersection and difference. The pre-service teachers made valid and invalid notational definitions in similar numbers for these concepts. The pre-service teachers made the minimum number of valid notational definitions and the most invalid notational definitions in subset. Accordingly, it could be said that the concept that is most difficult to mathematically define was subset. It was emerged that the pre-service teachers had difficulty in using mathematical notations to express their thoughts while making mathematical definition of subset. In these definitions, it was observed that subset was confused with intersection and mathematical notations were misused. Sample subset definitions are presented in Figure 7.
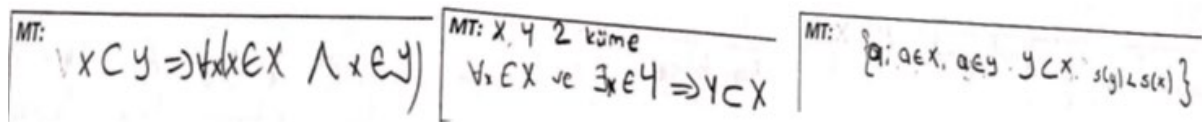
Figure 7. Sample of difficulties in making the notational definition of subset

When the pre-service teachers made mathematical definitions, it was found that the concept that had the most difficulties in the second rank was equal set. They confused equal set with equivalent and had difficulty in expressing their thoughts with notations. Samples of these definitions are shown below.
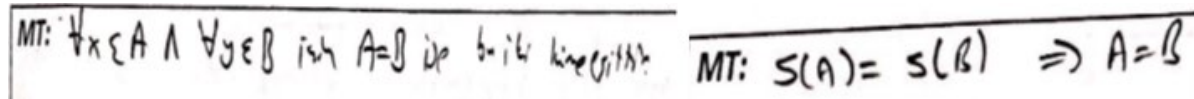
Figure 8. Difficulties in making notational definition of equal set

Although not as much as subset and equal set concepts, pre-service teachers gave few valid mathematical definitions of complement. It was determined that these pre-service teachers did not properly understand complement, made definitions for special cases, and could not use mathematical notations correctly. Samples are presented below in Figure 9.

Figure 9. Difficulties in making notational definition of complement

Personal Definitions of Pre-service Teachers for Set Concepts

In order to determine how the pre-service teachers interpret the basic set concepts with their own sentences, the pre-service teachers were asked to express the concepts using their own sentences. When the personal definitions of the pre-service teachers were examined, it was found that the definitions were divided into seven categories. The information about the categories is presented below Figure 10 below.
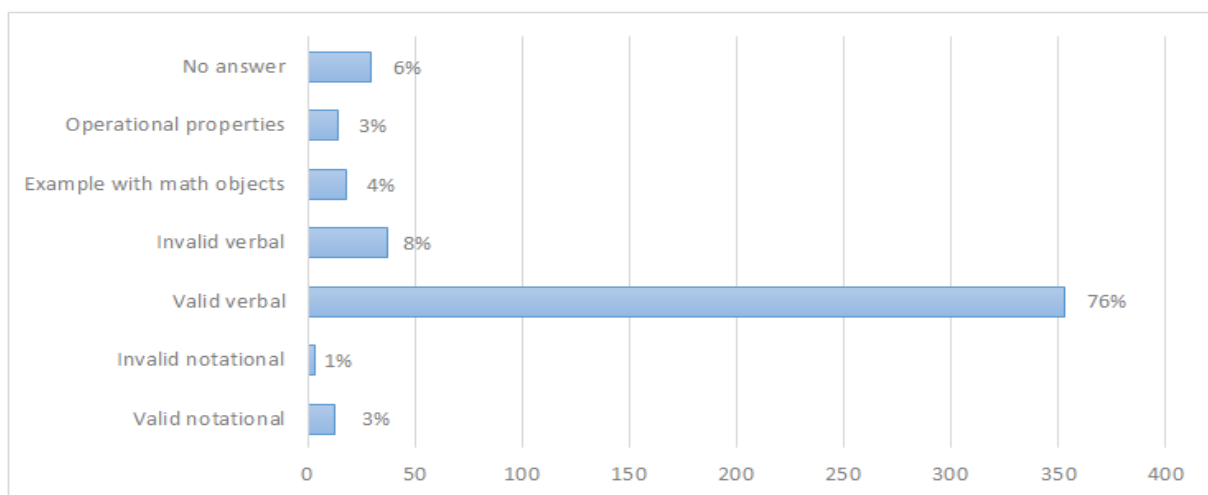
*Figure 10.* Personal definition types of the pre-service teachers

According to Figure 10, the personal definitions were often valid verbal definitions. It was found that 76% of the definitions reflected the verbal definition. Accordingly, it could be said that most pre-service teachers had no difficulty in defining concepts informally. In 8% of personal definitions, pre-service teachers tried to explain concepts verbally, but were unable to make valid verbal definitions. Below is a sample valid verbal

definition for complement and invalid for difference. In the definition made for difference, the verbal definition defined the concept of symmetrical difference rather than difference.

KT: *Bir kümenin kendi elemanları hariç bulunduğu evrensel kümenin elemanlarından oluşan kümeye o kümenin tümleyeni denir. A' ile gösterilir.*	The set that has elements of universal set except for its elements is called compliment of this set. It is denoted by A'.
KT: *İki kümenin farklı olan elemanlarıdır.*	These are different elements of two sets.

Figure 11. Valid and invalid verbal definitions

Mathematical notations were used in 4% of the definitions. Three percent of these definitions were valid but 1% invalid. Sample definitions are presented below.

KT:
$$A \subset B = \{x : \forall x \in A \wedge x \in B\}$$

KT:
$$A \cup B = \{x : x \in A \vee x \in B\}$$

Figure 12. Invalid and valid notational definitions

4% of the definitions were valid examples with mathematical objects, while 3% contained operational properties. Some pre-service teachers did not answer or used expressions that could not be analyzed. The following are samples for these categories.

KT:
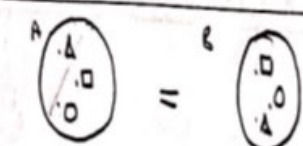
KT: $A = \{1, 1\}$ $E = \{1, 2, 5, 8, 9\}$
$A' = \{5, 8, 9\}$

KT: $s(A \cup B) = s(A) + s(B) - s(A \cap B)$

Figure 13. Examples with mathematical objects and operational properties

In this study, it was found that the pre-service teachers were mostly successful in explaining the concepts verbally. Analyses were conducted to reveal in which concepts the pre-service teachers were more successful or unsuccessful in making verbal definition. Distribution of verbal definitions according to the concepts is presented in Figure 14.

Concept	Invalid verbal	Valid verbal
Difference of sets	9	57
Compliment of a set	6	60
Intersection of sets	1	67
Union of sets	3	58
Subset	8	55
Equal sets	10	56

Figure 14. Verbal definitions of pre-service teachers according to the concepts

When Figure 14 was examined, it was revealed that pre-service teachers were most successful in making valid verbal definitions of intersection. Similar number of pre-service teachers made valid verbal definitions of other concepts. It was emerged that the pre-service teachers mostly had difficulty in making valid verbal definitions of equal set, difference and subset, respectively. Ten pre-service teachers could not explain equal set mathematical appropriately. It was revealed that these pre-service teachers made equivalent definition instead of equal sets. Figure 15 presents a sample definition.

KT: kendi tanımında A nın eleman sayısı ile B nın eleman sayısı birbirine eşit ise Bu kümeler birbirine eşittir.	*In my personal definition, if number of elements of A is equal to B, then these sets are equal.*

Figure 15. Sample verbal definition of equal set

Nine pre-service teachers made invalid verbal definitions of difference. In personal definitions of the pre-service teachers, it was seen that symmetrical difference is more defined than difference. Accordingly, it could be said that these pre-service teachers had difficulty in distinguishing between difference and symmetrical difference. Figure 16 shows sample definition.

KT: İki kümenin ortak elemanları dışında kalan elemanlarda dışarı kalma	*The set that has elements except common elements of two sets is the difference.*

Figure 16. Sample verbal definition of difference

Eight pre-service teachers tried to explain subset definition verbally, but failed. In invalid verbal definitions, pre-service teachers did not fully reflect the logic of subset or used expressions that were difficult to reconcile with the subset definition. In these statements, it could be said that the pre-service teachers had difficulty in using the quantifiers in particular. Sample definitions are presented in Figure 17.
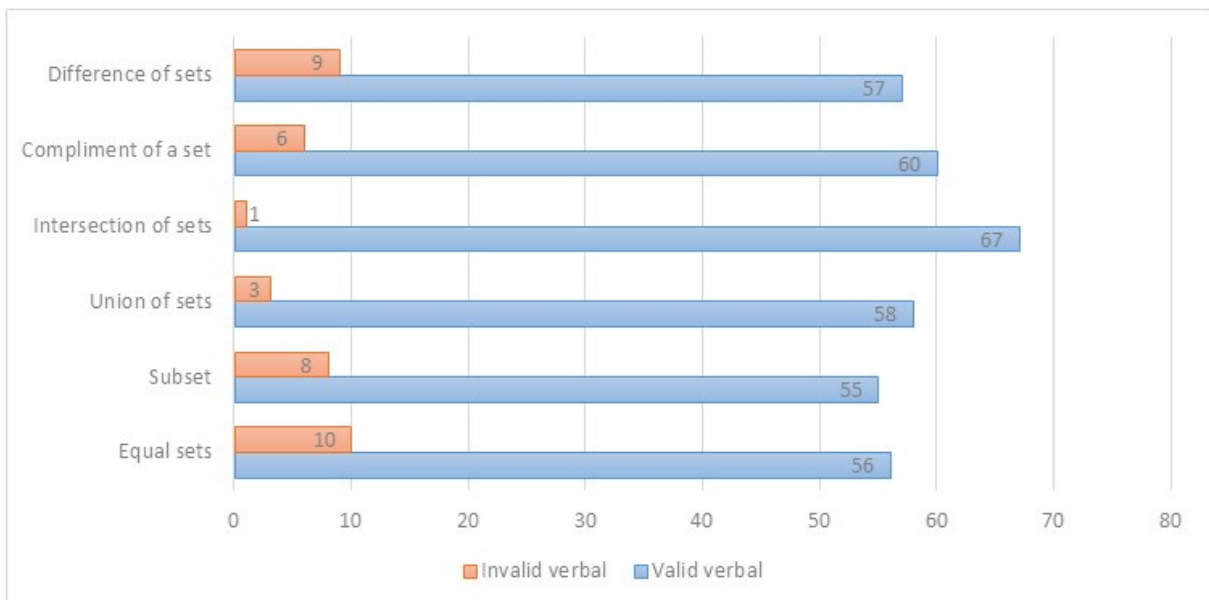
KT: B'de var olan elemanların en az bir'si A 'da da var ise B⊃A veya A⊂B 'yi denebilir.	*If at least one element of B is also element of A, then it can be said that $A \subset B$ or $B \supset A$.*
KT: A kümenin bazı elemanları, B kümenin elemanlarıyla B, A'nın alt kümesidir denir.	*If some elements of A are also elements of B, then B is subset of A.*

Figure 17. Sample verbal definition of subset

Six pre-service teachers gave invalid definitions of complement and only three pre-service teachers gave invalid definitions of union. Pre-service teachers making invalid verbal definitions of complement often used expressions that did not reflect complement. In some of these statements, it is possible to say that the universal set was not considered. Sample definitions are presented below.

KT: Bir kümenin Evrensel kümeden farkına	*The compliment is called the difference of a set from the universal set.*
KT: Herhangi bir kümenin aua tüm elemanlarını örnüyorsa tümleyeni denk görünür.	*If a set covers all elements of any set, then it can be demonstrated as its compliment.*

Figure 18. Sample verbal definition of complement

Daily-Life Examples of Pre-service Teachers in Set Concepts

In this study, teachers were asked to give daily-life examples of basic set concepts. It was revealed that examples were collected in seven categories. Figure 19 provides information about categories.
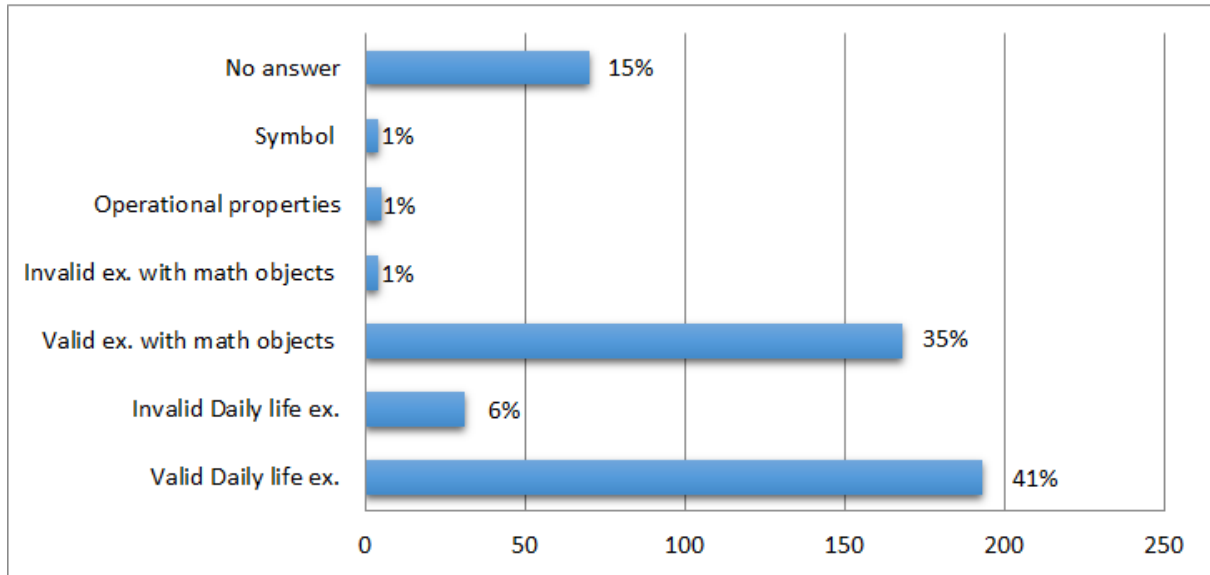
Figure 19. Daily-life example types of pre-service teachers

Figure 19 shows that 76% of pre-service teachers gave valid examples. However, it was found that examples given by 41% of the pre-service teachers were daily-life examples requested from them. In total, 44% of pre-service teachers did not give valid daily-life examples. In 15% of the examples, the pre-service teachers either did not respond or used expressions that could not be analyzed. It was determined that pre-service teachers had difficulty in giving daily-life examples while they gave mathematically valid examples. Although 6% of the examples were real-life examples, they did not fully reflect the concept. Figure 20 presents real-life examples that are valid for difference and invalid for intersection.

Figure 20. Valid and invalid real-life examples

In 36% of the examples, pre-service teachers tried to give examples using mathematical objects such as diagrams and lists instead of daily-life examples. Nearly all of these examples reflected the relevant concepts. 1% of the examples with mathematical objects, did not reflect relevant concepts correctly. Below are samples of these two categories.

Figure 21. Valid and invalid examples with mathematical objects

In 2% of the examples, pre-service teachers specified operational properties and symbols of concepts rather than giving examples. Samples are presented below in Figure 22.
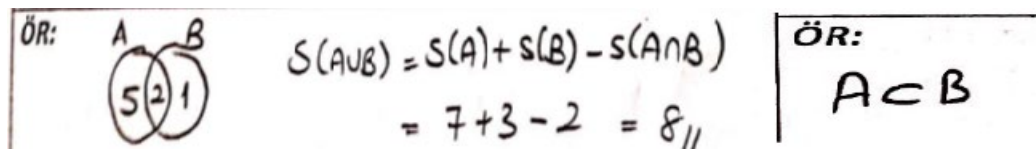
Figure 22. Samples of operational properties and symbol categories

It was intended to examine distribution of example types given frequently by the pre-service teachers according to the concepts. The following figure describes distribution of daily-life examples and examples with mathematical objects according to the concepts.
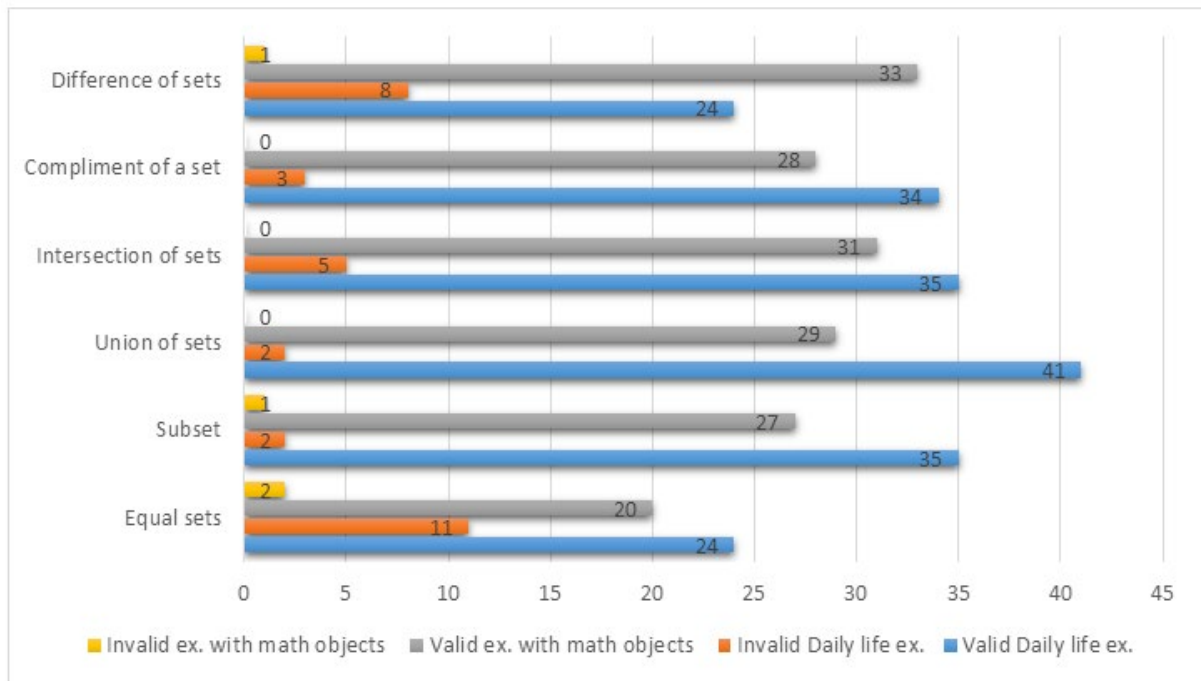
Figure 23. Pre-service teachers' daily life examples and examples with mathematical objects according to the concepts

When Figure 23 was examined, it was found that the pre-service teachers were most successful in giving valid daily-life examples of union. The concepts that the pre-service teachers had most difficulties were equal set and difference. When invalid daily-life examples were examined, it was determined that pre-service teachers mostly gave examples related to equivalent for equal set. When invalid daily life examples for difference were examined, it was found that the examples did not match the mathematical meaning of difference. Samples are presented in Figure 24.

Figure 24. Difficulties in giving daily-life examples of equal set and difference

When examples with mathematical objects were examined, it was found that the pre-service teachers gave more examples in difference. As mentioned above, it was emerged that pre-service teachers having difficulty in giving daily-life examples tend to use mathematical objects. The only one concept that pre-service teachers gave more examples using mathematical objects than daily-life was difference. This showed that the concept that pre-service teachers had most difficulty in associating with daily-life was difference. However, equal set and intersection also drew attention as concepts where difference between valid daily-life examples and

examples with mathematical objects. Below are samples of the examples with mathematical objects for difference
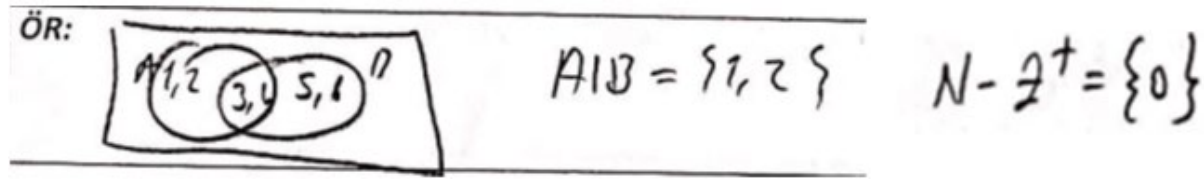
Figure 25. Samples of examples with mathematical objects for difference.

Opinions of Pre-service Teachers

Interviews were conducted with ten participants selected from among 79 pre-service teachers responding to DKFS. The first consideration in the interviews was whether written responses reflected their true thoughts on the concepts. For this reason, written responses were evaluated together with them. It was found that all the pre-service teachers' opinions in the interview were parallel with their written responses. For example, interviews were carried out with P9. In DKFS, P9 often left mathematical definitions blank and gave only personal definitions. In this interview, it was revealed that P9 could not make definitions that left unwritten. Below are excerpts from the conversation between the researcher and P9.

>*Researcher: You didn't make a mathematical definition of subset. Why?*
>
>*P9: I didn't specifically define it mathematically. Because I was going to write something missing there for sure. After all, it's a memorization thing. That's why I always wrote my own definitions.*
>
>*Researcher: Do you want to do it now?*
>
>*P9: [She tries to make a mathematical definition, but she can't]. I can't define it mathematically. There's no mathematical definition.*

The pre-service teachers stated that they had difficulty in making mathematical definitions in the study. Most of the pre-service teachers stated that they used their personal definitions instead of mathematical definitions. These pre-service teachers stated that they could not remember their mathematical definitions, that they had difficulty expressing their thoughts mathematically, and that personal definitions were more logical and understandable to them. Below are same opinions of these pre-service teachers.

>*P3. When we make our definitions, we can explain our thoughts with simple things, but when it comes to mathematical definition, it's a little harder.*
>
>*P5: My own definition sounds more logical and understandable. Mathematical definition is more difficult to explain. I used my own definitions instead of mathematical definitions.*
>
>*P6: I've always used my own definition here instead of mathematical definition. I showed some of them in diagram. I didn't remember mathematical definition. I haven't been able to give a mathematical definition in any of the concepts.*

P7 specified operational properties and diagram instead of mathematical definition. She thought that operational properties and diagrams could be given as mathematical definitions. Below is the dialogue between P7 and the researcher.

>*Researcher: In the study, you gave operational property for mathematical definition. Why?*
>
>*P7: That could be a mathematical definition. It's a property in a sense, but it could be a mathematical definition.*
>
>*Researcher: Here are notational definition [showing a valid notational definition] and diagram [showing an valid example with the Venn diagram], which one is more mathematical?*

> *P7: I think, diagram is more mathematical because it's more visual. But notional definition is used in proofs. According to the professors at university, notational definition. But the diagram is easier. I couldn't write the notational definition. I didn't remember.*

P2 also often used examples, especially in personal definitions. Below are P2's views.

> *P2: I use these examples more as my definition. Because when I evaluate my own definition mathematically, it means the same thing. It makes more sense to present definitions by giving examples. When given an example, we think about what the definition might be.*

Some pre-service teachers were asked what method should be used to teach these concepts. They stated that personal definitions and examples should be more prominent in the teaching of set concepts and that it would be useful to apply mathematical definitions to the last. Below are the opinions of P1.

> *P1: First, we provide the information by our definition. Then, we give an example of everyday life. After that, I think it's best to put it into mathematical language. If we do it this way, students will understand better. When we start a concept by giving examples rather than definitions, the issues are better understood. If courses start with definitions, students can't understand anything as there is nothing in their mind. We're having similar problems ourselves. Courses such as linear algebra, for example, are courses about definitions. We don't understand anything when definitions are written by professor. It can be better understood when you give an example and the definition is explained through that example.*

Some difficulties, identified from DKFS before, were revealed in the interviews. For example, in interview with P1, difficulties were detected in understanding of difference and complement. Below is the dialogue between P1 and the researcher.

> *Researcher: You didn't write mathematical definition for complement. Why?*
>
> *P1: I didn't remember.*
>
> *Researcher: Do you want to define it now?*
>
> *P1: Let me give you an example. Let's think of a class. Because the classroom is inside the school, the school is the complement of the class. We can think of it that way.*
>
> *Researcher: All the school? Are we including the class in the complement?*
>
> *P1: We're including the class. The whole school is happening.*
>
> *Researcher: What is the complement of set A in this example? [Researcher wrote an example with Venn diagram such as $A \subset E$].*
>
> *P1: It's a universal set.*
>
> *Researcher: Can you define the difference?*
>
> *P1: It is a set consisting of the removal of common elements from two sets.*

4. Discussion

As a result of the analysis of the data obtained with the help of DKFS and interviews, it was revealed that the pre-service teachers had difficulty in making notational definition of the concepts. Accordingly, it can be said that most pre-service teachers were not even at knowledge level for notational definitions. Pre-service teachers mostly made verbal definitions instead of notational definitions. This means that these pre-service teachers used verbal definitions as mathematical definitions of set concepts. Some pre-service teachers gave examples using mathematical objects instead of notational definitions. Some pre-service teachers also presented operational properties and symbols as mathematical definitions. This conclusion is consistent with the results of studies in which pre-service teachers had difficulties in understanding formal definitions of concepts (Açıkyıldız, 2013; Doruk et al., 2018).

Secondly, it was determined that the majority of pre-service teachers were able to make valid verbal definitions Seventy six percent of the definitions were valid verbal definitions. Therefore, it can be said that

the majority of pre-service teachers were at conceptual level regarding the concepts. In the last part of the study, pre-service teachers were asked to give daily-life examples for set concepts. It was found that 76% of examples were mathematically valid examples. This percentage obtained from this section was found to be equal to the percentage obtained from the previous section. This astonishing result is a meaningful result in terms of validity of the study. Because the skills investigated in these parts are indicators of the same cognitive level. The behavior of explaining a concept, interpreting it, explaining it in different ways, and giving examples are indicators of understanding level (Baki, 2014; Demirel, 2014). This conclusion confirmed that the pre-service teachers were at the conceptual level of set concepts. Similarly, Yazıcı (2017) found that mathematics teachers could often accurately describe equal sets, subsets, and complement.

However, 41% of examples were found to be valid daily life examples. According to these reasons, it can be said that students had difficulty in establishing relationship between set concepts and daily-life. Most of the pre-service teachers gave examples with mathematical objects. Some pre-service teachers presented operational properties and symbols of concept as daily-life examples. Accordingly, in order to associate the concepts of sets with daily life, studies can be carried out in teaching of related courses. Unfortunately, mathematics teachers used more abstract examples in teaching of set concepts (Yazici, 2007). Similarly, Schoenfeld (1991) stated that students in schools could not relate to mathematics and daily-life.

Although this study focused on the concept definition section of CD&CI, it provided important information on the concept images of pre-service teachers for set concepts. Vinner (1981) stated that for some concepts, concept definition was part of concept image. He stated that some of the concepts in this expression are concepts that can be presented by verbal definition. Set concepts are among the some concepts stated by Vinner (1981). In this study, it was found that verbal definitions were considered more than notational definitions. The categories identified in this study can also be said to be part of their concept images. Because the questions asked in every part of the study changed, but the categories always remained same. Accordingly, concept images of the pre-service teachers were: verbal definition, examples with mathematical objects (mostly diagram representation), notational definition, operational properties, and concept symbols. Verbal definitions and examples with mathematical objects were stronger images than others. One of the sources of these images may be the learning backgrounds of the pre-service teachers. The images expressed in the study are included in the course books used from middle school to university level. These images may have been transferred to students through instructions and textbooks for set concepts. The results of this study supported Tall and Vinner's (1981) views that "the concept image may differ from the features in the concept definition".

It was emerged that the pre-service teachers had more difficulty in some concepts. As a result of the examinations, it was determined that the pre-service teachers had various difficulties. These difficulties adversely affected the performance of the pre-service teachers in the study. The difficulties identified in the study are listed below.

1. Pre-service teachers confused notational definition of subset with intersection.
2. Pre-service teachers used equivalent instead of equal set.
3. The pre-service teachers neglected universal set in making definitions and giving examples of complement.
4. The pre-service teachers considered complement for special cases.
5. Pre-service teachers used symmetrical difference instead of difference.
6. Pre-service teachers had difficulty expressing their thoughts using mathematical notations.
7. Pre-service teachers had particular difficulty in using quantifiers and in symbolically expressing concepts.

In previous studies, pre-service teachers confused equal set with equivalent set (Baki & Sahin, 2002), neglected the universal set while working with the concept of complement (Zehir et al., 2008), difficulty in using mathematical notations (Zehir et al., 2008). The first and fifth difficulties identified in this study were never mentioned, and the fourth, sixth and seventh difficulties were partially addressed. For example, Kabael, Barak and Özdas (2015) stated that students could not connect the formal definition of the limit with the concept image, and that the reason for this situation was that they could not use quantifiers in a meaningful way.

5. Recommendations

In order to care about mathematical definitions, mathematical definitions can be used in the teaching and evaluation process of the related courses. In the course teaching process, daily-life examples and problems should be included. Efforts can be made to help students develop an appropriate conceptual image for concepts. Because developing an appropriate conceptual image for concepts paves the way for meaningful learning, while the wrong concept images prevent them from learning correctly (Gülkılık, 2008). The course books used can be reviewed so that students can relate concepts to daily-life and develop appropriate concept images. Teaching plans of the courses can be arranged considered the difficulties of the pre-service teachers.

References

Açıkyıldız, G. (2013). *Matematik öğretmeni adaylarının türev kavramını anlamaları ve yaptıkları hatalar [Mathematics candidate teachers' understanding of derivative concept and their mistakes].* (Unpublished master thesis). Karadeniz Teknik University, Trabzon.

Aydeniz, F. (2011). *Öğretmen adaylarının eğim kavramı ile ilgili sahip oldukları kavram imajlarının ve matematiksel anlayışlarının incelenmesi üzerine bir durum çalışması [A case study on the concept images and mathematical understanding of prospective secondary mathematics teachers' related with concept of 'slope']* (Unpublished master thesis). Gazi University, Ankara.

Baki, A. (2014). *Kuramdan uygulamaya matematik eğitimi [Mathematics education from theory to practice].* (5. Baskı). Ankara: Harf Eğitim Yayıncılık.

Baki, A., & Şahin, S. M. (2002). Assessment of preservice teachers' mathematical learning trough computer aided concept mapping method. *Turkish Online Journal of Educational Technology, 3*(2), 91-104.

Balcı, M. (2005). *Genel matematik [General mathematics].* Ankara: Balcı Yayınları

Baykul, Y. (2002*). İlköğretimde matematik ögretimi [Mathematics teaching in primary education].* Ankara: PegemA Yayıncılık.

Baykul, Y. (2014). *Ortaokullarda matematik öğretimi [Mathematics teaching in middle schools].* (2 baskı). Ankara: Pegem Akademi.

Çakıroğlu, E. (2013). Matematik kavramlarının tanımlanması [Defining the concepts of mathematics]. İ.Ö. Zembat, M.F. Özmantar, E. Bilgölbali, H. Şandır ve A. Delice (Ed.). *Tanımları ve tarihsel gelişimleriyle matematiksel kavramlar* içinde (s. 1-14). Ankara: PegemA yayıncılık.

Çallıalp, F. (2009). *Soyut matematik [Abstract mathematics].* İstanbul: Birsen Yayınevi.

Çelik, B. (2018). *Soyut Matematik [Abstract mathematics].* Bursa: Dora Yayıncılık.

Council of Higher Education [YOK]. (2018). *İlköğretim matematik öğretmenliği lisans programı.* Ankara: YOK.

Demirel, Ö. (2015). *Kuramdan uygulamaya: eğitimde program geliştirme [From theory to practice: curriculum development in education].* (24. Baskı). Ankara: Pegem Yayıncılık.

Doruk, M., Duran, M., & Kaplan, A. (2018). Interpredations related to the definition of derivative and ascribed meanings to derivative of undergraduate students. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 18* (2), 834-856. doi: 10.17240/aibuefd.2018..-431455

Dündar, S. (2015). Knowledge of mathematics teacher-candidates about the concept of slope. *Eğitimde Kuram ve Uygulama, 11*(2), 673-693.

Erdoğan, G. (2017). *Lise ve matematik öğretmenlerinin noktada türev ve türev fonksiyonu hakkındaki kavram imajları [Concept image about derrivation at point and derrivation function of high school mathematics teachers]* (Unpublished master thesis). Necmettin Erbakan University, Konya.

Fischbein, E., & Baltsan M. (1999). The mathematical concept of set and the collection model, *Educational Studies in Mathematics, 37*,1-22.

Gülkılık, H. (2008). *Öğretmen adaylarının bazı geometrik kavramlarla ilgili sahip oldukları kavram imajlarının ve imaj gelişiminin incelenmesi üzerine fenomenografik bir çalışma [A phenomenographic study on the concept images and image development of prospective secondary mathematics teachers related with some geometric concepts]* (Unpublished master thesis). Gazi University, Ankara.

Kabael, T., Barak, B., & Özdaş, A. (2015). Students' concept definitions and concept images about limit concept. *Anadolu Journal of Educational Sciences International, 5*(1), 88-114.

Karakuş, F. (2018). Investigation of primary pre-service teachers' concept ımages on cylinder and cone. *Elementary Education Online, 17*(2), 1033-1050. doi:10.17051/ilkonline.2018.419352

Küçükkeleş, A., & Aktaş, Ş. (2018). *Ortaokul ve imam hatip ortaokulu 6. Sınıf matematik ders kitabı.* Ankara: Berkay Yayıncılık.

Macit, E., & Nacar, S. (2019). Concept images for rational number and fraction of the students at the elementary mathematics education department. *Inonu University Journal of the Graduate School of Education, 6*(11), 50-62. doi: 10.29129/inujgse.547277

Merriam, S.B. (2013). *Nitel araştırma desen ve uygulama için bir rehber [A guide to qualitative research pattern and practice.].* (Çev. Ed. S. Turan). Ankara: Nobel Akademik Yayıncılık.

Ministry of National Education [MEB] (2018a). *Matematik dersi öğretim programı (İlkokul ve Ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. Sınıflar).* Ankara: Talim Terbiye Kurulu Başkanlığı.

Ministry of National Education [MEB] (2018b). Ortaöğretim *matematik dersi öğretim programı (9., 10., 11. ve 12. Sınıflar).* Ankara: Talim Terbiye Kurulu Başkanlığı.

Nordlander, M. C., & Nordlander, E. (2012). On the concept image of complex numbers. *International Journal of Mathematical Education in Science and Technology, 43*(5), 627-641. doi:10.1080/0020739X.2011.633629

Öner, A., & Ertekin, E . (2015). Preservice elementary mathematics teachers' concept images related to the period concept. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi, 35* (2), 333-353.

Schoenfeld, A. H. (1991). What's all the fuss about problem solving. *Zentrallblatt Für Didaktik der Mathematik, 91*(1), 4-8.

Simon, M. A. (2017). Explicating mathematical concept and mathematical conception as theoretical constructs for mathematics education research. *Educational Studies in Mathematics, 94*(2), 117-137. doi:10.1007/s10649-016-9728-1

Tall. D., & Vinner, S. (1981). Concept image and concept definition in mathematics with particular reference to limits and continuity. *Educational Studies in Mathematics, 12*(2), 151-169. doi:10.1007/BF00305619

Tekin Sitrava, R. (2017). Prospective mathematics teachers' concept images of algebraic expressions and equations. *Cumhuriyet International Journal of Education*, *6*(2), 249–268.

Turkish Language Society [TDK] (2015). *Türkçe sözlük.* Ankara: Türk Dil Kurumu Yayınları

Uçak, A., Emir, E., Uçkun, F., Kutlu, G., & Kahraman, S. (2018). *Ortaöğretim fen lisesi matematik 9 ders kitabı.* Ankara: Milli Eğitim Bakanlığı Yayınları.

Vinner, S. (1983). Concept definition, concept image and the notion of function. *International Journal of Mathematical Education in Science and Technology*, *14*(3), 293-305. doi:10.1080/0020739830140305

Vinner, S., & Dreyfus, T. (1989). Images and definitions for the concept of function. *Journal for Research in Mathematics Education, 20*(4), 356-366. doi:10.2307/749441

Yazıcı, N. (2017). *Mathematıcal knowledge for teachıng of the math teachers: analysıs of the basıc concepts ın the sets* (Unpublished doctoral dissertation). Ataturk University, Erzurum.

Yılmaz, E. (2015). *İlköğretim matematik öğretmen adaylarının katı cisimler ile ilgili kavram tanımı ve kavram imajlarının fenomenografik yaklaşımla incelenmesi [Examination of elemantary mathematics teacher candidates concept definitions and concept images related to solid objects through the phenomenological approach]* (Unpublished master thesis). Erciyes Üniversitesi, Kayseri.

Zaslavsky, O., & Shir, K. (2005). Students' conceptions of a mathematical definition. *Journal for Research in Mathematics Education 36*(4), 317–346. doi: 10.2307/30035043

Zehir, H., Işık, A., & Zehir, K. (2008). The level of conceptual knowledge of pre-service elementary mathematics teachers about set. *Bayburt Üniversitesi Eğitim Fakültesi Dergisi, 3(1-2),* 61-75.

Appendix

DEFINITION KNOWLEDGE FORM FOR SETS

- *Make mathematical definition using mathematical symbols of the following concepts (**MD: Mathematical definition**).*
- *Express the following concepts by using your own words (**PD: Personal definition**).*
- *Give an example from everyday life of the following concepts (**EX: Example**).*

EQUAL SETS

MD:	
PD:	
EX:	

SUBSET

MD:	
PD:	
EX:	

UNION OF SETS

MD:	
PD:	
EX:	

INTERSCTION OF SETS

MD:	
PD:	
EX:	

COMPLIMENT OF A SET

MD:	
PD:	
EX:	

DIFFERENCE OF SETS

MD:	
PD:	
EX:	

Experiences of Turkish Preschool Teachers for Including Children with Autism Spectrum Disorders: Challenges Faced and Methods Used

Yeşim Güleç-Aslan[1]

[1]Istanbul Medeniyet University, Istanbul, Turkey

ARTICLE INFO

ABSTRACT

Inclusion is important for development of social-communication and all skills of children with autism spectrum disorders (ASD) and their participation in social life. In order to carry out a successful inclusion process, preschool teachers have crucial and fundemantal role. The purpose of this qualitative study is to explore the experiences of eight preschool teachers in Turkey. In other words, challenges faced by preschool teachers and methods used were explored. Semi-structured interviews were analyzed via inductive analysis. The findings show that the teachers experience various difficulties and use various methods, though limited, to handle these difficulties. It is expected that this research will shed light on the current practice and inspire advanced research studies. Moreover, it is predicted that research carried out in different cultures can offer cultural perspectives to the international literature.

Keywords:
Autism spectrum disorder; inclusion; inductive analysis; preschool; qualitative research

1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disabilities defined by presentation of challenges in social communication and interaction skills and restricted and repetitive behaviors (American Psychiatric Association [APA], 2013). Individuals diagnosed with ASD make significant progress in all areas of development with qualified special education services started at an early age. One of the main objectives of the special education offered to these children is continuing the one-on-one special education services, which start in early childhood, with supported or unsupported inclusion education in pre-school institutions and beyond. Significant developments are observed in social acceptance and social interaction of children diagnosed with ASD who are trained in inclusive settings having an opportunity to learn through observing and modeling their typically developing peers from an early age on (Lindsay, Proulx, Scott, & Thomson, 2014; Mastropieri & Scruggs, 2004; Vakil, Welton, O'Connor, & Kline, 2009). In addition, successful inclusion practices in pre-school institutions are also essential for the success of the child's inclusion practices in primary education and beyond (Lovaas, 2003; National Autism Center [NAC], 2009, 2015; Odom & Connie, 2015; Sturmey & Adrienne, 2007).

Preschool teachers' positive attitudes towards inclusion and children with ASD along with their use of appropriate educational methods are important for successful integration (Eldar, Talmor, & Wolf-Zukerman, 2010; Vakil et al., 2009). Given the complex nature of ASD and the presence of severe learning and

behavioral problems in individuals with ASD, preschool teachers working with individuals with ASD need to have professional competencies specific to ASD in order to carry out a successful inclusion process (Grossi-Kliss, 2006; Scheuermann, Webber, Boutot, & Goodwin, 2003; Simpson, 2004). In other words, it is crucial that preschool teachers need professional competencies in basic relevant subjects such as the characteristics of individuals with ASD, the processes of education and training for these individuals, inclusion, coping with behavioral problems, interdisciplinary teamwork, and cooperation with the family, in addition to having a positive attitude towards the integration process of children with ASD (Eldar et al., 2010; Grossi-Kliss, 2006; Lindsay et al., 2014; Mak & Zhang, 2013; McConkey & Bhlirgri, 2003; Odom & Connie, 2015; Razali, Toran, Kamaralzaman, Salleh, & Yasin, 2013).

1.1. Preschool inclusion in Turkey

Inclusion practices have been initiated in Turkey with the Decree Law No: 573, and regulations on inclusion practices were actualized with Special Education Services Regulation of 2006, Preschool and Primary School Institutions Regulations of 2014 and with Circular on Integrating / Integrating Education Practices of 2017. Under this legislation, pre-school education is compulsory in Turkey for individuals with special need aged 37-72 months. In line with the results of educational evaluation and placement studies carried out at the Counseling and Research Centers under the Ministry of National Education (MoNE), the children with special needs who do not have severe or multiple disabilities are referred to inclusion education in state or private preschools. Children who are not eligible for inclusion education are directed to Early Childhood Special Education Centers or special education classes where children with special needs are educated. Legal regulations emphasize necessary educational adaptations for children in inclusion processes, preparation of individualized education programs (IEP), provision of the necessary support services, actualization of necessary physical arrangements in schools and classrooms, and family participation. In addition, there can be a maximum of two special needs students in the inclusion classes with 10 students and only 1 in classes with 20 students (Akalın, Demir, Sucuoğlu, Bakkaloğlu, & İşcen, 2014; Bozarslan & Batu, 2014; Milli Eğitim Bakanlığı [MEB], 1997, 2006, 2014, 2017, 2018; Richardson-Gibbs ve Klein, 2014; Sucuoğlu & Bakkaloğlu, 2018). Even though there is a great effort to improve and develop inclusion education in Turkey, various problems currently encountered in inclusion practices (i.e.: the overcrowded classrooms with many inclusion students, and lack of trained educators) negatively impact the success of inclusion (Akalın et al., 2014; Bozarslan & Batu, 2014; Melekoğlu, Cakıroğlu, & Malmgren, 2009). It is observed that preschool teachers receive a limited number of courses in fields of special education and inclusion prior to service. These teachers receive only two required credits in special education and inclusion courses and are offered some elective courses in the field over their four-year undergraduate education (Yüksek Öğretim Kurulu [YÖK], 2018). Although these teachers may have the opportunity to participate in a limited number of required and / or voluntary training programs during their service years, these are short-term trainings, mostly dense in theoretical information and lacking or including very little practical information and counseling services. Therefore, it is observed that these teachers' professional knowledge and skills related to inclusion are not sufficient to carry out successful inclusion practices. It is necessary that these they receive long-term and practical pre- and in-service trainings to develop professional qualifications especially in dealing with behavioral problems, classroom management, ASD and individualized training programs in order to carry out successful inclusion practices (Bozarslan & Batu, 2014; Gök & Erbaş, 2011; Melekoğlu et al., 2009).

1.2. Research on preschool teachers' experiences of including children with ASD

There are severel studies about the experiences of preschool teachers related to the inclusion of children with ASD in the literature. Grossi-Kliss (2006) conducted a quantitative research study with preschool teachers (N=41) to examine skill priority for preparing curriculum that meet the needs of children with ASD in an inclusive classroom. The teachers completed a survey rating the importance of skills when providing a curriculum to students with ASD. According to the results of the survey, teachers rated communication and social skills as the most important skills and educational needs of the children with ASD. Teachers rated the motor skills as the skill of lowest importance with respect to requiring educational support. Based on this

study, social and communication skill areas should be the main focus areas for children with ASD in inclusive preschools and that every teacher should gain further knowledge in preparing and modifying curriculums according to these children's needs. Barned, Knapp, and Neuharth-Pritchett' study (2011) investigated knowledge and attitudes of early childhood pre-service teachers. Fifteen teachers completed the Autism Inclusion Questionnaire and researchers conducted interviews with four of these teachers. Results showed that pre-service teachers lacked knowledge and had misconceptions about the core features of ASD. According to findings, teachers held a generally positive attitude toward the inclusion of children with ASD. However, their attitudes were strongly influenced by the severity of the disorder and presence of behavior problems. They needed further, in-depth knowledge about ASD and inclusion in order to become successful teachers in inclusion settings. Another quantitative study was conducted to explore the knowledge, attitudes, and practices around children with developmental disorders (such as ASD) among 503 preschool teachers. The results showed that the teachers had inadequate knowledge and wanted to improve their special education and inclusion skills. They needed to receive education and training (Lian, Ying, Tean, Lin, Lian, & Yun, 2008). Razali et al. (2013) conducted a narrative inquiry about three preschool teachers' perceptions regarding including children with ASD. Findings from these interviews showed that the preschool teachers lack knowledge and skills on educating children with ASD and also need to gain further awareness of the importance of inclusion. The findings also included the need to resolve obstacles to the success of inclusive practices in a classroom such as lack of shadow aide, and overcrowded classrooms. Another study examined the preschool teachers' knowledge, attitudes, and perceptions of children with ASD. This study's data were collected from 471 teachers via questionnaires. Results indicated that teachers' knowledge of ASD and evidence-based intervention were insufficient. Findings also indicated that preschool teachers needed training and they were willing and motivated to further develop their skills for working more effectively with children with ASD (Liu, Li, Zheng, Zaroff, Hall, Li, & Hao, 2016).

In addition to the international literature, there are studies conducted in Turkey, as well. In Yazıcı & Akman's (2017) qualitative study, interviews were conducted with 20 preschool teachers on inclusion of children with ASD diagnosis. Their findings yielded that while some of the teachers knew the basic features of ASD, the overall competencies of the teachers were inadequate in topics such as basic symptoms of ASD, social and communication difficulties, and stereotyped behaviors. The majority of teachers believe that inclusion is beneficial for these children and some of them want these children to be in their classrooms. Teachers who reported not to wish to have children with ASD in their classrooms explained their desire to be due to not having relevant experience, not knowing what kind of work should be carried out with a child diagnosed with ASD, and the size of their classroom not being appropriate for inclusive practices. Another quantitative study examined preschool educators' level of knowledge on ASD. A total of 270 participants consisting of pre-school teachers, branch teachers, and assistant teachers filled out ASD knowledge data sheets. Findings indicated that participants did not have a sufficient level of knowledge on ASD or inclusion and needed pre-service and in-service training programs (Er-Sabuncuoğlu, 2016). Another qualitative study investigated the opinions on preschool inclusion of 26 teachers who work with individuals diagnosed with ASD at preschool institutions. The results show that the educators lack sufficient knowledge on inclusion and that especially those with negative opinions needed further information. Participants emphasized the importance of special education support services like resource rooms, acceptance of special needs individuals by typically developing children and families, and educators' education for a successful inclusion (Bozarslan & Batu, 2014). A qualitative case study was carried out with 9 teachers working with individuals with ASD diagnosis. The interview results yielded that, in order to carry out a successful inclusion process, teachers needed increased competencies in knowledge and skills, less students per classroom, in-service trainings, special education support services (i.e.: special education counseling), and support from school management and family (Özaydın & Çolak, 2011). The findings from Gök & Erbaş's (2011) qualitative study based on interviews with 10 preschool teachers also show that these teachers lack knowledge in inclusive practices, the classrooms lack necessary equipment, and that difficulties are experienced in acceptance of students with ASD diagnosis by their typically developing peers and their families.

International and national new research on the needs, experiences and recommendations of preschool teachers, especially the findings of qualitative research studies that allow these teachers to transfer their thoughts in depth; can provide important guiding insights for ensuring successful inclusion practices. Specifically, research findings that indicate the challenges and needs of these teachers will guide qualified practices for students with ASD. In other words, in the context of the important role of preschool teachers in successful inclusion, it is very important to carry out the research about the needs and difficulties of these teachers and conducting the practices for teachers based on the findings of existing and new researches (for example; Bozarslan & Batu, 2014; Eldar et al., 2010; Lian vd., 2008; Lindsay et al., 2014; Razali vd., 2013; Scheuermann et al., 2003 Simpson, 2004). In the light of these informations and considering the quite limited literature on the subject in Turkey, this research has been carried out. The purpose of the present study was to investigate the experiences of preschool teachers with regard to including children with ASD. Considering the limited literature on preschool teachers' experiences about ASD, the findings of this study can be expected to make contribution to the literature. In addition, based on the pre-service and in-service training needs of pre-school teachers regarding special education and ASD (Bozarslan & Batu, 2014; Gök & Erbaş, 2011; Melekoğlu et al., 2009), it is thought that this study may shed light on the practices, measures and new researches to be successfully included. The findings from Turkey are also expected to enrich the cultural perspective of the current literature. This study aims to address the following research questions:

What are the challenges faced by preschool teachers who have students with ASD?
How can preschool teachers who have students with ASD can cope with these challenges?

2. Method

This qualitative research has been conducted through phenomenological approach. The general purpose of phenomenological study is to understand and explore the individuals's lived experience of the phenomenon. This type of research in educational settings involves the experience and perception of individuals about a specific phenomenon. In this study, the experiences of preschool teachers on the inclusion of children with ASD were investigated..This approach, like the subject of this research, introduces the basic knowledge about the subjects which have been studied at a limited level, sheds light on the field of practice and constitutes the basis for further research (Creswell, 2014; Moustakas, 1994; Smith ve Osborn, 2004, Yüksel ve Yıldırım, 2015).

2.1. Participants

A purposeful sampling strategy was used to determine participants (Creswell, 2014). The study sample consisted of eight Turkish preschool teachers who met the following criteria: (1) have minimum two years of experience in an integrated classroom; (2) have a child with ASD in their classroom for the last two years; (3) volunteer to participate in the research; (4) live in Istanbul. Istanbul is Turkey's most populous province with a population of approximately 15 million. Initially, thirteen teachers who met these criteria applied to volunteer in the study but five of them could not attend the study for various reasons such as intensity of their work. The identities of the teachers are kept confidential in accordance with research ethics. In this context, teachers identified by the notation of "T" for teacher with accompanying participant number (for example, T1).

All of the participants were females. The age range of the participants was 26 to 39, with an average age of 29 years. Among the 8 participants, 6 teachers worked at state preschools and 2 teachers worked at private preschools. The participants' teaching experience ranged from 3 to 18 years. All teachers had taken special education courses during their undergraduate education. Two of the teachers had also enrolled in the Small Steps Early Education Program course. Four of the teachers stated that they have attended seminars and congresses on special education and ASD throughout their career.

2.2. Data Collection

The data were collected via semi-structured interviews. Interviews are the basic data collection tool to collect information about experiences in phenomenological research (Creswell, 2014; Smith ve Osborn, 2004). Interview questions were prepared by researchers with reference to extensive literature review (Lindsay et al., 2014; Mcconkey & Bhlirgri, 2003). After obtaining a review of interview questions by two special education teachers and approval of two experts, the questionnaire was finalized. One of the experts works as an assistant professor in the Preschool Education Department of a university and the other in the Special Education Department. There were six questions in the questionnaire as follows: "What difficulties do you encounter when working with students with ASD?", "How do you ensure that your student with ASD participates in class and school activities", "What training methods do you use for your students with ASD?", "What would you like to say about the results and effects of the methods you use?", "What kind of educational support do you think you need about ASD?", and "What are your suggestions for the trainings offered in inclusive environments to be beneficial for students with ASD?"

The interview was conducted by the researcher at teacher's school. Voice recordings were taken of each interview. The duration of the interviews ranged from 17 to 40 minutes with an average of 26 minutes per interview. The teachers also completed a demographic form collecting information such as age, gender, and teaching experience.

2.3. Data analysis

Content analysis was used for data analysis (Bogdan & Biklen, 1998; Creswell, 2014). The author read and perused repeatedly interview transcripts to determine initial categories. After initial categories were formed, one specialist who is proficient with qualitative research, special education and ASD reviewed categories and gave feedback. The author refined coding categories by feedback. After preliminary themes were determined by the author, themes refined via peer debriefing process. For this process, aforementioned and another researcher proficient with qualitative research and special education examined preliminary themes and categories for the consistencies between preliminary themes and categories After specialists' feedback, the author examined and finalized themes according to feedbak. After this stage, all data were structured thematically. Finally all themes were reported in an interrelated manner and a systematic way. Following strategies were applied for trusthworthiness (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005; Creswell, 2014): (a) keeping participant identities confidential; (b) research is written in detail to allow for replication and understandability; (c) as seen in the above sections, peer debriefing during data collection, data coding and theme constitution; (d) the analysis and discussion of the data was conducted in line with the literature and the consistency of the data with the literature and the data is ensured to be consistent with the literature.

3. Results

In the following section, the findings are presented under the following themes: challenges teachers faced, methods teachers use, teachers 'educational needs, teachers' recommendations for successful inclusion:

Challenges Teachers Faced

All of the participating teachers reported encountering various challenges during inclusive practices. These challenged are examined under four sub-themes: School and classroom conditions, reactions of typically developing children and their families, characteristics of students with ASD, and teacher competencies.

School and classroom conditions

Five teachers (T1, T2, T3, T4, and T6) stated that they face challenges regarding classroom size and equipment insufficiency in their classrooms and schools create obstacles in executing inclusive practices. For instance:

The biggest problem we have with autism is that the physical conditions of the classrooms are not very appropriate. For example, children with autism in my class also have hyperactivity; my current student with ASD also has it. However, the ends of the tables, chairs in my classroom are pointy. Actually, this is a problem for all of the kids. Lack of appropriate educational materials that create obstacle for my student with autism is challenging for me as well (T1).

Class sizes are too large. For example, I have 24 students in my class and I am the only teacher (T3).

In addition, two teachers (T1, T4) stated that the absence of a resource room in schools prevented the success of inclusive practices. A teacher emphasized: *"The lack of a resource room at school is one of the biggest problems" (T1).* Six teachers (T1, T3, T4, T6, T7, T8) in their classrooms reported lack of support staff with necessary professional competence in their classroom (shadow teacher, co-instructor, etc.) to make it difficult to carry out inclusion. Some of them expressed their concerns with the following statements:

There are no shadow teachers. The most important problem is the lack of workforce support. You can't take care of everything yourself. When you are alone, the child is sometimes unattended, and finds room to display problem behaviors (T4).
No shadow teachers in classes. The lack of educated, professionally sufficient shadow teachers is one of the biggest challenges I have (T8).

Reactions of typically developing children and their families

Four of the teachers (T1, T3, T4, T5) stated that some typically developing children in their classrooms and/or their families had difficulty accepting the inclusion student, and that they had difficulty overcoming this situation and providing inclusion for the student with ASD. They stated that this situation was more difficult when the inclusion student was a child with problem behaviors. Several teachers described their experiences as follows:

The families of other children are opposed to inclusion because they don't want their children to be with in the same class with these children. They don't want the teacher to take more care of the child with special needs. We're having problems with this. In terms of children, we are experiencing difficulties in accepting children with autism. We're trying to solve these problems. But it is difficult (T1).
Families of typical children are really difficult within this respect, I can't balance the tension. I also find it very difficult to explain this situation to other children. I don't know how to bridge the class and the child (T5).

Characteristics of students with ASD

In the process of inclusion, all teachers stated experiencing difficulties regarding the diagnostic features of students with ASD. Teachers listed various deficiencies of children with ASD such as social and communication skills, behavior problems and repetitive behavior as the greatest difficulty experienced in the process of inclusion. All of the teachers, as expressed in the following example statements, reported that these characteristics of children with ASD were very challenging for them, that they found these difficult to resolve, and that this was an obstacle to successful integration:

They refuse to participate in activities. They have obsessions. Their attention span is very limited. These are the challenges I encounter (T2).
My student doesn't' have much communication or make eye contact. Most of the time s/he is repeating what I say. S/he has problem behaviors like throwing toys at peers. When I attend to him/her the other children lose focus and when I attend the rest of the class the child with ASD loses focus. I don't know what to do (T3).
Because children with ASD often come from a one-on one educational settings before attending inclusion classrooms, and lacking or having had very limited group education, they experience problems in things like how to behave in group settings or obeying the rules. We face challenges in making them gain these skills. Moreover, majority of these children come to our classrooms not having developed self-care skills. Most of their prior education

is focused around academics and cognition. They often lack a lot of skills in self-care, social, communication, and communal areas. This creates a significant challenge for us (T6).
My student has many obsessions. For example, s/he continuously focuses on balls and will not let go of a ball. S/he expresses self only through crying and does not attend social activities. These are only a few of the challenges I encounter (T7).

Teacher competencies

Five teachers (T1, T2, T3, T5, T7) stated that their knowledge and skill deficiencies were important challenges for successful inclusion. These teachers stated that they felt in adequate in terms of their knowledge and skills pertaining to ASD, education and behavior changing methods suitable for individuals with ASD, inclusion, and communication with families. They expressed that they experienced difficulties due to these competency issues. A teacher mentioned how important it is for successful inclusion to have knowledge about ASD: *"We don't know enough about what autism is. We did not have any courses on this in university. Now, we are trying to learn through reading, attending seminars, but I still find it difficult to carry out inclusion processes due to the shortcomings in my knowledge" (T1).* Other teachers expressed the importance of teacher competences with similar examples. To illustrate:

I know very little about how to work with children with autism. I didn't know anything when I first started my career and I was shocked when a student with autism attended my class for the first time. If we are professionally competent, especially if we have practical knowledge, we will not have so many challenges. (T3).
The special education course I took at university is not enough for me to work with children with autism. I don't know what to do with the student with autism in my classroom. What do I teach? And how? How do I deal with problem behaviors? It's very tiring and exhausting (T5).
I cannot be sure about the accuracy of the methods I use in classroom. It is difficult for me to not know if I doing the right thing or not (T6).

Methods teachers used

The findings show that five teachers applied various methods to deal with some of the difficulties they encountered in inclusive practices. These methods are examined in three sub-themes of coping methods for problem behaviors, teaching methods, and social skills development.

Coping methods for problem behaviors

Two teachers (T3, T6) mentioned coping with problem behaviors via proximity control and taking precautions during transitions using the following statements: *"In order to prevent problem behavior like throwing toys at peers, I tend to sit in proximity so I can intervene immediately to avoid these behaviors." (T3), "Most problem behaviors occur during activity transitions. Because we have many activities we have many transition periods. I inform the student about the following activity, meaning that I use visuals to tell about the next activity. When the child knows what is ahead, s/he can participate in the activity without any problems" (T6).*

Teaching Methods

Four teachers (T5, T6, T7, T8) reporting using various teaching methods to ensure the child benefits from education and to overcome educational challenges. For example, some teachers highlighted the importance of reinforcement, prompts, and environmental arrangement: *"I reward them if they complete their activities. For example I tell them that they earned a surprise for completing an activity and I give them a reward. I know my student really enjoys drawing so I use drawing as a reward" (T5); "To avoid losing focus during activities, I ensure the classroom environment is simpler. I use environmental adjustments to remove elements that can negatively impact his/her attention. Moreover, I reward him/her when s/he participates in an activity. For example, we color together first, and in time s/he can color independently" (T7); "I give reinforcements. For example, I give a star sticker when s/he succeeds" (T8).* The other teacher emphasized the importance of small group activities in class and giving the

families homework as follows: "*I give homework to family members. I ask them to repeat at home what we cover in school. This ensures the permanence of what I teach. Besides, I do certain activities not as a whole class but by breaking into smaller groups. Students with ASD participate more easily when we work in small groups and pat attention to what is being taught*" (T6).

Social skill development

Two teachers (T6, T7) stated that it is important to teach classroom rules to improve the social skills of students with ASD: "*I am trying to teach the social rules that must be followed in the classroom*' (T6) and '*I teach the rules to develop their social skills*" (T7).

Teachers' Educational Needs

Teachers reported that they have various educational needs to carry out successful inclusion practices for children with ASD.

All of the participants stated that they needed trainings where they could gain knowledge on ASD. Moreover, they emphasized that these trainings should not consist only of theoretical concepts but should also be based on practical information as well:

I need trainings, seminars on autism. What is autism? What are the methods used with children with autism? (T1).
I need trainings covering information on autism, delivered by experts. Trainings focusing on practice related recommendations would be great (T3).
There should be trainings on autism. I also would like to attend a seminar about how to explain autism to children in the classroom and their families (T5).
I need trainings where I can be up to date on new information, where we are presented with latest findings on autism (T8).
I need trainings on autism. However, these seminars need to be practice based. Solely theoretical trainings are not of much help (T7).
In addition, two teachers (T1, T4) also reported that they needed resource room support at schools. *For example, one teacher shared her opinion as 'If there were resource rooms at schools, we would work with children with ASD in those rooms at certain times' (T1).* Six teachers (T1, T3, T4, T6, T7, T8) reported that it is imperative that there are assistant staff with adequate professional competencies in their classrooms who can support them (i.e.: shadow teachers, assistant teachers, etc.). For example, '*There is no support like a shadow teacher or assistant teacher. The greatest challenge is lack of workforce support. We need assistant staff (T4).*

Teachers' Recommendations for Successful Inclusion

Teachers have provided various recommendations for carrying out successful inclusion processes. All of the teachers recommended trainings on inclusion, ASD, and children with ASD that attend inclusion classrooms.

I should definitely be informed by experts about the child with ASD that is going to attend my classes. I should be informed about the child's character and how I should behave. I do get to know the child over time once they begin to attend my classes but adaptation period would be much easier and we would be able to have better practices if we were well informed prior to attendance (T5).
I need training on autism. But these seminars should be practice oriented. In addition, seminars can be organized for teachers only. Counseling services can be provided after the trainings. (T6).
I need trainings that provide the latest information on autism, where I can be up to date on the new information. Seminars should be organized especially for teachers to attend free of charge for developing their professional competencies. Most of the seminars are very expensive (T8).

In addition, two teachers (T1, T5) stated that activities (seminars, etc.) should be provided for typically developing children and their families to raise their awareness about integration and ASD. Teachers' statements were as follows: *"First, it is necessary to raise the awareness of parents of children with normal development. I think that the seminars given by the experts are very important. Problems arise if the condition of the student with ASD is not explained to the parents. I do not know much knowledge on it either. If families are informed in advance, adaptation will be easier for students, families and teachers"* (T1), *"If only there were trainings for children in classroom, provided by experts on autism and how to treat children with autism. This would make the process easier for everyone"* (T5).

Two teachers recommended having resource rooms at schools: *"If there were resource rooms at schools, we would work with children with ASD in those rooms at certain times"* (T1). *"Resource rooms should be available"* (T4). Two other teachers reported that practices to enhance their motivation were important: *"Authorities should always implement practices that increase our motivation"* (T2); *"Measure should be taken and incentives should be provided that increases teachers' motivation"* (T6). Some of the teachers (T2, T3, T4, and T6) stated that the reduction of class sizes is necessary for successful inclusion. For example, the following statements were made by some: *"Classes are too crowded for inclusion. For example, my class size is 24 and I'm on my own. How can I succeed? It is very difficult"* (T3), *"This work cannot be attained in crowded classes; the class sizes must be reduced. I have 20 students and no assisting staff"* (T4).

Finally, six teachers (T1, T3, T4, T6, T7, T8) reported that there should be support professional staff (shadow teacher, co-instructor, etc.) in classrooms: *"An assistant teacher is required. This person must also be familiar with inclusive practices, special education, and autism"* (T3); *"Certainly, professionally adequate shadow teachers or co-instructors should be officially appointed to schools and work in our classrooms. In addition, a special education teacher should be assigned to each school and serve as a counselor for us"* (T6).

4. Discussion, Conclusion and Suggestions

In the context of the importance of early childhood education, while successful inclusion in preschool period brings significant progress in the development of all skills and social acceptance, it is especially effective with respect to social communication and interaction skills of children diagnosed with ASD (Lindsay et al., 2014; Odom & Connie, 2015; Vakil et al., 2009). It is crucial that pre-school teachers have professional competencies needed to carry out successful inclusion practices (Eldar et al., 2010; Lindsay et al., 2014). This study examined the inclusion experiences of some preschool teachers in Turkey with the expectation of being a guiding study for precautions for successful inclusion. It is also expected that the study may contribute to the limited literature. In addition, the findings from Turkey are expected to enrich the cultural perspective of the current literature.

The first finding of this research shows that all of the teachers who participated in this study stated that the challenges they experience regarding the condition of the classroom and the school during the inclusion practices, the negative attitudes and behaviors of typically developing children and their families towards children with ASD, the diagnostic characteristics of children with ASD, and their professional competencies are obstacles for carrying out a successful inclusion. This finding is consistent with findings of previous research studies which highlighted the barriers of successful inclusion conducted with preschool teachers who had children with ASD and / or other special needs in their classrooms (Barned et al., 2011; Lindsay et al., 2014; Liu et al., 2016; Mcconkey & Bhlirgri, 2013; Özaydin & Çolak, 2011; Yazıcı & Akman, 2017).

The second finding shows that some of the teachers who participated in the research applied a variety of methods, though limited, to cope with some of the challenges (problem behaviors exhibited by ASD students, educational challenges, and lack of social skills) they encountered in the process of inclusion. Some previous studies have also shown that some teachers try to make sure that the difficulties encountered during inclusion are overcome and a successful inclusion is actualized via various educational measures and adaptations when they have students with ASD in their classroom (Gök & Erbaş, 2011; Lindsay et al., 2014; Yazıcı & Akman, 2017). This finding can be considered as a promising finding for successful inclusion.

However, considering that there are many precautions that can be taken for the successful inclusion and the effective method that can be applied (NAC, 2009, 2015; Odom & Connie, 2015); it is thought that pre-school teachers should further develop their professional competencies to cope with difficulties. As emphasized in the initial finding, they experience difficulties other than the difficulties stated in the second finding. However, the teachers have not made any explanations on how they cope with these difficulties. Therefore, this finding can be viewed that they try to cope with only a part of the difficulties they have experienced at a limited level, and that they have difficulties in dealing with other difficulties and / or they cannot cope with difficulties. There are, indeed, similar findings indicating that preschool teachers have difficulties in or are inadequate at coping with the challenges they encounter (Grossi-Kliss, 2006; Lian et al., 2008; Özaydın & Çolak, 2011; Razali et al., 2013).

The third finding shows that in order to successfully carry out an inclusion process, the participant teachers need further development of professional competencies, to inform typically developing peers and their families about the student with ASD, and have support services such as resource rooms and assisting staff. This finding, which draws attention to the importance of meeting the needs of teachers in successful inclusion, is consistent with previous findings (Barned et al., 2011; Bozarslan & Batu, 2014; Grossi-Kliss, 2006; Lian et al., 2008; Liu et al., 2016; Özaydın & Çolak, 2011; Razali et al., 2013; Varlıer, 2004).

The fourth finding includes recommendations for successful inclusion, consistent with the needs of teachers. Teachers proposed procurement of resource rooms, developing professional competencies, raising awareness of typically developing children and their families, taking measures to increase their motivation, reducing class sizes, and appointment of supporting staff. Suggestions for successful inclusion process by preschool teachers in findings of previous studies are similar to the findings of this study (Barned et al., 2011; Er-Sabuncuoğlu, 2016; Lian et al., 2008; Liu et al., 2016; Varlıer, 2004; Yazıcı & Akman, 2017).

To conclude, considering the limited literature on preschool teachers' experiences about ASD, the findings of this study can be expected to make contribution to the literature. Moreover, it can also shed light on practices and policies that may be actualized to ensure preschool teachers carry out successful inclusion. Additionally, this study offers a cultural perspective to the literature in the context of containing information relating to preschool inclusion in Turkey and examining some preschool teachers' experiences with inclusion. On the other hand, the collection of data only by interview method can be considered as a limitation.

Based on the findings, some suggestions can be offered. The following recommendations are submitted for improving current practice; (a) In the context of increasing pre-service trainings, undergraduate students in preschool programs can be offered courses, seminars on ASD and opportunities for observations and internships in educational institutions for students with ASD; (b) in-service trainings can be offered to preschool teachers that include practice, counseling and mentoring; (c) physical (i.e.: support room), educational (i.e.: materials) and staff (i.e.: shadow teacher) support can be provided to the institutions of preschool teachers; (d) educational support may be provided to the inclusion students and their families; (e) awareness-raising activities can be organized for school-staff, typically developing students, and their families. Recommendations for future studies may be summarized as follows: (a) qualitative and quantitative research studies using different data collection methods and on larger samples should be conducted to explore the experiences of teachers; (b) work of teachers in different cultures should be examined to be able to make intercultural comparisons.

References

Akalın, S., Demir, Ş., Sucuoğlu, B., Bakkaloğlu, H., & İşcen, F. (2014). The needs of inclusive preschool teachers about inclusive practices. *Eurasian Journal of Educational Research*, *54*, 39-60. doi:10.14689/ejer.2014.54.3

American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. Arlington, VA, US: American Psychiatric Publishing.

Barned, N. E., Knapp N. F., & Neuharth-Pritchett, S. (2011). Knowledge and attitudes of early childhood preservice teachers regarding the inclusion of children with autism spectrum disorder. *Inclusive Early Childhood Teacher Education, 32* (4), 302-321. doi:10.1080/10901027.2011.622235

Bozarslan, B., & Batu, E. S. (2014). Özel anaokullarında çalışan eğiticilerin okulöncesi dönemde kaynaştırma ile ilgili görüş ve önerileri [Examining the opinions of teachers working in private preschools about inclusion]. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 14* (2), 86-108. doi:10.17240/aibuefd.2014.14.2-5000091529

Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional Children, 71* (2), 195-207. doi:10.1177/001440290507100205

Bogdan, R., & Biklen, S. K. (1998). *Qualitative Research for Education An introduction to theories and methods.* Boston: Allyn and Bacon, Inc.

Creswell, W. J. (2014). *Educational research: planning, conducting, and evaluating quantitative and qualitative research.* Upper Saddler River, NJ: Pearson.

Eldar, E., Talmor, R., & Wolf-Zukerman, T. (2010). Successes and difficulties in the individual inclusion of children with Autism Spectrum Disorder (ASD) in the eyes of their coordinators. *International Journal of Inclusive Education, 14* (1), 97-114. doi:10.1080/13603110802504150

Er-Sabuncuoğlu, D. M. (2016). Otizm bilgi düzeyi: Okul öncesi eğitimcileri [Autism Knowledge; Preschool Educators]. *H.Ü. Sağlık Bilimleri Fakültesi Dergisi 3* (1), 28-52.

Grossi-Kliss, J. (2006). Teaching Children With Autistic Spectrum Disorder: A Preschool Teacher Survey To Determine Best Practice Approach. *Journal of the American Academiy of Special Education Professionals (JAASEP)*, 97-106.

Gök, G., & Erbaş, D. (2011). Okul öncesi öğretmenlerinin kaynaştırma eğitimine ilişkin görüşleri ve önerileri [Opinions and suggestions of preschool teachers about inclusion]. *International Journal of Early Childhood Special Education, 3* (1), 66-87. https://dergipark.org.tr/tr/pub/intjecse/issue/8649/107947

Lian, W. B., Ying, S. H., Tean, S. C., Lin, D. C., Lian, Y. C., & Yun, H. L. (2008). Pre-school teachers' knowledge, attitudes and practices on childhood developmental and behavioral disorders in Singapore. Journal Paediatry Child Health, 44 (4), 187-194. doi:10.1111/j.1440-1754.2007.01231.x

Lindsay, S., Proulx, M., Scott, H., & Thomson, N. (2014). Exploring teachers' strategies for including children with autism spectrum disorder in mainstream classrooms, *International Journal of Inclusive Education*, 18 (2), 101-122. doi:10.1080/13603116.2012.758320

Liu, Y., Li, J., Zheng, Q., Zaroff, C. M., Hall, B. J., Li, X., & Hao, Y., (2016). Knowledge, attitudes, and perceptions of autism spectrum disorder in a stratified sampling of preschool teachers in China. *BMC Psychiatry*, 16 (142), 1-12. doi:10.1186/s12888-016-0845-2

Lovaas, O. I. (2003). *Teaching individuals with developmental delays: Basic intervention techniques.* Austin, Texas: Pro-Ed.

Mak, C., & Zhang, K. C. (2013). Teachers' perceptions of a community participation programme for preschoolers with autism. *Emotional and Behavioural Difficulties, 18* (1), 102-117. doi:10.1080/13632752.2012.695535

Mastropieri, M. A., & Scruggs, E. T. (2004). *The inclusive classroom: Strategies for effective instruction.* Ohio: Merril Publishing Company.

Mcconkey, R., & Bhlirgri, S. (2003). Children with autism attending preschool facilities: The experiences and perceptions of staff. *Early Child Development and Care, 173* (4), 445-452. doi:10.1080/0300443032000086926

Milli Eğitim Bakanlığı (MEB) [Ministry of National Education] (1997). *573 sayılı Kanun Hükmünde Kararname [573 Decree Law].* Retrieved from

https://orgm.meb.gov.tr/meb_iys_dosyalar/2012_10/10111011_ozel_egitim_kanun_hukmunda_karar name. pdf.

Milli Eğitim Bakanlığı (MEB) [Ministry of National Education] (2006). *Özel Eğitim Hizmetleri Yönetmeliği. [Special Education Services Regulation].* Retrieved from https://orgm.meb.gov.tr/meb_iys_dosyalar/2018_07/09101900_ozel_egitim_hizmetleri_yonetmeligi_0 7072018.pdf.

Milli Eğitim Bakanlığı (MEB) [Ministry of National Education] (2014). *Okul Öncesi Kurum ve İlköğretim Kurumları Yönetmeliği [Regulation on Pre-school Institutions and Primary Education Institutions].* Retrieved from http://mevzuat.meb.gov.tr/dosyalar/1703.pdf.

Milli Eğitim Bakanlığı (MEB) (2017). *Kaynaştırma/Bütünleştirme Yoluyla Eğitim Uygulamaları Genelgesi.* [Circular on Educational Applications through Integration / Integration]. Retrieved from https://orgm.meb.gov.tr/meb_iys_dosyalar/2017_09/21112929_kaynastirma_genelge.pdf.

Milli Eğitim Bakanlığı (MEB) [Ministry of National Education] (2018). *Özel Eğitim Hizmetleri Yönetmeliği [Regulation of Special Education Services].* Retrieved from http://mevzuat.meb.gov.tr/dosyalar/1963.pdf.

Melekoğlu, M. A., Cakiroğlu, O., & Malmgren, K. W. (2009). Special education in Turkey. *International Journal of Inclusive Education, 13* (3), 287-298. https://doi.org/10.1080/13603110701747769

Moustakas, C. (1994). *Phenomenological research methods.* Thousand Oaks, CA: Sage.

National Autism Center [NAC] (2015). *National standarts report.* Retrieved from http://www.nationalautismcenter.org/pdf/NACStandards.

National Autism Center [NAC] (2009). *National standarts report.* Retrieved from http://www.nationalautismcenter.org/pdf/NACStandards.

Odom, S. L., & Connie, .W. (2015). Connecting the dots: Supporting students with Autism Spectrum Disorder. *American Educator,* 39 (2), 12-19. https://doi.org/10.17755/esosder.286479

Özaydın, L., & Çolak, A. (2011). Okul öncesi öğretmenlerinin kaynaştırma eğitimine ve okul öncesi eğitimde kaynaştırma eğitimi hizmetiçi eğitim programına ilişkin görüşleri [The views of preschool education teachers over mainstreaming education and over in-service education program of mainstreaming education at preschool education]. *Kalem Eğitim ve İnsan Bilimleri Dergisi, 1* (1), 189-226. doi:10.23863/kalem.2017.6

Razali, N. M., Toran, H., Kamaralzaman, S., Salleh, N. M., & Yasin, M. H. M. (2013). Teachers' Perceptions of Including Children with Autism in a Preschool. *Asian Social Science, 9* (12), 261-267. doi:10.12681/dial.11965

Richardson-Gibbs, M. A., ve Klein, M. D. (2014). *Making preschool inclusion work.* H. Bakkaloğlu ve B. Sucuoğlu (Trans.). Ankara: Nobel Yayınevi.

Scheuermann, B., Webber, J., Boutot, E. A., & Goodwin, M. (2003). Problems with personel preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities,* 18 (3), 197-206. doi:10.1177/10883576030180030801.

Simpson, L. R. (2004). Finding effective intervention and personel preparation practices for students with autism spectrum disorders. *Exceptional Children,* 70 (2), 135-144. doi:10.1177/001440290407000201

Smith, J. A., Osborn, M. (2004). Interpretative phenomenological analysis. J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (51–80). London: Sage.

Sturmey, P., & Adrienne, F. (2007). *Autism spectrum disorders.* Austin, Texas: Pro-ed.

Sucuoğlu, B., & Bakkaloğlu, H. (2018). *Okul öncesinde kaynaştırma: Öğretmen eğitimi [Inclusion in pre-school education: Teacher training].* Ankara: PEGEM Akademi.

Vakil, S.,Welton, E., O'Connor, B., & Kline, L. (2009). Inclusive means everyone! The role of the early childhood educator when including young children with autism. *Early Childhood Education Journal, 36*: 321-326. doi:10.1007/s10643-008-0289-5

Varlıer, G. (2004). *Okulöncesi eğitim öğretmenlerinin kaynaştırmaya ilişkin görüşleri* (Yayınlanmamış Yüksek Lisans Tezi). [The views of pre-school teachers on integration (Unpublished Master Thesis)]. Anadolu Üniversitesi, Eskişehir.

Yazıcı, D. N., & Akman, B. (2017). Okul öncesi öğretmenlerinin otizmli çocukların kaynaştırılması hakkındaki düşüncelerinin incelenmesi [An investigation of pre-school teachers' opinions about the inclusion of children with autism]. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi, Elektronik Yayın. 19*, 1-24. doi:10.21565/ozelegitimdergisi.284253

Yüksek Öğretim Kurulu (YÖK) [Higher Education Council] (2018). *Okulöncesi öğretmenliği lisans program* [Undergraduate programs of early childhood education]. Retrieved from http://www.yok.gov.tr/documents/10279/41805112/Okul_Oncesi_Ogretmenligi_Lisans_Programi.pdf

Yüksel, P & Yıldırım S. (2015). Theoretical Frameworks, Methods, and Procedures for Conducting Phenomenological Studies in Educational Settings. Turkish Online Journal of Qualitative Inquiry, 6 (1) , 1-20. doi:10.17569/tojqi.59813

PES

www.ijpes.com

International Journal of Psychology and Educational Studies
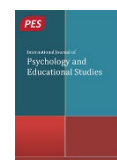
Analysis And Improvement Of Prospective Teachers' Educational Facebook Use and Development A Model For Educational Purposes

Onur İşbulan[1], Dr. Mübin Kıyıcı[2]

[1]Computer Education and Instructional Technologies Department, Sakarya University, Sakarya, Turkey
[2]Computer Education and Instructional Technologies Department, Sakarya University, Sakarya, Turkey

ARTICLE INFO

ABSTRACT

Within the scope of this research, prospective teachers' opinions on Facebook use for educational purposes was examined, and a modeling study was conducted in accordance with these views. In this study in which mixed method research patterns were used as research model, opinions were taken from 462 prospective teachers with a view to develop Acceptance of Facebook Use for Educational Purposes Scale and Acceptance of Facebook Use for Educational Purposes Model; scale development and model development studies were completed. With Facebook Use for Educational Purposes Activity in accordance with the developed model, level of acceptance of Facebook use for educational purposes among prospective teachers was analyzed. Pilot application of Facebook use for educational purposes activities was carried out with 76 students, and its application was carried out with 67 students; at the end of application, interviews were made with 17 students through semi-structured interview form. At the end of the study, Acceptance of Facebook Use for Educational Purposes Model was created based on Technology Acceptance Model 2, and through the educational purpose Facebook activity, a significant increase was achieved in prospective teachers' level of acceptance to Facebook use for educational purposes.

Keywords:
Social Network, Technology Acceptance Model, Facebook, Facebook Use for Educational Purposes

1. Introduction

Together with the developing technology, number of Internet users, duration spent on the Internet and opportunities to access to the Internet are increasing day by day in the world. Around the world, many people are able to benefit from opportunities of Internet and make Internet a part of their lives. In addition, users create their own contents together with the developing technology, and it is observed that social networks are increasingly becoming widespread by offering opportunities such as socialization (Amichai-Hamburger and Vinitzky, 2010). Educational systems also adapt themselves to continuously improving technology and make use of opportunities of the technology. Especially together with inclusion of Web 2.0 technologies in education systems, it has become easier to establish interactive learning environments, support systems have been developed, and learning has been removed from a single-learning state in classroom environment and started to become independent of place and time. At the same time, due to rapid increase in human population today, failure of educational environments in responding to the rapid population growth and people's need towards receiving lifelong education rather than a certain duration period, at the point of people's self-development and seeking answers to their questions have all lead people to new alternative environments outside school. It can be said that Internet-based social networks are one of these alternative medias (Öztürk and Akgün, 2013).

[1] Corresponding author's address: Sakarya University, Sakarya, Turkey
Telephone: +902642953397
e-mail: oisbulan@sakarya.edu.tr
Orcid: https://orcid.org/0000-0001-5326-071X

Social networks are defined as online environments in which users can create profiles and establish a personal network to communicate with other users (Lenhart and Madden, 2007). Social networks are web sites in which individuals keep their public or semi-public profiles recorded in a system, share a link, view list of other users, share likes and activities of individuals from online communities and share messages, e-mails, discussion videos, voice chat and files with each other over the network (Boyd and Ellison, 2007). One of the working principles of social networks is the process of transferring relationships among individuals to a virtual environment, and this process is indicator of the power of bond between people. These networks consist of many people who interact with each other. Not only an individual's friends or family but also his/her teacher, neighbors, friends from any non-governmental organization he/she is registered can be included in this network.

According to Ellison, Steinfield and Lampe (2007), social networks offer people the opportunity to express themselves, establish their own social environments, communicating and interacting with other users and maintaining this connection. While Wang, Moon, Kwon, Evans and Liu (2010) define social network as establishing a personal profile page that contains personal information, photographs and videos and as meeting with unknown people; Kim, Jeong and Lee (2010) interpret social networks as sharing of contents such as photographs and videos by means of a profile page established. Social networks increase their popularity at the same rate as their increasing number of users day by day, as places where people express their thoughts and ideas freely, where they find entertainment medium and gather together in according to common goals, where users affect each other. People are able to establish virtual communities thanks to such social networks and become part of a virtual community. Today, the social network with the most number of members in the world and in Turkey is "Facebook".

It has been observed that there are increases in success, satisfaction and skill acquisitions when social networks are used for educational purposes (Yuen and Yuen, 2008; Lockyer and Patterson 2008; Munoz and Towner, 2009). Analysing the status of Facebook for educational purposes, it is revealed that this tool increases the level of interaction in providing student-student, student-content and student-teacher interaction, and it supports collaborative learning (Kalafat and Göktaş, 2011). Positive change in students' learning process with the new dimension acquired in interpersonal communication is important in terms of providing permanent learning (Yu, Stella, Doug and Kwok, 2012). Together with social networks such as Facebook becoming more widespread, educational systems have also taken its share from this development process, and social networks have begun to emerge as places where training and education take place or support processes are managed. Therefore, prospective teachers need to accept the use of such technology in educational context. One of the important models analyzing the acceptance of a new emerging technology by individuals is "Technology Acceptance Model".

Based on the Induced Behavior Theory developed by Fishbein and Ajzen (1975) and Planned Behavior Theory developed by Ajzen (1991), Technology Acceptance Model was developed by Davis within the scope of doctoral dissertation study in 1986. Technology Acceptance Model suggests that real-life use of technology is associated with behavioral intentions and this is formed with trends towards using technology (Özgen and Turan, 2009:138). According to this model, basic idea is that, for a newly developing technology to be accepted, perceived ease of use and perceived usefulness predict attitudes towards newly developing technology and use behavior for this technology.

Within the scope of the research, Technology Acceptance Model 2 was included in the study. This is because relationships between exogenous variants and factors contained in the Technology Acceptance Model 1 were not clearly defined. On the other hand, since there are so many exogenous variables in Technology Acceptance Model 3 and Combined Technology Acceptance Model, the model to be established will not constitute an exemplary model. For this reason, Technology Acceptance Model 2 which was considered to be formatted a little better compared to other models, was included in the survey.

However, the following questions also emerge. What are Turkish prospective teachers' level of accepting Facebook, a social sharing web site, in terms of educational purposes? Is there a significant difference in terms

of gender, department and Facebook use frequencies on acceptance level basis in case of using Facebook for educational purposes? Is it possible to achieve an increase in prospective teachers' acceptance levels for Facebook use for educational purposes with an application to be conducted over Facebook?

Problem Statement

This study aims at configuration of prospective teachers' acceptance levels of Facebook use for educational purposes according to Technology Acceptance Model 2 and analyzing whether increases can be achieved among prospective teachers' acceptance levels of Facebook use for educational purposes with various training-oriented activities to be designed in Facebook platform. In line with this purpose, the answer to the following questions were sought:

1. Can Facebook Use for Educational Purposes Model be adapted according to Technology Acceptance Model 2?

2. Is it possible to achieve an increase in prospective teachers' acceptance levels for Facebook use for educational purposes with training-oriented activities to be carried out in Facebook platform?

2. Method

In this section, information about the research model, work groups of the study, data collection tools, application processes, data collection and data analysis processes is given respectively.

2.1. Model Of The Research

In the research, mixed method research patterns were employed in which quantitative and qualitative methods were used together. Mixed method research patterns are a type of research that allows to qualitative and quantitative data collection, analysis and integration (Creswell & Plano Clark, 2007). Tashakkori and Creswell (2007) define mixed research patterns as research types in which quantitative and qualitative methods are used together to collect and analyze data, in which data are obtained and procedures towards future are found. While searching answers to research problems during research process, explanatory pattern which is one of the mixed method research patterns was used. Consisting of two stages, the objective of this pattern is to support, describe or sample data collected with qualitative method with data collected with quantitative method (Creswell, 2013). Data collected with qualitative method in the research was obtained with cross-sectional and longitudinal scanning models, and data collected with quantitative method was obtained through interview technique. By using qualitative and quantitative data collection methods together, the aim was to eliminate deficiencies stemming from nature of the method used in the research. Therefore, qualitative and quantitative data collection methods are used together in mixed method research patterns to reach "correct" and "definite" judgment (Guion, Diehl & McDonald, 2011).

As one of the primary goals of the study, prospective teachers' acceptance of Facebook use for educational purposes was tested with structural equation model according to Technology Acceptance Model 2. Structural equation model is a statistical method that puts forward a confirmatory approach to solve structural theories (Byrne, 2001). Structural equation model is more advantageous than other techniques such as basic components analysis, factor analysis or multiple regression analysis since it allows researchers to interact with theory and data (Chin, 1998). With the structural equality modeling applied at the end of study, compatibility of prospective teachers' acceptance of Facebook use for educational purposes was found out according to Technology Acceptance Model 2. At the beginning of the research, acceptance of Facebook use for educational purposes was measured among prospective teachers in the application group using "Acceptance of Facebook Use for Educational Purposes Scale", then the same scale was re-applied to prospective teachers after activities were carried out. In this context, it can be that this study is also a longitudinal scanning research (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2009).

Another stage of the research is "interview". Interview is defined as a communication process that is predetermined, conducted for a serious objective and that is based on interaction towards receiving answers by asking questions (Yıldırım & Şimşek, 2013). In face to face interview, in addition to the language

interviewee use, messages given by interviewee's gestures and facial expressions can be informative and assessed. Therefore, hints that are not reflected on forms or surveys may be obtained during interview (Pişkin & Öner, 1999). Rate of answering questions during interviews is higher compared to other techniques. Exact date, even time, of interview is evident, this allows observing background and future of events that may change interview. During the meeting, questions requiring complex, graphic, table or schema can be used and necessary descriptions can again made by the interviewer (Bailey, 1987). A semi-structured interview form was developed within the scope of research to find out prospective teachers' acceptance of Facebook use for educational purposes. With this form developed, an interview was made with voluntary students in a place and time previously determined, and interview was recorded in accordance with authorization from students, and data was analyzed using descriptive analysis method. Semi-structured interview form used for interview was discussed under the title, data collection tools.

2.2. Study Groups Of The Research

We worked with different groups in different stages of the research. These groups are listed as;

- Scale and model Development Group
- Pilot Application Group of the Research
- Application Group of the Research
- Interview Group

Data was collected separately from groups and analyzed. Groups worked together within the scope of the research are as follows:

2.2.1. Scale and model Development Group

During the process of development of Acceptance of Facebook Use for Educational Purposes Scale and development of Acceptance of Facebook use for Educational Purposes Model that were used in studies conducted within the scope of the research, 462 students attending different programs in Faculty of Educational Sciences in Sakarya University in the Fall Semester of 2012-2013 Academic Year were included in the study. As sampling method, convenience sampling among non-random sampling methods was preferred. Convenience sampling is the method in which researcher receives respondents starting from the most accessible respondents until a group of required magnitude is reached with a view to save time and cost. Among participants participating in the study with the aim of developing scale and model, 323 of them are female (70%), 139 of them are male (30%); 65 participants (14.1%) attend Computer Education and Instructional Technology Department, 30 participants (6.5%) attend Classroom Teaching Program, 26 participants (5.6%) attend Turkish Teaching Program, 80 participants (17.3%) attend Mentally Handicapped Teaching Department, 80 participants (17.3%) attend Psychological Counseling and Guidance Department, 54 participants attend Primary School Mathematics Education Department, 45 participants (9.7%) attend Social Science Teaching Department, 40 participants (8.7%) attend Science Teaching Department, 42 participants (%9.1) attend Preschool Teaching Department; 213 participants (46.1%) are included in 19 years old and younger age group, 182 participants (39.4%) are in 20 years old age group, 67 participants (14.5%) are in 21 years old and older age group.

2.2.2. Pilot Application Group of the Research

Participants, included in pilot application group of the research, constitute of 76 students who attended Computer and Education Technologies Teaching Department and who attended Teaching Design course in spring term of 2012-2013 Academic Year. For selection of pilot study group, criterion sampling among teleological sampling methods was used as the sampling method. In this method, a study group can be established from individuals, events, objects or situations with certain qualities (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2009). During sample selection process, units with criterion predetermined

for the sample are taken into the sample. Reason for using criterion sampling method can be shown as the fact that prospective teachers attend Teaching Design course and the requirement for having a certain technological background. Among participants participating in the pilot study conducted for acceptance of Facebook use for educational purposes, 31 of them is female (41%), 45 of them is male (59%); 5 participants (7%) are in 19 years old and younger age group, 34 participants (45%) are in 20 years old age group, 36 participants (48%) are in 21 years old and older age group.

2.2.3. Application Group of the Research

Participants, included in application group of the research, constitute of 67 students who attended Computer and Education Technologies Teaching Department and who attended Material Design in Education course in Spring Term of 2013-2014 Academic Year. For selection of study group of the research, criterion sampling among teleological sampling methods was used as the sampling method. In sample selection process, it was deemed mandatory for prospective teachers to be included in work group that they attended Material Design and Use in Education course and had a certain technological background, and criterion sampling method among teleological sampling methods had to be used. Among participants participating in the application conducted for acceptance of Facebook use for educational purposes, 29 of them is female (43%), 38 of them is male (57%); 24 participants (36%) are in 19 years old and younger age group, 28 participants (42%) are in 20 years old age group, 15 participants (22%) are in 21 years old and older age group.

2.2.4. Interview Group

Semi-structured interview form is one of the data collection tools applied to students after the application process applied. Using this form, volunteer students were interviewed one-to-one at the end of application process, and interviews were recorded. The study group, in which semi-structured interview form was applied, constitutes of 17 participants who participated in the application applied in fall semester of 2013-2014 academic year and who were selected among students volunteered in participating in the interview.

2.3. Data Collection Tools

In the research, data was collected using "Acceptance of Facebook Use for Educational Purposes Scale" and semi-structured interview form developed by the researcher were used. Detailed information about developed and used scales is given in this chapter.

2.3.1. Development Process for Acceptance of Facebook Use for Educational Purposes

Development process for Acceptance of Facebook Use for Educational Purposes began with item writing process by considering theoretical basics of Technology Acceptance Model 2. A 32-item draft scale was prepared determined in accordance with factors and external variables included in Technology Acceptance Model 2. The scale was prepared in 5-point Likert type and pores were listed between 1 = "Strongly Disagree" and 5 = "Strongly Agree". After developing draft items of the scale, these items were analyzed by 5 experts working in Computer and Education Technologies Training Department, 1 expert in Measurement-Evaluation in Education Department and 1 expert in Turkish Language Training Department. In expert opinions received, opinions were requested on whether items included in the scale were suitable for factors and items could be used in the scale. By deleting 6 items from the scale following experts analysis, exploratory and confirmatory factor analysis was applied on the scale with a total of 26 items and 8 factors.

2.3.2. Exploratory factor analysis study for acceptance of Facebook use for educational purposes scale

Exploratory factor analysis was applied to calculate item load values of 16 items included in the scale and reveal their factor structures. Using SPSS 21 Packaged software, exploratory factor analysis was carried out using basic components analysis technique and Varimax Vertical Rotating Techniques. Primarily, to conducted exploratory factor analysis, Kaiser-Meyer-Olkin (KMO) Test was analyzed which tests sample adequacy. As a result of analysis, KMO values was found as .93. Since KMO value was greater than .70, it can be said that sample compliance is sufficient for conducting exploratory factor analysis (Bryman & Cramer, 1999). To test whether obtained data were suitable for applying exploratory factor analysis, Bartlett Sphericity Test was examined. As a result of analysis (x^2= 6681.07, p= .000), it was concluded that data was suitable for

applying exploratory factor analysis (Bryman & Cramer,1999). As a result of exploratory factor analysis carried out, a 26-item structure was found as collected in 8 factors with eigenvalue higher than 1. As a result of analysis, explained variance in 8-factor pattern is 72.38%. Factor load values of items included in 8 factors and factors they belong to are given in Table 1.

Table 1. Result of Basic Components Analysis of Acceptance of Facebook Use for Educational Purposes Scale

Factor	Item	Factor Loads							
Perceived Usefulness	M17	.671							
	M18	.799							
	M19	.724							
	M20	.702							
Result Demonstrability	M10		.649						
	M11		.822						
	M12		.560						
	M13		.824						
Image	M1			.793					
	M2			.763					
	M3			.637					
Perceived Ease of Use	M21				.729				
	M22				.852				
	M23				.534				
Output Quality	M7					.682			
	M8					.711			
	M9					.519			
Subjective Norm	M14						.848		
	M15						.805		
	M16						.496		
Job Relevant	M4							.595	
	M5							.677	
	M6							.759	
Intention towards Use	M24								.739
	M25								.625
	M26								.739

2.3.3. Confirmatory factor analysis study for acceptance of Facebook use for educational purposes scale

Confirmatory factor analysis was applied to data set with a view to uncover latent variables and test relevant theories. The structure consisting of 8 factors and 26 items found out in exploratory factor analysis was applied with confirmatory factor analysis. Names of factors were determined as "Useful" for Perceived Usefulness, "Res_Dem" for Result Demonstrability, "Eas_Use" for Perceived Ease of Use, "OutQ" for Output Quality, "SubNorm" for Subject Norm, "Job_Rel" for Job Relevant and "Intention" for Intention towards Use. As a result of the first analysis applied, it was observed that desired values were not achieved in fit indices especially including RMSEA, GFI and AGFI. Therefore, modification indices were analyzed, and it was concluded that modifications to be conducted between M7 and M8, between M10 and M11, between M11 and M13, and between M14 and M15 would result in great contributions to χ2. Following modifications applied, confirmatory factor analysis was repeated. New obtained values were found as χ2=592.80 (sd=267, p<.000), χ2/sd=2.20, RMSEA= 0.051, S-RMR = 0.046, GFI=0.91, AGFI=0.88, CFI=0.99, IFI= 0.99, NNFI=0.98. With regard to these values, Sümer (2000) and Şimşek (2007) indicate that good fit will be shown if χ2/sd value equals to 3 or below; if RMSEA value is .08 or below. Byrne (1998), on the other hand, indicates that RMR and SRMR values should equal to .10 or lower for a good fit. In addition, it is emphasized that IFI, CFI, NFI and NNFI

with a value over .90 will express a good model. Büyüköztürk, Akgün, Demirel and Özkahveci (2004) emphasize that AGFI with .80 or higher and GFI with .85 or higher value express good fit. Considering from this aspect, it can be said that all values have a quality to express good fit. Path diagram related to confirmatory factor analysis applied is shown in Figure 1 and Figure 2.
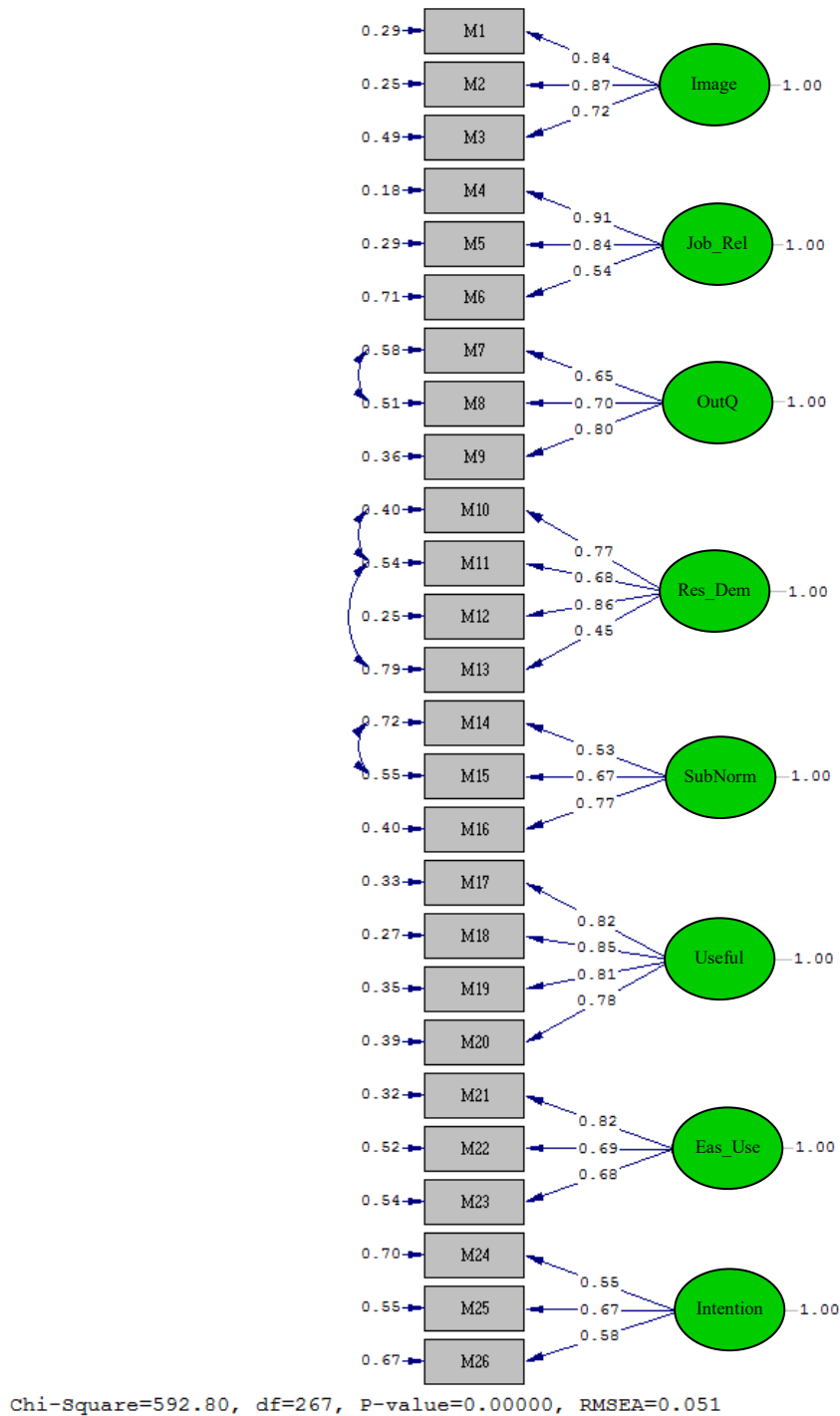
Figure 1. Confirmatory Factor Analysis Path Diagram for Acceptance of Facebook Use for Educational Purposes Scale (Standard Coefficients)
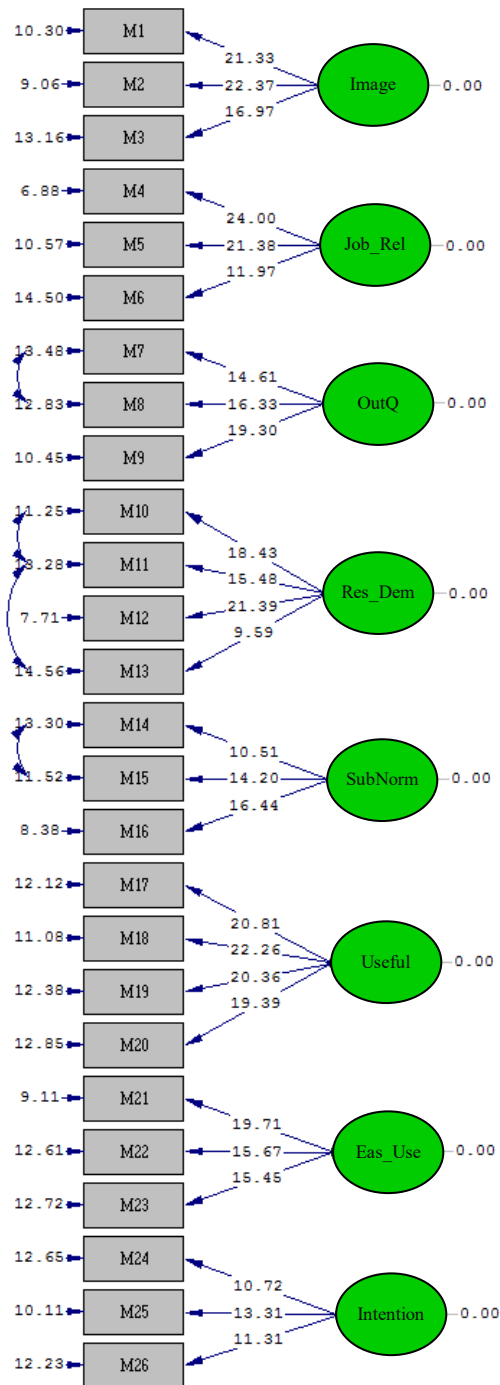
Figure 2. Confirmatory Factor Analysis Path Diagram for Acceptance of Facebook Use for Educational Purposes Scale (t Values)

As a result of confirmatory factor analysis, values emerging related to items are given in Table 2.

Table 2. Confirmatory Factor Analysis Results

	SC	TD	R²		SC	TD	R²		SC	TD	R²
M1	.84	21.33	.71	**M10**	.77	18.43	.60	**M19**	.81	20.36	.65
M2	.87	22.37	.75	**M11**	.68	15.48	.46	**M20**	.78	19.39	.61
M3	.72	16.97	.51	**M12**	.86	21.39	.75	**M21**	.82	19.71	.68
M4	.91	24.00	.82	**M13**	.45	9.59	.21	**M22**	.69	15.67	.48
M5	.84	21.38	.71	**M14**	.53	10.51	.28	**M23**	.68	15.45	.46
M6	.54	11.97	.29	**M15**	.67	14.20	.45	**M24**	.55	10.72	.30
M7	.65	14.61	.42	**M16**	.77	16.44	.60	**M25**	.67	13.31	.45
M8	.70	16.33	.49	**M17**	.82	20.81	.67	**M26**	.58	11.31	.33
M9	.80	19.30	.64	**M18**	.85	22.26	.73				

For reliability analyses of factors included in scale's model, Cronbach α and Omega (ω) and average variances extracted (AVE) were calculated. In reliability studies, Cronbach's α coefficient is calculated for all scales and factors. Cronbach α is especially used frequently in cases when answers are obtained in rating scale (Büyüköztürk et al., 2009). However, Omega ω coefficient must be given for congeneric measurements (situations where factor loads are not equal) (McDonald, 1985). For the whole scale, Cronbach α value was found as .93, and Omega (ω) was found as .96.

Table 3. α, ω and OAV Values of Scale Factors

	α	ω	OAV
Image	.84	.85	.65
Job Relevant	.80	.81	.60
Output Quality	.80	76	.51
Result Demonstrability	.83	.79	.50
Subjective Norm	.76	.70	.44
Perceived Usefulness	.88	.88	.66
Perceived Ease of Use	.77	.74	.53
Intention towards Use	.63	.62	.46

Correlation matrix between factors and OAV values were used to provide validity among factors of the scale. Findings relating to distinctive validity are as follows:

Table 4. Distinctive Validity of the Scale

	Image	Job_Rel	OutQ	Res_Dem	SpeNorm	Usefulness	Eas_Use	Intention
Image	**.80**							
Job_Rel	.70	**.79**						
OutQ	.73	.68	**.71**					
Res_Dem	.54	.58	.65	**.70**				
SubNorm	.66	.57	.56	.44	**.67**			
Usefulness	.70	.74	.73	.64	.59	**.81**		
Eas_Use	.54	.65	.76	.66	.41	.71	**.72**	
Intention	.50	.57	.66	.55	.38	.63	.61	**.67**

As shown in Table 4, correlation values among factors were left as they were, for testing distinctive validity of the scale, and square roots of OAV values were written in bold with factors themselves and to their intersection points. As a result of the analysis applied, it was revealed that OAV values of factors were higher than correlation values emerging with other factors. Therefore, it can be said that distinctive validity among factors of the scale were provided (Fornell and Larcker, 1981).

2.3.4. Interview Form

During preparation of semi-structured interview forms, questions were prepared in accordance with factors included in Acceptance of Facebook Use for Educational Purposes Model. Then, prepared questions were analyzed by 2 field experts and 1 language expert, their approval was taken. Firstly, a "Validity Committee" was established to ensure validity and reliability of interview forms. In this committee consisting of thesis supervisor, one academic member and two experts from the field, problems faced in application on the basis of theory and methods, also suggestions towards eliminating these problems were discussed.

In addition, the researcher tried to enter long term interactions with the environment and participants both during face to face courses and in Facebook environment to ensure validity and reliability in qualitative research; the researcher conducted the study by providing interaction with student in accordance with objectives of the research and shared the data obtained from semi-structured interview form with expert academic personnel and received their approval; the researcher tried to be as much objective as possible in determining participants and in analysis and interpretation of data.

2.4. Application Process

Within the scope of the research, two application processes were carried out including pilot application and application.

2.4.1. Pilot Application

Objective of pilot application is to test activities carried out over Facebook as a preparation for the application and to implement improvements in accordance with opinions from students and experts. In this way, preparation for the application conducted in fall semester of 2013-2014 academic year was completed.

A group was created in Facebook for pilot application, and students volunteered to participate in pilot application were requested to join this group. Facebook activities with educational purposes were applied in the group consisting of 31 female and 45 male students. Activities such as subject presentation video sharing, lesson presentation sharing, establishing discussion group, web site sharing related to the subject were carried out with the students over Facebook.

2.4.2. Application

Experiences acquired with pilot application, student opinions, expert comments and application of using Facebook for educational purposes were reviewed again. In accordance with opinions received, it was decided to add more activities and to include researcher more into application. For the application conducted with 38 male and 29 female students, primarily a group called "Material Design Facebook Activity" was created on Facebook, and students were asked to join this group. General information about the course was given to student in the first week of spring term of 2013-2014 academic year, and during the following 4 weeks, face-to-face courses were carried out, at the same time, application for Facebook use for educational purposes was implemented. During the 4-week period, activities were carried out over Facebook with students including

course presentation video sharing, course presentation sharing, establishing discussion group, web site sharing related to the subject, non-course related video sharing, news sharing on the subject, image sharing separately in each week.

Collection of qualitative data after application was carried out with semi-structured interview form developed by the researcher. During termination of the application, students volunteered to participate in interviews were determined, and the researcher agreed to interview with 20 students in the following week but 17 out of 20 students attended the interview. Post Graduate class of Computer Education and Instructional Technology Department, Faculty of Educational Sciences, Sakarya University was selected as interview environment, and the researcher conducted 17 interviews ranging from 4 minutes to 10 minutes with participants between November 9, 2013 and November 25, 2013. Interviews were carried out by the researcher upon written and oral permission from participants. Then, these interviews were analyzed with descriptive content analysis method. Descriptive analysis method is an analysis method in which previously obtained data is interpreted according to predetermined themes, direct quotes are frequently used to reflect individuals' opinions dramatically and in which obtained results are interpreted within the framework of cause-effect relationships (Yıldırım and Şimşek, 2013).

2.5. Data Analysis

2.5.1. Analysis of Quantitative Data

SPSS 21 and Lisrel 8.71 Package software were used for analysis of quantitative data obtained in the study. While descriptive analyses, comparative analysis, relational analysis and descriptive factor analysis studies were conducted with SPSS Package Software; confirmatory factor analysis and structural equation modeling were carried out with Lisrel 8.71 package software.

Since application group was limited with 67 people, distribution of the group was considered for interpretation of quantitative data, and parametric or non-parametric tests were preferred according to the distribution. Kolmogorov-Smirnov test results for the application group are given in Table 5.

Table 5. Kolmogorov-Smirnov Test Results for Application Group

Factor	Kolmogorov-Simirnov Test Result	Selected Test
Image (Pre-Application)	.011 (p<.05)	Non-Parametric
Image (Post-Application)	.001 (p<.05)	Non-Parametric
Job Relevant (Prior to Application)	.002 (p<.05)	Non-Parametric
Job Relevant (Post-Application)	.014 (p<.05)	Non-Parametric
Output Quality (Pre-Application)	.000 (p<.05)	Non-Parametric
Output Quality (Post-Application)	.000 (p<.05)	Non-Parametric
Result Demonstrability (Pre-Application)	.000 (p<.05)	Non-Parametric
Result Demonstrability (Post-Application)	.000 (p<.05)	Non-Parametric
Subjective Norm (Pre-Application)	.000 (p<.05)	Non-Parametric
Subjective Norm (Post-Application)	.017 (p<.05)	Non-Parametric
Perceived Ease of Use (Pre-Application)	.022 (p<.05)	Non-Parametric
Perceived Ease of Use (Post-Application)	.006 (p<.05)	Non-Parametric
Perceived Usefulness (Pre-Application)	.016 (p<.05)	Non-Parametric
Perceived Usefulness (Post-Application)	.000 (p<.05)	Non-Parametric
Intent For Use (Pre-Application)	.000 (p<.05)	Non-Parametric
Intent for Use (Post-Application)	.000 (p<.05)	Non-Parametric
Acceptance Level Total (Pre-Application)	.064 (p<.05)	Parametric
Acceptance Level Total (Post-Application)	.200 (p<.05)	Parametric

Factor	Kolmogorov-Simirnov Test Result	Selected Test
Total Satisfaction	.061 (p<.05)	Parametric
Total Perceived Learning	.001 (p<.05)	Non-Parametric

As a result of Kolmogorov-Simirnov test applied, it was determined that 3 factors showed normal distribution, and other factors did not show a normal distribution. For groups not showing a normal distribution, logarithmic conversion, square root conversion, reciprocal conversion, logistic conversion methods were tried for right-skewed groups, and square root conversion was tried for left-skewed groups but normal distribution of data could not be achieved. Therefore, it was decided to use parametric tests for analyses towards 3 factors showing normal distribution and to use non-parametric tests for tests to be conducted for other factors. In addition to this, it was decided to use non-parametric tests during the process of analyzing a group showing normal distribution and another group not showing normal distribution together.

2.5.2. Analysis of Qualitative Data

Answered obtained in light of semi-structured interview forms for qualitative analysis were applied with descriptive analysis. Data obtained in descriptive analysis approach is summarized and interpreted according to predetermined themes. While it is possible to arrange data according to themes revealed by research questions, data can be presented by considering questions or dimensions used during interview and observation processes. Direct quotes are frequently used to reflect opinions of interviewees or observed individuals in a dramatic way in the descriptive analysis. In such type of analysis, the aim is to present findings in an arranged and interpreted way (Yıldırım and Şimşek, 2013).

In this research, coding process was conducted in accordance with factors found in Technology Acceptance Model 2. Data collected in a such coding process is subjected to a deductive analysis, and the results is revealed by the researcher. For this purpose, all data obtained during research was recorded line by line, and dimensions considered important were determined. By this way, category lists were established based on data.

After category lists are established, common directions among categories were determined and thematic coding process was applied. The objective was to establish a significant whole to ensure *internal consistency* during thematic coding and to create an integrity with distinct themes for ensuring *external consistency*. Due to extended data collected in the research and excessive number of categories determined, themes were created with reference to common relationships of categories.

For reliability of the research, another expert other than the research also evaluated data. As for calculation of reliability for the research, reliability formula suggested by Miles and Huberman (1994) was used.

$$\text{Reliability = Consensus / (Consensus + Dissention)}$$

Coefficient for each theme was found higher than 0.70 for each theme in reliability study of themes. During analysis of qualitative data, Microsoft Excel 2013 software was used.

3. Results

In this chapter, results related to the research are given under headlines related to the specified problem and sub-problems.

3.1. Acceptance Of Facebook Use For Educational Purposes Adapted From Technology Acceptance Model 2

Data obtained from Acceptance of Facebook Use for Educational Purposes Scale was analyzed with Lisrel 8.70 software, and structural equality modeling was carried out.

When the model was established, "Experience" and "Voluntariness" external variables found in Technology Acceptance Model 2 were excluded from the model. The main reason for this is that individuals accepting Facebook use for educational purposes should have used Facebook previously, they should have a certain experience in Facebook use, and people attending the application process carried out according to the model should voluntarily participate in such an activity. It was considered impossible for individuals without necessary experience in Facebook use and participating such an activity reluctantly to accept Facebook use for educational purposes.

After structural equality analysis was conducted, it was found that $\chi 2=802.78$ (sd=287, p<.000), $\chi 2/sd=2.79$, RMSEA= 0.06, S-RMR = 0.05, GFI=0.88, AGFI=0.85, CFI=0.98, IFI= 0.98, NNFI=0.97. With regard to these values, Sümer (2000) and Şimşek (2007) indicate that good fit will be shown if $\chi 2/sd$ value equals to 3 or below; if RMSEA value is .08 or below. Byrne (1998), on the other hand, indicates that RMR and SRMR values should equal to .10 or lower for a good fit. In addition, it is emphasized that IFI, CFI, NFI and NNFI with a value over .90 will express a good model. Büyüköztürk et al. (2004) emphasize that AGFI with .80 or higher and GFI with .85 or higher value express good fit. Considering from this aspect, it can be said that all values have a quality to express good fit. Path diagram belonging to structural equation analysis applied is shown in Figure 3 and Figure 4.
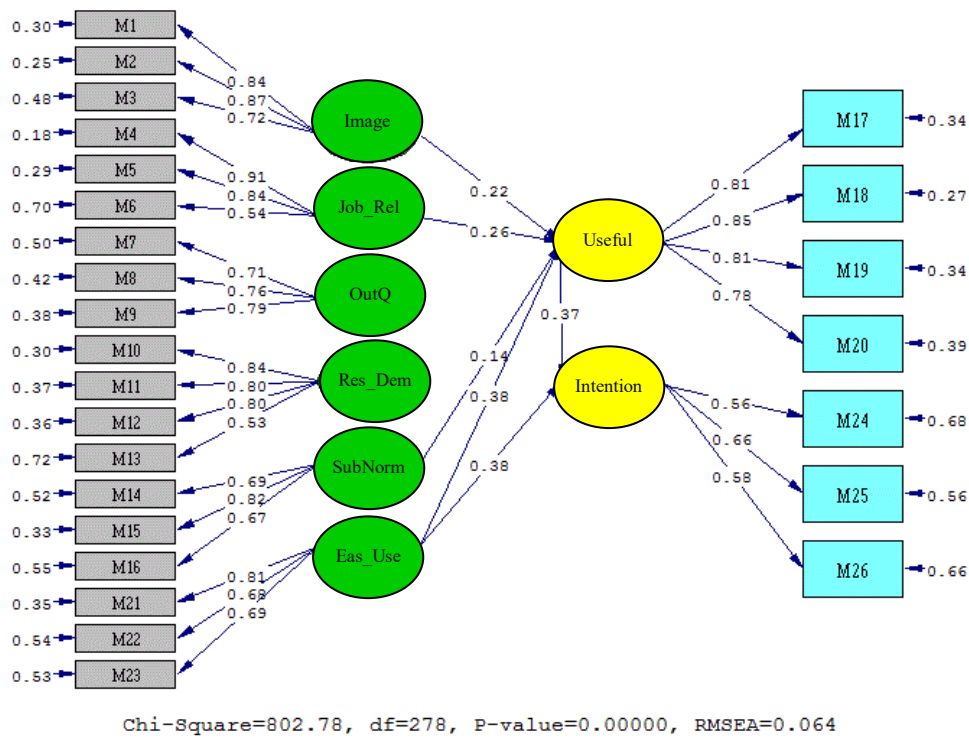
Figure 3. Path Diagram of Facebook Use for Educational Purposes Model According to Technology Acceptance Model 2 (Standard Coefficients)

As a result of structural equation modeling, it was found that standard solutions of three items included in Image Factor were between .87 and .72; standard solutions of three items included in Job Relevant Factor were between .91 and .54; standard solutions of three items included in Output Quality Factor were between .79 and .71; standard solutions of four items included in Result Demonstrability Factor were between .84 and .53; standard solutions of three items included in Subjective Norm Factor were between and .82 and .67; standard solutions of four items included in Perceived Usefulness Factor were between .85 and .78; standard solutions of three items included in Perceived Ease of Use Factor were between .81 and .68; and standard solutions of three items included in Intention towards Use Factor were between .66 and .58.

However, considering from the framework of structural model applied on path scheme shown in Figure 12, it can be seen that Image (standard solution=0.22), Job Relevant (standard solution=0.26), Subjective Norm

(standard solution=0.14) factors explain Perceived Usefulness factor; Perceived Ease of Use factor explains Perceived Usefulness (standard solution=0.38) and Intention towards Use (standard solution=0.38) factors; on the other hand, Perceived Usefulness (standard solution=0.37) factor explains Intention towards Use.

Following standard solutions, t values among factors and items were considered. Jöreskog & Sörbom (1996) indicated that failure in finding red arrow related to t values demonstrated that all items were significant at .05 level. The lack of red arrows among t values showed that all items were significant at .05 level.
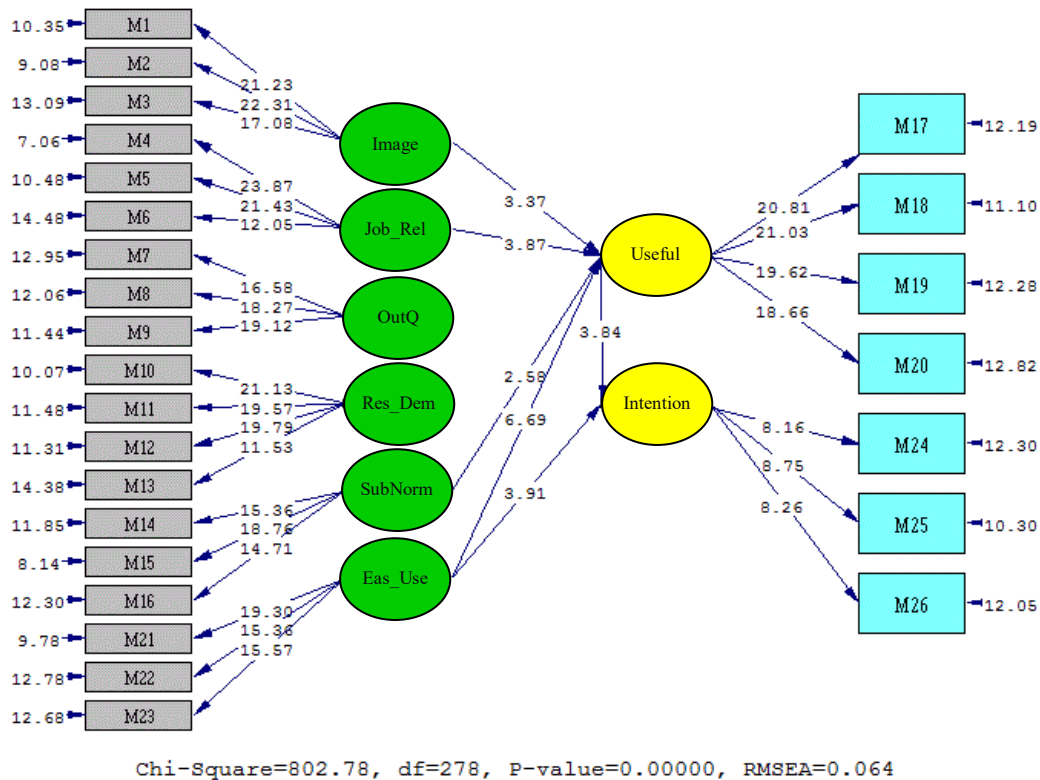
Figure 4. Path Diagram of Facebook Use for Educational Purposes Model According to Technology Acceptance Model 2 (t Values)

It can be seen that items included in Image factor have t values between 22.31 and 17.08; items included in Job Relevant factor have t values between 23.87 and 12.05; items included in Output Quality factor have t values between 19.12 and 16.58; items included in Result Demonstrability factor have t values between 21.13 and 11.53; items included in Subjective Norm factor have t values between and 18.76 and 14.71; items included in Perceived Usefulness Factor have t values between 21.03 and 18.66; items included in Perceived Ease of Use factor have t values between 19.30 and 15.36; items included in Intention towards Use factor have t values between 8.55 and 8.16. Analysing t values between factors, it can be seen that these values are 3.37 between Image and Perceived Usefulness factors, 3.87 between Job Relevant and Perceived Usefulness factors, 2.58 between Subjective Norm and Perceived Usefulness factors, 6.69 between Perceived Ease of Use and Perceived Usefulness factors, 3.91 between Perceived Ease of Use and Intention towards Use factors, and 3.84 between Perceived Usefulness and Intention towards Use factors. According to these values, significance among factors is at $p < .01$ level (Byrne, 2001).

It can be seen that Perceived Ease of Use factor included on the model has direct effect on Intention towards Use factor, at the same time, has effect on Perceived Usefulness factor. Therefore, it was investigated whether Perceived Usefulness factor mediates Intention towards Use factor in terms of Perceived Ease of Use factor.
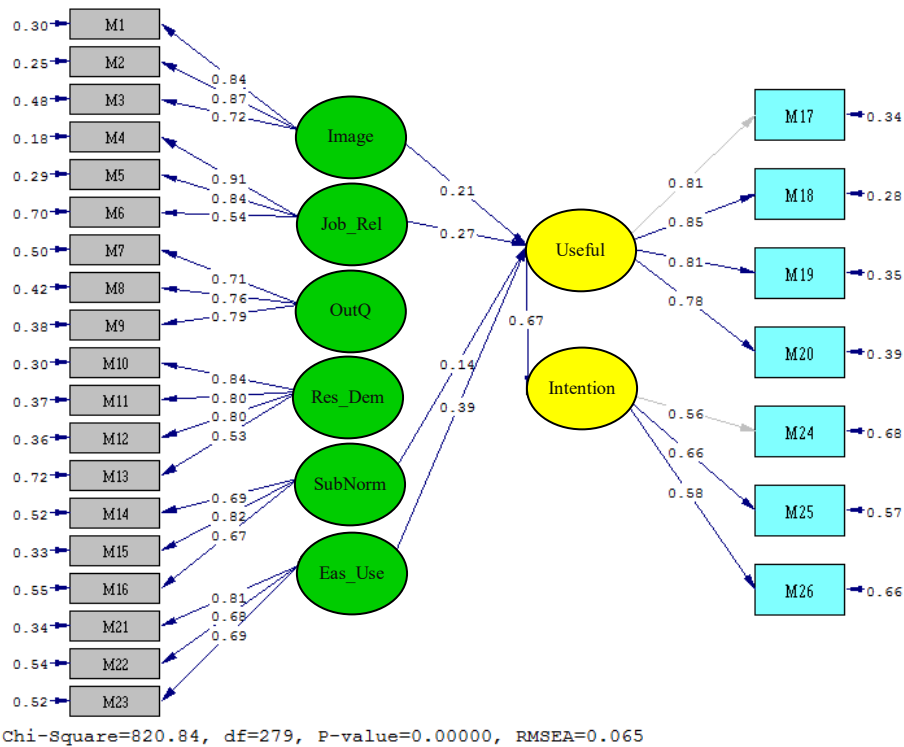
Figure 5. Removing the Path among Perceived Ease of Use and Intention towards Use Factors in the Model

As shown in Figure x, when the path between Perceived Ease of Use and Intention towards Use factors is removed, it gives very high values in terms of model goodness of fit. To understand whether Perceived Usefulness factor mediates between Perceived Ease of Use factor and Intention towards Use, the path between Perceived Ease of Use factor and Intention towards Use factor was drawn again.
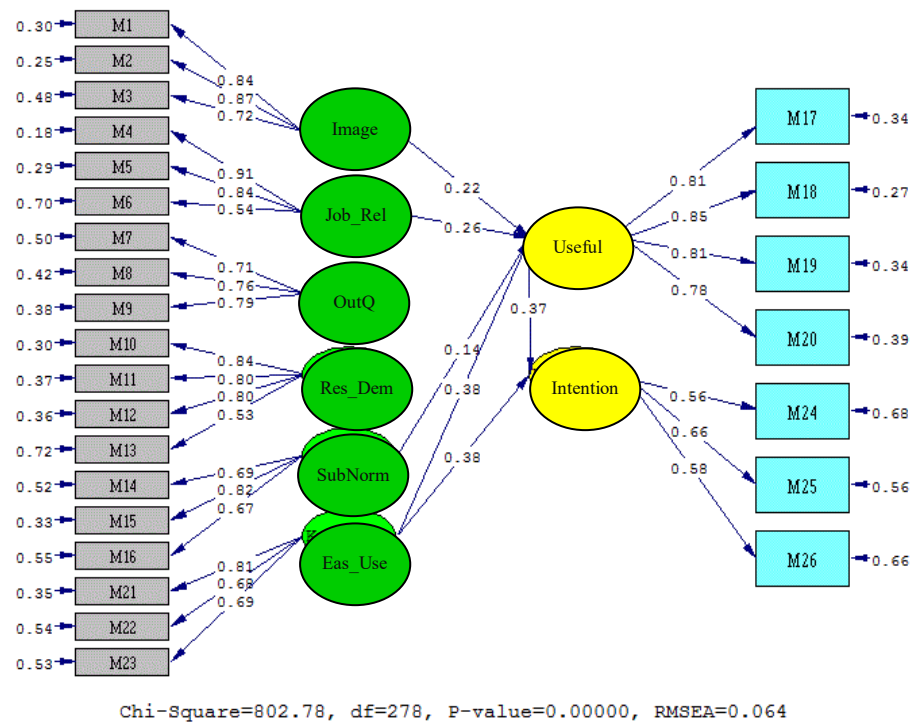
Figure 6. Combining the Path between Perceived Ease of Use and Intention towards Use Factors in the Model

As shown in Figure x, when the path between Perceived Ease of Use and Intention towards Use factors is removed, this did not show any effects on model fit. Therefore, it can be said that Perceived Usefulness factor

does not have any mediatory roles between Perceived Ease of Use and Intention towards Use, and factors function independently from each other.

Output Quality and Result Demonstrability factors have not shown fit to the model in Acceptance of Facebook Use for Educational Model aimed to be established according to Technology Acceptance Model 2. Reason for this incompatibility is discussed in conclusion sections.

3.2. Changes In Acceptance Levels Of Facebook Use For Educational Purposes Before And After Facebook Use For Educational Purposes Activity

After the Facebook Use for Educational Purposes Model was developed, it was confirmed by a semi-experimental design that the model was working. For this reason, an educational use Facebook activity has been carried out. Before and after Facebook use for educational purposes activity, change in prospective teachers' levels of acceptance of Facebook use for educational purposes is as shown in Table 6

Table 6. Changes in Factors of Acceptance of Facebook Use for Educational Purposes Model Before and After Facebook Use for Educational Purposes Activity

	Test		N	Order Avg.	Order Tot.	z	p
Image	**Pretest**	**Negative Order**	19	26.61	505	-2,053	.040
		Positive Order	35	27.99	979		
	Posttest	**Equal**	13	-			
Job Relevant	**Pretest**	**Negative Order**	13	22.65	294	-3,765	.000
		Positive Order	40	28.41	1136		
	Posttest	**Equal**	14	-			
Subjective Norm	**Pretest**	**Negative Order**	19	23.63	449	-3,167	.002
		Positive Order	39	32.36	1262		
	Posttest	**Equal**	9	-			
Perceived Usefulness	**Pretest**	**Negative Order**	14	19.00	266	-3,996	.000
		Positive Order	39	29.87	1165		
	Posttest	**Equal**	14	-			
Perceived Ease of Use	**Pretest**	**Negative Order**	16	26.19	419	-3,679	.000
		Positive Order	44	32.07	1411		
	Posttest	**Equal**	7	-			
Intention towards Use	**Pretest**	**Negative Order**	11	16.45	181	-3,961	.000
		Positive Order	35	25.71	900		
	Posttest	**Equal**	21	-			

According to the analysis performed, after Facebook use for educational purposes activity, significant difference was found in terms of image (p<0.05, z=-2,053), Job Relevant (p<0.05, z=-3,765), subjective norm (p<0.05, z=-3,167), perceived usefulness (p<0.05, z=-3,996), perceived ease of use (p<0.05, z=-3,679) and intention towards Use (p<0.05, z=-3,961) factors of Facebook Use for Educational Purposes Model. Comparing mean ranks, it can be seen that a significant increase occurred in factors such as Image (Mean Rank Diff.=1.38), Relation with the Profession (Mean Rank Diff.=5.76), Subjective Norm (Mean Rank Diff.=8.73), Perceived Usefulness (Mean Rank Diff.=10.87), Perceived Ease of Use (Mean Rank Diff.=5.88) and Intention towards Use (Mean Rank Diff.=9.26).

4. Conclusions

After the research was completed, Facebook Use for Educational Purposes Model was established based on Technology Acceptance Model 2. In created Facebook Use for Educational Purposes Model, "Result Demonstrability" and "Output Quality" factors belonging to Technology Acceptance Model 2 developed by Venkatesh and Davis (2000) were not included. In addition, "Experience" and "Voluntariness" exogenous variables not included in the scope of the research. The main reason for this is that individuals accepting Facebook use for educational purposes should have used Facebook previously, they should have a certain experience in Facebook use, and people attending the application process carried out according to the model should voluntarily participate in such an activity. It was considered impossible for individuals without necessary experience in Facebook use and participating such an activity reluctantly to accept Facebook use for educational purposes.

The fact that "Output Quality" and "Result Demonstrability" factors included in Technology Acceptance Model 2 were not included in the model after analysis of data obtained as a result of quantitative research methods can be explained with data obtained from qualitative analysis. Analyzing qualitative findings, prospective teachers did not make sense of questions asked with regard to "Output Quality" and "Result Demonstrability" factors or associate with teaching profession.

Example sentences that prospective teachers mentioned with regard to "Output Quality" factor and that could not be completely answered can be listed as follows:

"So now it will surely have an effect... Well, normally it is positive, namely, it is positive when considered in this way. (E.Z.)"

"Yes. That is to say. Would it be possible without it? (silence) I think it would not be, sir, namely, Facebook contributed to us. (A.G.)"

Analyzing the abovementioned examples, students' answers to questions related to "Output Quality" are not exactly satisfactory. Questions of how much qualified the expected outputs would be at the end of training process conducted with Facebook and who much Facebook was effective in completing job-related tasks were not understood by the students. However, after mutual interviews, prospective teachers gave answers on teaching profession to the questions on "Output Quality". These given answers also resemble to examples included in "Job Relevant" factor. Sample sentences are as follows:

"Since we make research, so much information is not forgotten. I mean this is what we call learning by doing. (U.K.)"

"Facebook helps. As I said earlier, interaction for each subject exists in terms of acquisitions. Rather than coming to school to ask questions to teacher, it is possible to reach teacher continuously over the web site. (O.E.)"

"This results in development on student's side, also communication between teacher and student occurs differently, namely, different from educational environment. I think it is more associated with researching. (A.T.)"

"Output Quality" factor, one of the factors specified in Technology Acceptance Model 2, explains "Job Relevant" factor and "Perceived Usefulness" factor even in the study conducted by Venkatesh and Davis (2000). Therefore, in the study for development of Acceptance of Facebook Use for Educational Purpose Model, "Output Quality" factor was ignored, only "Job Relevant" factor was included in the study.

As a result of research conducted, "Result Demonstrability" factor also emerges as one of the factor that do not appear in the modeling study established. As a result of analysis of data collected from qualitative data collection tools, it can be seen that the basic idea in "Result Demonstrability" factor is the fact that usefulness in Facebook use for educational purposes can be shared with others. In addition, Venkatesh and Davis (2000, p:192) suggest a significant relationship between "Result Demonstrability" factor and "Perceived Usefulness" factor. It was observed from obtained data that prospective teachers' answers to questions related to "Result Demonstrability" factor and "Perceived Usefulness" factor showed similarity. Examples of given answers are as follows:

"That is because we knew Facebook as a social media despite not used in courses. Now, we know about video sharing, text, audio, so I can easily discuss these activities. (M.A.)"

"So, teacher can send course documents, or whatever is required, over Facebook directly." One can be comfortable over that group created. There is no need to find teacher, and there is no need for trying hard to communicate with teacher. So, I can discuss about anything. (E.A.)"

"Because, what did we use to do while using Facebook regularly? You spend time in Facebook in vein, play games, talk to your friends at chat, in fact, you feel a loss of communication, so I was against Facebook use. However, I said, since Facebook is used for educational purposes, I can easily inform my family about Facebook use. Why do you have a Facebook account? When they ask like this, I can say that I use Facebook for educational purposes. When they ask about Facebook's use for education, I can show them comments, shares in that group. Look, one of my friend commented like this, and I added another comment. So I can discuss about its effectiveness and convince my family."

Acceptance of Facebook Use for Educational Purposes Model, which was suggested within the scope of the research, is similar to Technology Acceptance Model 2 with its dimensions excluding "Output Quality" and "Result Demonstrability" factors. Acceptance of Facebook Use for Educational Purposes Model obtained with structural equality modeling at the end of research is as follows:
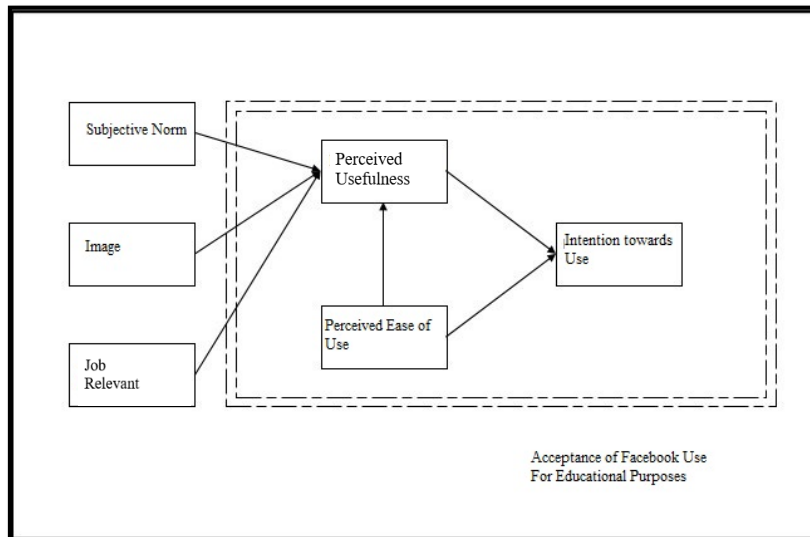
Figure 7. Acceptance of Facebook Use for Educational Purposes

After the model was created, a Facebook activity for educational purposes was designed, and this activity was applied with the study group. One of utmost importance reasons in designing the activity is testing and application of the model in the framework of this event. Before the activity carried out, prospective teachers' level of acceptance of Facebook use for educational purposes was measured, then the same test was applied after the activity. A significant increase was achieved among prospective teachers' level of acceptance of Facebook use for educational purposes thanks to the activity carried out. At the end of the event, prospective teachers accepted Facebook as a learning environment. There are studies available in the field literature supporting this finding (Munoz & Towner, 2009; Wang, Woo, Quek, Yang, & Liu, 2012; Meishar-Tal, Kurtz, & Pieterse, 2012).

Conclusions emerging as a result of discussions over findings of the research are as follows:

Acceptance of Facebook Use for Educational Purpose Model was adapted according to Technology Acceptance Model 2. In the resulting model, "Result Demonstrability" and "Output Quality" among factors of Technology Acceptance Model 2 were not included. This is because Output Quality factor was perceived together with Job Relevant factor; and Result Demonstrability factor was perceived together with Perceived Usefulness factor. After Facebook use for educational purposes activity, it was analyzed whether there were any significant increases based on factors of Acceptance of Facebook Use for Educational Purposes. After Facebook use for educational purposes activity, it was found out that there was an increase in terms of factors of Facebook Use for Educational Purpose including image, job relevant, subjective norm, perceived usefulness, perceived ease of use and intention towards use factors.

5. Recommendations

According to the findings obtained in the research;

- Suggestions towards researchers,
- Towards educators,
- Towards faculties

are listed as follows.

5.1. Suggestions Towards Researchers

- At the end of the research, students were asked to evaluate themselves and their perceived learning levels were measured. With academic achievement tests to be prepared, prospective teachers' academic achievements can be measured; effect of Facebook use for educational purposes on academic achievement can be revealed with experiment-control groups.
- Pilot application and application carried out within the scope of the research were carried out with prospective teachers attending Computer and Teaching Technologies Training Department. Conducting similar studies in other departments outside Computer and Teaching Technologies Training Department will allow for determining the level of acceptance of Facebook use for educational purpose in different sample groups.
- Facebook was included in the survey since it is the social network with the highest number of users in Turkey and in the world. Such studies can be repeated with different social networks.
- As a result of the research, students indicated that they intended to use Facebook for educational purposes. With future studies, it can be monitored whether prospective teachers will continue to use Facebook for educational purposes when they start the teaching profession.
- Modeled within the scope of the research, Acceptance of Facebook Use for Educational Purposes Model was adapted based on Technology Acceptance Model 2. A new model suggestion for Acceptance of Facebook Use for Educational can be implemented based on Technology Acceptance Model, Technology Acceptance Model 3 or Combined Technology Acceptance and Use Model which are excluded from the scope of this research.
- Together with activities carried out over Facebook, face to face courses continued. With new studies to be performed, results of studies on training-education processes conducted completely over Facebook can be compared with results of this research.
- An analysis over prospective teachers' comments on activities over Facebook was not applied. Prospective teachers' comments in activities and their answers can be analyzed with qualitative analysis methods to deepen the research scope.
- Teacher candidates' time spent on Facebook was not measured within the scope of this research. With studies in which logs are kept, acceptance of Facebook use for educational purposes can be analyzed with comparative studies.

5.2. Suggestions Towards Educators

- Activities arranged within the scope of the research are limited with activities designed by the researcher. Educators may design new activities to be used in their courses, and a similar study with new activities can be carried out.
- Duration of application in Facebook activity for educational purposes was carried out in 4 weeks within the scope of the research. Educators may arrange new applications by increasing duration based on intensity and duration of their courses or decreasing duration of application.

5.3. Suggestions Towards Faculties

- Faculties may encourage academic staff to communicate with students over Facebook and carry out some of their course process over Facebook.
- Faculties may award academic staff who are in contact with students over Facebook and support training process with social media.
- Communicative processes can be carried out more efficiently through Facebook pages to be created.
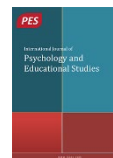
References

Ajzen, I. (1991). *The theory of planned behavior*. Organizational Behavior and Human Decision Processes .

Amichai-Hamburger, Y., & Vinitzky, G. (2010). Social network use and personality. *Computers in Human Behavior, 26*(6), 1289-1295. doi:10.1016/j.chb.2010.03.018

Bailey, D. (1987). *Methods of Social Research*. New York: The Free Press.

Boyd, D., & Ellison, N. (2007). Social Network Sites: Definition, History and Scholarship. *Journal of Computer-Mediated Communication,* 13(1), 210-230.

Bryman, A., and Cramer, D. (1999). *Quantitative Data Analysis with SPSS Release 8 for Windows*. Taylor and Francis e-Library, Routledge.

Büyüköztürk, Ş., Akgün, Ö., Demirel, F., & Özkahveci, Ö. (2004). Güdülenme ve Öğrenme Stratejileri Ölçeği'nin Türkçe formunun geçerlik ve güvenirlik çalışması. *Kuram ve Uygulamada Eğitim Bilimleri*, 4(2), 207-239.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö., Karadeniz, Ş., & Demirel, F. (2009). *Bilimsel Araştırma Yöntemleri.* Ankara: Pegem Yayınları.

Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS and SIMPLIS: Basic concepts, applications, and programmings.* London: Lawrence Erlbaum Assocatiates, Publishers.

Byrne, B. M. (2001). *Structural Equation Modeling with AMOS: Basic Concepts, Applications and Programming.* NJ: Lawrence Erlbaum Associates, Inc.

Chin, W. W. (1998). The Partial Least Squares Approach for Structural Equation Modeling. In G. A. Marcoulides, *Modern Methods for Business Research* (pp. 236-295). London: Lawrence Erlbaum Associates.

Creswell, J. (2013). *Research Design , Fourth Edition. Qualitative, Quantitative, and Mixed Methods Approaches*. CA: SAGE Publications, Inc.

Creswell, J., & Plano Clark, V. (2007). *Designing and Conducting Mixed Methods Research*. CA:Sage: Thousands Oaks.

Davis, F. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results.* Massachusetts: Massachusetts Institute of Technology (Unpublished dissertation thesis).

Ellison, N., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4). doi:10.1111/j.1083-6101.2007.00367.x

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research.* Reading, MA: Addison-Wesley.

Fornell, C., & Larcker, D. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.

Franklin, T., & van Harmelen, M. (2007). *Web 2.0 for Content for Learning and Teaching in Higher Education*. Franklin Consulting.

Guion, L., Diehl, D., & McDonald, D. (2011). *Triangulation: Establishing the Validity of Qualitative Studies*. Youth and Community Sciences.

Jöreskog, K., & Sörbom, D. (1996). *LISREL 8: Structural equation modeling with the SIMPLIS command language.* Chicago: Scientific Software International/Erlbaum.

Kalafat, Ö., & Göktaş, Y. (2011). Sosyal Ağların Yükseköğretimde Kullanımı: Gümüşhane Üniversitesi, Facebook Örneği. 5. *Bilgisayar ve Öğretim Teknolojileri Eğitmi Sempozyumu*. Elazığ: Fırat Üniversitesi.

Kim, W., Jeong, O., & Lee, S. (2010). On Social Web Sites. *Information Systems*, 35(2), 215-236. doi:10.1016/j.is.2009.08.003

Kwon, O., & Wen, Y. (2010). An empirical study of the factors affecting social network service use. *Computers in Human Behavior,* 26(2), 254-263. doi:10.1016/j.chb.2009.04.011

Lenhart, A., & Madden, M. (2007). *Social Networking Web sites and Teens: An Overview*. Washington: Pew Internet and American Life Project Report.

Lockyer, L., & Patterson, J. (2008). Integrating Social Networking Technologies in Education: A Case Study of a Formal Learning Environment. *8th IEEE International Conference on Advanced Learning Technologies.* Dubai: University of Wollongong.

McDonald, R. (1985). *Factor analysis and related methods*. Hillsdale, N J: Erlbaum.

Meishar-Tal, H., Kurtz, G., & Pieterse, E. (2012). Facebook Groups as LMS: A Case Study. *The International Review of Research in Open and Distance Learning*, 33-48.

Miles, M., & Huberman, A. (1994). *Qualitative Data Analysis (2nd edition)*. Thousand Oaks, CA: Sage Publications.

Munoz, C., & Towner, T. (2009). Opening Facebook: How to Use Facebook in the College Classroom. *Society for Information Technology and Teacher Education Conference*. Charleston, South Carolina.

Özgen, F., & Turan, A. (2009). Türkiye'de E-Beyanname Sisteminin benimsenmesi: Geliştirilmiş Teknoloji Kabul Modeli İle Ampirik Bir Çalışma. *Doğuş Üniversitesi Dergisi*, 10(1), 134-147.

Öztürk, M., & Akgün, Ö. (2013). Üniversite Öğrencilerinin Sosyal Paylaşım Siteleriyle İlgili Görüşlerinin Demografik Özellikleri Açısından İncelenmesi. *Adnan Menderes Üniversitesi Eğitim Fakültesi, Eğitim Bilimleri Dergisi*, 4(1), 1-14.

Pişkin, M., & Öner, U. (1999). *Görüşme İlkeleri ve Teknikleri*. Ankara: Siyasal Yayıncılık.

Sümer, N. (2000). Yapısal eşitlik modelleri: Temel kavramlar ve örnek uygulamalar. *Türk Psikoloji Yazıları*, 3(6), 46-74.

Şimşek, Ö. F. (2007). *Yapısal Eşitlik Modellemesine Giriş, Temel İlkeler ve LISREL Uygulamaları*. Ankara: Ekinoks Yayıncılık.

Tashakkori, A., & Creswell, J. (2007). The new era of mixed methods. *Journal of Mixed Methods Research*, 1(1), 3-8.

Venkatesh, V., & Davis , D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 46(2), 186-204.

Wang, Q., Woo, H., Quek, C., Yang, Y., & Liu, M. (2012). Using the Facebook group as a learning management system: An exploratory study. *Journal of Educational Technology*, 428-438.

Wang, S., Moon, S., Kwon, K., Evans, C., & Stefanone, M. (2010). Face off: Implications of visual cues on initiating friendship on Facebook. *Computers in Human Behaviour*, 26(2), 226-234. doi:10.1016/j.chb.2009.10.001

Yıldırım, A., & Şimşek, H. (2013). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*. Ankara: Seçkin Yayıncılık.

Yu, Y., Stella, T., Doug, V., & Kwok, C. (2012). Can learning be virtually boosted? An investigation of online social networking impacts. *Computers & Education*, 55(4), 1494-1503. doi: 10.1504/IJNVO.2011.039999

Yuen, S., & Yuen, P. (2008). Web 2.0 in education. *Proceedings of Society for Information Technology & Teacher Education International Conference*. Chesapeake: AACE.

Relational Humor and Marital Satisfaction in Married Individuals

Begüm Satıcı[1], M. Engin Deniz[2]

[1]*Artvin Coruh University, Turkey,* [2]*Yildiz Technical University, Turkey*

ARTICLE INFO	ABSTRACT
	This study investigated whether married individuals' relational humor styles were significant predictors of their marital satisfaction levels. The study was conducted with a total of 228 married participants (139 women and 89 men). The duration of marriage of the participants ranged from 1 to 46 years (M = 9.34, SD = 10.37). The data were obtained by using the Marital Life Scale and Relational Humor Inventory. The data were tested with multiple regression analysis supported by bootstrapping process. According to the regression results, self-positive and self-negative relational humor styles significantly predicted their own marital satisfaction. On the other hand, self-instrumental humor did not predict marital satisfaction significantly. Otherwise, marital satisfaction was significantly predicted by partner-positive, partner-negative, and partner-instrumental humor styles. The findings obtained in the study were discussed in accordance with the related literature and suggestions were made for the following studies

1. Introduction

Marriages appears to be a transition stage toward creating their own family in an individual's experience and is emphasized to be an important social ritual with the aim of meeting the emotional needs of individuals (Dildar, Sitwat, & Yasin, 2013). For some one of the most important interpersonal relationships of marriage is a source of happiness and satisfaction, while for others marriage is characterized as a worrying situation (Curun, 2006). This is because individuals raised with unique habits and spiritual values in different family environments have different expectations when they combine within a common structure (Velidedeoğlu-Kavuncu, 2011). As a result, if these differing expectations are not met by the other partner, problems may occur in the relationship. However, considering everyone comes from different families and still marry, what is the difference for couples with balanced expectations who obtain high levels of satisfaction from the experience of marriage? The answer to this question has been a topic of curiosity for many researchers.

Research into factors affecting marriage satisfaction are more interesting for several reasons. Firstly, marital satisfaction appears to be important in terms of forming the basis of individual well-being and family well-being (Stack & Eshleman, 1998). Additionally, it is known that reducing problems in marriage and divorce is very important for obtaining satisfaction from marriage (Baucom, Shoham, Mueser, Daiuto, & Stickle, 1998). Building the foundations for a strong marriage and protecting this structure has many benefits for society, like preventing possible crimes (Laub, Nagin, & Sampson, 1998). As a result, research about marital satisfaction has great importance in the sense of both individuals and society. Research into factors increasing marital satisfaction of couples is necessary in terms of developing the required intervention methods (Hahlweg, Markman, Thurmaier, Engl, & Eckert, 1998).

Longitudinal research about marital satisfaction has stated that satisfaction falls after the first years of marriage and reaches the level of the first years again in later years, forming a curved path (Rollins & Feldman, 1970). However, currently this statement is invalid and it was revealed that the satisfaction individuals obtain from marital experiences does not reduce or increase according to monotonous periodic cycles; contrarily, satisfaction is a dynamic variable affected by many factors (Lee, Zarit, Rovine, Birditt, & Fingerman, 2011). For example, it appears the marital satisfaction of women undergoes a pronounced fall through the years compared to men (Kurdek, 2005). The results of the same research supported the view that the fall in marital satisfaction is affected by mental problems experienced by men and women in the first four years of marriage and perceptions related to their marriage. This research also revealed that the marital satisfaction of individuals differs in line with the interaction between partners. However, when marriage is discussed, there is a significant correlation between expressing affect and marital satisfaction (Waldinger et al., 2004).

Expression of emotions occurs through a variety of pathways. For example, a person annoyed with their partner may express this by crying, shouting, sulking, or not speaking or a person happy with a gesture from their partner may show this by laughing, hugging or talking. Though different paths may be used to express negative and positive feelings, there is a common path to express these feelings and that is the use of humor (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). In marriage, humor may be used in a positive way to provide affection (Ammerman, 2002) or with the aim of regulating the relationship to resolve conflicts (de Koning & Weiss, 2002) or in a negative way to offend the other or express negative feelings (Saroglou, Lacour, & Demeure, 2010). For example, though men use humor in relationships more compared to women (Honeycutt & Brown, 1998), the content of this humor is negative in the form of hurting or demeaning the other (Saroglou et al., 2010).

The positive use of humor appears to be as important as the presence of feelings like love, trust and affection and creating healthy communication to successfully maintain a marriage (Johari, 2004). In fact, humor is one of the traits most sought after by individuals in relationships and has a very important place in romantic relationships (Bressler & Balshine, 2006). Considering relational humor, it can be divided into three as positive, negative and instrumental humor. Humor is attractive and is emphasized to increase intimacy in relationships so positive relational humor may strengthen a romantic relationship (de Koning & Weiss, 2002). Negative relational humor may increase manipulation by using humor aggressively in the relationship and as a result may weaken romantic relationships. On the other hand, instrumental relational humor may be used to avoid problematic situations and lighten tension. These three relational humor types may be presented by both the individual and their partner in the relationship. As a result, humor may simultaneously provide clues about the quality of the relationship (de Koning & Weiss, 2002; Eckstein, Junkins & McBrien, 2003).

The use of humor has a determinative role in sustaining affection in marriage and securing the connection between partners (Butzar & Kuiper, 2008). Transformation of discussions into a game in daily interactions, in addition to during conflicts, ending discussion enthusiastically and using humor appears to be necessary in terms of the continuity of the relationship (Driver & Gottman, 2004). Research investigating the correlation between marital satisfaction and the use of humor have shown that individuals using humor positively have higher marital satisfaction compared to those using humor negatively (Ammerman, 2002). Additionally, it was concluded that married individuals use humor more positively than divorced individuals (Saroglou et al., 2010). Individuals experiencing difficulty in adapting to marriage appear to have low sense of humor and use a more negative humor style (Kazarian & Martin, 2006). On the other hand, the use of negative humor appears to be very effective on the breakup of marriages (Eckstein et al., 2003). Similarly, high levels of negative communication are proposed to enhance marital stress (Gordon, Baucom, Epstein, Burnett, & Rankin, 1999).

Based on all this information and findings, this study aims to research the role of humor, which appears to be very important, in maintaining marriages and obtaining satisfaction from relationships. In line with this, the predictive role of relational humor styles of married individuals for marital satisfaction was investigated. The results of this research are important in terms of revealing the factors necessary to sustain positive communication in married life and to obtain satisfaction from marriage and will guide future research. Similarly, it is expected to contribute in terms of providing awareness for experts working in the field of marriage counseling about the humor styles used by partners when expressing feelings in the counseling process.

2. Method

2.1. Study Group

The study group in this research comprised married individuals living in Turkey. Care was taken that data obtained online were provided by married individuals with living partners. Of participants, 139 were female (61%) and 89 were male (39%). The ages of participants varied from 21-65 years (M = 34.68, SD = 9.34), while their partners' ages were 21-69 years (M = 36.04, SD = 10.08). When marriage durations are considered, they varied from 1-46 years (M = 9.34, SD = 10.37). Demographic information related to participants are shown in Table 1.

Table 1. Study group detailed information *(N = 228)*

Variable		*n*	(%)
Education level	Primary school	13	5.7
	Middle School	8	3.5
	High school	16	7.0
	Associate degree	16	7.0
	Bachelor degree	139	61.0
	Graduate	36	15.8
Perceived social economic status	Low	20	8.7
	Middle	108	47.8
	High	100	43.8
Occupational status	Working	160	70.2
	Not working	68	29.8
Kinship with his/her wife	Kindred	17	7.5
	Non-kin	211	92.5
Number of marriages	One	223	97.8
	More than one	5	2.2
Number of children	No children	85	37.3
	Single child	69	30.3
	Two children	52	22.8
	Three or more children	22	9.6
Whether he/she has received psychological support before	Psychological support received	49	21.5
	Psychological support was not received	179	78.5

2.2. Data Collection Tools

2.2.1. Marital Life Scale (MLS): The MLS, developed by Tezer (1996), comprises 10 items (e.g., 'most of my expectations from marriage were realized') in a single dimension. The MLS has 5-point Likert type scoring from 1 (definitely disagree) to 5 (definitely agree). With possible points from 10 to 50, increasing points on the MLS represent increasing general satisfaction in marital relationships. Tezer (1996) reported the test-repeat test reliability for the MLS at a three-month interval was .85 with Cronbach alpha reliability coefficient of .91.

2.2.2. Relational Humor Inventory (RHI): The RHI, developed by de Koing and Weiss (2002), comprises 34 items. The inventory measures three sub-dimensions of positive, negative and instrumental relational humor of both the self and partner. The Turkish adaptation of the scale was completed by Bacanlı, İlhan and Cihan-Güngör (2012). The Turkish form of the RHI comprises 32 items and three sub-dimensions like the original form. The researchers reported the validity and reliability of the scale.

2.3. Data Analysis

Multiple regression analysis was performed with the aim of identifying whether relational humor of married individuals predicted marital satisfaction. Before beginning hierarchic regression analysis, correlation analysis was performed to determine the relationships between variables and mean, standard deviation, skewness and kurtosis were examined. Additionally, the 10,000 bootstrapping procedure was used for regression analysis and confidence intervals were calculated.

3. Results

Firstly, the research investigated the correlations between marital satisfaction and relational humor. In line with this, Table 2 gives the correlations between variables and the descriptive statistics for the variables.

Table 2. Correlations among the variables and descriptive statistics

Variable	1	2	3	4	5	6	7
1. Marital satisfaction	-						
2. Self-positive	.54**	-					
3. Self-negative	-.22	.32**	-				
4. Self-instrumental	.16*	.49**	.52**	-			
5. Partner-positive	.50**	.69**	.10	.38**	-		
6. Partner-negative	-.31**	.02	.39**	.48**	-.09	-	
7. Partner-instrumental	.31**	.57**	.26**	.56**	.55**	.37**	-
Mean	39.67	24.21	9.74	29.63	23.42	19.32	16.51
SD	8.42	6.86	3.61	9.95	6.83	7.58	5.99
Skewness	-.79	-.38	.35	.06	-.27	.72	-.05
Kurtosis	.34	-.47	.13	-.32	-.62	.75	-.63

Note. $^*p < .05$; $^{**}p < .001$

As seen in Table 2, marital satisfaction of married individuals has a significant correlation with relational humor. Marital satisfaction displays a positive significant correlation with self-positive humor ($r = .54$, $p < .001$) and self-instrumental humor ($r = .16$, $p < .05$). However, marital satisfaction was determined to have a negative and significant correlation with self-negative humor ($r = -.22$, $p < .001$). Marital satisfaction can be said to have positive significant correlations for partner-positive humor ($r = .50$, $p < .001$) and partner-instrumental humor ($r = .31$, $p < .001$) and a negative significant correlation for partner-negative humor ($r = -.31$, $p < .001$).

After investigating correlations and determining there was no singularity between variables, regression analysis was used to check other variables. In this context, the Durbin-Watson value was investigated to confirm no collinearity between terms. The values were between 1.96 and 2.00 which abided by Field's (2016) recommendation. Additionally, the variance inflation factor (VIF) was investigated to confirm there was no multicollinearity. Values varied from 1.33 to 1.94 which abided by the conditions given by Field (2016). As a result, it was decided the data were suitable for regression analysis. The results for the multiple regression analysis are presented in Table 3.

Table 3. Multiple regression analysis results for predicting marriage satisfaction

Variable	Unstandardized		Bootstrapping BCa 95% CI		Standardized		R^2	$F_{(2-224)}$
	B	**SE B**	**Lower limit**	**Upper limit**	**β**	**t**		
(Constant)	26.58	1.87	22.90	30.28	-	14.20		
Self-positive	.77	.08	.63	.93	.63**	10.09	.34	38.43**
Self-negative	-.45	.15	-.75	-.16	-.20**	-3.05		
Self-instrumental	-.04	.06	-.16	.07	-.05	-.72		
(Constant)	32.33	2.07	28.26	36.40	-	15.66		
Partner-positive	.39	.09	.22	.56	.32**	4.55	.36	42.56**
Partner-negative	-.45	.07	-.56	-.29	-.38**	-6.17		
Partner-instrumental	.39	.11	.19	.60	.30**	3.75		

Note. $^{**}p < .001$

As seen in Table 3, the model where marital satisfaction was predicted by relational humor use by the self ($F_{(2-224)} = 38.43$, $p < 001$) and relational humor use by their partner ($F_{(2-224)} = 42.56$, $p < 001$) was significant. When dealt with in detail, self-positive humor ($β = .63$, $p < .001$) and self-negative humor ($β = -.20$, $p < .001$) significantly predicted marital satisfaction, while self-instrumental humor ($β = -.05$, $p > .05$) did not significantly predict

marital satisfaction. These two variables with significant predictive value explained 34% of the total marital satisfaction (R^2 = .34).

The marital satisfaction of married individuals was significantly predicted by partner-positive humor (β = .32, $p < .001$), partner-negative humor (β = -.38, $p < .001$) and partner-instrumental humor (β = .30, $p < .001$). Relational humor use by their partner was understood to explain 36% of the total variance (R^2 = .36) in marital satisfaction.

4. Discussion and Conclusion

This study investigated the predictive role of relational humor for marital satisfaction. In line with this, the six sub-dimensions of relational humor for self and partner (positive-instrumental-negative humor) were tested for whether they predict marital satisfaction or not. The results of the analysis observed that positive humor use by self and negative humor use by self significantly predicted marital satisfaction, while instrumental humor use by self did not significantly predict marital satisfaction. On the other hand, positive, negative and instrumental humor use by partners were identified to significantly predict marital satisfaction. These findings are discussed below in light of the literature.

Positive humor appears to be a humor style ensuring partners become closer and feel appreciated in relationships (de Koning & Weiss, 2002). At this same time is has aspects that strengthen connections between partners (Ziv, 1988), and ensure a healthy communication style increasing warmth between partners to strengthen connections (Bippus, 2000). The appropriate use of humor in potential conflict situations, especially, is known to be a feature of couples obtaining high levels of relationship satisfaction (Driver & Gottman, 2004). Humor is a part of sustaining relationships in couples with high relationship satisfaction and they are known to frequently use it to develop affection (Haas & Stafford, 2005). Additionally, previous research has indicated similar results (e.g., de Koning & Weiss, 2002; Ünal & Akgün, 2019). Research has stated that positive humor has the potential to reduce conflict (Bippus, 2003) and contribute constructively to relationships (Haas & Stafford, 2005). Additionally, Saroglou et al. (2010) revealed that individuals using positive humor themselves gain high satisfaction in terms of marital satisfaction for both themselves and their partners. In this context, the determination that positive humor use by themselves and partners positively predicts marital satisfaction in the research may be said to be consistent with the relevant literature and logical.

Negative humor is encountered as a humor style used to represent aggressiveness or to manipulate the opposite side (de Koning & Weiss, 2002). Humor may be used in negative form to provoke conflict during discussions between married couples and to not make hostility clear (Alberts, 1990). From this aspect, humor may cause distance in relationships (Jacobs, 1985). Especially when humor is used to demean the opposite side, the two partners cannot perceive this situation as constructive (Driver & Gottman, 2004). The use of humor in this way causes weakening of relationships. Similarly, a person's perception of the use of negative humor by their partner appears to be associated with low marital satisfaction (de Koning & Weiss, 2002; Jacobs, 1985). As a result, it is plausible that negative humor use by the individual and their partner negatively predicts marital satisfaction as revealed in this research. Additionally, similar results are observed in the relevant literature. Research has revealed that negative humor in romantic relationships is a factor which may reduce marital satisfaction (e.g., Johari, 2004). Additionally, according to the results of a meta-analysis by Hall (2017) negative relational humor negatively predicted marital satisfaction, as in the findings of this research.

Instrumental humor represents the extent to which humor is used to prevent tension in a person's relationships and in attempts to repair negative feelings (de Koning & Weiss, 2002). Instrumental relational humor is the use of humorous messages or behavior to reach a communication target specific to romantic relationships, like reducing stress or solving problems (Hall, 2013). Humor used only in this fashion, in other words narrowing the use of humor as a tool, is stated not to positively affect relationships in the literature (Hall, 2017). The use of humor instrumentally may be an indicator of directing conflict, expressing hidden thoughts and the need to apologize in relationships (Campbell, Martin, & Ward, 2008; de Koning & Weiss, 2002) and this are more common in relationships with less satisfaction. Additionally, this style of humor may be characterized as avoiding humor (de Koning & Weiss, 2002). Generally, it appears that a feature of this type of humor is to change the focus of conversation during conflict (Butzer & Kuiper, 2008) and to completely avoid talking (Alberts, 1990). In line with this, it was revealed not to affect relationship satisfaction in the scope of a meta-analysis (Hall, 2017). Within the scope of this research, consistent with the literature, instrumental

humor used by the self negatively predicted marital satisfaction. However, also within the research, the use of instrumental research by the partner appeared to positively predict marital satisfaction. This situation is thought to be due to instrumental humor having the trait of creating a positive moment (de Koning & Weiss, 2002) by distracting negative feelings and reducing tension during conflict discussions.

It is necessary to consider limitations when assessing the findings obtained in this study. Firstly, there is a limitation due to the cross-sectional design of the study. At this point caution is recommended when dealing with causative relationships between the study variables. Additionally, there are limitations due to the nature of the scale tools used. Concepts should only be assessed within the scope of these self-report scale tools and future studies should include scale tools based on different techniques.

With all these limitations, it appears significant findings were obtained about how married individuals may experience more quality in their marital lives. It may be stated that married individuals should use positive relational humor to strengthen their marital satisfaction and reduce the use of negative relational humor. Additionally, instrumental humor use by partners was determined to be an element that may increase marital satisfaction.

References

Alberts, J. K. (1990). The use of humor in managing couples' conflict interactions. In D. D. Cahn (Ed.), *Intimates in Conflict: A Communication Perspective* (pp. 105-120). Routledge. doi: 10.4324/9780203062852

Ammerman, M. C. (2002). *Gender differences in the use of humor in intimate relationships and marital adjustment.* Unpublished Doctoral Dissertation. Peperdine University, USA.

Bacanlı, H., İlhan, T., & Güngör, H. C. (2012). İlişkisel Mizah Envanterinin Türkçe'ye uyarlanması: Geçerlik ve güvenirlik çalışması. *Türk Psikolojik Danışma ve Rehberlik Dergisi*, *4*(37), 11-23.

Baucom, D. H., Shoham, V., Mueser, K. T., Daiuto, A. D., & Stickle, T. R. (1998). Empirically supported couple and family interventions for marital distress and adult mental health problems. *Journal of Consulting and Clinical Psychology*, *66*(1), 53-88. doi: 10.1037/0022-006X.66.1.53

Bippus, A. M. (2000). Humor usage in comforting episodes: Factors predicting outcomes. *Western Journal of Communication*, *64*(4), 359-384. doi: 10.1080/10570310009374682

Bressler, E. R., & Balshine, S. (2006). The influence of humor on desirability. *Evolution and Human Behavior*, *27*(1), 29-39. doi: 10.1016/j.evolhumbehav.2005.06.002

Butzer, B., & Kuiper, N. A. (2008). Humor use in romantic relationships: The effects of relationship satisfaction and pleasant versus conflict situations. *The Journal of Psychology*, *142*(3), 245-260. doi: 10.3200/JRLP.142.3.245-260

Campbell, L., Martin, R. A., & Ward, J. R. (2008). An observational study of humor use while resolving conflict in dating couples. *Personal Relationships*, *15*(1), 41-55. doi: 10.1111/j.1475-6811.2007.00183.x

Curun, F. (2006). Yüklemeler, iletişim çatışmaları, cinsiyet ve cinsiyet rolü yönelimi ile evlilik doyumu arasındaki ilişki. *Yayınlanmamış Doktora Tezi, Ankara Üniversitesi.*

de Koning, E., & Weiss, R. L. (2002). The relational humor inventory: functions of humor in close relationships. *The American Journal of Family Therapy, 30*(1), 1-18. doi: 10.1080/019261802753455615

Dildar, S., Sitwat, A., & Yasin, S. (2013). Intimate enemies: Marital conflicts and conflict resolution styles in dissatisfied married couples. *Middle-East Journal of Scientific Research*, *15*(10), 1433-1439. Doi: 10.5829/idosi.mejsr.2013.15.10.11581

Driver, J. L., & Gottman, J. M. (2004). Daily marital interactions and positive affect during marital conflict among newlywed couples. *Family Process*, *43*(3), 301-314. doi: 10.1111/j.1545-5300.2004.00024.x

Eckstein, D., Junkins, E., & McBrien, R. (2003). Ha, ha, ha: Improving couple and family healthy humor (healthy humor quotient). *The Family Journal*, *11*(3), 301-305. doi: 10.1177/1066480703252869

Field, A. (2016). *Discovering statistics using IBM SPSS Statistics*. London: Sage.

Gordon, K. C., Baucom, D. H., Epstein, N., Burnett, C. K., & Rankin, L. A. (1999). The interaction between marital standards and communication patterns: How does it contribute to marital adjustment? *Journal of Marital and Family Therapy, 25*, 211-223. doi: 10.1111/j.1752-0606.1999.tb01123.x

Haas, S. M., & Stafford, L. (2005). Maintenance behaviors in same-sex and marital relationships: A matched sample comparison. *The Journal of Family Communication*, *5*(1), 43-60. doi: 10.1207/s15327698jfc0501_3

Hahlweg, K., Markman, H. J., Thurmaier, F., Engl, J., & Eckert, V. (1998). Prevention of marital distress: Results of a German prospective longitudinal study. *Journal of Family Psychology*, *12*(4), 543-556. doi: 10.1037/0893-3200.12.4.543

Hall, J. A. (2013). Humor in long-term romantic relationships: The association of general humor styles and relationship-specific functions with relationship satisfaction. *Western Journal of Communication*, *77*(3), 272-292. doi: 10.1080/10570314.2012.757796

Hall, J. A. (2017). Humor in romantic relationships: A meta-analysis. *Personal Relationships*, *24*(2), 306-322. doi: 10.1111/pere.12183

Honeycutt, J. M., & Brown, R. (1998). Did you hear the one about?: Typological and spousal differences in the planning of jokes and sense of humor in marriage. *Communication Quarterly*, *46*(3), 342-352. doi: 10.1080/01463379809370106

Jacobs, E. C. (1985). *The functions of humor in marital adjustment.* Doctoral dissertation, New School for Social Research.

Johari, M. (2004). *Humour and marital quality: Is humour style associated with marital success?.* Unpublished Master Dissertation. Wilfrid Laurier University, Canada.

Kazarian, S. S., & Martin, R. A. (2006). Humor styles, culture-related personality, well-being, and family adjustment among Armenians in Lebanon. *Humor*, 9(4): 405-423. doi: 10.1515/HUMOR.2006.020

Kurdek, L. A. (2005). Gender and marital satisfaction early in marriage: A growth curve approach. *Journal of Marriage and Family*, *67*(1), 68-84. doi: 10.1111/j.0022-2445.2005.00006.x

Laub, J. H., Nagin, D. S., & Sampson, R. J. (1998). Trajectories of change in criminal offending: Good marriages and the desistance process. *American Sociological Review*, 225-238. doi: 10.2307/2657324

Lee, J. E., Zarit, S. H., Rovine, M. J., Birditt, K. S., & Fingerman, K. L. (2012). Middle-aged couples' exchanges of support with aging parents: patterns and association with marital satisfaction. *Gerontology*, *58*(1), 88-96. doi: 10.1159/000324512

Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality*, *37*(1), 48-75. doi: 10.1016/S0092-6566(02)00534-2

Rollins, B. C., & Feldman, H. (1970). Marital satisfaction over the family life cycle. *Journal of Marriage and the Family*, *32*(1), 20-28. doi: 10.2307/349967

Saroglou, V., Lacour, C., & Demeure, M. E. (2010). Bad humor, bad marriage: Humor styles in divorced and married couples. *Europe's Journal of Psychology*, *6*(3), 94-121. doi: 10.5964/ejop.v6i3.210

Stack, S., & Eshleman, J. R. (1998). Marital status and happiness: A 17-nation study. *Journal of Marriage and the Family*, *60*(2), 527-536. doi: 10.2307/353867

Tezer, E. (2016). Evlilik ilişkisinden sağlanan doyum: Evlilik yaşamı ölçeği. *Türk Psikolojik Danışma ve Rehberlik Dergisi*, *2*(7), 1-7.

Ünal, Ö. ve Akgün, S. (2019). Yakın ilişkilerde mizah tarzları, evlilik uyumu ve evlilik doyumu ilişkisi. *Nesne, 7*(15), 184-200.

Velidedeoğlu Kavuncu, N. (2011). *Kadın Erkek İllişkilerinde Sorunlar ve Çözümleri.* Ankara: Efil Yayınevi.

Waldinger, R. J., Schulz, M. S., Hauser, S. T., Allen, J. P., & Crowell, J. A. (2004). Reading others' emotions: The role of intuitive judgments in predicting marital satisfaction, quality, and stability. *Journal of Family Psychology*, *18*(1), 58-71. doi: 10.1037/0893-3200.18.1.58

Ziv, A. (1988). Teaching and learning with humor: Experiment and replication. *The Journal of Experimental Education*, *57*(1), 4-15. doi: 10.1080/00220973.1988.10806492

Investigation of the Emotional Intelligence Levels of University Students Working Voluntarily in Special Olympics

Okan Burçak Çelik[1]

[1]*Gazi University, Turkey*

ARTICLE INFO

ABSTRACT

The aim of this study was to investigate of the emotional intelligence levels of university students working voluntarily in Special Olympics. The research was designed with a descriptive survey model, one of the quantitative research methods. A total of 256 university students participated in the study. 135 students voluntarily worked in Special Olympic. 121 students didn't serve in Special Olympic. The emotional Intelligence Scale developed by Chan (2004) and used as Turkish by Aslan and Özata (2008) was employed as a data collection tool in the study. It was determined that the research data showed normal distribution. Then, it was decided that the parametric test was used. Independent samples T-test was preferred to compare the emotional intelligence levels of working voluntarily and non-working students in Special Olympics. Likewise, a t-test was used to investigate the emotional intelligence of volunteers according to gender. As a result of the analysis, it was determined that the scores of working voluntarily students were statistically higher in the emotional appraisal, positive regulation, empathic sensitivity, positive utilization sub-dimensions and general emotional intelligence scores than the non-working students in the organization. But, according to the gender variable, there was no statistically significant difference between the participants in both sub-dimensions and the whole scale. According to these results, it can be said that emotional intelligence levels of individuals who serve voluntarily in organizations for disabled people, like Special Olympics, were higher. Moreover, it can be deduced that there is no difference according to gender in the emotional intelligence levels of the participants working voluntarily in Special Olympics.

Keywords:
Emotional Intelligence, Special Olympics, Volunteers

1. Introduction

Emotional intelligence is defined as a subset of social intelligence that includes the ability to observe one's own and others' feelings and emotions, to distinguish between them, and to use this information to direct someone else's thoughts and actions (Salovey, Brackett and Mayer, 2004). In other definition, emotional intelligence is expressed as the potential to be aware of and use own emotions in communication with oneself and others, also manage and motivate oneself and others by understanding emotions (Wraham, 2009).

As can be understood from the definition of emotional intelligence, this concept is closely related to the concepts of empathy and communication. In addition, individuals with high emotional intelligence are expected to have empathy (Yeniçeri et al., 2015) and communication skills (Lee and Gu, 2013).

Having empathy and communication skills is an important characteristic of a person. It can be accepted as some of the prerequisites to get a healthy social relationship. But empathy and communication with some

individuals may be more difficult than usual. Considering the life of people with disabilities, this can be considered normal. In particular, it may be necessary for a great effort to communicate with people with intellectual disabilities. However, it is known that sport plays an important role in preventing such difficulties and contributes to the development of these individuals (Çevik and Kabasakal, 2013; İlhan, 2008; İlhan, 2009; Grandisson, Tétreault and Freeman, 2012; Güngör, Yılmaz and İlhan, 2019).

One of the largest non-governmental organizations in the world, the Special Olympics serves for this purpose. The Special Olympics aims to huddle other people together and individuals with special educational needs, to provide regular training and competition opportunities in various sports activities via sports, to improve their physical condition, motor skills and abilities, to show courage, to enjoy the happiness of their success, to strengthen their relations with the society through various activities other than sports and to provide their participation in social life. Many people, institutions and organizations also contribute to this process (''Special Olympics Turkey'', 2019).

In the games, individuals who can communicate with mentally disabled individuals by guiding them and showing empathy, tolerance, and patience against their behaviour serve voluntarily. These people are called ''volunteers''. Volunteers are seen as one of the key stakeholders of the Special Olympics. It is thought that it is important to have some social skills to working as a volunteer in the games. In this respect, the aim of this study was to investigate of the emotional intelligence levels of university students working voluntarily in Special Olympics TURKEY.

Hypotheses

H_0: There is no difference between the emotional intelligence levels of male and female participants working in the Special Olympics.

H_1: There is a difference between the emotional intelligence levels of the participants working in the Special Olympics and participants not working.

2. Method

In this section, information was given about the research model, participants, data collection tool and data analysis.

2.1. Research Model

The survey model was used in this research. The survey model is a research model that aims to describe a situation that exists in the past or present (Karasar, 2009).

2.2. Participants

The participants of the study are 135 Gazi University students working voluntarily at the Special Olympics Central Anatolia Region Games and 121 students not working in the games. A total of 256 university students participated in the study. The participants of the study were selected by convenience sampling method. In the convenience sampling method, the researcher selects the sample group by starting from the most accessible responders until reached required number, or works on samples or situations which are the most accessible and provide maximum saving (Büyüköztürk et al., 2013). Participants answered the emotional intelligence scale on a volunteer basis.

2.3. Data Collection Tool

In the study, Emotional Intelligence Scale, which was originally developed by Schutte as a 33-item version and then used a 12-item version by Chan (2004) and adapted to Turkish by Aslan and Özata (2008) was used as a data collection tool. The Emotional Intelligence Scale has four sub-dimensions. These sub-dimensions are emotional appraisal, positive regulation, empathic sensitivity, and positive utilization. There are three items in each sub-dimension. The scale is a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). In the study of Aslan and Özata (2008), reliability values (Cronbach Alpha) were calculated as .87, .83, .88 and

.85, respectively. For the present study, Cronbach alpha was calculated for sub-dimensions as .82, .83, .86, and .80 respectively. In addition, Cronbach alpha was calculated for the whole scale as .87.

2.4. Data Analysis

Normality distribution was analyzed by the Kolmogorov-Smirnov test. It was found that the significance value of the Kolmogorov-Smirnov test was .007. For this reason, Skewness and Kurtosis values were examined and it was determined that these values were between -1.5 and +1.5. It states that the distribution of data was normal (Tabachnick & Fidell, 2013). Therefore, independent samples t-test was preferred in a paired comparison.

3. Results

In this section, the findings obtained from the analysis of the research data are presented in the tables and interpreted. Findings showing the emotional intelligence scores of the participants working voluntarily in the Special Olympics and the participants not working in the games are given in Table 1, and the findings showing the emotional intelligence scores of the participants working voluntarily in the games according to gender were given in Table 2.

Table 1. Participants' emotional intelligence scale scores

Variables	University Students	N	$\overline{\text{X}}$	SD	t	p
Emotional appraisal	Working Voluntarily	135	12,80	1,61	4,91	,001*
	Non-working	121	11,64	2,13		
Empathic sensitivity	Working Voluntarily	135	12,29	1,86	3,95	,001
	Non-working	121	11,36	1,90		
Positive regulation	Working Voluntarily	135	13,10	1,51	6,28	,001*
	Non-working	121	11,58	2,30		
Positive utilization	Working Voluntarily	135	12,99	1,45	4,88	,001*
	Non-working	121	12,04	1,63		
Emotional Intelligence Scale	Working Voluntarily	135	51,19	5,27	6,27	,001*
	Non-working	121	46,64	6,32		

*$p < 0.05$; $\overline{\text{X}}$: Mean; SD: Standard Deviation

When table 1 was examined, in the sub-dimension of emotional appraisal, it was seen that the mean score of the working participants was 12,80±1,61, the mean score of the non-working participants was 11,64±2,13. In the sub-dimension of empathic sensitivity, it was understood that the mean score of the working participants was 12,29±1,86 and the mean score of the non-working participants was 11,36±1,90. In the positive regulation sub-dimension, it was drawn attention that the mean score of the working participants was 13,10±1,51 and the mean score of non-working participants was 11,58±2,30. In the sub-dimension of positive utilization, it was seen that the mean score of the working participants was 12,99±1,45 and the mean score of the non-working participants was 12,04±1,63. In general emotional intelligence score, it was understood that the mean score of the working participants was 51,19±5,27 and the mean score of the non-working participants was 46,64±6,32. It was seen that the participants working voluntarily in the Special Olympics had a statistically significant higher score than the non-working participants in the scores obtained from both the sub-dimensions and the whole scale. According to these findings, it can be said that university students working voluntarily in Special Olympics have higher emotional intelligence level than non-working university students.

Table 2. Emotional intelligence scores of participants working voluntarily in the Special Olympics according to gender

Variables	Working Voluntarily	N	X̄	SD	t	p
Emotional appraisal	Female	88	12,86	1,63	,232	,534
	Male	47	12,68	1,60		
Empathic sensitivity	Female	88	12,37	1,83	,046	,504
	Male	47	12,14	1,93		
Positive regulation	Female	88	13,14	1,60	,890	,645
	Male	47	13,02	1,32		
Positive utilization	Female	88	13,01	1,58	2,492	,838
	Male	47	12,95	1,17		
Emotional Intelligence Scale	Female	88	51,39	5,65	,843	,538
	Male	47	50,80	4,49		

X̄: Mean; SD: Standard Deviation

When table 2 was examined, in the emotional appraisal sub-dimension, it was understood that the mean score of females working voluntarily in the Special Olympics was 12,86±1,63 and the mean score of males working voluntarily in the Special Olympics was 12,68±1,60. In the empathic sensitivity sub-dimension, it was seen that the mean score of females working voluntarily in the Special Olympics was 12,37±1,83 and the mean score of the males working voluntarily was 12,14±1,93. In the sub-dimension of positive regulation, it was drawn attention that the mean score of females working voluntarily in Special Olympics was 13,14±1,60 and the mean score of the males working voluntarily was 13,02±1,32. In the positive utilization sub-dimension, it was understood that the mean score of the females working voluntarily in Special Olympics was 13,01±1,58 and the mean score of the males working voluntarily was 12,95±1,17. It was seen that according to the gender variable, there was no statistically significant difference between the participants in both sub-dimensions and the whole scale. According to these findings, it can be deduced that there is no difference in the emotional intelligence levels of the participants working voluntarily in the Special Olympics by gender.

4. Discussion and Conclusion

As a result of the study, it was determined that the emotional intelligence levels of the university students working voluntarily in the Special Olympics were higher than the students not working in the games. In their research, Gerits et al. (2005) examined the emotional intelligence of nurses who care for people with severe behavioral problems and stated that female nurses have high emotional intelligence. In addition, Gerits, Derksen, and Verbruggen (2004) stated that nurses working with extremely aggressive individuals with mental retardation have emotional intelligence levels better than average. In this respect, it is thought that the results of other studies support the current research results. It is indicated in the literature that emotional intelligence level of people who spend time with people with intellectual disabilities and care for them should be high, if that is not high, they should be educated so that they might have higher emotional intelligence level. Zijlmans et al. (2011) developed an educational program aiming to develop emotional intelligence and applied this program to staff working with mentally disabled individuals and determined that the emotional intelligence of the experimental group changed significantly compared to the control group.

According to another result of the study, no difference was found according to gender between the emotional intelligence levels of the participants working voluntarily in the Special Olympics. When the researches in the literature were examined, it was seen that in the research of Mandell and Pherwani (2003), female participants have higher emotional intelligence score than male participants. In the research of Katyal and Awasthi (2005), have stated that females have higher emotional intelligence than males. Similarly, in the research of Extremera, Fernández-Berrocal, and Salovey (2006), have found that females had higher emotional intelligence than males. Likewise, it was found that females had higher emotional intelligence than males in the research of Cabello et al. (2016). In the research of Ahmad, Bangash, and Khan (2009), have reported that male participants had higher emotional intelligence scores compared to female participants. The current research results differ from other research results. This may be due to cultural differences in the countries where the researches were conducted.

As a result of this study, it was concluded that the emotional intelligence levels of the university students working voluntarily in the Special Olympics were higher than the students not working in the games and in addition, it was found that there was no difference between students working voluntarily in the Special Olympics by gender. It is thought that emotional intelligence is an important skill for an individual. For this reason, it is suggested that people should be encouraged to work in organizations such as Special Olympics. Moreover, it is thought that the study will contribute to the literature. But this study was limited with variables of working in the Special Olympics and their gender as a demographic variable. More comprehensive researches can be conducted with more variables.

References

Ahmad, S., Bangash, H. & Khan, S. A. (2009). Emotional intelligence and gender differences. *Sarhad J. Agric, 25*(1), 127-130. Retrieved from http://www.aup.edu.pk/SJA-search.php?volume_issue=25%7C1%7C2009&debug=false

Aslan, Ş. & Özata, M. (2008). Duygusal zeka ve tükenmişlik arasındaki ilişkilerin araştırılması: Sağlık çalışanları örneği. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 0*(30), 77-97. Retrieved from https://dergipark.org.tr/en/pub/erciyesiibd/issue/5887/77865

Büyüköztürk, Ş., Çakmak, E., Akgün, Ö., Karadeniz, Ş. & Demirel, F. (2013). *Bilimsel araştırma yöntemleri.* Ankara: Pegem.

Cabello, R., Sorrel, M. A., Fernández-Pinto, I., Extremera, N., & Fernández-Berrocal, P. (2016). Age and gender differences in ability emotional intelligence in adults: A cross-sectional study. *Developmental Psychology, 52*(9), 1486–1492. doi:10.1037/dev0000191

Chan, D. W. (2004). Perceived emotional intelligence and self-efficacy among Chinese secondary school teachers in Hong Kong. *Personality and Individual Differences, 36*(8), 1781-1795. doi: 10.1016/j.paid.2003.07.007

Çevik, O. & Kabasakal, K. (2013). Spor etkinliklerinin, engelli bireylerin toplumsal uyumuna ve sporla sosyalleşmelerine etkisinin incelenmesi. *Uluslararası Sosyal ve Ekonomik Bilimler Dergisi / International Journal of Social and Economic Sciences, 3*(2), 74-83. Retrieved from http://www.ijses.org/index.php/ijses/article/view/105

Extremera, N., Fernández-Berrocal, P. & Salovey, P. (2006). Spanish version of the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). Version 2.0: reliabilities, age and gender differences. *Psicothema, 18*, 42-48. Retrieved from http://www.psicothema.com/english/psicothema.asp?id=3274

Gerits, L., Derksen, J.J. & Verbruggen, A.B. (2004). Emotional intelligence and adaptive success of nurses caring for people with mental retardation and severe behavior problems. *Mental retardation, 42*(2), 106-121. doi: 10.1352/0047-6765(2004)42<106:EIAASO>2.0.CO;2

Gerits, L., Derksen, J.J., Verbruggen, A.B. & Katzko, M. (2005). Emotional intelligence profiles of nurses caring for people with severe behaviour problems. *Personality and individual differences, 38*(1), 33-43. doi: 10.1016/j.paid.2004.03.019

Grandisson, M., Tétreault, S. & Freeman, A.R. (2012). Enabling integration in sports for adolescents with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 25*(3), 217-230. doi: 10.1111/j.1468-3148.2011.00658.x

Güngör, N. B., Yılmaz, A., & İlhan, E. L. (2019). Gains of a special athlete in the context of quality of life: A case study in line with parent opinions. *Ankara University Faculty of Educational Sciences Journal of Special Education, 20*(3), 421-443. doi: 10.21565/ozelegitimdergisi.488740

İlhan, L. (2008). Eğitilebilir zihinsel engelli çocuklarda beden eğitimi ve sporun sosyalleşme düzeylerine etkisi. *Kastamonu Eğitim Dergisi, 16*(1), 315-324. Retrieved from https://dergipark.org.tr/en/pub/kefdergi/issue/49101/626554

İlhan, L. (2009). Zihinsel engelli çocuğa sahip anne-babaların çocuklarının özel eğitimleri sürecinde, beden eğitimi ve spor etkinliklerine yaklaşımlarının değerlendirilmesi. *Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi, 3*(1), 38-48. Retrieved from http://dergi.nigde.edu.tr/index.php/besyodergi/article/view/88

Karasar, N. (2009). *Bilimsel araştırma yöntemleri.* Ankara: Nobel

Katyal, S., & Awasthi, E. (2005). Gender differences in emotional intelligence among adolescents of Chandigarh. *Journal of Human Ecology*, *17*(2), 153-155. doi: 10.1080/09709274.2005.11905771

Lee, O.S. & Gu, M.O. (2013). The relationship between emotional intelligence and communication skill, clinical competence & clinical practice stress in nursing students. *Journal of the Korea Academia-Industrial cooperation Society, 14*(6), 2749-2759. doi:10.5762/KAIS.2013.14.6.2749

Mandell, B. & Pherwani, S. (2003). Relationship between emotional intelligence and transformational leadership style: A gender comparison. *Journal of Business and Psychology, 17*(3), 387-404. doi: 10.1023/A:1022816409059

Özel Olimpiyatlar Türkiye (2019). Retrieved from http://www.soturkiye.org.tr/hakkimizda/biz-kimiz

Salovey, P., Brackett, M.A. & Mayer, J.D. (Eds.). (2004). *Emotional Intelligence: Key Readings on the Mayer and Salovey Model*. New York: Dude.

Schutte, N.S., Malouff, J.M., Hall, L.E., Haggerty, D.J., Cooper, J.T., Golden, C.J. & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*, 167–177. doi: 10.1016/S0191-8869(98)00001-4

Tabachnick, B.G. & Fidell, L.S. (2013) *Using multivariate statistics*. Boston: Pearson.

Wraham, J. (2009). *Emotional Intelligence Journey to The Centre of Yourself*. UK: O Books.

Yeniçeri, E.N., Yıldız, E., Seydaoğulları, E., Güleç, S., Sakallı-Çetin, E. & Baldemir, E. (2015). Muğla Sıtkı Koçman Üniversitesi Tıp Fakültesi öğrencilerinde duygusal zeka ve empati ilişkisi. *Turkish Journal of Family Practice/Türkiye Aile Hekimligi Dergisi, 19*(2), 99-107. Retrieved from http://www.turkailehekderg.org/makaleler/arastirma/mugla-sitki-kocman-universitesi-tip-fakultesi-ogrencilerinde-duygusal-zeka-ve-empati-iliskisi/

Zijlmans, L.J.M., Embregts, P.J.C.M., Gerits,L., Bosman, A.M.T. & Derksen, J.J.L. (2011). Training emotional intelligence related to treatment skills of staff working with clients with intellectual disabilities and challenging behaviour. *Journal of Intellectual Disability Research, 55*(2), 219-230. doi: 10.1111/j.1365-2788.2010.01367.x

Traumatic Experiences and Collectivist Coping Styles of University Students in Turkey

Fatma Altun[1]

[1]Department of Educational Sciences, Trabzon University, Trabzon, Turkey

ARTICLE INFO

ABSTRACT

Several taxonomies have been suggested to classsify coping styles, yet collectivist and individualist are the two fundamental types currently being adopted in research on coping styles. In this respect, the main purpose of this study was to examine the collectivist coping styles of university students who have traumatic life experiences. The sample of the study consisted of 508 (Female=333, Male=161, Unspecified=14) undergraduate students in Turkey. The findings of the study revealed that the most frequently experienced traumatic life events were "death/illness of a loved one", "breakup with significant others", "unwanted sexual activity/coercion/sexual assault" and "academic pressure/suspension of school", respectively. One striking finding of the study was that 65.6% of the participants experienced only one traumatic event, 16.1% had two incidents, 10.6% had three and 7.7% had four or more traumatic events. Another noteworthy finding of the the study revealed that "Family Support" and "Religion and Spirituality" styles were referred with the lowest frequency in traumatic events of sexual content; however, these two styles were highly preferred and effective in traumatic events such as natural disaster, death of a loved one, and personal illness. It was further found that women experienced significantly more traumatic events involving sexual and physical violence, whereas men experienced major accident, natural disaster, or witness to an injury of another person or physical violence. It was found that women who had traumatic experience used "Religion and Spirituality" dimension significantly more than men. The results revealed that collectivist coping styles are widely used among Turkish university students and that the preferred coping style differs depending on gender and the traumatic situation.

Keywords:
collectivist coping, traumatic experience, university students

1. Introduction

Conventional scholarly wisdom has it that trauma experiences are difficult to adapt, unexpected, sudden and abnormal events which distort the individual's frame of reference, psychological needs and related schemas (McCann & Pearlman, 2015). War, rape, natural disasters, accidents, sudden death of a loved one, kidnapping or taking hostages can be suggested as examples of traumatic events (Morrison, 2014). Moreover, even if the person may not have experienced traumatic events personally, it is well-documented that even to witness such events, to intervene in the work place or learn that a relative was exposed to is enough to cause traumatic effect on the person (APA, 2014).

There is ample evidence that many people have been exposed to or witnessed at least one traumatic event throughout their life (Atwoli et al, 2013; Goldstein et al., 2016; Kilpatrick, Resnick, Milanak, Miller & Keyes, 2013). The incidence of traumatic events has also been found to be quite high in studies conducted with university students (Khan et al., 2016; Weiss et al., 2018). In a study conducted by Cusack et al. (2016) with 2310 university freshmen, it was found that 70% of the students had at least one traumatic experience. In line with this, studies have shown that the pervasiveness vary with respect to gender. Current literature abounds

with concrete evidence that women are exposed to more traumatic events than men and they are affected worse (Lassemo, Sandanger, Nygard & Sorgaard, 2017; Olaya et al., 2015; Overstreet et al., 2016). Furthermore, the type of traumatic event may also vary by gender (Maercker, Hecker, Augsburger & Kliem, 2018). Taken together, it would be fair to suggest that gender and gender roles are important in the investigation of traumatic events.

Traumatic events are known to be among the important risk factors for individuals' mental health (Frounfelker et al., 2018; Swartzman, Booth, Munro & Sani, 2017). Related literature reveals that individuals with trauma experience have higher rates of depression and post-traumatic stress disorder symptoms than individuals with no trauma experience (Dunn, Nishimi, Powers & Bradley, 2017; Fullerton, Ursano & Wang, 2004;). From a different perspective, recent studies indicate that trauma has positive effects in the course of human life which is also called as maturation (Bagheri et al., 2018; Jin, Xu, Liu & Liu, 2014). Furthermore, the coping styles preferred by the individuals are considered among the important factors that affect the results of the traumatic event (Gul & Karanci, 2017; Mattson, James & Engdahl, 2018; Sattler, Boyd & Kirsch, 2014).

Another major concern merit to highlight is the notion of culture. A growing body of evidence suggests that the effectiveness of coping styles might differ depending on cultural elements (Lazarus, 2000). In this regard, the classification of cultural orientation is generally considered within individualism and collectivism framework (Kağıtçıbaşı, 2007). Directing the situation outright, opposing the others to protect their rights and expressing their opinions directly can be listed among the preferred coping styles in in individualist societies (Hofstede, Hofstede & Minkov, 2010; Triandis, 2001). However, since compliance with others and compliance with the social situation is considered important in collectivist societies, the coping style that an individual will use may also require him to make changes in himself rather than the situation. In this regard, coping styles which are considered as ineffective in western culture can serve the psychological well-being of an individual in collectivist cultures (Cross, 1995). In the same vein, research has clearly demonstrated that coping styles used in collectivist cultures are affected by variables such as family support, respect for ancestors and family elders, obedience to authority, patience-tolerance, social activity and fatalism (Heppner et al., 2006; Yeh, Arora & Wu, 2006).

The past few decades have witnessed a tremendous growth in research efforts aimed at depicting the coping styles used by individuals who have been exposed or witnessed traumatic events. In some of these studies, problem-oriented coping styles and post-traumatic psychological well-being have been associated disregarding the cultural factors (Gil, 2005; Khamis, 2015). The results of recent research on collective societies indicate that religious coping (Freh, 2016; Karabulutlu, Yaralı & Karaman, 2017; Molsa et al., 2017) and social support (Bryant-Davis, Ullman, Tsong ve Gobin, 2011; Dai et al., 2016) are important protective factors for mental health. To the best of researchers' knowledge, no published reports have documented the relationship between the coping styles used in collectivist societies and the type of traumatic event experienced. The aim of this study was to examine the relationship between the types of traumatic experiences and preferred collective coping styles as well as gender. In addition, the study also probed into the prevalence of traumatic events experienced by the research group as well as whether they had professional help or not.

2. Method

2. 1. Participants

A total of 508 university students with traumatic experiences participated in this study. Of the participants, 333 (65.6%) were female and 161 (31.7%) male while 14 (%2.7) did not state gender. Most of the group had lower (n= 250, 49.2%) socio-economic income level, 101 (19.9%) had moderate and 141 (27.8%) had high socio-economic income level. The mean age of the group was 21.94 (SD = 2.50). The majority of the participants' mothers (n=304, %59.8) and fathers (n=192, %37.8) were primary school graduates, while the rest were middle school graduates ($n_{mothers}$= 90, 17,7%, $n_{fathers}$ = 112, 22%), high school graduates ($n_{mothers}$= 72, 14,2%, $n_{fathers}$ = 134, 26.4%) and university gradutaes ($n_{mothers}$= 26, 5,1%, $n_{fathers}$ = 62, 12,2%). The descriptive statistics for the types of trauma experienced by the research group and their help status are summarized in Table 1.

Table 1. Descriptive statistics for traumatic Events of University Students

Variables	n	%
Type of Traumatic Event		
Unwanted sexual activity, or sexual coercion, harm or sexual assault	49	9.6
Major accident	31	6.1
Natural disaster (e.g., earthquake)	33	6.5
Death or illness of a loved one	140	27.6
Personal illness	35	6.9
Robbery or harmful physical contact	22	4.3
Witnessing someone else being hurt or assaulted	38	7.5
Academic pressure or discontinuing	44	8.7
Breakup with significant others (e.g., divorce, termination of romantic relationship)	60	11.8
Other	54	10.6
Number of Traumatic Events		
1	333	65.6
2	82	16.1
3	54	10.6
4 and more	39	7.7

2.2. Data collection Instruments

Demographic Information Form: A demographic information form was developed by the researchers to obtain some demographic information about the participants. In this form, participants' gender, age, monthly income of the family, parents' education level were asked.

2.2.1. List of Traumatic Events: This list of common traumatic events was developed by Yazıcı, Altun, Şahin, Tosun, Pekdemir and Bulut-Yazıcı (2017) based on the study by Gershuny (1999). Nineteen different traumatic events such as sexual abuse, physical violence, death of a loved etc. were included in the list. Participants were asked to mark the traumatic event they experienced (if the item was not one of them, they were asked to fill in the "other" option) and asked to answer the other questions accordingly. Those who experienced more than one traumatic event were asked to pass on to the other questions considering the event that affected them the most. In this study, some traumatic events were never marked, and some were combined (for instance: unwanted sexual activity, or sexual coercion, harm or sexual assault, and whether the trauma took place before or after 14 years of age were removed or combined). Discontinuing school and academic pressure were also combined. Therefore, the number of traumatic events in the list finally was 11.

2.2.2. Collectivist Coping Styles Inventory (CCSI): CCSI was originally developed by Heppner and colleagues (2006). The adaptation of this inventory to Turkish culture was conducted by Yazıcı et al. (2017). In this inventory, participants were expected to indicate how much they benefited from the strategies presented to them in dealing with the traumatic events they experienced. The scale is a 6-point Likert-type scale ranging from 0 (I have never used this strategy / not suitable) to 5 (extremely helpful). With respect to the validity of the scale, it was found that the structure consisting of five sub-scales of "Acceptance, Reframing, and Striving", "Family Support", "Religion Spirituality", "Avoidance and Detachment", "Private Emotional Outlets" could explain 63.8% of the total variance. The fit indices obtained by an exploratory factor analysis were as follows $\chi^2 \backslash sd = 2.08$, GFI= 0.90, AGFI= 0.87, CFI= 0.95, RMSEA= 0.06 and SRMR= 0.07) which reveals that all the factors were well represented by the items. Criterion-related validity calculations revealed a negative significant relationship between Collectivist Coping Styles Inventory and Problem-Solving Inventory ($r= -.12$, $p< .01$). For reliability, Cronbach alpha internal consistency coefficient was performed on two different samples and found to be .81 and .84 for the whole scale, respectively. The test-retest reliability of the whole scale was found to be .82 for a total of 213 participants in two weeks' interval, while for the subscales the results ranged between .72 and .84.

2.3. Data Analyses

The data of the study were analyzed using IBM SPSS 23. Descriptive statistics were computed to analyze the gathered data. Chi-square cross table analysis was used to analyze categorical data. One-way analysis of variance (One-Way ANOVA) and independent samples *t*-test were also computed following the normality tests.

3. Results

Table 2 summarizes the descriptive findings of the participants' Collectivist Coping Styles Inventory (CCSI) scores. According to the analyses, the most commonly used and effective collectivist coping style of trauma used by students was "Religion and Spirituality" (Mean= 3.31±1.47), followed by "Acceptance, Reframing, and Striving" (Mean= 3.24±1.10). Moreover, this was also followed by "Family Support" (Mean= 2.97±1.36) and "Avoidance and Detachment" (Mean= 2.93±1.16) dimensions, while the least preferred coping style was "Private Emotional Outlets" which includes talking with strangers and getting help from professionals (Mean= 1.12±1.66). It was found that the skewness and kurtosis values of all factors were within the expected values (Tabachnick & Fidell, 2015) and the data were assumed to be normally distributed.

Table 2. Descriptive statistics regarding the Collectivist Coping Styles Inventory scores

Collectivist Coping Styles	Min.	Max.	Mean	SD	Skewness	Kurtosis
Family Support	0	5	2.97	1.36	-.59	-.30
Religion and Spirituality	0	5	3.31	1.47	-.83	-.14
Avoidance and Detachment	0	5	2.93	1.16	-.27	-.30
Private Emotional Outlets	0	5	1.12	1.66	1.17	-.06
Acceptance, Reframing, and Striving	0	5	3.24	1.10	-.50	.20

3.1. Preferred Collectivist Coping Styles According to Traumatic Event

One-way ANOVA was performed to determine whether there was a significant difference between the collectivist coping styles that the participants preferred and the style they considered effective depending on the type of trauma they experienced. The results are presented in Table 3. Statistically significant differences were observed in the participants' scores of "Family Support" ($F_{(9,495)}$= 10.02, *p*= .001, η2= .15) as well as "Religion and Spirituality" ($F_{(9,496)}$= 4.68, *p*= .001, η2= .08) regarding the type of trauma they experienced.

As a result of Bonferroni test conducted to determine the source of the difference in "Family Support" dimension, it was found that participants who had experienced "unwanted sexual activity, or sexual coercion, harm or sexual assault" (Mean= 1.85±1.55) had significantly lower scores than participants who had experienced "major accident" (Mean = 2.96±1.54), "natural disaster" (Mean= 3.54±1.19), "death or illness of a loved one" (Mean= 3.45±1.05), "personal illness" (Mean= 3.44±1.20), "witnessing someone else being hurt or assaulted" (Mean= 2.81±1.37). Moreover, it was also found that participants who had experienced "natural disaster" (Mean= 3.54±1.19), "death or illness of a loved one" (Mean= 3.45±1.05) and "personal illness" (Mean= 3.44±1.20) events used "Family Support" significantly more than those who had been subjected to "robbery or harmful physical contact" (Mean= 2.04±1.34) and "death or illness of a loved one" (Mean= 2.54±1.36) in coping with these traumatic events.

When the dimension of "Religion and Spirituality" is considered, it was found that those who had experienced "unwanted sexual activity, or sexual coercion, harm or sexual assault" (Mean= 2.70±1.66) had statistically significantly lower scores than participants who had experienced "major accident" (Mean= 3.78±1.37) or who were affected by the "death or ilness of a loved one" (Mean= 3.81±1.18). In addition, participants preferred "Religion and Spirituality" significantly more in coping with the "death or illness of a loved one" (Mean= 3.81±1.18) than those who had been exposed to "unwanted sexual activity, or sexual

coercion, harm or sexual assault" (Mean= 2.51±1.69) and "witnessing someone else being hurt or assaulted" (Mean= 2.84±1.64).

Table 3. The relationship between Collective Coping Styles and Type of traumatic event

Collectivist Coping Style	Source	SS	df	MS	F	*p*	η²
Family Support	Between Groups	145.24	9	16.14			
	Within Groups	797.09	495	1.61	10.02	.001	.15
	Total	942.34	504				
Religion and Spirituality	Between Groups	85.27	9	9.48			
	Within Groups	1005.01	496	2.03	4.68	.001	.08
	Total	1090.28	505				
Avoidance and Detachment	Between Groups	11.65	9	1.29			
	Within Groups	662.59	496	1.34	.97	.465	
	Total	674.23	505				
Private Emotional Outlets	Between Groups	37.93	9	4.21			
	Within Groups	1346.85	496	2.72	1.55	.127	
	Total	1384.78	505				
Acceptance, Reframing, and Striving	Between Groups	14.01	9	1.56			
	Within Groups	579.36	496	1.17	1.33	.217	
	Total	593.37	505				

3.2. Relationship Between Traumatic Event Type and Gender

The differences between the types of traumatic events experienced with regard to gender were examined by Chi-Square test and the results are presented in Table 4. There was statistically significant relationship between gender and type of traumatic event experienced ($\chi2$ = 17.09, df = 9, *p*= .047, C= .18). The results shown in Table 4 reveal that female participants experienced significantly more "unwanted sexual activity, or sexual coercion, harm or sexual assault" and "robbery or harmful physical contact" while male participants experienced significantly more "major accident" and "natural disaster (e.g., earthquake)" as well as "witnessing someone else being hurt or assaulted" than female participants.

Table 4. Differences between the types of traumatic events experienced by men and women

Trauma Type		Female	Male	Total
(χ^2= 17.09, df= 9, *p*= .047, C= .18)		f (%)	f (%)	f (%)
Unwanted sexual activity, or sexual coercion, harm or sexual assault	Observed	38 (79.2)	10 (20.8)	48 (100)
	Expected	32.4	15.6	
Major accident	Observed	17 (56.7)	13 (43.3)	30(100)
	Expected	20.2	9.8	
Natural disaster (e.g., earthquake)	Observed	18 (54.5)	15 (45.5)	33 (100)
	Expected	22.3	10.7	
Death or illness of a loved one	Observed	100 (74.6)	34 (25.4)	134 (100)
	Expected	90	43	
Personal illness	Observed	21 (61.8)	13 (38.2)	34 (100)
	Expected	22.9	11.1	
Robbery or harmful physical contact	Observed	17 (77.3)	5 (22.7)	22 (100)
	Expected	14.8	7.2	
Witnessing someone else being hurt or assaulted	Observed	19 (50)	19 (50)	38 (100)
	Expected	25.6	12.4	
Academic pressure or discontinuing	Observed	28 (65.1)	15 (34.9)	43 (100)
	Expected	29	14	
Breakup with significant others	Observed	39 (67.2)	19 (32.8)	58 (100)
	Expected	39.1	18.9	

Other		Observed	35 (67.3)	17 (32.7)	52 (100)
		Expected	35.1	16.9	

3.3. Relationship between Collective Coping Styles and Gender

Independent samples *t*-tests were conducted to see whether there were statistically significant differences in the coping styles used in traumas participants experienced with respect to gender. According to the analyses results presented in Table 5, only in "Religion and Spirituality" coping style was there a significant difference between male and female participants (*t*= 3.49, df= 492, *p*= .001, *d*= .32). This difference was due to the fact that female scores (X = 3.46±1.37) were significantly higher than that of men (X= 2.97±1.64).

Table 5. Differences between Collective Coping Styles with respect to gender

CCSI Factors		n	Mean	SD	df	*t*	*p*	*d*
Family Support	Female	332	3.02	1.41	491	.99	.323	
	Male	161	2.89	1.26				
Religion & Spirituality	Female	333	3.46	1.37	492	3.49	.001	.32
	Male	161	2.97	1.64				
Avoidance and Detachment	Female	333	2.91	1.15	492	-.01	.996	
	Male	161	2.92	1.17				
Private Emotional Outlets	Female	333	1.07	1.64	492	-.90	.367	
	Male	161	1.21	1.70				
Acceptance, Reframing, and Striving	Female	333	3.28	1.05	492	1.32	.189	
	Male	161	3.14	1.17				

4. Discussion and Conclusion

The most common traumatic events of the participants were identified as "death and severe illness of a loved one", "breakup with significant others (e.g., divorce, termination of romantic relationship)", "sexual abuse/coercion/harassment" and "academic pressure/discontinuation of education". These results are in line with the results of other studies investigating the traumatic events (Heppner et al., 2006; Liu et al., 2017; Özdemir & Yazıcı, 2018; Weinberg & Gil, 2016). Most of these studies identified experiencing sexual abuse or assault, having a major accident, witnessing someone else being hurt or assaulted as the most frequently experienced traumas (Levine & Frederick, 2013). In a study by Norris (1992), the 10 most common traumatic events were identified; tragic deaths and sexual assaults were identified as the most common of those.

All of the participants had somehow experienced at least one traumatic event while 34% of the participants stated that they experienced more than one traumatic event. This result is in line with the previous research results revealing the prevalence of traumatic events (Arıtan, 2007; Galea, Nandi & Vlahov, 2005; Kessler-Sonnega, Bromet, Hughes & Nelson, 1995). Darves-Bornoz et al. (2008) reported that 63.6% of individuals aged 18 and over experienced at least one traumatic event in six different European countries. In another study (Breslau et al., 2004) supporting these findings, it was reported that of 2181 people 14% were exposed to one, 15.8% were exposed to two, 15.1%, were exposed to three and 55.1% were exposed to four or more traumatic events.

In this study, participants' collectivist coping styles, which they found to be effective, were compared. In this respect, it was found that "Family Support" is less preferred by those who have sexually traumatic experience compared to other traumatic experiences. Moreover, it was also found that "Family Support" is more commonly used in "death or illness of a loved one", "personal illness" than "breakup with significant others", "robbery or harmful physical contact" traumatic experiences. Besides, individuals who experience traumatic events based on "breakup with significant others", "physical violence", "unwanted sexual activity" seem to prefer "Family Support" significantly less in coping with trauma. It is noteworthy that these types of events are considered as inappropriate to talk to family elders in Turkish culture and in other collectivist societies (İkkaracan, 2018). In addition, this result seems more meaningful when the fact that physical violence and sexual assault are committed mostly by the family and by familiar people (Baybuğa, Irmak, Talas & Savran, 2012; Gölge & Yavuz, 2007) is considered. Moreover, the results of some research in individualistic societies also support this conclusion. In a study on Belgian adolescents (Bal, Crombez, Van-Oost & Debourdeaudhuij,

2003), it was concluded that the young people who were sexually abused use more avoidance coping style and referred less to family support. However, it should be noted that family support is a significant mediator in the psychological well-being of the victims of sexual abuse (Jóhannesdóttir, 2017).

In this study, those who use the "Family Support" coping style most are the ones who experiences traumatic events such as "natural disaster", "death of a loved one" and "personal illness". These are the events believed to be caused by God or nature herself or fatal rather than caused by human conduct (Pargament, 1997). It has been consistently confirmed by research that family support is an important coping mechanism for such events in collectivist societies (McCarty et al., 1999; Yeh, Inman, Kim & Okubo, 2006). Furthermore, family support and unity are also considered important in collectivist societies. Moreover, paying attention to each other in the family or group and respecting the elderly are considered as moral values which may also be related to these events (Kağıtçıbaşı, 2007; Markus & Kitayama, 1991). In studies conducted in individualist cultures, too, it was found that individuals in the process of mourning and illnesses sought social support rather than professional assistance and that this helped more in coping with trauma (Haden, Scarpa, Jones & Ollendick, 2007; Rask, Kaunonen & Paunonen-Ilmonen, 2002). However, some authors who researched collectivist coping (e.g. Wong 1993; Zhang & Long, 2006) point out that family support observed in collectivist societies is different from social support in individualistic cultures. In collectivist societies, within the family support, the group sees the problem as its own and all members of the family try to solve the problem in unity. However, social support emphasized in individualist cultures includes listening to the family members unbiased or unprejudiced, getting information and financial support along with family support. Besides, research has also demonstrated that family support is not always welcome. In a study of Finnish young participants who were in the mourning process (Rask et al., 2002), some of the young people stated that their families and relatives were burden rather than support.

In this study, a statistically significant difference was found in "Religion and Spirituality" coping style with respect to the type of trauma experienced. In this regard, participants who were traumatized by "major accident" or "death or illness of a loved one" preferred "Religion and Spirituality" coping style significantly more than the participants who experienced "unwanted sexual activity, or sexual coercion, harm or sexual assault", "robbery or harmful physical contact" as well as "witnessing someone else being hurt or assaulted. As mentioned above, while death, accident and disaster are considered as fatal or under the control of a superhuman power, events such as sexual assault, robbery or extortion, physical violence are considered as traumatic events created by human per se (Kira, Fawzi & Fawzi, 2013). Thus, religion or spirituality plays an important role in dealing with events such as death, illness and a major accident in collective societies (Morling & Fiske, 1999; Tweed & Conway, 2016). In individualist societies, religion or spirituality can be an important means of coping with traumas such as the death of a loved one, an important illness or a natural disaster (Harris et al., 2008; Kremer & Ironson, 2014). However, comparative studies have identified that people use religious and spirituality more in collectivist cultures than those in individualist cultures (Bjorck, Cuthbertson, Thurman, & Lee, 2001; Taylor, Chatters, Jayakody & Levin, 1996). Furthermore, some researchers have examined the relationship between religious or spiritual coping style and post-traumatic symptoms and emphasized its high rate of effectiveness. To illustrate, studies with AIDS (Kremer & Ironson, 2014) and cancer patients (Tarakeshwar et al., 2006) revealed higher quality of life as well as improvement in physical symptoms among people who use religion or spirituality. In this regard, it is possible to talk about the positive and developing effect of religious or spiritual coping strategy on individuals (Harris et al., 2008). Put differently, it would be wise to infer that religious or spiritual coping strategy has positive and improving effect on traumatized people (Harris et al., 2008). However, caution should be exercised at this point in that religious coping is not always yielded positive results. For instance, in a study conducted in Turkey after a major earthquake (Kula, 2001), it was found that 63% of the participants considered this event as the God's punishment. In the same way, some other research also documented negative effects on physical and mental health of individuals who used religious coping style (Falsetti, Resick & Davis, 2003; Murat & Kızılgeçit, 2017). Particularly, if the trauma experienced shakes the sense of justice and trust in God or includes beliefs that they are punished by God and they deserved this punishment, it is possible to observe that individuals' physical and mental symptoms can get negative or worse (Pargament & Raiya, 2007). In line with the results of this study, a considerable amount of research has identified that individuals' seeking asylum in religion or spirituality levels can get quite low or negative in cases of extortion, physical violence or sexual traumatic events (Bradley, Schwartz & Kaslow, 2005). As a matter of fact, it is reported that behaviors such as anger to

God and backsliding or lapse in religion/ spirituality are frequently seen in people who have been sexually abused (Kane, Cheston & Greer, 1993; Lawson, Drebing, Berg, Vincellette & Penk, 1998).

Female participants in this study experienced more traumatic events such as "unwanted sexual activity, or sexual coercion, harm or sexual assault" or exposure to "physical violence" while men were more likely to experience "major accident", "natural disaster" and "witnessing someone else being hurt or assaulted" type of traumas. This significant difference with respect to gender is consistent with the research results in the extant literature (Holbrook, Hoyt, Stein & Sieber, 2002). To illustrate, Maercker, Hecker, Augsburger and Kliem (2018), in their study of sexual events in women, reported that physical violence and accidents were more common among males. Benjet et al. (2016) examined the prevalence of traumatic events in a large study covering 24 countries including collectivist and individualist cultures and reached conclusions which corroborated the findings of this study. However, Benjet et al. (2016) pointed out that women suffered more sexual and physical violence than men, and that the violence women suffered was commonly committed by their close partner. Some researchers focused on the effects of traumas on individuals rather than traumatic experiences per se and found that women experienced more post-traumatic stress disorder than men (Aksu & Sevil 2010; Demirli, 2011). Remarkably enough, post-traumatic maturation levels of women are reported to be higher than men (Kesimci, Göral, & Gençöz, 2005; Laufer & Solomon, 2006). To put the point briefly, women might have a higher potential to be negatively affected by traumatic events, whereas they seem to have also the ability to recover and improve themselves. This may also be due to differences in coping styles.

When the coping styles used and found effective by men and women in our sample were examined, it was seen that women preferred "Religion and Spirituality" style more than men. Correspondingly, a compelling amount of published studies document findings in line with our findings (Kremer & Ironson, 2014; Tarakeshwar et al., 2006). More specifically, a study conducted with cancer patients reported that most women used positive religious coping (Zamanian et al., 2015). In addition, Tarakeshwar et al. (2006) documented that non-white Americans preferred positive religious coping significantly more than white ones. In collectivist societies, it is highly appreciated for women to endure difficulties and to keep their own desires and needs in the background and/or subordinate them (Heron, Jacobs, Twomey & Kaslow, 1997). Hence, it could conceivably be hypothesized that collectivist women use religion or spirituality to find strength for coping and meaning of life.

The evidence from this study revealed that various traumatic experiences were observed among Turkish university students. To cope with these traumatic experiences, students used "Collectivist Coping Styles". The preferred coping style varied according to the type of traumatic event and gender. However, several limitations to this study need to be acknowledged. The first is that the participants of the study were selected only from university students. Thus, further studies are recommended in groups with different educational and age levels. Another limitation needs to be noted are the cross-sectional survey and self-report scales. In the future studies, the collectivist coping styles of individuals experienced traumatic events can be investigated in depth by a mixed methods research design study. In addition, it is suggested that the relationship between the collectivist coping styles and variables such as traumatic interference index and elapsed time, rather than the type of trauma experienced, be tested in further studies.

References

Aksu, H., & Sevil, Ü. (2010). Göç ve kadın sağlığı [Migration and women's health]. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi*, *2*(3), 133-138.

APA (American Pyschiatric Association) (2014). *Ruhsal bozuklukların tanısal ve sayımsal el kitabı 5 [Diagnostic and statistical manual of mental disorder 5]* (E. Köroğlu, Trans.) Ankara: Hekimler Birliği Yayın Birliği.

Atwoli, L., Stein, D. J., Williams, D. R., Mclaughlin, K. A., Petukhova, M., Kessler, R. C., & Koenen, K. C. (2013). Trauma and posttraumatic stress disorder in South Africa: analysis from the South African Stress and Health Study. *BMC Psychiatry*, *13*(1), 182-194, doi: 10.1186/1471-244X-13-182

Bagheri, S. H. S., Iranmanesh, S., Rayyani, M., Dehghan, M., Tirgari, B., & Hosseini, S. H. (2018). Post-traumatic stress and growth among CPR survivors in the southeast of Iran. *International Journal of Adolescent Medicine and Health* (published online ahead of print), 20170138, doi: 10.1515/ijamh-2017-0138

Bal, S., Crombez, G., Van Oost, P., & Debourdeaudhuij, I. (2003). The role of social support in well-being and coping with self-reported stressful events in adolescents. *Child Abuse & Neglect, 27*(12), 1377-1395, doi: 10.1016/j.chiabu.2003.06.002

Baybuğa, M. S., Irmak, Z., Talas, S., & Savran, B. M. (2012). Adli tıp şube müdürlüğüne başvuran fiziksel ve cinsel şiddet mağduru kadın olgularının değerlendirilmesi [Evaluation of cases involving female victims of physical and sexual assault reporting to the forensic medicine department] *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi, 15*(3), 173-180, doi: 10.17049/ahsbd.72800

Benjet, C., Bromet, E., Karam, E. G., Kessler, R. C., McLaughlin, K. A., Ruscio, A. M., et al. (2016). The epidemiology of traumatic event exposure worldwide: results from the World Mental Health Survey Consortium. *Psychological Medicine, 46*(02), 327-343, doi: 10.1017/S0033291715001981

Bjorck, J. P., Cuthbertson, W., Thurman, J. W., & Lee, Y. S. (2001). Ethnicity, coping, and distress among Korean Americans, Filipino Americans, and Caucasian Americans. *The Journal of Social Psychology, 141*(4), 421-442, doi: 10.1080/00224540109600563

Bradley, R., Schwartz, A. C., & Kaslow, N. J. (2005). Posttraumatic stress disorder symptoms among low-income, African American women with a history of intimate partner violence and suicidal behaviors: Self-esteem, social support, and religious coping. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies, 18*(6), 685-696, doi: 10.1002/jts.20077

Bryant-Davis, T., Ullman, S. E., Tsong, Y., & Gobin, R. (2011). Surviving the storm: The role of social support and religious coping in sexual assault recovery of African American women. *Violence Against Women*, *17*(12), 1601-1618, doi: 10.1177/1077801211436138

Cross, S. E. (1995). Self-construals, coping, and stress in cross-cultural adaptation. *Journal of Cross-Cultural Psychology*, *26*(6), 673-697, doi: 10.1177/002202219502600610

Cusack, S. E., Hicks, T. A., Bourdon, J., Sheerin, C. M., Overstreet, C. M., Kendler, K. S., ... & Amstadter, A. B. (2018). Prevalence and predictors of PTSD among a college sample. *Journal of American College Health*, 66, 1-24, doi: 10.1080/07448481.2018.1462824

Dai, W., Chen, L., Tan, H., Wang, J., Lai, Z., Kaminga, A. C., ... & Liu, A. (2016). Association between social support and recovery from post-traumatic stress disorder after flood: a 13–14 year follow-up study in Hunan, China. *BMC public health*, *16*(1), 194-203, doi: 10.1186/s12889-016-2871-x

Demirli, A. (2011). Terörizm, psikososyal etkileri ve müdahale modelleri [Terrorism, psychosocial effects and intervention models]. *Türk Psikolojik Danışma ve Rehberlik Dergisi*, *4*(35), 66-76.

Falsetti, S. A., Resick, P. A., & Davis, J. L. (2003). Changes in religious beliefs following trauma. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies, 16*(4), 391-398, doi: 10.1023/A:1024422220163

Freh, F. M. (2016). Why are some individuals more resilient than others: the dynamic role of social support and religious coping in predicting PTSD and psychiatric distress as a result of mass trauma? *Al-Adab Journal*, *116*, 45-66.

Frounfelker, R., Gilman, S. E., Betancourt, T. S., Aguilar-Gaxiola, S., Alonso, J., Bromet, E. J., ... & Karam, E. G. (2018). Civilians in World War II and DSM-IV mental disorders: Results from the World Mental Health Survey Initiative. *Social Psychiatry and Psychiatric Epidemiology*, *53*(2), 207-219, doi: 10.1007/s00127-017-1452-3

Fullerton, C. S., Ursano, R. J., & Wang, L. (2004). Acute stress disorder, posttraumatic stress disorder, and depression in disaster or rescue workers. *American Journal of Psychiatry*, *161*(8), 1370-1376, doi: 10.1176/appi.ajp.161.8.1370

Gershuny, B. S. (1999). *Structural models of psychological trauma, dissociative phenomena, and distress in a mixed-trauma sample of females: Relations to fear about death and control.* Unpublished doctoral dissertation, University of Missouri, Columbia, MO.

Gil, S. (2005). Coping style in predicting posttraumatic stress disorder among Israeli students. *Anxiety, Stress, and Coping, 18*(4), 351-359, doi: 10.1080/10615800500392732

Goldstein, R. B., Smith, S. M., Chou, S. P., Saha, T. D., Jung, J., Zhang, H., ... & Grant, B. F. (2016). The epidemiology of DSM-5 posttraumatic stress disorder in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions-III. *Social Psychiatry and Psychiatric Epidemiology, 51*(8), 1137-1148, doi: 10.1007/s00127-016-1208-5

Gölge, Z. B., & Yavuz, M. F. (2007). Cinsel saldırı olgularının suç motivasyonuna göre sınıflandırılması [Classifying rape cases according the crime motivation]. *Adli Tıp Dergisi, 21*(2), 11-19.

Gul, E., & Karanci, A. N. (2017). What determines posttraumatic stress and growth following various traumatic events? A study in a Turkish community sample. *Journal of Traumatic Stress, 30*(1), 54-62, doi: 10.1002/jts.22161

Haden, S. C., Scarpa, A., Jones, R. T., & Ollendick, T. H. (2007). Posttraumatic stress disorder symptoms and injury: The moderating role of perceived social support and coping for young adults. *Personality and Individual Differences, 42*(7), 1187-1198, doi: 10.1016/j.paid.2006.09.030

Harris, J. I., Erbes, C. R., Engdahl, B. E., Olson, R. H., Winskowski, A. M., & McMahill, J. (2008). Christian religious functioning and trauma outcomes. *Journal of Clinical Psychology, 64*(1), 17-29, doi: 10.1002/jclp.20427

Heppner, P. P., Heppner, M. J., Lee, D. G., Wang, Y. W., Park, H. J., & Wang, L. F. (2006). Development and validation of a collectivist coping styles inventory. *Journal of Counseling Psychology, 53*(1), 107-125, doi: 10.1037/0022-0167.53.1.107

Heron, R. L., Jacobs, D. P., Twomey, H. B., & Kaslow, N. J. (1997). Culturally competent interventions for abused and suicidal African American women. *Psychotherapy, 34*, 410-424, doi: 10.1037/h0087639

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd ed). New York: Mcgraw-hill.

Holbrook, T. L., Hoyt, D. B., Stein, M. B., & Sieber, W. J. (2002). Gender differences in long-term posttraumatic stress disorder outcomes after major trauma: Women are at higher risk of adverse outcomes than men. *Journal of Trauma and Acute Care Surgery, 53*(5), 882-888.

İkkaracan, P. (Ed.) (2018). *Müslüman toplumlarda kadın ve cinsellik [Women and sexuality in Muslim societies].* (6th ed.). İstanbul: Sena Ofset.

Jóhannesdóttir, H. (2017). The role of sexual abuse, social support and positive perspective towards school on adolescents' psychological well-being. Unpublished doctoral dissertation. Reykjavik University, Reykjavik, Iceland.

Jin, Y., Xu, J., Liu, H., & Liu, D. (2014). Posttraumatic stress disorder and posttraumatic growth among adult survivors of Wenchuan Earthquake after 1 year: Prevalence and correlates. *Archives of Psychiatric Nursing, 28*(1), 67-73, doi: 10.1016/j.apnu.2013.10.010

Kağıtçıbaşı, Ç. (2007). *Kültürel psikoloji: Kültür bağlamında insan ve aile [Cultural psychology: Human and family in the context of culture].* (3rd. ed), İstanbul: Evrim Yayınları.

Kane, D., Cheston, S. E., & Greer, J. (1993). Perceptions of God by survivors of childhood sexual abuse: An exploratory study in an underresearched area. *Journal of Psychology and Theology, 21*(3), 228-237, doi: 10.1177/009164719302100306

Karabulutlu, E. Y., Yaralı, S., & Karaman, S. (2017). Evaluation of distress and religious Coping among cancer patients in Turkey. *Journal of Religion and Health,* 1-10, doi: 10.1007/s10943-017-0453-6

Kesimci, A., Göral, F. S., & Gençöz, T. (2005). Determinants of stress-related growth: Gender, stressfulness of the event, and coping strategies. *Current Psychology, 24*(1), 68-75, doi: 10.1007/s12144-005-1005-x

Khamis, V. (2015). Coping with war trauma and psychological distress among school-age Palestinian children. *American Journal of Orthopsychiatry*, *85*(1), 72-79, doi: 10.1037/ort0000039

Khan, A. A., Haider, G., Sheikh, M. R., Ali, A. F., Khalid, Z., Tahir, M. M., ... & Khan, M. B. (2016). Prevalence of post-traumatic stress disorder due to community violence among university students in the world's most dangerous megacity: A cross-sectional study from Pakistan. *Journal of Interpersonal Violence*, *31*(13), 2302-2315, doi: 10.1177/0886260515575605

Kilpatrick, D. G., Resnick, H. S., Milanak, M. E., Miller, M. W., & Keyes, K. M. (2013). National estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *Journal of Traumatic Stress*, *26*, 537-547, doi: 10.1002/jts.21848

Kira, I. A., Fawzi, M. H., & Fawzi, M. M. (2013). The dynamics of cumulative trauma and trauma types in adults patients with psychiatric disorders: Two cross-cultural studies. *Traumatology, 19*(3), 179-195, doi: 10.1177/1534765612459892

Kremer, H., & Ironson, G. (2014). Longitudinal spiritual coping with trauma in people with HIV: implications for health care. *AIDS Patient Care STDS, 28*(3), 144-154, doi: 10.1089/apc.2013.0280

Kula, N. (2002). Deprem ve dini başa çıkma [Earthquake and religious coping]. *Gazi Üniversitesi Çorum İlahiyat Fakültesi Dergisi,1*(1), 234-255.

Lassemo, E., Sandanger, I., Nygård, J. F., & Sørgaard, K. W. (2017). The epidemiology of post-traumatic stress disorder in Norway: trauma characteristics and pre-existing psychiatric disorders. *Social Psychiatry and Psychiatric Epidemiology*, *52*, 11-19, doi: 10.1007/s00127-016-1295-3

Lawson, R., Drebing, C., Berg, G., Vincellette, A., & Penk, W. (1998). The long-term impact of child abuse on religious behavior and spirituality in men. *Child Abuse & Neglect*, *22*(5), 369-380, doi: 10.1016/S0145-2134(98)00003-9

Laufer, A., & Solomon, Z. (2006). Posttraumatic symptoms and posttraumatic growth among Israeli youth exposed to terror incidents. *Journal of Social and Clinical Psychology, 25*(4), 429-447, doi: 10.1521/jscp.2006.25.4.429

Lazarus, R. S. (2000). Toward better research on stress and coping. *The American Psychologist, 55*, 665-673, doi: 10.1037//0003-066X.55.6.665

Levine, P. A., & Frederick, A. (2013). *Kaplanı uyandırmak: Travmayı iyileştirmek, (*Çev: Z. Yalçınkaya). İstanbul: Butik Yayıncılık.

Liu, H., Petukhova, M. V., Sampson, N. A., Aguilar-Gaxiola, S., Alonso, J., Andrade, L. H., ... & Kawakami, N. (2017). Association of DSM-IV posttraumatic stress disorder with traumatic experience type and history in the World Health Organization World Mental Health Surveys. *JAMA Psychiatry*, *74*(3), 270-281, doi: 10.1001/jamapsychiatry.2016.3783

Maercker, A., Hecker, T., Augsburger, M., & Kliem, S. (2018). ICD-11 prevalence rates of posttraumatic stress disorder and complex posttraumatic stress disorder in a German nationwide sample. *The Journal of nervous and mental disease, 206*(4), 270-276, doi: 10.1097/NMD.0000000000000790

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*(2), 224-253, doi: 10.1037/0033-295X.98.2.224

Mattson, E., James, L., & Engdahl, B. (2018). Personality factors and their impact on PTSD and post-traumatic growth is mediated by coping style among OIF/OEF veterans. *Military Medicine, 183*(9-10), e475-e480, doi: 10.1093/milmed/usx201

McCann, L., & Pearlman, L. A. (2015). *Psychological trauma and adult survivor theory: Therapy and transformation*. New York: Routledge.

McCarty, C. A., Weisz, J. R., Wanitromanee, K., Eastman, K. L., Suwanlert, S., Chaiyasit, W., & Band, E. B. (1999). Culture, coping, and context: Primary and secondary control among Thai and American youth. *The Journal of Child Psychology and Psychiatry and Allied Disciplines, 40*(5), 809-818, doi: 10.1111/1469-7610.00496

Morling, B., & Fiske, S. T. (1999). Defining and measuring harmony control. *Journal of Research in Personality, 33*(4), 379-414, doi: 10.1006/jrpe.1999.2254

Morrison, J. (2014). *DSM-5 made easy–the clinician's guide to diagnosis*. New York: Guilford Press.

Mölsä, M., Kuittinen, S., Tiilikainen, M., Honkasalo, M. L., & Punamäki, R. L. (2017). Mental health among older refugees: The role of trauma, discrimination, and religiousness. *Aging & Mental Health, 21*(8), 829-837, doi: 10.1080/13607863.2016.1165183

Murat, A., & Kızılgeçit, M. (2017). Dini başa çıkma ve psikopataloji ilişkisi (Rize örneği) [Relationship between religious coping and psychopathology (Rize case)]. *Journal of Divinity Faculty of Recep Tayyip Erdogan University, 6*(11), 111-151.

Olaya, B., Alonso, J., Atwoli, L., Kessler, R. C., Vilagut, G., & Haro, J. M. (2015). Association between traumatic events and post-traumatic stress disorder: results from the ESEMED-Spain study. *Epidemiology and Psychiatric Sciences, 24*(02), 172-183, doi: 10.1017/S2045796014000092

Overstreet, C., Berenz, E. C., Sheerin, C., Amstadter, A. B., Canino, G., & Silberg, J. (2016). Potentially traumatic events, posttraumatic stress disorder and depression among adults in Puerto Rico. *Frontiers in Psychology, 7*, 469-476, doi: 10.3389/fpsyg.2016.00469

Özdemir, M., & Yazıcı, H. (2018). The relationships between help seeking, social support, coping, and traumatic events among university students. *Journal of Higher Education, 8*(2), 158-171, doi: 10.2399/yod.18.009

Pargament, K. I. (1997). *The psychology of religion and coping: Theory, research, practice*. New York: Guilford Press.

Pargament, K. I., & Raiya, H. A. (2007). A decade of research on the psychology of religion and coping: Things we assumed and lessons we learned. *Psyke & Logos, 28*(2), 742-766.

Rask, K., Kaunonen, M., & Paunonen-Ilmonen, M. (2002). Adolescent coping with grief after the death of a loved one. *International Journal of Nursing Practice, 8*(3), 137-142, doi: 10.1046/j.1440-172X.2002.00354.x

Sattler, D. N., Boyd, B., & Kirsch, J. (2014). Trauma-exposed firefighters: Relationships among posttraumatic growth, posttraumatic stress, resource availability, coping and critical incident stress debriefing experience. *Stress and Health, 30*(5), 356-365, doi: 10.1002/smi.2608

Swartzman, S., Booth, J. N., Munro, A., & Sani, F. (2017). Posttraumatic stress disorder after cancer diagnosis in adults: A meta-analysis. *Depression and Anxiety, 34*(4), 327-339, doi: 10.1002/da.22542

Tarakeshwar, N., Vanderwerker, L. C., Paulk, E., Pearce, M. J., Kasl, S. V., & Prigerson, H. G. (2006). Religious coping is associated with the quality of life of patients with advanced cancer. *Journal of Palliative Medicine, 9*(3), 646-657, doi: 10.1089/jpm.2006.9.646

Taylor, R. J., Chatters, L. M., Jayakody, R., & Levin, J. S. (1996). Black and white differences in religious participation: A multisample comparison. *Journal for the Scientific Study of Religion, 35*(4), 403-410, doi: 10.2307/1386415

Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality, 69*(6), 907-924, doi: 10.1111/1467-6494.696169

Tweed, R. G., & Conway, L. G. (2006). Coping strategies and culturally influenced beliefs about the world. In *Handbook of multicultural perspectives on stress and coping* (pp. 133-153). Springer, Boston, MA.

Weinberg, M. & Gil, S. (2016). Trauma as an objective or subjective experience: The association between types of traumatic events, personality traits, subjective experience of the event, and posttraumatic symptoms. *Journal of Loss and Trauma, 21*(2), 137-146, doi: 10.1080/15325024.2015.1011986

Weiss, N. H., Bold, K. W., Contractor, A. A., Sullivan, T. P., Armeli, S., & Tennen, H. (2018). Trauma exposure and heavy drinking and drug use among college students: Identifying the roles of negative and positive affect lability in a daily diary study. *Addictive Behaviors*, *79*, 131-137, doi: 10.1016/j.addbeh.2017.12.015

Wong, P. T. P. (1993). Effective management of life stress: The resource-congruence model. *Stress Medicine, 9*, 51-60, doi: 10.1002/smi.2460090110

Yazıcı, H., Altun, F., Şahin, M., Tosun, C., Pekdemir, Ü., & Bulut-Yazıcı, E. (2017). Turkish adaptation of Collectivist Coping Styles Inventory. *Journal of Mood Disorder*, *7*(2), 73-103, doi: 10.5455/jmood.20170304070533

Yeh, C. J., Arora, A. K., & Wu, K. A. (2006). A New theoretical model of collectivistic coping. In *Handbook of multicultural perspectives on stress and coping*. (Wong PTP, Wong LJC. Ed.). New York: Springer.

Yeh, C. J., Inman, A. G., Kim, A. B., & Okubo, Y. (2006). Asian American families' collectivistic coping strategies in response to 9/11. *Cultural Diversity and Ethnic Minority Psychology, 12*(1), 134-148, doi: 10.1037/1099-9809.12.1.134

Zamanian, H., Eftekhar-Ardebili, H., Eftekhar-Ardebili, M., Shojaeizadeh, D., Nedjat, S., Taheri-Kharameh, Z., & Daryaafzoon, M. (2015). Religious coping and quality of life in women with breast cancer. *Asian Pacific Journal of Cancer Prevention, 16*(17), 7721-7725, doi: http://eprints.iums.ac.ir/id/eprint/5529

Zhang, D., & Long, B. C. (2006). A multicultural perspective on work-related stress: Development of a collective coping scale. In *Handbook of multicultural perspectives on stress and coping* (pp. 555-576). Springer, Boston, MA.
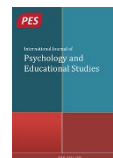
The Determinants of Social Anxiety in Lower Secondary Education Student Athletes: A Case of Competitive Swimming Environment

Funda Coşkun Özyol[1]

[1]Van Yüzüncü Yıl University, The School of Physical Education and Sports

ABSTRACT

Social anxiety disorder is a common psychological problem that may negatively impact the cognitive and social development of children. Its severity may, however, be reduced through regular participation in sports or other physical activity. This study aimed to determine the relationship between competitive student-athlete swimmers' social anxiety levels and anthropometric measurements (height, weight, and BMI), body composition (body fat and lean body mass), and body type (ectomorph, endomorph, or mesomorph). The participants were pre-adolescent female and male lower secondary education student-athlete swimmers. The Social Anxiety Scale was used to evaluate their social anxiety levels, while the anthropometric parameters included height and weight, from which BMI was calculated. Body composition involved determining the percentage of body fat and lean body mass; ectomorphic, endomorphic, and mesomorphic values were then calculated. We found that the social anxiety levels of both female and male student-athlete swimmers were low. There was no statistically significant relationship between the social anxiety levels of the male and female student-athlete swimmers with BMI, lean body mass, or ectomorphy. For the female swimmers, social anxiety levels were not associated with body fat, endomorphy, or mesomorphy, nor were those of the male student-athlete swimmers. These findings suggest that participation in competitive swimming during adolescence is effective in controlling social anxiety. Furthermore, this study revealed that social anxiety is not associated with lower secondary education student-athlete swimmers' anthropometric measurements, body composition, or body type.

Keywords:
Lower secondary education, student-athlete swimmers, adolescent athlete, swimming training, social anxiety, body composition, adolescent athlete

1. Introduction

Social anxiety is one of the most frequently encountered psychological problems that are common all over the world. Social anxiety disorder (SAD), also known as social phobia, was first described in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association [APA]) in 1980 and is an ongoing disorder in children, adolescents, and adults. Following its initial appearance which typically occurs during childhood, SAD frequently persists throughout adulthood, with patients often going undiagnosed or having only limited access to treatment (Creswell, Waite, & Cooper, 2014; Khalid-Khan, Santibanez, McMicken, & Rynn, 2007). SAD is characterized by a "marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others" (APA, 2013, p. 202). People with SAD worry about the possibility of being embarrassed or judged by others and hence take pains to avoid such environments.

These individuals experience intense anxiety, which may cause significant discomfort and even disrupt their functioning (Antony & Rowa, 2008).

Since SAD is not exclusive to adults, it is also found in social environments in which children are present (APA, 2013; Crozier, Gillihan, & Powers, 2011). Fear or anxiety in children may manifest as crying, seizures, freezing up, clinging, shrinking away, or not speaking in social settings (APA, 2013). According to APA (2013) data, the prevalence of SAD in adults was 7% over a 12-month period, with similar values reported for children and adolescents. In a study involving approximately 10,000 individuals over the age of 18, researchers found that SAD was the fourth most common psychological disorder, with 12.1% having experienced it at some point in their lives and 6.8% reporting symptoms within the previous year (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005; Kessler, Chiu, Demler, Merikangas, & Walters, 2005). In a large-scale study conducted in the U.S., anxiety and depression rates in children and adolescents aged 6-17 were examined by comparing data from the years 2003 (n = 102.353), 2007 (n = 91.642), and 2011-2012 (n = 95.677). The results showed an increase in prevalence from 5.4% in 2003 to 8.4% in 2011-2012 (Bitsko et al., 2018).

The causes of social anxiety are also among the important investigated topics such as the prevalence of social anxiety. As with many types of psychological disorders, research on the causes of SAD, which is multifactorial, incorporates both genetic factors and life experiences, including those occurring within the family environment (Beidel, Turner, & APA, 2007; Essau & Ollendick, 2013; Hope, Heimberg, & Turk, 2010). Studies indicate that individuals with SAD are 2-3 times more likely to have family members with SAD as a result of children learning to be socially anxious by observing family members (Antony & Swinson, 2008). Numerous studies have revealed the positive effects of physical activity and sports on social and psychological health. In children and especially adolescents, physical activity has been associated with an increase in self-confidence and social interaction (particularly in connection with sports participation) and a decrease in depressive symptoms (Eime, Young, Harvey, Charity, & Payne, 2013). In one study examining the relationship between high school students' participation in sports and anxiety symptoms, the findings revealed that social phobia levels decreased during the period that the participants were involved in sports (Ashdown-Franks, Sabiston, Solomon-Krakus, & O'Loughlin, 2017). Jewett, Sabiston, Brunet, O'Loughlin, Scarapicchia and O'Loughlin (2014) found that participation in sports during adolescence played an important and positive role in the mental health of individuals in early adulthood. In a study conducted with primary school children aged 7-8 years, Dimech and Seiler (2010) reported that the children who participated in team sports exhibited reduced levels of social anxiety. Ashdown-Franks et al. (2017) found that individual sports also protect against the emergence of social phobia symptoms in high school students. Literature on this subject has emphasized that 60 minutes of regular, moderate to intense athletic activity on a daily basis will increase physical fitness, decrease body fat, strengthen bones, decrease or eliminate risks for certain diseases, and reduce depression and anxiety symptoms in children and adolescents aged 5-17 years (Physical Activity Guidelines Advisory Committee [PAGAC, 2008]).

The fact that physical inactivity status was presented as a factor that directly or indirectly increased social anxiety led to a focus on seeking a relationship between various variables related to inactivity and social anxiety. The relationship between social anxiety and BMI, body fat, and body mass has been examined in various studies, with some conflicting findings. Some studies have revealed that when these anthropometric parameters reflect a physique that is not to the individual's liking (fat or obese, for example), body dissatisfaction and, consequently, social anxiety result (Barry, Pietrzak, & Petry, 2008; Crisp & McGuiness, 1976; Kivimaki et al., 2009). Other studies, however, have found no relationship between these parameters and anxiety (Ejike, 2013; Lamertz, Jacobi, Yassouridis, Arnold, & Henkel, 2002; Roberts, Deleger, Strawbridge, & Kaplan, 2003). In one study of 50 obese children and adolescents aged 7-16.5 and 50 healthy peers, anxiety and depression were observed in all of the obese participants (Abdel-Aziz, Hamza, Youssef, & Mohammed, 2014). A study in which individuals aged 9-18 were observed at 4 different times reported a relationship between anxiety and obesity, finding obesity to be a predictor of anxiety, especially in young women (Anderson, Cohen, Naumova, & Must, 2006; Anderson, Cohen, Naumova, Jacques, & Must, 2007).

Although not directly linked to SAD, the relationship between personality and body type (somatotype) has been a topic of research for many decades (Cavala, Trninic, Jasic, & Tomljanovic, 2013; Kellett, Marzillier, & Lambert, 1981; Slaughter, 1970; Zeigler, 1948). The first to approach this topic was Sheldon (1942), who argued

that the relationship between human physique (body shape) and psychology could be classified according to the following body types: ectomorphic, endomorphic and mesomorphic.These body types were thought to be associated withcertain personal and psychological characteristics, including social anxiety. According to Sheldon's classification (1942), endomorphs are physically round, with broad hips, narrow shoulders, and fat in the torso, arms, and legs. In terms of personality, they tend to be comfortable with themselves, tolerant, social, fun-loving, humorous, balanced, calm, and enjoy eating and socializing. Ectomorphs, on the other hand, possessphysical characteristics quite the opposite those of endomorphic individuals, witha narrow chest, shoulders, and face, a lean body with thin arms and legs, and the ability to eat as much as endomorphs while remaining skinny. They are considered wise, withdrawn, thoughtful, silent, and private, with well-developed artistic tendencies, but exhibit high levels of social anxiety, are afraid to try new things, and generally inflexible. Mesomorphs, whose characteristics lie somewhere between those of endomorphs and ectomorphs, are portrayed as possessing an attractive, desirable body shape, with a slim waist and broad shoulders, and strong, muscular, lean arms, legs, and torso. Psychologically, they are adventurous, brave, ambitious individuals, unafraid of trying new things in the company of new people (Sheldon, 1942). In one of the few studies on Sheldon's somatotype classification and the attendant personality traits that pertain to athletics, Slaughter (1970) investigated the relationship between the somatotypes and personality traits of students in the physical education department. His findings aligned with Sheldon's hypothesis that mesomorphic individuals have low anxiety levels. However, other studies have failed to find any relationship between somatotype and personality (Catell & Metzner, 1993; Deabler, Hartl, & Willis, 1973).

As in other sports, swimming not only allows individuals to be physically active, but also provides anthropometric fitness. In addition, the sport of swimming benefits children and adolescents both physically and psychologically. Besides simply being fun, swimming as a physical activity works the whole body, providing numerous health benefits, and at a competitive level requires intensive strength and endurance training in a systematic manner (Dassanayake, Rajarathna, & Rajarathna, 2016; Pharr, Irwin, Layne, & Irwin, 2018). Similar to other sports, swimming has been shown to increase flexibility, muscle strength, and cardiovascular fitness, reduce depression and improve mood (Chase, Sui, & Blair, 2008; Lee & Oh, 2013). Studies have found the mesomorphic somatotype to be prevalent among swimmers, although there are differences between the somatotypes of young female and male swimmers (Martinez, Pasquarelli, Romaguera, Arasa, Tauler, & Aguilo, 2011; Zuniga et al., 2011).

Currently, there is a gap in the literature on the relationship between social anxiety, body composition, and somatotypes, a gap that is especially conspicuous with respect to young swimmers. The present study will therefore be useful in revealing this relationship in a sample of preadolescent competitive swimmers.As there have been virtually no studies focusing on the physical and psychological characteristics of student-athlete swimmers of different age groups in Turkey, the current study, by examining the relationship between social anxiety level and anthropometric measurement, body composition and body type, will contribute to the literature (Ayan & Kavi, 2016; Bostancı, Ateş, Yılmaz, & Kabadayı, 2017). More specifically, this study aimed to determine the relationship between competitive student-athlete swimmers' social anxiety levels and anthropometric measurements (height, weight, and BMI), body composition (body fat and lean body mass), and body type (ectomorph, endomorph, or mesomorph).

2. Method
2.1. Researh Design

The current study used a descriptive and correlational design, using a cross-sectional data. In a cross-sectional study, a predetermined group or events are examined at some point of time. Correlational research involves examining relationships between variables in a single group and often suggests the possibility of cause and effect (Fraenkel, Wallen, & Hyun, 2011).

2.2. Participants

This study included a conveniently selected 306 student-athlete swimmers (160 females and 146 males) competing in the Turkish National Swimming Championships who regularly train at least 3 days per week. All student-athletes were lower secondary education students. The mean age of the participants was 11.49 ±

.55 ($\bar{X}_{\text{female}}$ = 11.47, SD = 0.59; $\bar{X}_{\text{male}}$ = 11.53, SD = 0.50). Demographic data pertaining to the study participants is presented in Table 1.

Table1. Demographic data of the study participants

	Female (n = 160)		Male (n = 146)	
	$\bar{X}$	SD	$\bar{X}$	SD
Age	11.47	0.59	11.53	0.50
Experience (years)	5.36	1.86	5.34	1.92
Height (m)	1.53	0.07	1.52	0.07
Weight (kg)	44.50	8.67	42.58	7.25
BMI	18.86	2.59	18.43	2.18
Body fat percentage	16.61	3.99	15.60	4.89
Lean body mass	29.95	8.88	30.64	8.36
Ectomorphy	3.22	1.35	3.35	1.66
Endomorphy	3.11	0.95	2.83	0.91
Mesomorphy	2.79	1.36	3.32	1.64

2.3. Data Collection Instrument

The revised Turkish version of the Social Anxiety Scale was used to determine the social anxiety levels of the student-athlete swimmers participating in the study (Demir, Eralp-Demir, Türksoy, Özmen, & Uysal, 2000). As developed by La Greca, Dandes, Wick, Shaw, and Stone (1988), the scale originally consisted of 10 questions; it was later revised to 18 questions (La Greca & Stone, 1993). Using a five-point Likert-type scale (with the possible responses ranging from "not at all" to "always"), children are asked to indicate to what extent they agree with each statement. The scores generated by the scale, which includes items for evaluating social anxiety as well as the dimensions of distress/discomfort experienced in social settings, range from 18-90, with higher scores indicating elevated levels of social anxiety. The Cronbach's alpha value for the present study was .86.

2.4. Ethics statement

Ethical approval to undertake this study was obtained from the Ethics Committee of the ...University, Turkey. The approval of the Turkish Swimming Federation was also obtained. The student-athleteswimmers were provided with a description of the study procedures and methods that would be implemented and written informed consent and parental permission were obtained for each participant prior to the start of the study.

2.5. Procedures
2.5.1. Anthropometric measurements
Anthropometric parameters included measurements of body mass (kg), height (cm), BMI, body fat, and lean body mass. Body mass measurements for each participant were taken on the same day, in the morning, using a scale of ±100 grams, while height measurements were obtained using a Holtain brand sensitivity stadiometer (±1 mm). The participants were barefoot for the height measurements and wore swimsuits for their weight measurements. The BMI was obtained for each participant by dividing body mass (kg) by the square of the height (m).
2.5.2. Body composition measurements
Skinfold, circumference, and diameter measurement techniques were used to determine the participants' body fat percentage and lean body mass. Skinfold thickness measurements (biceps, triceps, subscapular, suprailiac regions, forearm, and thigh; in mm) were obtained using a Holtain brand skinfold caliper, while circumference measurements (biceps, forearm, thigh, and calf; in cm) were taken using a standard tape measure. A Holtain brand anthropometry set was used to measure the diameter of the femur and humerus in mm. All anthropometric measurements were conducted in the morning and in accordance with the techniques prescribed by the Anthropometric Standardization Reference Manual (ASRM) and the International Biological

Program (IBP) (Tanner, Hiernaux, & Jarman, 1969; Weiner & Lourie, 1969). The values obtained as a result of the measurements were incorporated into the Durnin and Womersley body fat percentage and Martin muscle mass formulas to yield body fat percentage and lean body mass, respectively (Durnin & Womersley, 1974; Martin, Spenst, Drinkwater, & Clarys, 1990).

Body Fat Percentage and Muscle Mass Calculation Formulas

Body fat percentage (%BF) was estimated by measuring four skinfold sites (triceps, biceps, subscapular and suprailiac), then entering the log of their sum into the Durnin and Womersley equations for males and females.

- D = predicted density of the body (g/ml),
- L = log of the total of the 4 skinfolds (mm).
- The density value can then converted to body fat percentage (%BF) using the Siri Equation.
- Body density equations for males and females aged < 17 years based on the Siri Equation.

D(males) = 1.1533 - (0.0643 x L)
D(females) = 1.1369 - (0.0598 x L)
%BF = (495 / Density) - 450.

Martin muscle mass = height x (0.0553x (thigh circumference corrected for the front thigh skinfold)^2 + 0.0987 x (uncorrected forearm circumference)^2 + 0.0331 x (calf circumference corrected for the medial calf skinfold thickness)^2) – 2445

2.5.3. *Body type measurements*

The Durnin and Womersley formula for body fat percentage (Durnin & Womersley, 1974) and Martin muscle mass formula for body muscle percentage (Martin, Spenst, Drinkwater, & Clarys, 1990) were used to determine somatotype values based on the method developed by Carter and Heath to identify somatotype characteristics (Carter & Heath, 1990).

Endomorphy, Mesomorphy, and Ectomorphy Calculation Formulas

- Endomorphy (height corrected) = - 0.7182 + 0.1451 (X) - 0.00068 (X^2) + 0.0000014 (X^3)
  X = sum of triceps, subscapular and supraspinal skinfolds multiplied by 170.18/height in cm.
- Mesomorphy = [(0.858 x humerus breadth) + (0.601 x femur breadth) + (0.188 x corrected arm girth) + (0.161 x corrected calf girth)] – (height x 0.131) + 4.50
- Ectomorphy = height-weight ratio x 0.732 - 28.58

2.6. Data Analysis

The Mann-Whitney U test was used to determine the existence of statistically significant differences between SAD scores, anthropometric measurements, and somatotype components by sex. Spearman's rank-order correlation analysis was used to identify statistically significant relationships (if present) between SAD levels, anthropometric measurements, and somatotypes.

3. Results

Using the Mann-Whitney U test, the data were analyzed to detect any significant differences between the young female and male student-athlete swimmers' social anxiety levels, years of athletic experience, heights, weights, BMI scores, body fat, and lean body mass levels, and ectomorphy, endomorphy, and mesomorphy. The results revealed no statistically significant differences between the female and male student-athlete swimmers with respect to social anxiety score (Mdn_{female}= 35.00, Mdn_{male}= 34.00), experience level (Mdn_{female}= 5.00, Mdn_{male}= 5.00), height (Mdn_{female}= 1.53, Mdn_{male}= 1.51), weight (Mdn_{female}= 43.50, Mdn_{male}= 42.70), BMI (Mdn_{female}= 18.60, Mdn_{male}= 18.25), lean body mass (Mdn_{female}= 335.35, Mdn_{male}= 33.60), or ectomorphy (Mdn_{female}= 3.40, Mdn_{male}= 3.30) (p> .05 for all) (Table 2). However, significant differences between the young female and male student-athlete swimmers were observed for body fat, endomorphy, and mesomorphy (Table 2). The female swimmer's body fat (Mdn= 16.00) and endomorphy (Mdn= 2.90) levels were higher than those of the male

student-athlete swimmers (*Mdn*= 14.60 and *Mdn*= 2.70, respectively), while their mesomorphy levels (*Mdn*= 2.85) were lower than those of the males (*Mdn*= 3.50) (Table 2).

Table2. The Mann-Whitney U test results showing differences in body type and somatotype parameters between female and male student-athlete swimmers

Variables	*U*	*Z*	*p*
SAD score	10996.50	-.89	.38
Experience	11423.50	-.23	.81
Height	10389.50	-1.68	.09
Weight	10281.00	-1.81	.07
BMI	10757.50	-1.19	.23
Body fat	9403.00	-2.95	.01
Lean body mass	11495.00	-.24	.81
Ectomorphy	11149.50	-.69	.49
Endomorphy	9585.00	-2.71	.01
Mesomorphy	8848.00	-3.66	.001

A series of Spearman rank-order correlations was conducted in order to determine the existence of any relationships between social anxiety level and anthropometric measures (height, weight, BMI), body composition (body fat percentage, lean body mass), and body type (ectomorph, endomorph, mesomorph) parameters of the student-athlete swimmers. Calculations to determine the relationship between body type and somatotype parameters, the latter exhibiting some variation according to sex, and social anxiety levels were performed separately for the young female and male student-athlete swimmers. The results of the analyses found no significant relationship between social anxiety level and BMI (r_s (306) = -.01, p> .05), body muscle (r_s (306) = -.02, p> .05), or ectomorphy (r_s (306) = -.01, p> .05). In addition, female social anxiety was not associated with body fat (r_s (160) = .12, p> .05), endomorphy (r_s (160) = .07, p> .05), or mesomorphy (r_s (160) = .03, p> .05), norwas male social anxiety with body fat (r_s (160) = .01, p> .05), endomorphy (r_s (160) = .07, p> .05), or mesomorphy (r_s (160) = -.01, p> .05) (Table 3).

Table 3. Correlations between social anxiety, lean body mass, BMI, body fat, and body type

	Spearman's correlation with SAD score
All participants	
BMI	-.002
Lean body mass	-.017
Ectomorphy	-.006
Female swimmers	
Body fat	.116
Endomorphy	.067
Mesomorphy	.032
Male swimmers	
Body fat	.005
Endomorphy	.065
Mesomorphy	-.001

4. **Discussion**

The present study was designed to investigate the relationship between social anxiety levels and anthropometric measurements and body types of young student-athlete swimmers aged 11-12. Our study found that the student-athlete swimmers had low social anxiety levels. Consistent with these findings, the participation of children and adolescents in sports has been found to have a positive effect on reducing anxiety (Eime et al., 2013; Kirkcaldy, Shephard, & Siefen, 2002). In particular, children and adolescents between the ages of 5-17 are advised to engage in moderate to vigorous levels of physical activity for 60 minutes per day. Maintaining this activity level, in addition to its positive effects on physical health (increased physical fitness, reduced body fat, etc.), helps reduce depression and anxiety (PAGAC, 2008). Since the children in this study train regularly as competitive student-athlete swimmers, we believe that this activity has a positive effect on their social anxiety levels, keeping them low. Studies have proposed various explanations for the low level of social anxiety experienced by physically active individuals. One such explanation is the endorphin hypothesis, also referred to as "runner's high," which suggests that endorphin secreted by exercise has a positive effect on the individual's mood, increasing the overall sense of well-being. While there are some studies supporting and others criticizing this hypothesis, researchers have agreed that an individual's sense of well-being of individuals tends to increase due to the psychological and physical effects of exercise (Craft & Perna, 2004; Dinas, Koutedakis, & Flouris, 2011; Weinberg & Gould, 1995). Another explanation for the relationship between athletic activity and anxiety is that regular participation in sports or other physical activity increases physical skill, overall physical fitness, and muscle density while reducing fat. As a result, a person experiences increased satisfaction with his/her body and receives more praise from others, thus contributing to a more positive emotional perception of him/her (Dimech & Seiler, 2010; Sonstroem, 1984; Sonstroem, 1998; Sonstroem & Potts, 1996). The positive effects of participation in sports on social development have been discussed in numerous studies emphasizing that individuals' perceptions of their ability to create the desired impressions in others are related to their levels of social anxiety, especially in connection with the perceived adequacy or inadequacy of their physical characteristics in terms of how they present themselves (Dimech & Seiler, 2010; Eime et al., 2013). This situation is also valid for the swimmers that comprise the sample population of this study, a situation believed to explain their low social anxiety levels.

Our findings indicated that the lower levels of social anxiety observed in our study participants did not significantly differ according to their gender, as social anxiety levels for both young female and male student-athlete swimmers were similar, consistent with the results of some other studies (Hashempour, Mansor, Juhari, Arshat, & Saidu, 2017; Lyneham, Street, Abbot, & Rapee, 2008). However, some studies have reported significant differences in social anxiety levels between young men and women (Asher, Asnaani, & Aderka, 2017; Essau, Conradt, & Petermann, 1999; MacKenzie & Fowler, 2013; Merikangas et al., 2010). As highlighted above, the fact that the student-athlete swimmers in this study engage in regular swimming training is thought to reduce their level of social anxiety regardless of gender.

Our results showed that the participants' body fat percentage, endomorphy, and mesomorphy values differed according to gender; however, this difference was not reflected in the relationship with their social anxiety levels. Although Sheldon (1942) stated that there is a relationship between endomorphic, ectomorphic, and mesomorphic traits and personality types, and hence, between body type and social anxiety, in the present study no association was found between body types and social anxiety scores for either the female or male participants. Deabler et al. (1973) investigated the relationship between the body types and personality traits of adult veterans and concluded that there was no significant association between the two variables. In a study conducted with young male participants aged 14-15, Fieldsend (1980) examined the relationship between numerous variables and failed to find any relationship between somatotype and personality. Similarly, Cavala et al. (2013) observed no significant relationship between the somatotypes and personality traits of handball players aged 15-31. However, other studies have found correlations between somatotype and personality traits. One such study was conducted by Slaughter (1970) to investigate the relationship between somatotype and personality traits in 157 young female college students pursuing coursework in the fundamentals of physical education. Sheldon, Dupertuis, and McDermott (1970) discovered a positive relationship between mesomorphy and low anxiety levels. In other words, an increase in muscularity or a more athletic-type body positively correlated with decreased anxiety levels in young college women. In the present study, we believe that because the participating student-athlete swimmers were competitive athletes, the body types identified were not the kind that would lead to social anxiety.

The research findings herein did not reveal any relationship between social anxiety levels and body fat, body mass, or BMI values for either the female or male student-athlete swimmers. Although a definite age range is not pinpointed in the literature, the importance of the period from early childhood to late adolescence in the development of social anxiety disorder has been emphasized (Essau et al., 1999; La Greca & Ranta, 2015; Rosellini, Rutter, Bourgeois, Emmert-Aronson, & Brown, 2013; Stein, Chavira, & Jang, 2001). It is during this period, with the onset of puberty, that significant changes in body shape, proportions, and functioning occur, and such factors as height, weight, and skin quality may lead to social anxiety for the adolescent (La Greca & Ranta, 2015). This is because the bodies of adolescents are (partially) exposed to others during the socialization process, and these individuals are concerned that they will be negatively judged by their peers or others during this process (Abdollahi, Abu Talib, Vakili Mobarakeh, Momtaz, & Kavian Mobarake, 2016; Smith, 2003). Although the 11-12 age group of the student-athlete swimmers in this study has been identified as an important age for the development of social anxiety, no association was observed between social anxiety levels and their physical characteristics, due to the latter not being of such a nature that would tend to cause feelings of anxiety or result in negative evaluations on the part of others. In other words, when body fat values are low, lean body mass values are high, and BMI values are in the normal range, there appears to be no relationship between physical characteristics and social anxiety levels (Smith, 2003). Although there are few studies directly investigating the relationship between social anxiety and body fat, lean body mass, and BMI levels, these variables are often included in the assertion of a relationship between the more frequently studied obesity and social anxiety (Gariepy, Nitka, & Schmitz, 2010). In one such study, a statistically significant correlation between BMI and social anxiety was observed (Zhao, Ford, Dhingra, Strine, & Mokdad, 2009), while another study with young women found an association between BMI and mental disorders, with incidence of the latter increasing with BMI (Becker, Margraf, Türke, Soeder, & Neumer, 2001). In one study conducted with girls whose ages averaged 11-12 years, the researchers investigated the relationship between BMI and social anxiety in different ethnic groups, reporting that social anxiety increased with an increase in BMI. There have also been studies that found no relationship between BMI and anxiety (Guedes et al., 2013).

Among the objectives of the present study was the examination of the relationship between somatotype and personality (more specifically, SAD) in athletes, a topic that has undergone only limited investigation in past years and heretofore produced inconsistent results. Although recent studies on this topic exist (Cavala et al., 2013), the great majority were carried out approximately 40 or more years ago (Deabler et al., 1973; Eysenck, Nias, & Cox, 1982; Fieldsend, 1980; Sheldon et al., 1970). The investigation of this relationship in our study on young student-athlete swimmers aged 11-12, which found no association between somatotype and SAD, nonetheless constitutes a contribution to the literature. Our research findings yielded current data concerning the relationship between body types and personality in preadolescent student-athlete swimmers, a relationship that has been a topic of debate since Sheldon's study was published in 1942.

There are several limitations to consider in evaluating the findings of the present study. The first of these concerns the sample selected to determine the relationship between SAD and somatotype. Although there are some differences between males and females in terms of somatotype, there nonetheless exist those possessing similar somatotypes. The non-inclusion of athletes with different somatotypes and SAD levels is another limitation. In addition, our sample consisted only of preadolescent student-athlete swimmers aged 11-12, a potentially limiting factor for generalizing our findings to other populations.

Our research findings indicate that the low SAD values obtained in our sample of 11-12-year-old student-athlete swimmers support the wisdom of directing children toward participation in sports. We believe that encouraging children to participate in sports may offer a solution to decrease anxiety in children with social anxiety or to prevent its emergence altogether. Furthermore, we believe that these findings will have repercussions in the fields of both psychology and education. The current study presents important evidence in support of bolstering the position of athletics in education, and especially of emphasizing swimming in the athletic curriculum. As the literature has thus far been quite limited on the subject of the relationship between somatotype and social anxiety, our results constitute a meaningful contribution to the existing literature on this topic.

The findings of this study present a number of possibilities for future research. Firstly, further studies are needed to assess whether or not our findings are valid for other populations. Examination of the relationship

between SAD and body types using different sample populations, comparison of athletes with non-athletes, or, especially, focusing on sample groups with different body types, will all contribute to our knowledge in this field. Additionally, studies on whether individuals exhibit behaviors in relation to their body types should be conducted, employing both qualitative and mixed methods.

5. References

Abdel-Aziz, E. A., Hamza, R. T., Youssef, A. M., & Mohammed, F. M. (2014). Health related quality of life and psychological problems in Egyptian children with simple obesity in relation to body mass index. *Egyptian Journal of Medical Human Genetics, 15*(2), 149-154. doi:10.1016/j.epag.2016.05.001

Abdollahi, A., Abu Talib, M., Reza Vakili Mobarakeh, M., Momtaz, V., & Kavian Mobarake, R. (2016). Body-esteem mediates the relationship between self-esteem and social anxiety: The moderating roles of weight and gender. *Child Care in Practice, 22*(3), 296-308. doi:10.1080/13575279.2015.1054787

American Psychiatric Association (APA) (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Publisher.

Antony, M., & Swinson, R. (2008). *The shyness and social anxiety workbook: Proven, step-by-step techniques for overcoming your fear*. New Harbinger Publications.

Antony, M. M., & Rowa, K. (2008). Social anxiety disorder: Psychological approaches to assessment and treatment. Göttingen, Germany: Hogrefe.

Anderson, S. E., Cohen, P., Naumova, E. N., & Must, A. (2006). Association of depression and anxiety disorders with weight change in a prospective community-based study of children followed up into adulthood. *Archives of Pediatrics & Adolescent Medicine, 160*(3), 285-291. doi:10.1001/archpedi.160.3.285

Anderson, S. E., Cohen, P., Naumova, E. N., Jacques, P. F., & Must, A. (2007). Adolescent obesity and risk for subsequent major depressive disorder and anxiety disorder: Prospective evidence. *Psychosomatic Medicine, 69*(8), 740-747. doi:10.1097/PSY.0b013e31815580b4

Ashdown-Franks, G., Sabiston, M. C., Solomon-Krakus, S., & O'Loughlin, L. J. (2017). Sport participation in high school and anxiety symptoms in young adulthood. *Mental Health and Physical Activity, 12*, 19-24. doi:10.1016/j.mhpa.2016.12.001

Asher, M., Asnaani, A., & Aderka, I. M. (2017). Gender differences in social anxiety disorder: A review. *Clinical Psychology Review, 56*, 1-12. doi:10.1016/j.cpr.2017.05.004

Ayan, V., & Kavi, N. (2016). The study of the somatotypes and the horizontal jump performance characteristics of the female swimmers aged between 8 and 14. *International Journal of Science and Sport, 4*(Special issue 4), 23-29. doi:10.14486/IntJSCS510

Barry, D., Pietrzak, R. H., & Petry, N. M. (2008). Gender differences in associations between body mass index and DSM-IV mood and anxiety disorders: Results from the National Epidemiologic Survey on alcohol and related conditions. *Annals of Epidemiology, 18*(6), 458-466. doi:10.1016/j.annepidem.2007.12.009

Becker, E. S., Margraf, J., Türke, V., Soeder, U., & Neumer, S. (2001). Obesity and mental illness in a representative sample of young women. *International Journal of Obesity, 25*(S1), 5-9. doi:10.1038/sj.ijo.0801688

Beidel, D. C., Turner, S. M., & American Psychological Association (APA) (2007). Shy children, phobic adults: Nature and treatment of social anxiety disorder. Washington, DC: American Psychological Association.

Bitsko, R. H., Holbrook, J. R., Ghandour, R. M., Blumberg, S. J., Visser, S. N., Perou, R., & Walkup, J. T. (2018). Epidemiology and impact of health care provider–diagnosed anxiety and depression among US children. *Journal of Developmental & Behavioral Pediatrics, 39*(5), 395–403. doi:10.1097/DBP.0000000000000571

Bostancı, Ö, Ateş, A, Yılmaz A. K., & Kabadayı, M. (2017). 12–13 yaş yüzücülerin cinsiyetlerine göre antropometrik özelliklerinin karşılaştırılması. *İnönü Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi, 4*(3), 12-21.

Cavala, M., Trninic, V., Jasic, D., & Tomljanovic, M. (2013). The influence of somatotype components and personality traits on the playing position and the quality of top Croatian female cadet handball players. *Collegium Antropologicum, 37*(2), 97-100.

Carter, J. L., & Heath, B. H. (1990). *Somatotyping: Development and applications.* Cambridge, NY: Cambridge University Press.

Catell, P., & Metzner, R. (1993). Associations among somatotype, temperament and self-actualization. *Psychological Reports, 72*(3_suppl), 1165-1166. doi:10.2466/pr0.1993.72.3c.1165

Chase, N. L., Sui, X., & Blair, S. N. (2008). Comparison of the health aspects of swimming with other types of physical activity and sedentary lifestyle habits. *International Journal of Aquatic Research & Education, 2*(2), 151-161. doi:10.25035/ijare.02.02.07

Craft, L. L., & Perna, F. M. (2004). The benefits of exercise for the clinically depressed. *Primary Care Companion to the Journal of Clinical Psychiatry, 6*(3), 104-111. doi:10.4088/pcc.v06n0301

Crisp, A. H., & McGuiness, B. (1976). Jolly fat: relation between obesity and psychoneurosis in general population. *British Medical Journal, 1*(6000), 7-9. doi:10.1136/bmj.1.6000.7

Crozier, M., Gillihan, S. J., & Powers, M. B. (2011). Issues in differential diagnosis: Phobias and phobic conditions. In D. McKay & E. A. Storch (Eds.), *Handbook of child and adolescent anxiety disorders* (pp. 7-22). New York, NY: Springer.

Creswell, C., Waite, P., & Cooper, P. J. (2014). Assessment and management of anxiety disorders in children and adolescents. *Archives of Disease in Childhood, 99*(7), 674-678. doi:10.1136/archdischild-2013-303768

Dassanayake, T. D. M. S. B., Rajarathna, S., & Rajarathna, A. A. J. (2016). Comparison of BMI and body fat percentages between national level teenage swimmers and controls. *Advances in Obesity, Weight Management & Control, 4*(6), 148-152. doi:10.15406/aowmc.2016.04.00109

Deabler, H. L., Hartl, E. M., & Willis, C. A. (1973). Physique and personality: Somatotype and the 16 PF. *Perceptual & Motor Skills, 36*(3), 927-933. doi:10.2466/pms.1973.36.3.927

Demir, T., Eralp-Demir, D., Türksoy, N., Özmen, E., & Uysal, Ö. (2000). Çocuklar için sosyal anksiyete ölçeğinin geçerlik ve güvenilirliği. *Düşünen Adam, 13*(1), 42-48.

Dimech, A. S., & Seiler, R. (2010). The association between extra-curricular sport participation and social anxiety symptoms in children. *Journal of Clinical Sport Psychology, 4*(3), 191-203. doi:10.1123/jcsp.4.3.191

Dinas, P. C., Koutedakis, Y., & Flouris, A. D. (2011). Effects of exercise and physical activity on depression. *Irish Journal of Medical Science, 180*(2), 319-325. doi:10.1007/s11845-010-0633-9

Durnin, J. V. G . A., & Womersley, J. (1974). Body fat assessed from the total body density and its estimation from skinfold thickness: Measurements on 481 men and women aged from 16 to 72 years. *British Journal of Nutrition, 32*, 77-97. doi:10.1079/bjn19740060

Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: Informing development of a conceptual model of health through sport. *International Journal of Behavioral Nutrition and Physical Activity, 10*, 98. doi:10.1186/1479-5868-10-98

Ejike, C. E. (2013). Association between anxiety and obesity: A study of a young-adult Nigerian population. *Journal of Neurosciences in Rural Practice, 4*(Suppl 1), S13-S18. doi:10.4103/0976-3147.116429

Essau C. A., & Ollendick T. H. (2013). *The Wiley-Blackwell handbook of the treatment of childhood and adolescent anxiety.* Chichester: Wiley-Blackwell.

Essau, C. A., Conradt, J., & Petermann, F. (1999). Frequency and comorbidity of social phobia and social fears in adolescents. *Behaviour Research and Therapy, 37*(9), 831-843. doi:10.1016/s0005-7967(98)00179-x

Eysenck, H. J., Nias, D. K. B., & Cox, D. N. (1982). Sport and Personality. *Advances in Behaviour Research and Therapy, 4*(1), 1-56. doi:10.1016/0146-6402(82)90004-2

Fieldsend, J. R. (1980). The interrelationship of physical fitness, somatotype, body cathexis and personality in a group of white schoolboys (Unpublished doctoral dissertation). Rhodes University, South Africa.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2011). How to design and evaluate research in education. New York: McGraw-Hill Humanities/Social Sciences/Languages

Gariepy, G., Nitka, D., & Schmitz, N. (2010). The association between obesity and anxiety disorders in the population: A systematic review and meta-analysis. *International Journal of Obesity, 34*(3), 407-419. doi:10.1038/ijo.2009.252

Guedes, E. P., Madeira, E., Mafort, T. T., Madeira, M., Moreira, R. O., Mendonça, L. M., ... & Farias, M. L. F. (2013). Body composition and depressive/anxiety symptoms in overweight and obese individuals with metabolic syndrome. Diabetology & Metabolic Syndrome, 5(1), 82. doi:10.1186/1758-5996-5-82

Hashempour, S., Mansor, M., Juhari, R., Arshat, Z. B., & Saidu, M. B. (2017). Gender and age differences in social anxiety among Iranian immigrants children in Kuala Lumpur Malaysia. *International Journal of Humanities and Social Science Invention, 6*(4), 85-89.

Hope, D. A., Heimberg, R. G., & Turk, C. L. (2010). Managing social anxiety: A cognitive-behavioral therapy approach (workbook). New York, NY: Oxford University Press.

Jewett, R., Sabiston, C. M., Brunet, J., O'Loughlin, E. K., Scarapicchia, T., & O'Loughlin, J. (2014). School sport participation during adolescence and mental health in early adulthood. *Journal of Adolescent Health, 55*(5), 640-644. doi:10.1016/j.jadohealth.2014.04.018

Kellett, J., Marzillier, J. S., & Lambert, C. (1981). Social skills and somatotype. *British Journal of Medical Psychology, 54*(2), 149–155. doi:10.1111/j.2044-8341.1981.tb01444.x

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and ageof onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 593–602. doi:10.1001/archpsyc.62.6.593

Kessler, R. C., Chiu, W. T., Demler, O., Merikangas, K. R., & Walters, E. E. (2005). Prevalence, severity andcomorbidity of 12-month DSM-IV disorders in the National Comorbidity SurveyReplication. *Archives of General Psychiatry, 62*(6), 617–627. doi:10.1001/archpsyc.62.6.617

Khalid-Khan, S., Santibanez, M. P., McMicken, C., & Rynn, M. A. (2007). Social anxiety disorder in children and adolescents. *Pediatric Drugs, 9*(4), 227-237. doi:10.2165/00148581-200709040-00004

Kirkcaldy, B. D., Shephard, R., & Siefen. G. (2002). The relationship between physical activity and self–image and problem behavior among adolescents. *Social Psychiatry and Psychiatric Epidemiology, 37*, 544-550. doi:10.1007/s00127-002-0554-7

Kivimaki, M., Lawlor, D. A., Singh-Manoux, A., Batty, G. D., Ferrie, J. E., Shipley, M. J., ... & Jokela, M. (2009). Common mental disorder and obesity: Insight from four repeat measures over 19 years: Prospective Whitehall II cohort study. *British Medical Journal, 339*, b3765. doi:10.1136/bmj.b3765

La Greca, A. M., & Ranta, K. (2015.) Developmental transitions in adolescence and their implications for social anxiety. In K. Ranta, K., A. M. La Greca, M. Marttunen, & L. J. Garcia-Lopez (Eds.), *Social anxiety and social phobia in adolescents: Development, manifestation, and treatment strategies* (pp. 95-117). New York, NY: Springer

La Greca, A. M., Dandes, S. K., Wick, P., Shaw, K., & Stone, W. L. (1988). Development of the Social Anxiety Scale for Children: Reliability and concurrent validity. *Journal of Clinical Child Psychology, 17*, 84–91. doi:10.1207/s15374424jccp1701_11

La Greca, A. M., & Stone, W. L. (1993). Social anxiety scale for children-revised: Factor structure and concurrent validity. *Journal of Clinical Child Psychology, 22*(1), 17-27. doi:10.1207/s15374424jccp2201_2

Lamertz, C. M., Jacobi, C., Yassouridis, A., Arnold, K., & Henkel, A. W. (2002). Are obese adolescents and young adults at higher risk for mental disorders? A community survey. *Obesity Research, 10*(11), 1152-1160. doi:10.1038/oby.2002.156

Lee, B. A., & Oh, D. J. (2013). The effects of health perception on living health belief, living satisfaction and wellbeing-oriented activities according to swimming participation with middle-aged women. *Journal of Exercise Rehabilitation, 9*(3), 381-388. doi:10.12965/jer.130047

Lyneham, H. J., Street, A. K., Abbott, M. J., & Rapee, R. M. (2008). Psychometric properties of the school anxiety scale—Teacher report (SAS-TR). *Journal of Anxiety Disorders, 22*(2), 292-300. doi:10.1016/j.janxdis.2007.02.001

Martin, A. D., Spenst, L. F., Drinkwater, D. T., & Clarys J. P. (1990). Anthropometric estimation of muscle mass in men. *Medicine and Science in Sports and Exercise, 22*, 729-733. doi:10.1249/00005768-199010000-00027

Martinez, S., Pasquarelli, B. N., Romaguera, D., Arasa, C., Tauler, P., & Aguilo, A. (2011). Anthropometric characteristics and nutritional profile of young amateur swimmers. *The Journal of Strength & Conditioning Research, 25*(4), 1126-1133. doi:10.1519/JSC.0b013e3181d4d3df

MacKenzie, M. B., & Fowler, K. F. (2013). Social anxiety disorder in the Canadian population: Exploring gender differences in sociodemographic profile. *Journal of Anxiety Disorders, 27*(4), 427-434. doi:10.1016/j.janxdis.2013.05.006

Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., ... & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry, 49*(10), 980-989.

Pharr, J., Irwin, C., Layne, T., & Irwin, R. (2018). Predictors of swimming ability among children and adolescents in the United States. *Sports (Basel), 6*(1), 17. doi:10.3390/sports6010017

Physical Activity Guidelines Advisory Committee (PAGAC). (2008). *Physical activity guidelines advisory committee report*. Washington, DC: US Department of Health and Human Services, 2008, A1–H14. Retrieved from https://health.gov/paguidelines/2008/report/pdf/committeereport.pdf

Roberts, R. E., Deleger, S., Strawbridge, W. J., & Kaplan, G. A. (2003). Prospective association between obesity and depression: Evidence from the Alameda County Study. *International Journal of Obesity, 27*(4), 514-521. doi:10.1038/sj.ijo.0802204

Rosellini, A. J., Rutter, L. A., Bourgeois, M. L., Emmert-Aronson, B. O., & Brown, T. A. (2013). The relevance of age of onset to the psychopathology of social phobia. *Journal of Psychopathology and Behavioral Assessment, 35*(3), 356-365. doi:10.1007/s10862-013-9338-5

Sheldon, W. H. (1942). *The varieties of temperament; A psychology of constitutional differences.* Oxford, England: Harper.

Sheldon, W. H., Dupertuis, C. W., & McDermott, E. (1970). *Atlas of men: A guide for somatotyping the adult male at all ages.* Macmillan Pub. Co.

Slaughter, M. (1970). An analysis of the relationship between somatotype and personality traits of college women. *Research Quarterly, 41*(4), 569-575. doi:10.1080/10671188.1970.10615017

Smith, A. L. (2003). Peer relationships in physical activity contexts: A road less traveled in youth sport and exercise psychology research. *Psychology of Sport and Exercise, 4*(1), 25-39. doi:10.1016/S1469-0292(02)00015-8

Sonstroem, R. J. (1984). Exercise and self-esteem. *Exercise and Sport Sciences Reviews, 12*, 123-155.

Sonstroem, R. J. (1998). Physical self-concept: Assessment and external validity. *Exercise and Sport Sciences Reviews, 26*, 133-164.

Sonstroem, R. J., & Potts, S. A. (1996). Life adjustment correlates of physical self-concepts. *Medicine & Science in Sports & Exercise, 28*(5), 619-625. doi:10.1097/00005768-199605000-00014

Stein, M. B., Chavira, D. A., & Jang, K. L. (2001). Bringing up bashful baby: Developmental pathways to social phobia. *Psychiatric Clinics, 24*(4), 661-675. doi:10.1016/S0193-953X(05)70256-2

Tanner, J. M., Hiernaux, J., & Jarman, S., (1969). Growth and physique studies. In Weiner, J. S., & Lourie, J. A., (Eds.), *In human biology: a guide to field methods.* Blackwell Scientific Publications, Oxford.

Weinberg, R. S., & Gould, D. (1995). *Foundations of sport and exercise psychology.* Champaign, IL, England: Human Kinetics Publishers.

Weiner, J. S., & Lourie, J. A. (1969). *In human biology: A guide to field methods,* Edinburgh: Published for the International Biological Programme by Black well Scientific, Oxford.

Zeigler, E. F. (1948). Implications of the study of body types for physical education. *The Journal of Health and Physical Education, 19*(4), 241-297. doi:10.1080/23267240.1948.10625408

Zhao, G., Ford, E. S., Dhingra, S., Li, C., Strine, T. W., & Mokdad, A. H. (2009). Depression and anxiety among US adults: Associations with body mass index. *International Journal of Obesity, 33*(2), 257-266. doi:10.1038/ijo.2008.268

Zuniga, J., Housh, T. J., Mielke, M., Hendrix, C. R., Camic, C. L., Johnson, G. O., ... & Schmidt, R. J. (2011). Gender comparisons of anthropometric characteristics of young sprint swimmers. *The Journal of Strength & Conditioning Research, 25*(1), 103-108. doi:10.1097/01.JSC.0000367244.85880.41
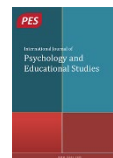
A Validity and Reliability Study of the Basic STEM Skill Levels Perception Scale

Özgen Korkmaz[1], Recep Çakır[2], Feray Ugur-Erdogmus[3]

[1]*Amasya University, Technology Faculty, Department of Computer Engineering, Amasya, Turkey*

[2]*Amasya University, Education Faculty, Department of CEIT, Amasya, Turkey*

[3]*Vocational School of Design, Computer Aided Design and Animation, Amasya, Turkey*

ARTICLE INFO	ABSTRACT
	The aim of this study is to develop a perception scale related to the possible basic skills that can be gained through STEM. Participants of this study were 723 university students. In this study, descriptive survey study was conducted. To identify validity of the scale exploratory factor analysis, cumulative item factor, corrected correlations and item discrimination were calculated. For reliability internal consistency and stability level were calculated. Collected data were analyzed in terms of arithmetic mean, standard deviation, t and ANOVA. The scale is a 7-point likert-type scale which consists of 43 items under 3 factors. Data analysis results showed that this scale is valid and reliable for measuring students' STEM skills according to their perceptions.

1. Introduction

Along with the developing world economy, science and technology have improved further since the second half of 20th century (Yıldırım & Selvi, 2017). Considering this realm, training productive learners who are inquisitive about science; who are problem solvers and creative, self-perpetuating individuals has become one of the most important objectives of education. To develop 21st century skills and train these individuals, countries should review and reform their educational systems (Bybee, 2013). As it is the case for many subject areas, when a glance is taken at the aims of science educational program, training students as science literate individuals is of crucial importance. It is expected from the science literate individuals to be collaborative, to make good use of communication skills, to be a life-long learner and to embrace knowledge, skills, attitudes, perceptions and values that science contains (Stinson, Harkness, Meyer & Stallworth, 2009). On the other hand, science literate individuals can use scientific knowledge, interpret world by defining problems based on evidences and derived results, and determine what kind of changes may occur and their causes according to possible changes of human activities (Rogers & Porstmore, 2004). Individuals want to explore and transfer knowledge through the generations by developing these explorations and inventions. These explorations and inventions are attained by converting theoretical knowledge into usable forms (Daugherty, 2009; Yılmaz, Gülgün & Çağlar, 2017). For sure, generating theories, developing explorations and inventions based on these theories require an interdisciplinary effort.

Science, Technology, Engineering and Mathematics (STEM) education aims to approach problems with an interdisciplinary approach (Honey, Pearson & Schweingruber, 2014; Yılmaz, Gülgün & Çağlar, 2017). STEM

Education focuses on three themes: gaining problem solving skills, being innovative and being capable of designing (Hernandez, et. al., 2014; Yılmaz, Gülgün & Çağlar, 2017). Problem solving-oriented interdisciplinary point of view is accompanied with teaching Science, Technology, Engineering and Mathematics areas in a combined fashion and this point of view enabled the formation of STEM education (Hernandez, et al., 2014, 108; Gülhan & Şahin, 2016). By definition, STEM aims to take individuals at an interdisciplinary level that includes Science, Mathematics, Engineering and Technology areas (Sullivan, 2008). Within this framework STEM is an approach that teachers support students constantly and encourage them to produce, to solve problems and to be in search of a better solution than the usual solution(s) (Yılmaz, Gülgün & Çağlar, 2017).

As the STEM education gained popularity, quality of it began to be questioned. It is suggested that to educate creative and innovative individuals should include science, technology, engineering and mathematics areas and this approach is called as STEAM (Yakman, 2008). Yakman (2008) formed a pyramid and divided it into four areas to define the STEAM education. In this pyramid at the lowest step topics of the STEAM disciplines are placed in a separate manner. The *disciplined specific* upper step is placed on the top of the first step and disciplines formed on these topics. Then at the third, *multidisciplinary* step, STEM education and art are placed. The fourth step which is called *integrative* step represents STEAM that integrates all disciplines and arts.

Before introducing STEM education, first theoretical framework should be taught (Yılmaz, Gülgün & Çağlar, 2017). This framework holds the knowledge of STEM subjects, integration and 21st century skills. 21st century skills point out upper-level thinking skills that students need for fulfilling necessities of the information age and also underline their learning tendencies (Whittle, Pell & MurdochEaton, 2010). These skills still constitute a requirement for students and schools are struggling for this very purpose (Günüç, Odabaşı & Kuzu, 2013). Students should be the individuals who are flexible, able to take initiatives if required and able to produce new and useful products (Gelen, 2007). According to World Economic Forum while skills that are going to be needed in 2015 were listed as complex problem solving, coordinating with others, people management, critical thinking, negotiation, quality control, service orientation, judgment and decision making, active listening and creativity; skills that are going to be needed in 2020 are articulated as complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation and cognitive flexibility (Gökkurt, Örnek, Hayat & Soylu, 2015). While maintaining their academic/learning life, being aware of the skills related to the demands of their future vision, the ones for the business world is essential for learners and developing themselves in accordance with these skills is critical to that end (MNE, 2011). All skills that are expected to be even more important in the 21st century are closely related to lifelong learning concept. Sustaining lifelong learning activities to develop students' knowledge, skills and abilities with respect to personal, citizenship, social and/or employment perspectives will be a suitable approach to be able to target the necessities of this age (Keçeci, Alan & Kırbağ Zengin; 2017). According to MNE (2011) skills that students should have in the 21st century addressed in four main themes, which are ways of thinking, ways of working, working tools and integration with world. Innovative/creative thinking and to be open for these, critical thinking, problem solving and decision making, using learning strategies/learning how to learn and having higher-order cognitive skills and self-evaluation can be considered within the scope of 'the ways of thinking'.

In this regard, in the STEM education process measurement of both academic achievements and the 21st century skills of the students are necessary. It is possible to utter that performance evaluation is the most common measurement and evaluation method in STEM education. In this method there are two parts: performance task and rubrics. The difference between the performance tasks and multiple-choice tests, which require choosing the right choice, is that students produce their own answers rather than arriving at the right choice amongst the provided ones. Rubric is the most common measurement tool. It is possible to come across rubric examples in the literature that are used for identifying to what extent students have the 21st century skills. However, these rubrics are the tools which are used in a rather discipline-dependent way. Moreover, teachers should observe students one by one in rubrics. Result of the literature review showed that there is not any valid or reliable scale developed to measure, STEM skills. In addition, there are limited numbers of studies related to possible basic skills that can be gained through STEM. Therefore, the aim of this study is to develop a valid and reliable perception scale to measure basic STEM skills levels of students according to their perceptions.

2. Methodology

2.1. Research Method

This study is a scale development study as well as being a descriptive one. A survey model was carried out. In this scope basis STEM skill levels perception scale was developed.

2.2. Participants

Participants of this study consisted of 723 university students who were students of elementary mathematics education, elementary science education and computer and instructional technology departments of education faculty and electrical and electronics engineering and mechanical engineering departments of engineering faculty of Amasya University in 2018 spring semester. While administering study groups, quantitative fields are chosen because students of these fields are thought to possess basic mathematics, science, engineering and technology skills. Volunteering students participated in this study. 361 of the participants were female and 362 of them were male. Distribution of the participants according to department and grade level is summarized in Table 1.

Table 1. Distribution of participants according to grades and departments

Department	Grade				Total
	1	2	3	4	
Elementary Mathematics Education	35	46	42	34	157
Elementary Science Education	23	44	58	74	199
Computer Education and Instructional Technology	3	34	38	0	75
Electrical and Electronics Engineering	45	60	50	45	200
Mechanical Engineering	40	52	0	0	92
Total	146	236	188	153	723

It is assumed that the students who will be included in the scope of the study have sufficient knowledge in engineering, science, mathematics and technology. When the curricula of these departments are examined, it is seen that there are many courses related to basic STEM skills. Hence these departments were selected as places to collect the relevant data. In that sense it can be expected that the differences between the items on the scale will be high.

2.3. Development process of the scale

Development process of this scale was initiated with literature review and creation of an item pool. There are many achievement scales related to STEM in the literature. Because of the nature of STEM almost all of these scales are comprised of field-specific open-ended questions and rubrics (Çepni, 2018). In this study, it is intended to develop a scale related to the possible basic skills that can be gained through STEM and how these skills are measured in support of field-specific test in the literature. Within these frameworks qualified items which could be answers to the following questions were attempted to be produced. To ensure that the item pool is as rich as possible, the questions are kept fairly general.

(1) Which skills are aimed to be developed with STEM?
(2) How does a student who has STEM skills behave?
(3) What kind of actions a student makes if they possess STEM skills?
(4) What are the target learning outcomes at the end of the STEM process in general?
(5) What are the evidences that show students have STEM skills?

Moreover, rubrics and learning outcomes pertaining to different levels of curriculum presented on the web pages of Stanford NGSS Assessment Project (SNAP, 2018) and Next Generation Science Standards (NGSS, 2018) are converted to a field-independent format and added onto the following item pool. For example, a learning outcome placed in DCI Arrangements of the Next Generation Science Standards (NGSS, 2018) and stated as "3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets." was adapted as a can-do statement: "I can define simple design problems that can be solved by applying scientific ideas about any subjects". Another learning outcome that is stated as "4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another." was adapted

as "I can apply scientific ideas to design a device for solving a problem. Similarly, the learning outcome which is stated as "5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment." was revised as "I can describe a topic by modelling all of its components." Moreover, the learning outcome which is stated as "MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave" was adapted as "I can use mathematical representations to describe a simple model related to science". Likewise, the learning outcome that is stated as "Analyze and interpret patterns in graphs/charts/maps to make predictions about natural hazards" and was placed in the curriculum developed by SANP (2018) was converted into two items: "I can analyze a graph and explain the relationship between the quantities in it" and "I can make predictions about a phenomenon by observations". Also, the learning outcome that is stated as "Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)" was adapted as "I can express evidences that I collected for the solution of a problem in graph or table".

Resulting item pool was finalized by using Delphi technique. Traditionally, Delphi technique requires application of a set of phases to reveal point of views of domain experts of a problem and to arrive at agreement as to what the solution to that problem should be. In this study, explained phases (Şahin, 2001) are applied as it is described in the following lines:

First step of the Delphi technique is to specify the problem. In this study, the following question forms the problem statement: "Which learning outcomes should an individual have to be evaluated as being capable of basic STEM skills?". This problem is stated as five questions, which were provided above, for them to be grasped in similar ways by the domain experts. The second step is determining panel members. In this context, eight domain experts were identified. All these domain experts have PhD degrees. Four of them have their PhD degree in instructional technology, two of them in science education, one of them in measurement and evaluation and the other one in primary mathematics education field. All were working on STEM then. In the third step, five questions mentioned above were emailed to these domain experts. As part of developing the first Delphi survey, to determine as many skills as possible related to topic the domain experts were asked to brainstorm. In the second Delphi survey formation step, opinions of the domain experts were listed as items and placed under "basic science skills, basic mathematics skills, basic engineering skills and basic technology skills" subtitles. As explained above, skills that were placed in the curriculum of SNAP (2018) and NGSS (2018) were added to skills that were written by the domain experts. The acquired item pool was resent to the domain experts. They were requested to take notes their opinions and justify the reasons behind agreeing/ disagreeing on items and considering whether the items are important or not using the related margins. In the third Delphi application, the domain experts were requested to review their answers related to the second item pool. Mean scores and expert opinions related to the previous application were also added to the form, which was submitted to domain experts. The domain experts were requested to review and write their opinions according to the mean scores. After this step, a meeting was assembled with the domain experts and in this meeting each item was reviewed one by one and the item pool was finalized. The draft form consisted of 66 items. In this meeting there were four domain experts. In the draft form items were organized into a 7-point likert type scale presenting statements to "strongly disagree" to "strongly agree" with. To refrain from misunderstandings short definitions of concept, analyze, analog signal, reference, relation, inference, digital signal, model, quantitative, phenomenon, abstract, design and data were added to the draft form.

2.4. Data analysis

In the statistical analysis, first, KMO and Bartlett tests were applied on the data that was gathered with the scale to determine construct validity of it and to determine whether factor analysis can be administered or not. Based on these results an explanatory factor analysis was conducted; factor discrimination of the scale was determined by principal component analysis; Varimax orthogonal rotation was used to analyze factor loadings. Independent sample t-test was used to test the discriminating power of items that remained in the scale after the factor analysis. Validity of the scale was determined by testing total item correlation of the scale by Pearson's r test. Item discrimination was tested by observing discrimination between lower 27% and upper 27% groups. Coefficient of internal consistency and stability was conducted to measure reliability of the scale. Cronbach's alpha reliability coefficient, split-half reliability correlation, Spearman-Brown formula and

Guttmann split-half reliability formula were used to determine internal consistency level. Test-retest method was conducted to identify the scale's stability.

3. Results

Findings related to validity of the scale

For the validity of the Basic STEM Skill Levels Perception Scale, construct validity, total item correlations and item discrimination levels were calculated, and findings were represented below.

Construct validity

Tatlıdil (2002) states that first appropriateness to factor analysis of collected data should be tested. Hence, Kaiser-Meyer-Oklin (KMO) and Bartlett tests were conducted, with a view to determining if exploratory factor analysis could be conducted or not. KMO values that were between 0.70 and 0.80 were considered as middling, 0.80 to 0.90 were good and higher than 0.90 were interpreted as the data set is marvelous for factor analysis. Moreover, if KMO value is under 0.50, data set cannot be factorized (Field, 2000; Russell, 2002). Besides, according to Bartlett test null hypothesis is rejected at 0.05 significance level (Büyüköztürk, 2002; Eroğlu, 2008). In this study KMO = 0.936; Bartlett test results were χ^2= 40417.699; df=2145 (p=0.000). Hence, data set is marvelous for factor analysis. On the other hand, common factor variances are between .585 to .821. According to this result all the items can be considered quite good.

In this framework, exploratory factor analysis was conducted; principal component analysis was carried out to identify scales factors; and by conducting Varimax rotation technique factor loads were investigated. Factor analysis is used to discover whether items of a scale are distributed to less factors or not (Balcı, 2009; Carmines, 1982). Principal component analysis is a common technique for factorization (Büyüköztürk, 2002; Carmines, 1982). According to principal component analysis results, if item factor loads are below 0.40 or items whose difference between two factor loads are not at least 0.100 (i.e., items whose factors distributed on two factors) should be omitted (Büyüköztürk, 2002). In the first analysis, when natural factor distribution was examined, there were 13 factors whose eigenvalue were above 1. However, a considerable part of the items was gathered under 3 factor and eigenvalues of these factors were quite large. Thus, factor analysis started as three-factor solution. According to principal components of tree-factor structure Varimax orthogonal rotation technique was conducted and 27 items, whose item loads were under 0.40 and distributed different factors, were removed from the scale incrementally. Removed items were revised by four field experts who participated in the third Delphi round meeting. Field experts came to an agreement on that learning outcomes that were measured by 17 of the removed items were also measured by other remaining items of the scale; and 6 of the removed items were slightly not appropriate to the general aim of the scale. Although factor loads of 4 items were below 0.40, they were not removed from the scale since it was considered that it could impact content validity negatively. As a result, it was agreed that removed items would not affect the content validity negatively and factor analysis was reconducted on 43 remained items.

At the end of these processes, it was witnessed that remaining 43 items gathered under 3 factors. KMO value of 43 itemed scale was 0.947; Bartlett values of it was χ^2=23874.641 df=903; p<0.001. Main criteria for factor analysis results is factor loads (Balcı, 2009; Eroğlu, 2008; Gorsuch, 1983). High factor loads are considered as a sign of possibility of placement of the variable under respective factor (Büyüköztürk, 2002). Unrotated factor loads of remaining 43 items were between .461 to .758. In the literature, explaining at least 40% of the general variance is found adequate in behavioral sciences (Büyüköztürk, 2002; Eroğlu, 2008; Kline, 1994; Scherer at al., 1988). First, it was identified that items in the scale and factors explain 54.16% of the variance in total variance. Then, contents of the items of factors were examined and checked to see whether they were placed under the predetermined themes (Science, Mathematics, Engineering and Technology). It was observed that Engineering and Technology themes merged. In this framework factors were entitled as Science, Mathematics and Engineering-technology. Factor structure can also be seen in eigenvalue scree plot (Figure 1). In figure 1, high accelerated decline is observed in the first three factors, so these three factors have important contributions to the variance. On the other hand, other factors decline horizontally meaning that contribution of these factors to the variance are close the each other (Büyüköztürk, 2002; Eroğlu, 2008).
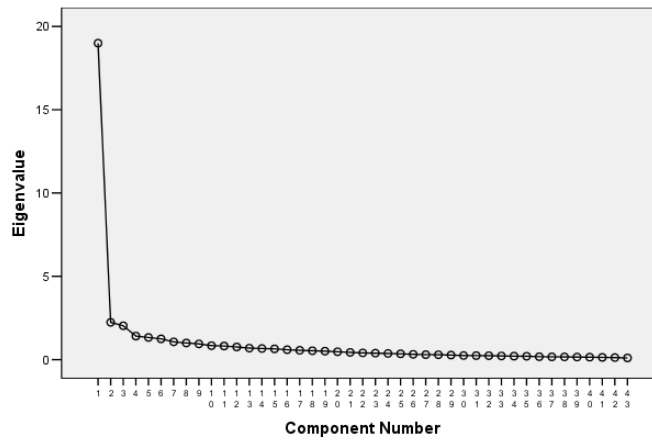
Figure 1. Screen plot graphic (eigenvalues according to the factors).

Findings that are related to item loads of remaining 43 items with respect to factors, eigenvalues of factors and the part of explained variance which is related to factors are presented in Table 2.

Table 2. Factor analysis results of the scale as per factors

	Items	Com. Var.	F1	F2	F3
	1. I can form relation/relations related topics.	.701	.758		
	2. I can form a model according to evidences that I gathered.	.653	.745		
	3. I can make prediction according to my observations related to a phenomenon.	.607	.734		
	4. I can make predictions by making measurements related to a phenomenon.	.516	.688		
	5. I can analyze a problem up to the minimum components.	.593	.674		
	6. I can assert a claim related to a topic by considering all of the evidences.	.560	.644		
	7. I can conduct a research to prove a claim, phenomena or theory.	.563	.642		
	8. I can compare different solutions that I produce for a solution of a problem.	.604	.618		
	9. I can criticize others' ideas by producing scientific/realistic/concreate/evidence-based claims.	.557	.618		
Science	10. I can explain relations of information that is needed for forming a model by going over a sample.	.547	.608		
	11. I can design a basic problem in which material, time or budget constraints and success criteria are given.	.492	.592		
	12. I can express evidences that I collected for a problem solution as graph or table.	.576	.585		
	13. I can produce different solutions for solution of a problem.	.536	.580		
	14. To understand an issue, I can consider all of the details related to that issue.	.526	.579		
	15. I can present design problems that can be solved by applying scientific ideas on any subject.	.571	.561		
	16. I can explain a topic by modeling it with all its components.	.478	.550		
	17. I can understand abstract relations between objects and events by forming cause and effect relationship.	.384	.550		
	18. I can recognize proportional relationships between quantities.	.487	.517		
	19. I can gather scientific evidence to solve a problem.	.366	.498		
	20. When developing a model, I can even consider the smallest details.	.372	.467		
	21. I review the inconsistencies in my solution model and try to reveal its source.	.704		.784	
	22. I can apply scientific principles to test a device to solve a problem.	.619		.755	
	23. By analyzing a chart, I can explain the relationship between the quantities in the chart.	.672		.742	
Engineering - Technology	24. I can design models for being understood of the idea that I proposed for solution.	.701		.716	
	25. I can write statements that include clear reasons and related evidences to support a claim.	.639		.703	
	26. I can apply scientific principles to build a device for a solution of a problem.	.559		.695	
	27. I can logically arrange evidences of a claim.	.604		.662	
	28. In order to understand a topic, I can collect related information in a model.	.633		.662	

29.	I can state the relationship by establishing connection between claims, reasons and evidences.	.555	.614	
30.	I can evaluate the evidence of alternative / counter-claims and, if necessary, accept it.	.574	.612	
31.	I can apply scientific principles to design a device to solve a problem.	.399	.564	
32.	I can test a model in the laboratory by setting up an experimental setup.	.430	.543	
33.	I can consider that realistic evidence is important to achieve the right solution.	.555	.539	
34.	I can suggest a mathematical model to solve a problem.	.461	.517	
35.	I can make conclusions using data from an example given about an unknown situation.	.433	.493	
36.	I can use the properties of integers to synchronize two sides of an equation.	.661		.806
37.	I can write simple equations to solve problems.	.568		.687
38.	I am aware that positive and negative numbers can indicate a direction. (for example, -3 degrees below zero, above +4 degrees)	.436		.624
39.	I use proportioning and reasoning to solve math problems.	.532		.598
40.	I can use mathematical expressions to describe a simple model related to science fields.	.495		.592
41.	I use proportioning and reasoning to solve the problems that I encounter in daily life.	.505		.577
42.	I can work collaboratively with my other friends in a research project designed to solve a problem.	.430		.516
43.	I can use statistical interpretation methods (mean, standard deviation, etc.) so that the numerical data I obtain can be the answer to a question.	.411		.509
	Eigenvalues	9.49	8.83	4.96
	Explained variance	22.06	20.52	11.53

(left margin label: Mathematics)

As it is seen in Table 2, Science factor of the scale includes 20 items and their factor loadings are ranging from 0.467 to 0.758. This factor's eigenvalue in the scale is 9.49; its portion in the total variance is 22.06%. Engineering-technology factor includes 15 items. These items factor loadings are ranging from 0.493 to 0.784. This factor's eigenvalue in the scale is 8.83; its portion in the total variance is 20.52%. Mathematics factor includes 8 items. These items factor loadings range from 0.509 to 0.806. This factor's eigenvalue in scale is 4.96; its portion in the total variance is 11.53%.

Item-Factor Total Correlations

In this part, correlation between scores of each item in factors and factor scores was calculated and level of serving for general purpose was tested for each item. Item-factor correlation values of each item are presented in Table 3.

Table 3. Item-factor scores correlation analysis

F1 Science		F2 Engineering-Technology		F3 Mathematics	
I	r	I	r	I	r
1	.826**	21	.825**	36	.763**
2	.790**	22	.743**	37	.746**
3	.758**	23	.805**	38	.595**
4	.657**	24	.844**	39	.733**
5	.766**	25	.789**	40	.707**
6	.732**	26	.734**	41	.699**
7	.744**	27	.773**	42	.677**
8	.745**	28	.794**	43	.653**
9	.732**	29	.755**		
10	.736**	30	.758**		
11	.698**	31	.641**		
12	.761**	32	.645**		
13	.725**	33	.733**		
14	.727**	34	.647**		
15	.743**	35	.640**		
16	.613**				
17	.697**				
18	.691**				
19	.610**				
20	.618**		N=723; **=p<. 001		

As it is seen in Table 3, item test correlation coefficients for the first factor is ranging from 0.610 to 0.826; for the second factor from 0.641 to 0.805 and for the third factor from .595 to 763. Each item has a positive and

significant correlation with the total factor (p<.001). Therefore, it can comfortably be stated that each item is appropriate for the factor that it is placed.

Item Discrimination

Item discriminations of the scale items were calculated. For this purpose, first, raw scores that were gathered from the scale sorted in a descending order. Then, groups of lower and upper groups were determined with 195 individuals from lower 27% and upper 27%. Independent sample t-test scores were calculated by using total scores of groups. *t* values related to discrimination powers and significance of them are presented in Table 4.

Table 4. Item Discrimination Powers

F1 Science		F2 Engineering-Technology		F3 Mathematics	
I	t	I	t	I	t
1	27.959*	21	20.651*	36	7.590*
2	26.445*	22	16.762*	37	13.823*
3	26.390*	23	18.720*	38	10.57*
4	15.377*	24	21.895*	39	22.259*
5	25.469*	25	18.909*	40	13.987*
6	22.319*	26	16.957*	41	13.201*
7	21.099*	27	22.333*	42	13.471*
8	19.082*	28	21.113*	43	12.766*
9	27.841*	29	21.569*		
10	22.692*	30	20.461*		
11	20.503*	31	15.879*		
12	27.305*	32	18.217*		
13	19.856*	33	21.113*		
14	20.394*	34	15.092*		
15	25.594*	35	22.338*		
16	20.049*			F1	46.560*
17	21.148*			F2	33.568*
18	23.924*			F3	20.957*
19	14.746*			FT	44.946*
20	14.431*			*df: 388; p<.001	

As it is seen in Table 4, independent sample t-test values related to 43 items, factors and total scores are ranging from 7.590 to 27.959. *t* value of the scale in general is 44.946. *t* values related to factor scores range from 20.946 to 46.560. Each difference is significant (p<.001). In accordance with that it can be shared that discrimination of the scale and each of its items are high.

Findings Related to Reliability of the Scale

Internal Consistency

Cronbach's alpha reliability coefficient, split-half reliability correlation, Spearman-Brown formula and Guttmann split-half reliability formula were used to calculate reliability of the scale considering the whole of the scale and its factors. Reliability analysis results considering the whole of the scale and its factors were summarized in Table 5.

Table 5. Reliability analysis results considering the whole of the scale and its factors.

Factor	Number of items	Two congruent halves correlation	Sperman Brown	Guttmann Split-Half	Cronbach's Alpha
Science	20	,887	,940	,938	,950
Engineering – Technology	15	,912	,954	,944	,940
Mathematic	8	,737	,849	,849	,848
Total	43	,852	,920	,918	,969

According to Table 5, split-half correlation of the scale is .852; Spearman-Brown reliability coefficient is .920; Guttmann Split-Half value is .918; Cronbach's alpha reliability coefficient is .969. Together with that, it is observed that split-half correlation related to factors range from .737 to .912; Spearman-Brown values range from .894 to .954; Guttmann Split-Half values range from .849 to .9382; and Cronbach's alpha reliability coefficients range from .848 to .950. Parallel to these results, it can be highlighted that both the whole of the scale and factors of it can make consistent measurements.

Stability Level

Stability level of the scale was determined by conducting test-retest method. After three weeks of the implementation, 29 students retook the 43-itemed final form of the scale. After both administration of the scale, correlation between the scores with respect to both each item and whole of the scale were measured. Thereupon, both each item's and the whole of the scale's ability to make stable measurements were tested and results are summarized in Table 6.

Table 6 Test-retest results of the items of the scale.

F1 Science		F2 Engineering-Technology		F3 Mathematics	
I	r	I	r	I	r
1	.849**	21	.531**	36	.349*
2	.523**	22	.404*	37	.640**
3	.889**	23	.340*	38	.393*
4	.686**	24	.639**	39	.506**
5	.572**	25	.342*	40	.477*
6	.618**	26	.524**	41	.684**
7	.900**	27	.661**	42	.895**
8	.651**	28	.526**	43	.400*
9	.364*	29	.386**		
10	.457*	30	.874**		
11	.887**	31	.465*		
12	.321*	32	.536**		
13	.398*	33	.471**		
14	.351*	34	.777*		
15	.888**	35	.443*		
16	.864**			F1	.833**
17	.740**			F2	.627**
18	.577**			F3	.741**
19	.549**			FT	.812**
20	.536**			N= 29; *=p<0.05 **=p<0.001	

As presented in Table 6, correlation coefficients of each item of scale ranges from .321 to .900, which were produced by test-retest method, and each correlation was significant and positive. Correlation coefficients of scale's factors, which were obtained by the same method, range from .741 to .833. It is observed that correlation related to the total score is .892 and each correlation was significant and positive. Whence it can be declared that this scale makes stable measurements.

4. Result, Discussion and Suggestions

In this study, "Basic STEM Skill Levels Perception Scale" was developed to identify students' basic STEM skill levels according to their perception. This scale is a 7-point likert-type scale consisted of 43 items under three factors. Each item under the factors was scaled between "(1) strongly disagree" to "(7) strongly agree". To identify the factor structure of the scale exploratory factor analysis was conducted. According to this exploratory factor analysis, the factor loadings of items, eigenvalues of factors and explained variances of this scale it can be said that it has construct validity. Item factor correlations of each items of the scale were calculated to identify at what level these items were able to measure the skills of the factors they belonged to. Finding correlation between scores gained from each item and the score of the factors that the item belongs to was used as a criterion to identify the level of service of each item to general purpose of each factor (Balcı, 2009). Accordingly, correlation between scores gained from each item and the score of factors that the item belongs to range from 0.595 to 0.826. Thus, it can be said that each item and the factor of the scale significantly serve for measuring skills aimed to evaluate scale-wide and item discrimination level of each item is appropriate. Internal consistency coefficient of the scale was calculated by Cronbach Alpha formula and was determined as .969. Hence, it is identified that both each factor and scale able to make consistent measurements. According to Murphy and Davidshoper (1988) Cronbach Alpha value which is higher than .90 indicates high level reliability. Stability of the scale was identified by conducting test-retest method and results showed that, between these two applications, correlation coefficients of factors ranged .320 to .900 and correlation related to scores was .812. As a result, it can be said that this scale is able to make reliable measurements. In addition, it can be said that "Basic STEM Skill Levels Perception Scale" is a valid and reliable scale to measure university students' basic STEM skills according to their self-perception. Considering the general structure of STEM approach, it is thought that using factors of the scale separately would not be

appropriate. In this line of thought it is recommended to use this scale to measure university students' perceived skills.

References

Balcı, A. (2009). *Sosyal bilimlerde araştırma: Yöntem, teknik ve ilkeler* [Research in social science: Methods, techniques and principles]. Ankara: PegemA Pub.

Brown, W. (2015). *Introduction to Algorithmic Thinking*. Available at: https://www.coursehero.com/file/31890645/Introduction-to-Algorithmic-Thinkingdocx/

Büyüköztürk, Ş. (2002). *Sosyal bilimler için veri analizi el kitabı* [Data analysis handbook for social sciences]. Ankara: PegemA Press.

Bybee, R. W. (2013). *The case for STEM education: challenges and opportunities*. Virginia: NSTA Press

Carmines, E.G. & Zeller, R.A. (1982). *Reliability and validity assessment. 5th ed.* Beverly Hills: Sage Publications Inc.

Çepni, S. (2018). *Kuramdan Uygulamaya STEM Eğitimi [From theory to practice STEM education]*. Ankara, PegemA.

Eroğlu, A. (2008). Faktör analizi [Factor analyses]. In: Kalaycı, Ş. (Ed.), *Spss uygulamalı çok değişkenli istatistik teknikleri* [Statistics Techniques with Multi Variable in SPSS Applications] (pp. 321-331). Ankara: Asil Publishers.

Field, A. (2000). *Discovering Statistics using SPSS for Windows*. London: Thousand Oaks- New Delhi: Sage Pub.

Gelen, İ. (2017). P21- 21st Century Skill Frameworks in Curriculum and Instruction (USA Practices). *Journal of Interdisciplinary Educational Research, 1*(2), 15-29.

Gökkurt, B., Örnek, T., Hayat, F. & Soylu, Y. (2015). Assessing Students' Problem-Solving and Problem-Posing Skills. Bartın University Jounal of Faculty of Education, 4(2), 751-774. doi:10.14686/buefad.v4i2.5000145637

Gorsuch, R. L. (1983). Factor analysis. Hillsdale: Lawrence Erlbaum Associates.

Gülhan, F. & Şahin, F. (2016). The effects of science-technology-engineering-math (STEM) integration on 5th grade students' perceptions and attitudes towards these areas. *International Journal of Human Sciences, 13*(1):602- 620. doi:10.14687/ijhs.v13i1.3447

Günüç, S., Odabaşı, H. F.& Kuzu, A. (2013). The Defining Characteristics of Student of The 21. Century By Student Teachers: A Twitter Activity. *Journal of Theory and Practice in Education, 9*(4), 436-455.

Hernandez, P. R., Bodin R., Elliott, J. W., Ibrahim B., Rambo-Hernandez, K. E., Chen T. W. & Miranda M. A. (2014). Connecting the STEM dots: measuring the effect of an integrated engineering design intervention. *International Journal Technology Design Education*. 24, 107-120, doi:10.1007/s10798-013-9241-0

Honey, M., Pearson, G. & Schweingruber, H. (Eds). National Academy of Engineering and National Research Council (2014). STEM integration in K12 education: Status, prospects, and an agenda for research. Washington D. C. : The National Academies Press.

Keçeci, G., Alan, B. & Kırbağ Zengin, F. (2017). STEM Education Practices with 5th Grade Students. *Ahi Evran University Journal of Kırşehir Educational Faculty (KEFAD), 18*, 1-17.

Kline, P. (1994). *An easy guide to factor analysis*. London and New York: Routledge.

MNE (2011). *21. Yüzyıl Öğrenci Profili* [21. Century Student Profile]. Ankara: Turkey Ministry of National Education

Murphy, K. & Davidshofer, C. (1988). *Psychological testing: Principles and applications*. Englewood Cliffs, NJ: Prentice-Hall.

NGSS. (2018). DCI Arrangements of the Next Generation Science Standards. Available at: https://www.nextgenscience.org/sites/default/files/NGSS%20DCI%20Combined% 2011.6.13.pdf

Rogers, C. & Portsmore, M. (2004). Bringing engineering to elementary school. *Journal of STEM Education, 5*(3), 17-28.

Russell, D. W. (2002). In search of underlying dimensions: The use (and abuse) of factor analysis. *Personality and Social Psychology Bulletin*, 28, 1629–1646. doi:10.1177/014616702237645

Scherer, R.F., Wiebe F.A., Luther, D. C. & Adams J. S. (1988). Dimensionality of coping: Factor stability using the ways of coping questionnaire. *Psychological Reports* 62(3), 763-770. PubMed PMID: 3406294. doi:10.2466/pr0.1988.62.3.763

SNAP (2018). SNAP Assessment for NGSS. Available at: https://snapgse.stanford.edu/snap-assessments-ngss

Stinson, K., Harkness, S., Meyer, H. & Stallworth, J. (2009). Mathematics and science integration: models and characterizations. *School Science and Mathematics*, 109(3), 153-161. doi:10.1111/j.1949-8594.2009.tb17951.x

Sullivan, F. R. (2008). Robotics and science literacy: Thinking skills, science process skills and systems understanding. *Journal of Research in Science Teaching*, 45(3), 373–394. doi:10.1002/tea.20238

Tatlıdil, H. (2002). *Uygulamalı çok değişkenli istatistiksel analiz* [Applied multivariate statistical analysis]. Ankara: Akademi Pub.

Whittle, S.R., Pell, G. & MurdochEaton, D.G. (2010). Recent changes to students' perceptions of their key skills on entry to higher education. *Journal of Further and Higher Education*, 34(4), 557-570. doi:10.1080/0309877X.2010.512082

Yakman, G, (2008). STEM Education: An overview of creating a model of integrative education. Pupils Attitudes Towards Technology Annual Proceedings. Netherlands.

Yıldırım, B. & Selvi, M. (2017). An experimental research on effects of stem applications and mastery learning. *Journal of Theory and Practice in Education*, 13(2), 183-210. doi:10.17244/eku.310143

Yılmaz, A., Gülgün, C. & Çağlar, A. (2017). Teaching with STEM Applications for 7th Class Students Unit of "Force and Energy": Let's Make a Parachute, Water Jet, Catapult, Intelligent Curtain and Hydraulic Work Machine (Bucket Machine) Activities. *Journal of Current Researches on Educational Studies, 7*(1), 97-116.

"Know-How" to Spend Time in Home Isolation during COVID-19; Restrictions and Recreational Activities

Pınar Güzel[1], Kadir Yıldız[2], Melike Esentaş[3], Devrim Zerengök[4]

[1,2,3,4]*Manisa Celal Bayar University, Manisa /TURKEY*

ARTICLE INFO	ABSTRACT
	This study aims at identifying the emotional, physical, psychological, and social states of individuals who had to stay home for a while due to the measures taken to prevent the spread of the COVID-19 pandemic and to determine what kind of recreational activities they preferred during this period. We used a mixed research method and composed the study group of 479 consisting of 297 female and 182 male participants with a non-random, convenience sampling method. Data was collected through questionnaires of open-ended qualitative questions. Findings address that recreational activities during the long homestay in a pandemic have psychological, socio-cultural, and physical benefits. Social isolation during such circumstances is known to be limiting the physical mobility of individuals and it did so in this COVID-19 pandemic process. While the main activity source was of technology of the people attended this research, we also observed that they are aware of the variety and the benefits of recreational activities at the same time. The respondents stated that the coronavirus outbreak had negative effects in terms of economic, social, psychological, and physiological contexts, but with the outbreak; staying in social isolation had also positive effects on their family such as exploring new things together, happiness, and spending time effectively. One other remarkable aspect is that respondents reported that they would do recreational activities soon after the social isolation period ends. In the results of the research, it is suggested that it is necessary to resort to recreational activities in order to both reduce the spreading effect of the virus in isolation at home and to overcome this process with the least negative impact, and individual and institutional efforts should be made for this.

1. Introduction

Coronavirus disease (COVID-19), which appeared in China and caused quite a serious panic and fear, has become a health problem on which the entire world has focused (Chen et al., 2020). The World Health Organization (WHO) declared on 11 March 2020 that the novel COVID-19 is a global pandemic. The coronavirus pandemic, which first appeared in Wuhan city of China and spread to the world, has been observed intensively in Europe and America as the new epi-center and has increased rapidly. Through the end of April 2020, there have been 2,471,136 confirmed cases and 169,006 deaths from COVID-19 in 209 different regions of the world (WHO, 2020). Because of this rapid spread, governments have started to apply highly serious and protective measures in the regions where the pandemic appears. These measures, which started with social distance practices, have gradually continued with self-quarantine practices, mandatory quarantines, travel restrictions, cancellation of international flights, then travel restrictions within the country, and lastly curfews. Education has been physically interrupted and while online education has been initiated, flexible and home office practices have started at workplaces.

Although no vaccine or medication can be found for the treatment of the virus-caused disease, it is known that many researchers around the world are conducting intensive research into the source of the virus and extensions of this pandemic. While the number of academic studies conducted recently to increase the exchange of information on the subject has also increased (Stove, 2020), on the other hand, it has been reported that no answer has yet been found to the questions regarding virus incubation time, risk assessment and effective treatment methods (Callaway & Cyranoski, 2020). It is emphasized from the statements of WHO officials that this process remains uncertain and that governments should take active measures to prevent further spread of the disease and continue the pressure on societies (VOA, 2020).

The outbreak of the COVID-19 pandemic has a major impact on society in many respects such as community health and the extent of the struggle. Pandemics have many different implications for community health. Social isolation and quarantine environments show up as an important measure in order to prevent the physical spread of pandemics. In terms of public health, while controlling the virus is a primary priority, it is also emphasized that individuals' daily physical activities should be continued. Although such measures as staying home, which is highly recommended to prevent the transmission of the virus from person to person, are safe, they have some undesirable negative consequences such as a decrease in the level of physical activity. As a result of staying home for a long time, individuals develop some permanent sedentary behavior routines, such as sitting, lying down, playing games, watching TV for a long time or constantly being attached to the screen with mobile devices; a decrease in the level of physical activity (hence, low energy consumption) ultimately increases the risk potential for chronic health conditions (CDC, 2020). Therefore, it is important for health to continue physical activity even in limited environmental conditions in order to stay healthy during the period of homestay. As a result of the rapid spread of the COVID-19 worldwide, it causes the spread of stress in society. In this process, it can be said that anxiety and fear related to the disease can cause severe mood changes in children and adults.

Both the WHO and the health authorities of countries recommend individuals to quarantine themselves as COVID-19 cases increase. In this regard, countries have decided to close businesses where people can come together, even if there is no decision to implement a quarantine. This situation has caused the temporary closure of environments such as fitness centers where individuals can do physical activity. The fact that individuals of all age groups stay home for a long time may cause them to be physically immobile. Sedentary life or low level of physical activity may have negative effects on individuals' health and quality of life. In such cases, it can be said that recreational activities can lead to physical, physiological, and social gains by enabling individuals to have physical mobility.

U.S. Center for Disease Control and Prevention (*CDC*) draws attention to the emergence of our fears about our own health and the health of our loved ones, changes in our diet and sleep patterns, sleep disturbances and difficulty in concentration, worsening of chronic health problems and an increase in alcohol, tobacco, and some other drug addictions as a result of the stress appearing in the pandemic environment (CDC, 2020). In addition to protecting our body, applying relaxation techniques such as deep breathing, stretching and meditation, following healthy and balanced nutrition, doing regular exercise, having sufficient and well sleep and avoiding harmful substance intake, it is particularly recommended not to constantly listen to negative news from the television, social media or other channels related to the pandemic in order to eliminate such negative effects (Achenbach, 2020). Considering the types of social isolation, it is mentioned about such types as individuals' being isolated from other people and social environments with self-control in order to avoid being affected by the pandemic, individual quarantine practice at home after risky mobility such as travel or compulsory quarantine in cases where the risk of the virus is high. In these days, when the COVID-19 pandemic shows its effect pretty intensely, social isolation periods are expected to take a long time. Considering the negative effects that social restrictions may have on individuals in a closed environment for a long time, it is highly significant to know how to evaluate time in the social isolation process. We need to make use of the time well, have activities that we like to do, and continue to interact with other people within the limitations and obstacles (Stieg, 2020). It is known that individuals participating in recreational activities are happy and healthy (Eskiler, Yıldız & Ayhan, 2019). Having knowledge about and applying recreational events and activities aimed at eliminating the negative effects of permanent homestay will prevent mental and physical regression and provide morale and motivation within the family while developing personal skills (Yildiz, 2010). Individuals should develop a time management mechanism for the extra time that occurs during

their homestay within the framework of pandemic measures in order to reduce the stress that shows up in themselves and the people around them. At this exact stage, recreation and recreational activities take an important place as a time management tool.

In this context, this study was carried out to determine the emotional, physical, psychological, and social states of individuals who had to stay home for a while due to the measures taken to prevent the spread of the COVID-19 pandemic and to determine what kind of recreational activities they preferred during this period.

2. Methods

2.1. Research Model: The mixed-method was used in the research. The mixed method is based on the basic assumption that quantitative and qualitative methods, when used together, provide a better understanding of research problems (Creswell & Plano Clark, 2014). On the other hand, Greene, Krayder & Mayer (2005) consider the mixed method as quantitative - qualitative data collection and data analysis processes in which participants' evaluations are carried out purposefully.

2.2. Study Group: The study group of the research consists of 297 female and 182 male participants that corresponds to a total of 479 individuals whose average age is 30,837 (± 9,55) and who voluntarily participated in the study determined by convenience sampling methods, which is one of the non-random sampling methods.

2.3. Data Collection Tools: While the process of reaching a larger sample group was ensured by means of quantitative methods, a more in-depth analysis of the research subject was realized with the qualitative data collection method (Green, Krayder & Mayer, 2005). In the research, a questionnaire form consisting of quantitative and qualitative questions prepared by the researchers was used as the data collection tool. Since the aim of the research was shaped by the participants staying home, an internet access system was used. The participants were reached via the web platform and a program providing online data was used as the data collection method (Reips, 2002).

2.4. Data Analysis:

Accordingly, statistical package program (SPSS 24) was used in the analysis of quantitative data. The arithmetic mean, standard deviation, frequency, minimum, and maximum values were used in statistical representations of the data. In the analysis of qualitative data, content analysis method was used and open coding method was applied (Yıldırım & Şimşek, 2018). In addition, Nvivo 10 package program was used to model the analysis of qualitative data.

In the qualitative research process, the data obtained was first transferred to the Office program and read several times, and coding was created by two experts in their field. Afterward, the themes (categories) that would form the outlines of the research findings were created by combining the codes, the content analysis method was used and the open coding method was applied (Yıldırım & Şimşek, 2018). Overlapping themes of the data coded by 2 experts in their field were grouped. Cohen's Kappa statistics are used to determine the consistency among evaluations made by two or more coders. Fleiss's kappa coefficient is a statistical method that measures the reliability of the comparative match among more than two constant numbers of raters (Cohen, Mannion, & Morrison, 2007; Cohen & Swerdlik, 2002). In the research, the rejected and accepted codes were calculated by placing in the Cohen kappa formula.

$$k = \frac{p_o - p_e}{1 - p_e}$$

In the study, the Cohen kappa coefficient was determined as r = 0.89 as the concordance among the coders. Therefore, the calculated values show that there is a very good level of concordance among the raters.

3. Findings

In this part of the study, the analysis results and comments of the quantitative and qualitative data obtained are included.

3.1. Findings regarding Quantitative Data

Table 1. Descriptive Statistics (percentage, frequency and means, prevalence scales)

Variables	Groups	f	%	Total
Gender	Female	297	62.0	
	Male	182	38.0	
Education Status	Primary/Secondary	16	3.3	
	High School	48	10.0	
	Bachelor	324	67.6	
	Master/PhD	91	19.0	479
	Public employee	166	34.7	
	Private Sector employee	96	20.0	
Occupation	Retired	8	1.7	
	Housewife	9	1.9	
	Student	167	34.9	
	Other	9	1.9	

When Table 1 was examined, it was observed that 62% (f= 297) of the participants were female and 38% (f= 182) were male. When the distributions were analyzed in terms of educational status, it was determined that 67.6% were bachelor's degree, 19% were master degree, 10% were high school and 3.3% were primary school graduates. In occupational distributions, it was seen that 34.9% were student groups and 34.7% were public employees.

Table 2. Findings regarding the experiences of the participants during COVID-19

Variables		f	%	Total
Do you care about the health measures to be taken released by the WHO or the Ministry of Health?	Yes	**420**	**87.7**	
	No	1	.2	
	Partially	58	12.1	
Do you believe that the recreational activities decrease the negative psychological, physical and socio-cultural effects of a long time home isolation	Yes	**250**	**52.2**	
	No	47	9.8	
	Partially	182	38.0	
Do you believe that Recreation has a therapeutic effect?	Yes	**275**	**57.4**	
	No	47	9.8	
	Partially	157	32.8	
When you think of the long-term home isolation, do you believe that recreational activities done at home can help to prevent/decrease physical and mental disorders that may occur in the long-term?	Yes	**256**	**53.4**	479
	No	75	15.7	
	Partially	148	30.9	
When you think of the long-term home isolation, do you believe that recreational activities done at home will help you develop some personal skills?	Yes	**244**	**50.9**	
	No	79	16.5	
	Partially	156	32.6	
When you think of the long-term home isolation, do you believe that recreational activities done at home will contribute positively to the mood and motivation of your family?	Yes	**294**	**61.4**	
	No	56	11.7	
	Partially	129	26.9	

It was determined that the participants stated that they complied with the coronavirus measures (87.7%; n=420) recommended by WHO and the Ministries of Health of the countries; recreational activities alleviated psychological, physical and socio-cultural effects of being constantly at home (52.2%; n=250) and in this process, recreation created a therapeutic effect (57.4%; n=275). In addition, the participants also stated that

when they stayed home for a long time, doing recreational activities at home could prevent future mental-physical regression (53.4%; n=256), improve personal skills and abilities (50.9%; n=244) and support the morale and motivation of the family (61.4%; n=294)

Table 3. Findings regarding the emotional state of the participants during COVID-19 pandemic process

Items	N	Min.	Max.	$\bar{x}$	Sd.
Stress and anxiety had negative effects on my life quality.	479	1.0	5.0	**3.292**	1.23
I did not have any idea about what to do during home isolation.	479	1.0	5.0	2.537	1.29
During my stay at home, my possibilities to move were restricted.	479	1.0	5.0	**3.499**	1.29
I am well equipped with the types of recreational activities in similar circumstances.	479	1.0	5.0	**3.386**	1.26
I felt alone and isolated.	479	1.0	5.0	2.537	1.34
I was strong enough to struggle with stress and anxiety.	479	1.0	5.0	**3.670**	1.17
I had mental health problems because of boredom.	479	1.0	5.0	1.706	1.10
I put on weight because of the inactivity.	479	1.0	5.0	2.511	1.43
I experienced a decrease in the physical activity level which was higher formerly.	479	1.0	5.0	**3.434**	1.32

While the individuals staying home due to COVID-19 stated that their lives were affected by anxiety and stress (x=3.292), their physical mobility was limited (x=3.499) and their physical activity level decreased (x=3.434) as long as they stayed home; in such cases, they said that they had information about recreational activities that could be done at home. Moreover, individuals stated that they had as much psychology as to deal with stress and anxiety in such cases (x=3.670). As the findings of the research were prepared in the form of five-point grading, it was observed that the participants generally commented above the average value (x=2.50).

3.2. Findings regarding Qualitative Data

Considering the analysis of the data obtained, the views of the participants were determined in eleven different outputs in the question about "what kind of recreational activities the participants do by staying home" (Figure 1). The participants were given the freedom to make more than one choice in the activities conducted in the research question directed to the participants.
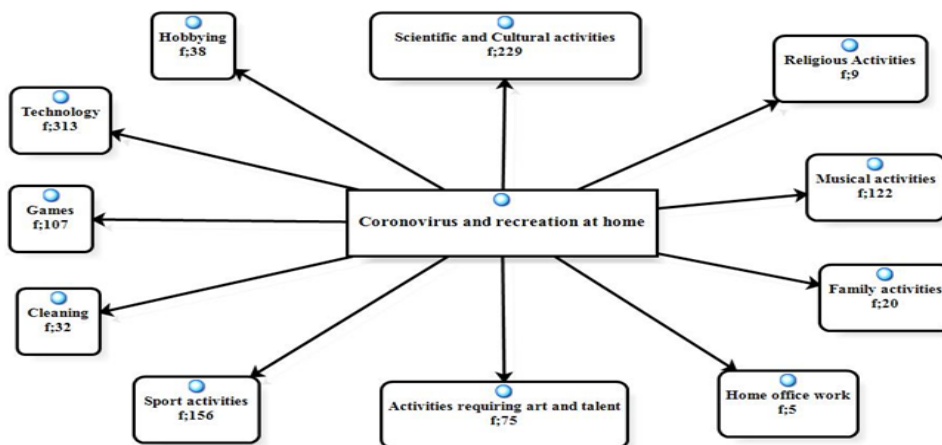
Figure 1. Coronavirus (COVID-19) and recreation at home

Some participant preferences for these outputs are given below:

"We are definitely playing with the whole family, how do we best evaluate the time, we strive for this, I am painting mandala, I am frequently reading books, I am trying to play the guitar, etc." (P30). "I have a little girl, she is just 2 years old, I am spending my whole day doing continuous activities with her and listening to music" (P50). "I am doing sports at home. I am reading books and trying to continue my academic studies. I am also occasionally watching documentaries and movies" (P80). "I am trying to do daily exercises regularly. After finishing my works, I have started to watch the movies I like and have not watched for a long time" (P180). "I am knitting, reading books, and trying recipes for different flavors" (P252). "I am doing sports at home, watching TV, and embroidering canvas; we are painting stones, spending lots of time with my daughters and studying lessons" (P335).

It was reached to ten different outputs as a result of the analysis of the question "What is your favorite recreational activity with your family during social isolation" question directed to the participants (Figure 2).
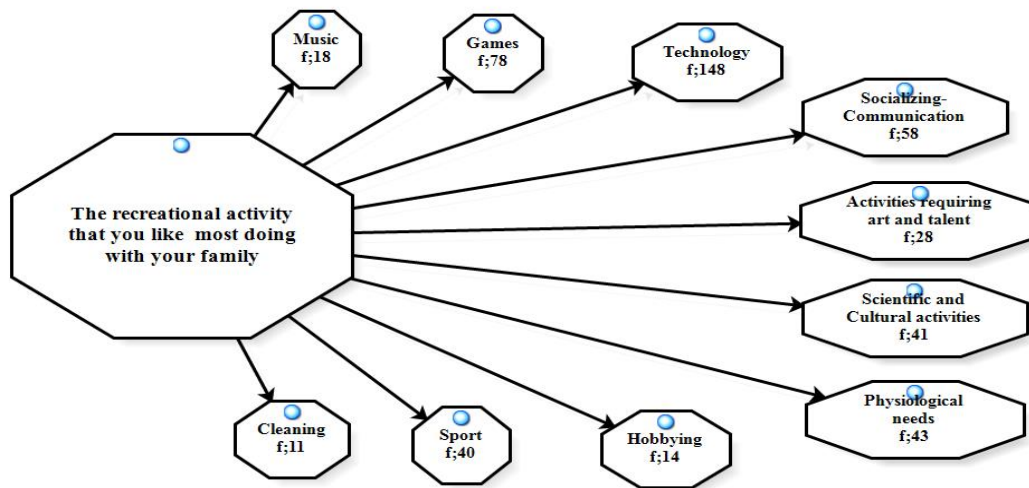
Figure 2. Family recreation

Some participant preferences for these outputs are given below:

"We are watching lots of movies with my spouse. We used to be fond of discovering new movies, collecting movies; while we have the time now, we act as if we are doing this arbitrarily by not thinking about the obligation of quarantine and staying home" (P55). "We are listening to music and singing karaoke with my 4.5-year-old son at home and having lots of fun" (P225). "Listening to music. Listening to music with the family can change your mode very easily, it is so at least for me. It works when I feel unhappy" (P326). "We are doing sports with the whole family at home. We are browsing the videos on the Internet and doing this all together" (P405).

Considering the analysis of the question of "How does staying home affect you as required by COVID-19 measures?" directed to the participants, three main themes and 14 sub-themes were reached (Figure 3). The main themes were discussed as positive, negative, and both positive and negative. While the sub-themes of discovering new things, self-awareness, effective use of time, the effectiveness of belief, taking precautions, happiness, and cleanliness struggle were reached in the positive theme, sub-themes of physiological effect, psychological effect, social effect, restriction, and economic effect were determined in the negative main theme. In both positive and negative main theme of the participants, it was found that the positive and negative effects of coronavirus on homestay were observed together.
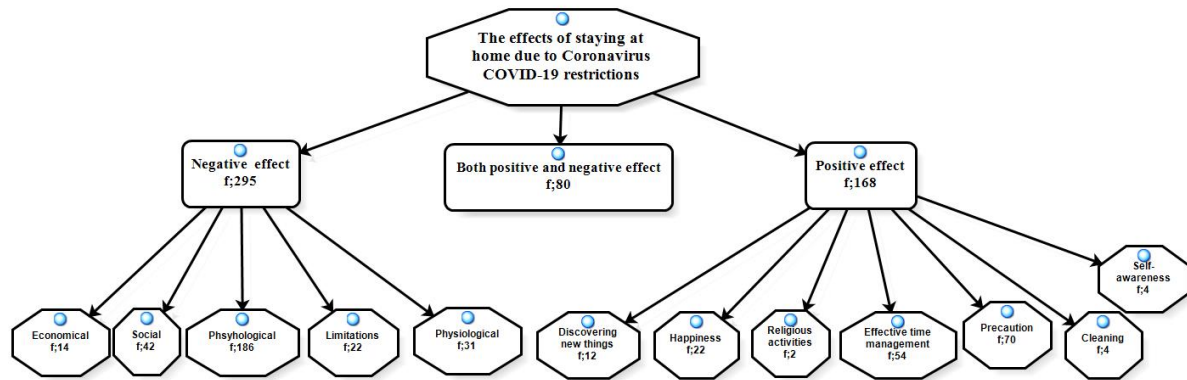
Figure 3. The effects of staying home due to coronavirus COVID-19

Some of the participants' views on these main and sub-themes:

Negative: "I am always feeling tired and sluggish because I can't move. I have become distanced from my social environment" (P4). "My psychology is broken. I have been affected. I have stenocardia for the past several days" (P195).
Positive: "I am just curious about my loved ones and worrying about them; of course, such external measures have positive effects ... most importantly, there has been actually a return to the inner world and I have realized the time I have forgotten to devote myself, there has been great awareness, so it has actually affected me positively..."(P50). "I declared as if it was a holiday for my children and my spouse. We are having a peaceful time, we are setting up special tables, we are trying to stay happy" (P124).
Both Positive and Negative: "Of course there are positive and negative aspects. The positive aspects are health is a cause in itself, but there are quite more negative aspects; first of all, our education life has ceased, there are so many obstacles coming out, my social life has definitely stopped and the activities at home can be done to a certain extent in this situation" (P30). "Staying away from social environments is boring. Although it is disadvantageous for children to take a break from education, we are trying to spend productive time at home with different activities and educational games that will affect my child's and my psychology to a minimum degree" (P330).

Considering the analysis of the question "What is the first activity you want to do when you return to your normal life after the COVID-19?" directed to the participants, eleven themes were reached (Figure 4).
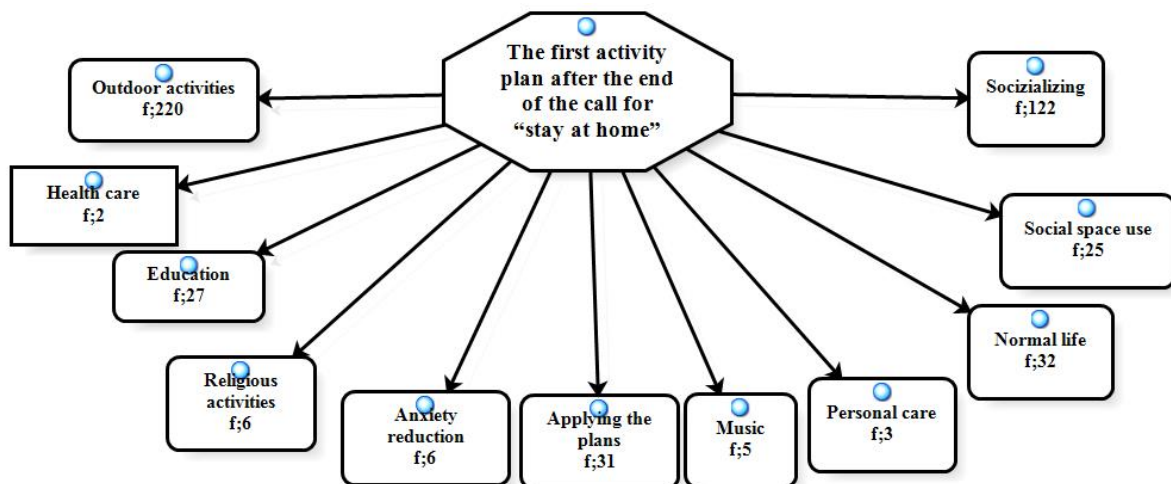
Figure 4. The first activities you want to do after COVID-19

Some of the participants' views on the themes reached as a result of Figure 4:
"There are so many people that I want to hug and I can go to the beach, sit until the evening and weep for joy" (P15). "I want to pray to thank God" (P116). "I am thinking of maintaining this situation by softening the conditions a little more,

the effects will continue for a while and it is better to be cautious" (P270). "Spending hours outside" (P417). "I want to meet my close friend and hug him tightly. A tiny virus took away the right of people even to hug their loved ones" (P445).

4. Discussion and Conclusion

Pandemic diseases have been one of the factors negatively affecting community life. At this point, the primary duties of states are to protect public health during the pandemic. Considering that physical inactivity is one of the important factors affecting death increases in the world today (Kohl et al., 2012), the importance of physical activity for public health should be emphasized. Recreational activities consist of activities involving individuals' personal characteristics, economic conditions, living conditions, and a range of socio-cultural situations as well as sportive activities. Performing both outdoor and indoor physical activities and recreational activities will be effective in individuals' being well physically, physiologically, and sociologically.

This study was conducted on participants who isolated themselves due to the novel coronavirus pandemic. It was stated that the participants acted in accordance with the recommendations of the WHO and the Health Ministries of the countries concerned about COVID-19, which has become a widespread pandemic worldwide. It can be said that individuals isolated at home in this challenging process stated that they could mitigate the psychological, physical, and socio-cultural effects of COVID-19 with recreational activities. Participants also expressed their views that health problems that might be encountered in the long term could be prevented by recreational activities to be carried out at home. In order to prevent the virus from spreading in many countries, including Turkey, cities have been closed to entries and exits, human circulation in public spaces has been restricted, and even restrictions have been imposed on public spaces that offer community sports and recreation. As a result of such measures taken during the pandemic control process, people may wonder whether physical activity and exercise can be done or they may think of the question about how to overcome this situation. As a result of a study conducted by Lowder, Padgett, & Woods (2005) on this subject, they have seen that regular exercise contributes to the development of the immune response to the influenza vaccine in adults.

Among the important effects of COVID-19 on the participants, it has been determined that the lives of individuals staying home due to coronavirus are affected by anxiety and stress, their physical mobility is limited and their physical activity levels show a decrease. One of the criteria for evaluating quality in the modern world is the ability of individuals to organize their daily lives well within social life. Although there are personal differences, it is seen that individuals can handle their time management in different ways in daily life (Jackson & Scott, 1999; Kujala et al., 1998; Zhang et al., 2020). In the results of our study, it has also been determined that there are individuals who want to be protected from the virus outbreak during isolation process by staying home; however, due to the fact that they constantly stay home, these individuals also want to overcome the psycho-social and physiological problems with family members by doing recreational activities. It is seen that similar results have also been obtained in a recent study conducted by Marston, Musselwhite & Hadley (2020). In this study, it has been emphasized that while it is important to actively evaluate the concept of mobility and time, it has also been stated that a life such as traveling, meeting friends in social environments and participating in social-cultural-artistic activities in open or closed areas existed before the virus outbreak. However, when these activities which continue routinely are restricted because of forced reasons such as health problems, viruses, etc., we are deprived of many opportunities, mainly the activities we do in order to meet our basic needs that are necessary for our social lives. The importance of recreation at home becomes evident in the process of overcoming these activities.

The benefits of regular physical activity are to help improve overall health and fitness, maintain a healthy weight, reduce the risk of many chronic diseases and premature death and promote good mental health (Janssen & LeBlanc, 2010; Warburton, Nicol, & Bredin, 2006; Yalcin & Ayhan, 2020). Due to the pandemic, it can be said that there is an increase in physical inactivity as a result of individuals declaring natural quarantine for themselves. The reason for this situation is the limitation of adequate sports and recreation areas for individuals. Therefore, individuals try to spend their time at home by doing recreational activities with their families. Recreational and leisure activities offer opportunities that bring people with similar hobbies together and open the doors to socialization and communication. It has been an issue of concern about how people can be kept busy within these constraints, whether social relationships will continue and how they can be

maintained if they can continue (Genoe et al., 2018; Hadley, 2019; Parnell, 2020). As a result of this research, it has been determined that the same problems arise in the individuals staying home and recreational activity with family members are an important solution tool for overcoming these problems.

In conclusion, in this study, it has been tried to create awareness towards the recreational activities that can improve the quality of life of individuals, especially in the psychological, physical, and social aspects during the COVID-19 pandemic period, which particularly affects the whole world and shows a rapid spread. In the results of the research, it is suggested that it is necessary to resort to recreational activities in order to both reduce the spreading effect of the virus in isolation at home and to overcome this process with the least negative impact, and individual and institutional efforts should be made for this.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Ethical clearance*:* "Ethics are the rules of conduct in research" (Walliman, 2006).That is especially important when conducting research with humans. The major principle for making sure that no harm is done to any participants in the research. Also as this was not an interventional study, 'permission form' and 'voluntary confirmation letter' were taken from all the participants. Informed consent of participants was obtained and they were at liberty to participate and withdraw voluntarily. We also ensured that their responses were anonymous and confidential.

References

Achenbach, J. (2020). *The Washington Post: Mental health experts offer counsel on staying calm during coronavirus pandemic*. Available at: https://www.washingtonpost.com/health/mental-health-experts-offer-counsel-on-staying-calm-during-coronavirus-pandemic/2020/03/17/a1a22af6-6701-11ea-b313-df458622c2cc_story.html. [accessed 04.04.2020].

Callaway, E., & Cyranoski, D. (2020). China coronavirus: Six questions scientists are asking. *Nature, 577*, 605–607.

Center for Disease Control and Prevention (CDC) (2020). *Coronavirus 2019 (COVID-19) Stress and coping.* Available at: https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html. [accessed 04.04.2020].

Chen, P., Mao, L., Nassis, G.P., Harmer, P., Ainsworth, B.E., & Li, F. (2020) Coronavirus disease (COVID-19): The need to maintain regular physical activity while taking precautions. *Journal of Sport and Health Science*, *9*(2),103–104. doi:10.1016/j.jshs.2020.02.001.

Cohen, L., Mannion, L., & Morrison, K. (2007). *Research methods in education*. London: Routledge.

Cohen, R.J., & Swerdlik, E.M. (2002). *Psychological testing and assesment*. New York: McGraw-Hill Book Co.

Creswell, J.W., & Plano, Clark, V.L. (2014). *Designing and conducting mixed methods research.* (Y. Dede & S. B. Demir, Translate Ed.). Ankara: Anı Publishing.

Eskiler, E., Yıldız, Y., & Ayhan, C. (2019). The effect of leisure benefits on leisure satisfaction: extreme sports. *Turkish Journal of Sport and Exercise, 21*(1), 16-20. doi:10.15314/tsed.522984

Genoe, M.R., Kulcyycki, C., Marston, H., Freeman, S., Musselwhite, C., & Rutherford, H. (2018). E-leisure and older adults: Findings from an international explotory study. *Therepeutic Recreation Journal*, *52*(1), 1-18. doi:10.18666/TRJ-2018-V52-I1-8417.

Green, J.C., Krayder, H., & Mayer, E. (2005). Combining qualitative and quantitative methods in social inquiry. In B. Somekh & C. Lewin (Eds.), *Research methods in the social sciences* (pp. 275-282). London: Sage.

Hadley, R.A. (2019). It's most of my life-going to the pub or the groupé. The social networks of involuntarily childless older men. *Ageing and Society 2019;* 1-26. doi:10.1017/ S0144686X19000837.

Jackson, E.L., & Scott, D. (1999). Constraints to leisure. In *Leisure Studies: Prospects for the 21st Century;* Eds.; Jackson, E.L., Burton, T.L., pp. 299–321. State College, PA, USA: Venture Publishing.

Janssen, I., & LeBlanc, A.G. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity, 7*(40), 1-16.

Kohl, H.W., Craig, C.L., Lambert, E.V., Inoue, S., Alkandari, J.R., Leetongin, G., & Kahlmeier, S. (2012). The pandemic of physical inactivity: Global action for public health. *The Lancet 380*(9838), 294–305. doi:10.1016/S0140-6736(12)60898-8.

Kujala, U.M., Kaprio, J., Sarna, S., & Koskenvuo, M. (1998). Relationship of leisure-time physical activity and mortality: The Finnish twin cohort. *Jama, 279*(6), 440-444.

Lowder, T., Padgett, D.A., & Woods, J.A. (2005). Moderate exercise protects mice from death due to influenza. *Brain, Behavior and Immunity, 19*(5), 377-380.

Marston, H.R., Musselwhite, C., & Hadley, R. (2020). COVID-19 vs. Social Isolation: The Impact technology can have on communities, social connections and citizens. *Ageing Issues*, The British Society of Gerontology.

Parnell, D., Widdop, A.B., & Wilson, R. (2020). COVID-19, networks and sport. *Managing Sport and Leisure, 2020;* 1-8. doi:10.1080/23750472.2020.1750100.

Reips, U.D. (2002). Standards for Internet-based experimenting. *Experimental Psychology, 49*(4), 243-256. doi:10.1027//1618-3169.49.4.243.

Stieg, C. (2020). *When it's all too much, here's how to quell coronavirus anxiety, according to experts.* Available at: https://www.cnbc.com/2020/03/13/how-to-stay-calm-amid-coronavirus pandemic-anxiety-relief-tips.html. [accessed 04.04.2020].

Stoye, E. (2020). China coronavirus: How many papers have been published. *Nature 2020;* 30.

VOA News (2020). Coronavirus Lockdowns Extended as Governments Hope for Progress. Available at: https://www.voanews.com/science-health/coronavirus-outbreak/coronavirus-lockdowns-extended-governments-hope-progress. [accessed 04.04.2020].

Walliman, N. (2006). *Social research methods.* Thousand Oaks: Sage.

Warburton, D.E., Nicol, C.W., & Bredin, S.S. (2006). Health benefits of physical activity: The Evidence. *Can. Med. Assoc. J., 174*(6), 801-809.

World Health Organization, (WHO). (2020). Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). Coronavirus disease 2019 (COVID-19) situation reports. Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports. [accessed 04.04.2020].

Yalçın, İ., & Ayhan, C. (2020). Sportif rekreasyonel etkinliklere katılan kadınlarda fiziksel görünüş mükemmeliyetçiliği ve psikolojik iyi oluşun öz güven üzerine etkisi. *SPORMETRE Beden Eğitimi ve Spor Bilimleri Dergisi,18*(1), 205-212. doi: https://doi.org/10.33689/spormetre.625218. [Turkish].

Yıldırım, A., & Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri*. 11. Basım. Ankara: Seçkin Yayıncılık. [Turkish].

Yildiz, S.M. (2010). *Spor ve fiziksel etkinlik hizmetleri pazarlaması.* Ankara: Detay Yayınevi. [Turkish].

Zhang, Y., Wang, J., Zhao, J., Tanimoto, T., Ozaki, A., Crump, A., & Jiang, Q.W. (2020). *Association between quarantined living circumstances and percieved stress in Wuhan city during the COVID-19 outbreak: A rapid, exploratory cross-sectional study.* Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3556642. [accessed 16.03.2020].
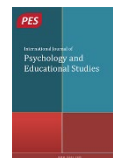
Interpretations of the 5 Th Grade (Ages 10-11) Turkish Students' Historical Knowledge Based on Historical Sources

Ayten Kiriş Avaroğulları[1]

[1]*Muğla Sıtkı Koçman University, Turkey*

ARTICLE INFO

ABSTRACT

This study aims to determine the ways how the 5th grade (ages 10-11) students interpret historical knowledge based on historical sources. To study this student were given a worksheet containing historical sources and an open-ended question based on the historical sources. The data of this study is collected through one of the answers provided to the question by 150 students in elementary school. The data has been categorized under themes which have been created after study of students answers and related literature. The analysis of data demonstrate that pupils can interpret historical knowledge in the sources. Also it has been found that most of the pupils were able to synthesis their prior knowledge and information in the historical sources presented to them and were able reach personal conclusion. Yet some of the students tend to copy the information as is written on the historical source or respond emotionally. This study supports the idea that 5th grade (ages 10-11) students can read historical written sources and acquire historical information. Also this study gives information to social studies teachers on what consider when they prepare historical task for elementary school. Keywords Teaching history, social studies education, elementary school students, primary sources, historical reading

Keywords:
Teaching history, social studies education, elementary school students, primary sources, historical reading

1. Introduction

One of the major elements of teaching history is historical thinking. The importance of historical thinking skills has been one of the most important 21st-century skills that the students are expected to acquire throughout their school years. Source questioning, causal reasoning and questioning various viewpoints are the most important activities in acquiring the historical thinking skills and they are big steps towards acquiring the 21st-century skills as well. To have the students exercise towards such skills in their early years would help them think historically on the following levels and acquire the 21st-century skills on the way. Therefore, in early school years, source questioning and historical reasoning exercises carry great importance may it be at the entry-level.

The historical thinking has been used as almost a synonym of the terms of historical reasoning and historical literacy. The meaning of these terms contains meta concepts such as historical importance, use of evidence, description of change and continuity, analysis of reasons and consequences, obtaining historical perspective

(Seixas, 2006; Van Drie and Van Boxtel, 2008). The final aim of these concepts is that the students should acquire knowledge from historical sources, complement their prior knowledge with the new ones, compare multiple sources and be able to come up with a relevant interpretation after having evaluated the sources with critical reading. In historical literacy, the use of the skill of source questioning is beyond reading and responding to a text.

1.1. Theoretical Framework

Since the process of teaching causal relations, perceiving changes and continuity, comparing the weaknesses and strengths of evidence, taking notes of similarities and differences, and in short, acquiring the understanding of historical thinking take a long period, it is the best to start the education as early as possible. In related studies (Rantala & Kahawaja, 2018; Shanahan &Shanahan, 2014; VanSledright, 2002), it is pointed out that elementary school students can historical questioning as a result of long-term applications. This study is important in terms of presenting current data and examining it in a different country

In teaching history, there are difficulties related to the process of questioning based on historical sources. One of them is that the language used in historical sources is difficult for students at young ages. Another problem is that such texts tend to be very long. Even though it is risky to make some amendments in the language and length of the source texts, it is obligatory to make some amendments in the source text in order for the students to comprehend in the school environment (Reisman, 2012). It is possible to state that many researchers studying teaching history (Barton & Levstik, 2010; Rantala & Khawaja, 2018; VanSledright & Afflerbach, 2005) believe that the students can succeed in historical questioning if adjusted according to the age group. Also Harnett (1993) state that it is more convenient to using visual sources at this student level. In the studies concerning the use of evidence in the education of social studies, it has been proven that, in Turkey, 5th, 6th, 7th and 8th graders (ages 10-14) in the elementary school can fictionalize past contextually depending on historical sources (Dilek, 2009), can support their explanations depending on multiple sources (Çulha Özbaş, 2010; Kızılay & Doğan, 2014). On the other hand, Topçu and Kaya (2014), stated that social studies teachers in elementary school recognize that the 5th grade students suffer certain cognitive incompetency and certain issues concerning history seem too abstract for the students to grasp and they meet difficulties when teaching such subjects.

In Turkey, the subjects of history at the elementary school level (the 5th, 6th, and 7th grades) are included within the curriculum of the 5th, 6th, and 7th grade social studies course and the 8th grade course of Republic of Turkey Revolution History and Kemalism. In the education year of 2012-2013, 4+4+4 system has updated the 5th grade students (ages 10-11) as the elementary school level, and the teachers of social studies courses have started to teach the 5th grade students social studies course in the elementary school as well. In 2018, social studies curriculum in Turkey (for the primary and elementary schools the 4th,5th,6th, and 7th grades) have been updated (MEB, 2018). In the updated curriculum (MEB, 2018) defines that it is aimed that the students will "question historical evident of the different periods and places and determine the similarities and differences between the people, objects, events and cases and perceive change and continuity" From this point of view, although the phrase of historical thinking skills is not used directly in this curriculum but in the aim of the curriculum part seems to aimed to acquire students historical thinking skills through social studies curriculum. However, in the 5th grade social studies textbook (Şahin, 2018), there is no activity concerning to question a historical source within the subjects related to history. Therefore, the 5th grade students are inexperienced in reading 1st and 2nd hand reading and interpreting historical sources.

In this context, this study provides the chance to reevaluate what to consider while determining the ways how the 5th grade students (ages 10-11) interpret historical sources and what to consider throughout the questioning depending on historical sources under the light of the field literature. Besides, the explanations and styles of how the 5th grade students interpret depending on the historical sources in the elementary school social studies class would provide the ones who prepare syllabi and course materials with valuable insight. In this study, only the answers given by the 5th grade students in the social studies class of the elementary school after reading the historical sources in the exercise sheet (ANNEX 1) based on casual reasoning were analyzed. The data acquired have been discussed within the frame of the related literature.

2. Method

This study is based on a qualitative research method and it is determined as a case study. A case study is a description and analysis of a limited system and the examination of an actual phenomenon in an actual context (Merriam, 2013). The data acquired during the research has been obtained through the examination of documents as a qualitative research technique. Document examination is the analysis of written material containing information related to phenomenon or phenomena that is aimed to be researched (Yıldırım and Şimşek, 2006). In this study, it is asked to answer the questions in the worksheet based on historical sources (Please see Appendix).

2.1. Participants

The participants of the study consist of the 5th grade students (ages 10-11) in 4 classes in a state elementary school in Turkey. It was thought suitable to conduct the research examining the 5th grade students (ages 10-11) to form an opinion on how they understand styles of interpreting depending on the evidence and historical thinking at an early age. Besides, the reason why this group has been chosen as participants is that at the time the research was conducted, the 5th grade students have just studied Hittites civilization which the study presents as the subject of historical sources in social studies lesson.

2.2. Data Sources

In the study, the data has been collected through student's task performance containing two historical sources and source based questions in April of 2019. The historical sources include quotes from one primary and one secondary sources related to plague happened in the Hittite. In both texts, it was stated that the information was cited from Hittite texts (anal), and the citation of the source texts was provided (ANNEX 1) according to the objective of presenting historical sources (Reisman, 2012). Since the sources should be in a proper level with 5th grade students quotes from the sources selected accordingly. Also this sources were not long and they were readable, it was not needed to modify the texts. The historical sources presented to the students did not include conflicting views rather they support each other. The reason the Hittite period selected is that this era is included in the national social studies curriculum. However the plague that happened in this era doesn't take place neither in the social studies curriculum nor in the textbooks.

There are 4 open-ended questions on the student's task related to two historical sources in total. However, in this study, the data acquired from only one of those questions has been analyzed, which has been designed for concepts such as causal reasoning depending on historical sources, empathy according to the historical context, and historical thinking. The question was set as "What was the actual reason for the plague among Hittites? What do you think about that?" When creating the open-ended question on the worksheet were short and focused on a single subject as suggested by Rantala and Khawaja (2018). We aimed to allow the students to respond to the task in their typical environment. Therefore, the students had to answer 4 questions in a 40-minute period in their classroom settings. During the application, the social studies teacher of the students was present without interfering anything. The students were asked to spend 10 minutes on each question. In the application, it was observed that the students returned their worksheets within the given time. In the first section, after the worksheets were distributed, and the students have read the source texts, they expressed that they do not know about the plague. Some of the students who had heard about the plague started to talk about it but the dialogue was kept as short as possible. Upon that, the students were explained that "it was a disease that caused death of many people." Later, the other students in the other 3 classes were provided with the same explanation.

2.3. Data Analysis

The data in this study were analyzed through content analysis technique within the qualitative research technique. In content analysis technique, the similar data are collected around specified concepts and themes (Yıldırım and Şimşek, 2008). The worksheets that are completely empty and illegible due to handwriting were eliminated from the study and the remaining 150 worksheets were analyzed. The acquired data were categorized according to the studies in the literature of the field (Dutt-Doner, Cook-Cottone & Allen, 2007; Harris, Halvorsen, Aponte-Martinez, 2016) and the codes developed by the researchers depending on the student responses. The response of each student was coded according to the provided themes and sub-themes and shown on the frequency table. While coding, each response by each student was assigned to only one

code. If the statements in the source text were copied or if two or more than two reasons were listed, they were coded as "copy" category. However, the expressions written by students having transformed from the information contained in the historical source were coded in appropriate categories according to their meanings. In order to provide reliability among coders, all data were coded together with another expert in social studies. The reliability of the data coded by two distinct experts was calculated with the formula provided by Miles and Huberman (1994) and the percentage of agreement was determined as 90. The formula reliability = (Consensus/Consensus + Dissidence) X 100 was applied. In the process of analysis, this percentage is considered to be reliable as well.

3. Findings

In this section, the answers written on the worksheets by the 5th grade students in response to the historical question based on historical sources and 4 themes were defined. These themes consist of sub-themes within themselves. The data coded according to the themes are shown in Table 1.

Table 1. Description of themes for analysis of 5th grade student's responses about questioning

Criteria	Sub-Criteria	N	%	Examples from students responses
Copied	The expressions in the historical source text are copied or two or more than two reasons are listed.	5	3	(App.1)
	One of the expressions in the source text is chosen and copied.	2	1	"Sacrifices offered to Mala (Euphrates) river were disregarded."
		8	5	"The unjust murder of Young Tudhaliya"
		9	6	"The gods were ignored."
		16	11	"The slaves brought by his father Suppiluliuma I carried the plague."
Logical reasoning	**Correct** deduction depending on the information provided by the historical source.	24	16	It is possible that the slaves coming from Egypt carried the disease. I think, it is the new coming slaves. Probably the slaves If Mursili's father had not brought those "slaves" to Hittite, then the plague did not happen. Because the slaves came from Egypt carried the plague. It started with the prisoners and then the disease was spread.. The disease must have been brought by the slaves. It is possible. The fact that the slaves carried the plague from Egypt to Anatolia. It may be because people were brought from abroad. Fleas coming from Mala River.
	Incorrect deduction depending on the knowledge contained in the historical source	10	7	Because they prayed for a plague. Because the Hittite gods sent the plague to Hittite king. Because the gods conspired with others.
	Correct deduction depending on the prior knowledge	18	12	The reason why the plague spread; I mean, if someone carries a disease it is possible that this plague happened to be.

				Because there were no hospitals and the science of medicine was not discovered.
				It is possible that a kind of germ procreated.
	Incorrect deduction depending on the prior knowledge	**2**	**1**	Because of the meteorological events.
				Because of the water.
Emotional responses	Injustice	**17**	**11**	I think, according to the reasons above, because of the reason why Young Tudhaliya was murdered, it must have been the punishment for the act.
				Because Suppiluliuma tormented Egyptians.
				Because his father tortured Egyptians.
				Because Suppiluliuma tormented Egyptians.
				Because of the bad deed they had done, people with plague came from Egypt.
				Because they argued with gods, it spread.
				Gods sent the plague from Egypt to punish.
				Because people were unjustly murdered.
	Hygiene	**21**	**14**	Perhaps, because some people did not live hygienically.
				Because they lived in a very dirty country.
				I think the real reason why the plague spread is that the administrators did not pay attention to the hygienes of the country.
No reading comprehension	I do not know	**5**	**3**	The text does not include that.
				There is no information about this.
				I could not find any information about this.
				I do not know; the text does not tell about it.
	I did not understand/ I have no idea	**6**	**4**	I did not understand.
				I have no idea.
	Irrelevant response	**7**	**5**	Perhaps they were attacked by another country.
				Alcoholic beverages, gambling.
				Hittites suffered such a disease because they could not protect their country and their goods.
Total		**150**	**100**	

3.1. Copied

The responses of 40 (27%) students were coded related to the theme of choosing only one or all of the causal expressions within the document. The number of the 5th grade students coded in these criteria because they have copied only one or all of the expressions within the source text is 24 (16%) in total

3.2. Logical Reasoning

The total number of the student response under this category is determined as 54 students (%36) among the data retrieved from the 5th grade students. The reasoning theme has been divided into sub-themes because the responses of the students differentiated as correct and incorrect within themselves. The student responses coded according to these sub-themes are presented in Table1.

3.2.1. Reasoning and writing based on historical source

When the responses of the 5th grade students are analyzed, it was seen that the students (16%) can write the reason for the plague correctly in their own words depending on the provided historical source. It was determined that the students can analyze the information in the historical source through their personal prior knowledge. The responses of 5th grade students show that they can combine their prior knowledge with newly attained knowledge.

3.2.2. Correct deduction depending on the information provided by the historical sources

The student responses coded to this category are the expressions taken from the text but do not prove correct. The students have read 2 different historical sources throughout this research and responded to various

questions. It is thought that as a response to the expressions in the other historical source (App.1) "What have you done, oh Gods? You let the plague spread in Hatti and now everybody dies!" they write responses such as "*Because they prayed for a plague.*" And, again, the reason might have been the anxiety of finding a correct answer and test (Brandmo, Bråten & Schewe, 2019) or their feeling the necessity of copying some part of the source text.

3.2.3. Deduction depending only on the prior knowledge

By their written expressions, it is understood that the 5th grade students deduce depending on their prior knowledge (12%) more than the historical source they read. The determinant of the student answers coded to this category is that there is no word or sentence in these answers depending on the historical source. This theme has been divided into sub-criteria because of the substrata has appeared under the theme of "correct deduction depending on prior knowledge.

Table 2. Justification depending on not the source text but prior knowledge and reasoning.

	Sub-criteria	n	%	Example
Correct deduction depending on prior knowledge	Plague-stricken people	2	11	First, someone got the disease then it spread everyone. The reason why the plague spread; I mean, if someone carries a disease it is possible that this plague happened to be.
	Animals spread	10	56	Fleas on animals. Perhaps rats. Animals spread it. Possibly they did not care for hygiene and rats.
	Main reason	2	11	A kind of microbe might have grown. Microbes.
	Economic reasons (Poverty, trade)	2	11	Perhaps international trade. Because they were not nurtured well enough.
	Migration	2	11	Migrations from other countries might have been the reason for the plague. I think someone got the disease in another country and then when that person came here, the plague spread.

When the answers of the 5th grade students coded to this theme are analyzed, it is seen that the majority (56%) have expressed the reason as animals. On the other hand, it is intriguing that there are answers related to economic reasons.

3.2.4. Incorrect deduction depending on prior knowledge

There are 2 student answers (1%) coded to the theme of incorrect deduction depending on reasoning. It is possible that these students write their statements depending on their own life experiences or the news of diseases they hear from media such as television or family when they write "because of water" or meteorological events.

3.3. Student answers related to emotional response theme

An "emotional response" theme has been created depending on the answers of participant students and related answers (25%) are coded as such. Similar themes were created in another study (Harris et al., 2016; Jacobson et al., 2018) related to the student questioning the reliability of historical sources as well. However, when coding to emotional response category, two different facets were discovered. It was seen that some students have used expressions such as "injustice, misdeed, torture, punishment," and then such answers were coded to the criteria of "injustice." In student answers coded to this category, it was seen that the statements take place especially in the historical text as "*The unjust murder of the Hittite prince*" was cited by the students. Another important result is that the students emotionally respond to the concept of hygiene. In those

answers coded to this category the emphasis to that Hittites were not clean enough is widespread. It is possible that they deduced such information with the knowledge of that the diseases spread in unhealthy environments (Arık, 1991). On the other hand, their answers reflect the judgment that in the past people were not clean.

3.4. Student responses related to insufficient reading

It is clear that statements such as "I do not understand/I do not know/I have no idea" are related to the concept of perceiving what one reads. Students who have met with the exercise of questioning historical sources for the first time might have written such answers. According to VanSledright and Afflerbach (2005), the insufficient skills of reading of the 5th grade students, hinders them to interpret the main sources. Another option is, historical sources are not understandable for these students.

4. Discussion and Conclusion

This study consists of only one section of larger research conducted with the 5th grade students in the elementary school. The 5th grade students were provided with 2 historical sources in their worksheets (App.1), and among a series of question-related to the historical sources, only the answers to one question ("What was the actual reason for the plague among Hittites? What do you think about that?") based on historical sources were analyzed in terms of their content.

One of the most important results of this study is that the 5th grade students have read the historical sources and question with the concern of finding a correct answer. It was determined that they have copied partial or complete parts of the historical source with the concern of finding and writing the correct answer. It is presumed that the students who do not know what to write have used this method as a means. In addition, it was observed that with the same concern they have written more than one correct answer depending on the historical sources. For example, one student is thought to show concerns of finding a correct answer because of her statement, "*I do not know. Perhaps because of the bad things they had done. And, perhaps it is because the gods did not like them. And, perhaps the plague spread from the Egyptians. Everything is possible.*" In a study conducted by Brugar and Roberts (2018), it was determined that if students cannot find the correct answer within the text, they tend to write random words from the text, or depend only on their prior knowledge, or to give incorrect answers depending on the source. In this study, it was seen that the 5th grade students have a similar tendency. In studies conducted by Khawaja (2018) and Seixas (2006) Wineburg (2001), it was stated that the students are more focused on the knowledge included in the sources. However, the aim of the teaching history depending on the questioning of sources is that the students should learn the skill of deep thinking instead of finding one correct answer.

It was surprising to receive answers such as "*I do not know, I did not understand, I have no idea.*" It is clear that the students read the source text in order to find a correct. Although the possibility of that the students were unwilling to write an answer when they respond as I do not know/I did not understand/I have no idea; however, according to the observations made during the application, that is a weak possibility. Because it was observed that the 5th grade students strived selflessly to be able to answer to the questions. According to the research results of ABIDE project (http1) conducted by The Ministry of National Education (MEB), the PISA results (Bozkurt, 2016) in Turkey are low because of the insufficient level of understanding of the texts among elementary school students. In this study, even the ratio is low, the difficulty of understanding the texts are observed, as well. It is thought that this situation is related to the concerns of finding a correct answer mainly as a result of the multiple-choice exams. It is a well-known fact that in the assessment and evaluation activities teachers do not choose open-ended questions for the 5th grade students. All teachers teaching the 5th grade students choose question types such as true-false, matching, filling the blanks in the evaluation exams (Aytaçlı and Gündoğdu, 2018).

With the answers of the 5th grade students, it was understood that this age groups are capable of a relatively interpret document based questions. Also the ratio of the correct deduction depending on the historical source texts is generally high percentage. This situation is important as it shows that the students at the age group of 10-11 can transfer knowledge instead of copying the information in the historical source. At least some of the students could use their own words to explain the following sentence in the source text. The researchers (Barton, 1994; Rantala & Khawaja, 2018; VanSledright, 2002) suggest that in terms of the skill of historical

thinking, 11-year-old students can be motivated to question sources and historical production with a long studying period.

It is also observed that the students can come up with interpretations depending on their prior knowledge and they can express them in their own words. As the table above shows, in the answers of 2 students, instead of the word "slave," "prisoners" and "captives" expressions were preferred, and it is understood that they suffer misconceptions. Depending on their own life experiences they show microbes as the result of the plague and they emphasize the impacts of poverty and malnutrition on such a disease is also an interesting result. 2 students stated that the plague may have spread from water and weather events.

Interestingly, however, none of the 5th grade students wrote a statement that questioned the accuracy and reliability of the information in the source text. In this example, there is no debate as to whether Mursili's father really brought prisoners from Egypt or whether these prisoners were sick. This shows that the students accept the information in the source text without question. It was found in the study conducted by Yeşilbursa (2015) that elementary school students rely on authoritative sources. For this reason, even the students who deduced correct answers accepted the "plague prisoners" part without questioning the correct information based on the information in the source. In fact, it would be an unreasonable expectation that students would question the reliability of historical sources at such an early age (VanSledright & Afflerbach, 2005).

In addition, as seen in Table 1, it is seen that the students judge Hittites, especially about hygiene. Based on the answers of these students, it is seen that they could not think in accordance with the historical context. Therefore, it can be said that they are at the beginning level in terms of the historical empathy levels indicated by Lee and Ashby (2001). Although there is no problem in reading skills, the students do not think of contextualization appropriately and fall into presentism/anachronism error. For this reason, they should carry out systematic and continuous historical source-based activity practices under teacher guidance.

Also when evaluated in terms of language, students probably used the phrase "I think" in general in their answers because the phrase "do you think" appears at the root of the question. In addition, it is understood that the students use the word "probably" a lot in their answers, and because they do not have the correct information, it is understood that the students express it in this way to show that they somehow predict the real reason. In general, the fact that the students write short answers is also one of the issues identified in this research.

In this study, there are some basic limitations. The first is that although the 5th grade students (10-11 years) know the Hittites in the source text presented in the data collection tool in the social studies course, a historical text related to the "plague" which they did not see directly in the course is presented. Secondly, without any preliminary work, the students had to read and respond to historical sources. Thirdly, the 5th grade students did not study about questioning historical sources in social studies courses.

As a result, this study is an indication that the 5th grade students in the elementary school can reason and interpret based on historical sources and transfer knowledge. Moreover, this study demonstrated that students in these ages can respond to written sources as well as visual sources. Secondly, there is data showing that the 5th grade students are anxious to find and give a single correct answer in the source texts. The fact that the students encounter multiple-choice questions at this grade level can be considered as a reason for this situation. Thirdly; in this study, it was found that some of the 5th grade students gave emotional responses to the source and did not think exactly in accordance with the historical context, and were at the beginning level in terms of establishing historical empathy. It can be said that students mix historical empathy and sympathy concepts at the 5th grade level.

It has been concluded that the 5th grade students are ready for the activities to gain historical thinking skills and that activities can be conducted at the basic level in order to derive meaning based on sources questioning. In the end, it will be important to have the 5th grade students experience long-term historical source questioning and activity-based and questionable conflicting historical sources. In the future research can be designed experimental study by researchers with social studies teachers in order to improve 5th grade students historical thinking capabilities.

Appendix. Source information provided for the 5th grade students.

Source A

It is known that the following expressions are mentioned in the plague prayers made to the gods in the Hittite texts.

"Oh gods, what have you done? You let the plague enter Hatti and everyone is dying! Now, there is no one left to prepare food and drink! Nobody sows and harvests the fields of the gods because all the planters and harvesters are dead! All the miller women who make bread for the gods are dead! Since all the cattle and sheep shepherds are dead, the sheep and cattle pens, which the sheep and cattle were selected for sacrifice are empty!"

Source: Reyhan, E. (2009). The Revenues of Hittite state, storage and. *Akademik Bakış,* 2(4), p. 157-174.

Source B

The plague prayers written during the period of Mursili II, the Hittite king (1339-1306 BC) include the following as the causes of this plague epidemic:
The gods were neglected,
The unjust murder of young Tudhaliya (Hittite prince),
Sacrifices offered to Mala (Euphrates) river were disregarded,
The slaves brought by his father Suppiluliuma I carried the plague
Source: Ünal, A. (1980). Hitit tıbbının ana hatları, *Belleten*, 44 (175), p. 475-496, Ankara: Türk Tarih Kurumu Yayınları

References

Arık, Feda Şamil (1991). Plague in Anatolia in Seljuk period, *Ankara University Journal of Historical Studies*, 15 (26), 27- 57. http://acikarsiv.ankara.edu.tr/browse/2348/

Aytaçlı, B.& Gündoğdu, K. (2018). Opinions of the teachers instructing in the fifth grade math course for the first time through the 4+4+4 System. *Adnan Menderes University Faculty of Education Journal of Educational Sciences*, *9*(1), 12-30.

Barton, K. (1994). "I just kinda know": Elementary student′s ideas about historical evidence. *Theory and Research in Social Education, 25*(4), 407–430. doi:10.1080/00933104.1997.10505821

Brandmo, C., Bråten, I. & Schewe, O. (2019). Social and personal predictors of test anxiety among Norwegian secondary and postsecondary students. *Social Psychology of Education*, *22*(1), 43-61.

Brugar, K.& Roberts, K. (2018). Elementary students' challenges with informational texts: Reading the words and the world. *The Journal of Social Studies Research*, *42*(1), 49-59.

Bozkurt, B. Ü. (2016). A report on reading instruction in Turkey: Implications from PISA scale. *Abant İzzet Baysal University Journal of Education Faculty*, *16*(4), 1673-1686.

Dilek, D. (2009). The reconstruction of the past through images: An iconographic analysis on the historical imagination usage skills of primary school pupils. *Educational Sciences: Theory & Practice*, 9 (2), 633-689.

Dutt-Doner, K.M., Cook-Cottone, C. & Allen, S. (2007). Improving classroom instruction: Understanding the developmental nature of analyzing primary sources, *RMLE Online Research in Middle Level Education*, *30*(6), 1-20.

Harnett, P. (1993). Identifying progression in children's understanding: The use of visual materials to assess primary school children's learning in history. *Cambridge Journal of Education,* 23 (2), 137-154. doi:10.1080/0305764930230203

Harris, L. M., Halvorsen, A., & Aponte-Martínez, G. (2016). "[My] family has gone through that": How high school students determine the trustworthiness of historical documents. *The Journal of Social Studies Research*. doi:10.1016/j.jssr.2015.06.007i

Khawaja, A. (2018). Designing an assessment tool for historical literacy: the case of Copernicus. *Nordidactica – Journal of Humanities and Social Science Education*, *3*, 1-26.

Kızılay, N. & Doğan, Y. (2014). Archeology in classroom: An action research upon developing the historical thinking skills of 6th grade students, *Fırat University Journal of Social Science*, *24*(2), 85-107.

Lee, P. J. ve Ashby, R. (2001). Empathy, perspective taking, and rational understanding. O. L. Davis, E. A. Yeager, S. J. Foster. (Eds.), Historical Empathy and Perspective Taking in the Social Studies (pp.21-50). Lanham, MD: Rowman & Littlefield Publishers, Inc.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* Sage Publishing.

MEB. (National Ministry of Education) (2018). Social studies curriculum (Primary and Secondary 4, 5, 6. and 7. grades), Ankara.

Özbaş Çulha, B. (2010). Progression in historical thinking among students ages 12-14 using historical evidence (Doctoral dissertation). Dokuz Eylül University, Institute of Educational Sciences, İzmir.

Rantala, J. & Khawaja, A. (2018). Assessing historical literacy among 12-year-old Finns. *The Curriculum Journal*, *29* (3), 354-369.

Reisman, A. (2012). 'The "document-based lesson": bringing disciplinary inquiry into high school history classrooms with adolescent struggling readers'. *Journal of Curriculum Studies*, *44* (2), 233–264. doi:10.1080/00220272.2011.591436

Seixas, P. (2006). Benchmarks of historical thinking: A framework for assessment in Canada. Centre for the study of historical consciousness. http://archive.historybenchmarks.ca/documents/benchmarkshistoricalthinkingframework-assessment-Canada.

Shanahan, C., & Shanahan, T. (2014). Does disciplinary literacy have a place in elementary school? *The Reading Teacher*, *67*(8), 636– 639.

Stahl, K.A.D. (2014). What counts as evidence? *The Reading Teacher*, *68*(2), 103– 106.

Şahin, E. (2018). Secondary school 5. grade social studies textbook. Ankara: Anadol Publishing.

Topçu, E. ve Kaya, B. (2014). Evaluation of fifth grade students in terms of social studies teacher. *International Journal of Eurasia Social Sciences*, *5*(16), 111 -131.

Van Drie, J., & Van Boxtel, C. (2008). Historical reasoning: Towards a framework for analyzing students' reasoning about the past. *Educational Psychology Review*, 20 (2), 87-110. doi:10.1007/s10648-007-9056-1

VanSledright, B. (2002). In search of America's past. Learning to read history in elementary school. New York, NY: Teachers College Press.

VanSledright, B. and Afflerbach, P. (2005). Assessing the status of historical sources: an exploratory study of eight US elementary students reading documents. In R. Ashby, P. Gordon, & P. Lee (eds.), Understanding history: Recent research in history education. London: Routledge Falmer, pp. 1–20.

Wineburg, S. (2001). Historical thinking and other unnatural acts: Charting the future of teaching the past. Philadelphia: Temple University Press

Yeşilbursa, C.C. (2015). Middle school student's perceptions' of history. *Journal of Gazi Education Faculty. (GUJGEF)*, *34*(3), 415-436.

Yıldırım, A. & Şimşek, H. (2005). *Qualitative research methods in social sciences* (5th ed.). Ankara: Seçkin publications.

Investigation of the Relationship between Cognitive Flexibility Levels and Personal Features of University Students

Seda Tüfekçibaşi[1] & Mustafa Şahin[2]

[1, 2]*Trabzon University, Turkey*

ARTICLE INFO

ABSTRACT

The purpose of this study was to examine the relationship between cognitive flexibility levels and personality traits of university students and whether these variables differ according to gender, education department, cigarette and alcohol use. The research was carried out with 151 students studying in the English language education, physical education and sports, science education, public relations and advertising departments of Karadeniz Technical University. "Cognitive Flexibility Scale" was used to measure the level of cognitive flexibility, "Eysenck Personality Questionnaire Short Form" to measure personality characteristics and "Personal Information Form" created by the researcher was used for personal information. Independent Sample T-Test, One Way Variance Analysis (ANOVA) and Pearson Correlation Coefficient were used in the analysis of the data. The analyses were carried out in SPSS 22.0 program. The results of the research showed that there was a negative relationship between cognitive flexibility and neuroticism and a positive relationship between cognitive flexibility and extraversion. According to another result only estraversion scores differ by gender. Women's extraversion scores were higher than men's scores. The variables don't differ according to the education department. Cognitive flexibility and psychoticism scores differ between smokers and non-smokers. In addition neuroticism and psychoticism scores differ between individuals who consume alcohol and do not consume alcohol. The findings were discussed based on the literature and suggestions for future research were presented.

Keywords:
Cognitive flexibility, personality traits, neuroticism, psychoticism, extraversion

1. Introduction

The introduction to social life starts with the birth by which the individual become a member of the family. This small community originally composed of mother, father and siblings and gradually becomes a society with the participation of new individuals. The individual has many different roles in his experience during this process. There are a number of responsibilities imposed by social life for these roles. One of them is to live in harmony with the society. In order to adapt to society, individuals should be able to respond to some unexpected demands of their roles. This situation is inevitable for the individual who enters new environments, meets new people and learns new things. Individuals should properly adapt their intellectual abilities to adapt to new and unfamiliar stiations they face. The way to this is to carry out healthy and positive cognitive processes. A harmonuious life is possible only when individuals can move away from the abrasive and consumer effects caused by the inflexible perspective. Reducing this flexibility can lead to emotional deprivations that are difficult to compensate (Eşiyok, 2016). Flexibility allows individuals to evaluate problems differently from ordinary perspectives and to see components in a universal and multi-faceted way. Resolving the problem, defining it and producing new solutions are other possibilities provided by flexibility (Martin and Rubin, 1995).

According to Canas et al (2003), cognitive flexibility is the ability of individuals to develop mental strategies in the face of unexpected situations and to use these strategies to suit the situation. Cognitive flexibility can be expressed as the presence of more than one and several alternative strategies in the individual's cognitive repertoire and the ability to choose one or more of these alternatives to suit the situation when needed. Cognitive flexibility is a requirement for individuals to develop new expressions and actions in the face of expected or unexpected situations and to organize their cognition creatively (Deak, 2003). Cognitive flexibility can be considered a high level skill as it involves simultaneous control of multiple factors -such as time,space and context. Martin and Anderson (1998) stated that individuals who evaluate more than one option in case of situations are more flexible than individuals who think that one option is correct. Being aggressive, careful, perceptual, responsible, rational and sensitive are characteristics of individuals with high cognitive flexibility (Cagela, 1981). In addition, they are individuls who can make sense of their lives and who are confident in communication power (Martin and Anderson, 1998). A study revelaed that cognitive flexibility is also associated with individuals' positive mood (Murray et al., 1990). Considering the relevant definitios and features, cognitive flexibility can be defined as the self-confidence and willingness of individuals to organize their knowledge and skills appropriately in the face of new and different situations, awareness of all options and selection and application of the appropriate option.

The characterisrics of having high cognitive flexibility include some parts of the personality of individuals. Personality is the lifestyle of the individual. This lifestyle includes different characteristics such as talent, intelligence, emotion, joy, grief, anger, friendship, traditions. Baymur (1993) has defined personality as a harmonious and holistic structure that contains many human characteristics in a personal way. Starting with fertilization, personality continues continuously until death and includes everything that concerns people. Individuals' attitudes and behaviors toward events, ways of dealing with events differ according to their traits (Türküm, 2000; Mete, 2006).

Usually, the experiences of individuals until the university years are limited to a familiar environment and do not exhibit much difference. The university years are the first times when these limits are exceeded and not witnessed anymore. Besides, these are the first years when the individual leaves the environment which he is accustomed to. In addition, new environments and first contacts with new people appear. These contacts, which are effective in individuals' future lifestyles, are clarified towards the end of their university years. University years are not only periods in which decisions are taken in line with the professional career, but also those in which the personality traits take a serious shape. Personality traits also play an important role in shaping the behavior of individuals (Eşiyok, 2016). It has been suggested that the personality traits of the individual have an effect on how to deal with the difficulties that one encounters in life. Individuals show behaviors such as escaping or fighting according to their personality traits (Çatal, 2014). Considering that personality traits are in the back-ground of individuals' attitudes and behaviors, it is thought that there may be a relationship between cognitive flexibility and personality traits. Accordingly, the aim of the study is to examine the personality traits and cognitive flexibility levels of university students.

2. Method

2.1. Research Model

This study is a relational study conducted to examine the relationship between cognitive flexibility levels and personality traits of university students studying in different departments according to some variables. In the research, exploratory correlational research model, one of the correlational research models, was used. Exploratory correlational research aims to investigate relationships between variables (Büyüköztürk et al. 2015).

2.2. Participants

The universe of the research consists of 151 students studying at Karadeniz Technical University English language education, physical education and sports, science education, public relations and advertising departments in the spring term of 2016-2017 academic year. Students who can be reached and agree to participate in the research are included in the sample. The type of sampling taking into account the ease of access and suitability is called the appropriate sampling (Demir, 2017). The distribution of the participants by gender is 89 women (%58,9) and 62 men (%41,1). The ages of the participants vary between 18 and 36, the

average age is 21,24. The distribution of the participants according to their department is 39 English language education (%25,8), 41 physical education ve sports (27,2), 36 science education (23,8) and 35 public relations and advertising (23,2). The majority of the participants reside at home (%60,3), secondly in the dormitory (24,5). The distribution of participants according to the level of education received is 38 in the 1st grade (%25,2), 75 in the 2nd grade (%49,7), 11 in the 3rd grade (%7,3) and 27 in the 4th grade (%17,9). The mothers of 150 participants are alive (%99,3) and the father of 142 participants is alive (%94). Most of the participants reported that their parents were mostly primary school graduates compared to other levels (mother:%40,4 and father:%31,1). Also the parents of most of the participants are married (%90,7). 130 participants stated that their mothers were housewives (%86,1). The distribution of the fathers of the participants by profession is 29 civil servants (%19,2), 44 self-employed (%29,1), 33 workers (%21,9), 34 retirees (%22,5) and 11 others (%7,3). 116 participants stated that they didn't smoke (%76,8), 35 participants stated that they smoked (%23,2). 120 participants stated that they didn't consumed alcohol (%79,5) and 31 participants stated that they consumed alcohol (20,5).

2.3. Instruments

2.3.1. Personal Information Form: The personal information form was created by the researcher. The purpose of the form was to gather information about the demographic characteristics of the participants (gender, age, department and degree of education, place of residence, life status of parents, education level and profession of parents, marital status of parents, income level, cigarette and alcohol consumption).

2.3.2. Cognitive Flexibility Scale: The Cognitive Flexibility Scale (CFS) was developed by Martin and Rubin (1995) and adapted to Turkish by Çelikkaleli (2014). The scale consists of 12 items and one dimension. CFS is a 6-point Likert-type scale. The items of the scale are 1 "absolutely disagree", 2 "" disagree ", 3" partially disagree ", 4" partially agree ", 5" "agree", 6 "absolutely agree". Items 2, 3, 6 and 10 are reversed, and the scores that can be obtained from the scale vary between 10 and 60. The high scores indicate the high level of cognitive flexibility. Confirmatory factor analysis and internal consistency coefficient were calculated for validity and reliability studies of the scale. The scale was found to have a single-factor structure that explained the variance of the total group by 43%. The internal consistency coefficient of the scale was calculated as .74.

2.3.3. Eysenck Personality Survey: The Revised Eysenck Personality Questionnaire-Abbreviated Form by Francis et al. (1992) was adapted to Turkish by Karancı, Dirik and Yorulmaz (2007). The questionnaire consisting of 24 items measures personality in 3 sub-dimensions: neuroticism, extraversion and psychoticism. In addition, it was aimed to prevent bias during the application of the questionnaire and to check the validity with the lie scale. Items of the scale are scored as Yes (1) - No (0), but items 3, 5, 7, 10, 15, 16, 17, 19, 20, and 22 are reversed. The scores that can be obtained for each sub-dimension vary between 0 and 6. The internal consistency coefficient of the scale was found to be .78, .65, .42, .64, respectively, for extraversion, neuroticism, psychoticism and lie dimensions.

2.4. Data Collection and Analysis Procedures

Data collection was carried out in the classroom and in groups. The scales were applied by the researcher himself during the lesson hours by appointment from the academic staff. The data obtained as a result of the research were evaluated in computer environment and statistical analyzes were done with SPSS 22.0 program. The normality of the distribution was examined by looking at the skewness - kurtosis values and kolmogorov-simirnov test significance levels.

Table 1. Skewness-Kurtosis Values and Kolmogorov-Simirnov Test Significance Levels of Points

	N	Skewness	Kurtosis	p
Cognitive Flexibility Scale	151	-.322	-.320	.08
Neuroticism	151	-.315	-.828	.17
Extraversion	151	-.548	-.856	.17
Psychoticism	151	.483	-.413	.22

When the kurtosis-skewness scores shown in Table 1 are examined, it is seen that the scores are in the appropriate range and show normal distribution (Pallant, 2001). Looking at homogenity, values were found to be greater than .05, the homogenity assumption was considered for variance analysis. As a result of the normality and homogenity analyzes, in the analiysis of the data it was decided to use t test and variance analysis which are parametric measurements. Pearson Correlation Analysis was performed to examine the relationship between variables.

3. Results

The mean and standard deviations of the students' scores from the scales used in the research, the lowest and the highest scores are shown in Table 2.

Table 2. Averages, Standard Deviations, Lowest and Highest Scores of the Participants' Scores on the Cognitive Flexibility Scale, Neuroticism, Extraversion and Psychoticism Subscales

	N	Min	Max	$\overline{X}$	ss
Cognitive Flexibility Scale	151	35	70	54.62	7.59
Neuroticism	151	0	6	3.37	1.75
Extraversion	151	0	6	3.82	1.93
Psychoticism	151	0	5	1.62	1.19

Independent Sample T-Test was applied to determine whether there was a significant difference between the cognitive flexibility, neuroticism, extraversion, psychoticism levels and gender variable of university students and the results are shown in Table 3.

Table 3. Independent Sample T-Test Findings Regarding the Relationship Between University Students' Cognitive Flexibility, Neuroticism, Extraversion, Psychotic Levels and Gender Variable

Gender		N	Mean	sd	t	*p*
Cognitive	Female	89	55.02	6.90	.762	.447
Flexibility	Male	62	54.06	8.51	.734	
Neuroticism	Female	89	3.61	1.73	1.942	.054
	Male	62	3.05	1.75	1.938	
Extraversion	Female	89	4.10	1.82	2.103	.03*
	Male	62	3.44	2.05	2.059	
Psychoticism	Female	89	1.63	1.11	.082	.935
	Male	62	1.61	1.32	.079	

*P<.05

When Table 3 is analyzed, it can be seen that cognitive flexibility, neuroticism and psychoticism levels of university students do not differ significantly by gender. Extroversion levels of university students differ according to gender and this difference is statistically significant (P<.05). Women's extraversion scores ($\bar{x}$=4.10) were higher than men's extraversion scores ($\bar{x}$=3.44).

One-Way ANOVA test was applied to determine whether the cognitive flexibility, neuroticism, extraversion and psychoticism levels of university students differ according to the program they are studied and the results are shown in Table 4.

Table 4. One-Way ANOVA Test Findings Regarding Cognitive Flexibility and Personality Traits of University Students According to the Training Program

Education Department	Factor	KT	sd	KO	F	p	η²
	Between Groups	163.93	3	54.64			
Cognitive Flexibility	Within Groups	8479.29	147	57.68	.94	.41	.01
	Total	8643.23	150				
	Between Groups	7.01	3	2.33			
Neuroticism	Within Groups	454.47	147	3.09	.75	.52	.01
	Total	461.48	150				
	Between Groups	16.13	3	5.37			
Extraversion	Within Groups	545.38	147	3.71	1.45	.23	.02
	Total	561.52	150				
	Between Groups	9.79	3	3.26			
Psychoticism	Within Groups	205.69	147	1.39	2.33	.07	.04
	Total	215.48	150				

*p<.05

As a result of the ANOVA test, no statistically significant difference was found between the cognitive flexibility levels of the university students and the program they studied.

Independent Sample T-Test was applied to determine whether the cognitive flexibility, neuroticism, extraversion and psychoticism levels of university students differ according to smoking, and the results are shown in Table 5.

Table 5. Independent Sample T-Test Findings Regarding Cognitive Flexibility and Personality Traits of University Students According to smoking.

Smoking		N	Mean	sd	t	p
Cognitive Flexibility	Yes	35	56,91	8,45	2,054	**,042***
	No	116	53,93	7,20		
Neuroticism	Yes	35	3,77	1,62	1,523	,130
	No	116	3,25	1,77		
Estraversion	Yes	35	4,37	1,61	1,913	,058
	No	116	3,66	1,99		
Psychoticism	Yes	35	2,22	1,37	3,118	**,003***
	No	116	1,43	1,08		

*p<.05

When Table 5 is analyzed, it is seen that the levels of neuroticism and extraversion of university students do not differ significantly from smoking. Cognitive flexibility level differs statistically significantly according to smoking (t=.042, p<.05). Cognitive flexibility levels of students who smoke ($\bar{x}$=56,91) were found higher than the students who did not smoke ($\bar{x}$=53,93). The psychoticism sub-dimension also varies according to

smoking and this difference is statistically significant (t=.003, p<.05). The scores of students who smoke from the psychoticism sub-dimension ($\bar{x}$=2,22)were higher than those of nonsmokers ($\bar{x}$=1,43).

Independent Sample T-Test was applied to determine whether the cognitive flexibility, neuroticism, extraversion and psychoticism levels of university students differ according to alcohol consumption and the results are shown in Table 6.

Table 6. Independent Sample T-Test Findings Regarding Cognitive Flexibility and Personality Traits of University Students According to Alcohol Consumption

Alcohol		N	Mean	sd	t	*p*
Cognitive	Yes	31	56,80	8,73	1,805	,073
Flexibility	No	120	54,06	7,19		
Neuroticism	Yes	31	3,96	1,77	2,126	**,035***
	No	120	3,22	1,72		
Estraversion	Yes	31	4,38	1,70	1,819	,071
	No	120	3,68	1,97		
Psychoticism	Yes	31	2,22	1,25	3,242	**,001***
	No	120	1,46	1,13		

*p<.05

When Table 6 is analyzed, it is seen that the cognitive flexibility and extraversion levels of university students do not differ significantly from alcohol consumption. Neuroticism sub-dimension differs according to alcohol use and this difference is statistically significant (t =, 035, p<.05). The scores of students using alcohol from the sub-dimension of neuroticism ($\bar{x}$=3,96) were higher than those who did not consumption alcohol ($\bar{x}$=3,22). At the same time, the psychoticism sub-dimension differs according to alcohol consumption and this difference is statistically significant (t =, 001, p<.05). The scores of students using alcohol from the sub-dimension of psychotism ($\bar{x}$=2,22) were found higher than those who did not consumption alcohol ($\bar{x}$=1,46).

Pearson Correlation Analysis was conducted to determine the relationship between the cognitive flexibility levels of the university students and neuroticism, extraversion, and psychoticism levels and the results are shown in Table 7.

Table 7. Correlation Analysis Findings Regarding the Relationship between Cognitive Flexibility Levels and Personality Traits of University Students.

		Cognitive Flexibility	Neuroticism	Extraversion	Psychoticism
Cognitive Flexibility	r	1	-.200*	.391**	.081
	p		.01	.00	.32
	N	151	151	151	151
Neuroticism	r	-	1	-.116	.033
	p	-		.155	.684
	N	-	151	151	151

Extraversion	r	-	-	1	.075
	p	-	-		.358
	N	-	-	151	151
Psychoticism	r	-	-	-	1
	p	-	-	-	
	N	-	-	-	151

* .05 level significant

** .01 level significant

When Table 7 is examined, it is seen that there is no significant relationship between cognitive flexibility and psychoticism. Neuroticism and extraversion have a statistically significant relationship with cognitive flexibility. There was found a negative correlation between cognitive flexibility and neuroticism at .05 level and correlation is medium size (r = -. 200). A significant relation was found between cognitive flexibility and extraversion in the positive direction .01 level and correlation is large size (r = .391).

4. Discussion

The aim of this study was to examine the cognitive flexibility and personality characteristics of university students based on various variables. In the search it was firstly examined whether the cognitive flexibility, neuroticism and psychoticism levels of university students differed by gender. Only extraversion differs by gender. Women's extraversion scores were higher than men's scores. Extraversion includes features such as sociability, assertiveness, sincerity, talkativeness, compatibility, leadership, effectiveness, optimism, strong humor and flexibility. In addition extroverted individuals love to work with the society and mostly prefer social work areas (İnanç and Yerlikaya, 2014). Many studies in the literature have found that extraversion does not differ by gender (Karancı et al., 2007; Deniz and Kesicioğlu, 2012; Tunç and Aliyev, 2015; Acet et al., 2016; Shevlin et al., 2002). The information obtained in this research is not compatible with the literature. However the finding that cognitive flexibility does not change by gender has also been found in previous studies (Diril, 2011; Çuhadaroğlu, 2011; Öz, 2012). The finding that cognitive flexibility does not differ by gender is consistent with other research results.

According to one of research findings cognitive flexibility and personality characteristics do not change according to the education department of university students. In her research, Başsu (2016) compared the cognitive flexibility scores of teachers in science and social sciences and obtained the finding that there was no significant difference. In the study of Şahin and Ünüvar (2011) it was found that personality traits did not differ between different departments of the faculty of education. The findings obtained are consistent with these research findings.

It was found that the levels of neuroticism and extraversion of university students did not differ significantly from smoking. According to the findings, the level of psychoticism and cognitive flexibility differs significantly depending on smoking. The average score of the smokers in the psychoticism sub-dimension is higher than the non-smoker individuals. Büyükçiçek et al. (2014) also found that the level of psychoticism was higher in smokers than non-smokers. Psychoticism includes features such as impulsivity, the desire for easy satisfaction, short response time, and difficulty in conducting long-term work. The findings obtained in the research are in line with these explanations. In addition, cognitive flexibility levels of smokers were higher than those who did not. When the literature on cognitive flexibility is examined, it is seen that it includes skills such as constructive and functional coping. Cognitively flexible people can develop multi-faceted perspectives, they are determined to produce unique solutions and they trust themselves (Çelikkaleli, 2014). For this reason, they evaluate the problems in a positive framework, perceive them as an opportunity for their own development and are confident that they can overcome them. Considering that individuals with high cognitive flexibility have lower perceived stress levels (Turan et al. 2019) and have self-control (Bilgin, 2017), it may be thought that they are less likely to turn to cigarettes that can lead to

addiction outside of their own control. In study of Bedel and Ulubey (2015), it was found that individuals with high cognitive flexibility tend mostly to active coping styles. The higher cognitive flexibility scores of smokers than non-smokers is an inconsistent and remarkable finding with this study. It can be thought that smokers and non-smokers evaluate according to different standards while answering items that measure cognitive flexibility.

It was found that cognitive flexibility and extraversion levels of university students did not differ significantly from alcohol use. According to the findings, the levels of neuroticism and psychoticism differ significantly compared to alcohol use. When the neuroticism levels are examined, it is seen that individuals who use alcohol have a higher average score compared to individuals who do not. Similarly, when looking at the sub-dimension of psychotism, the mean scores of the individuals using alcohol were found higher than the individuals not using alcohol. It can be thought that personality traits such as cold, insecure, aggressive, guilt, insensitivity in psychoticism are related to the social and impulsive dimension of alcohol use. The high psychoticism subscale scores of individuals using alcohol show that the research findings support the literature. Neuroticism sub-dimension includes personality traits such as anxious, depressed, shy (Bouchard, Lussier and Sabourin, 1999), hypersensitive and low self-esteem with features such as emotional consistency and excessive reactivity. It is stated in the literature that these properties are related to alcohol use (Karancı, Dirik and Yorulmaz, 2007). Herken, Bodur and Kara's (2000) study also found that individuals using substances such as cigarettes or alcohol show a neurotic and psychotic tendency.

No significant correlation was found between the cognitive flexibility levels of university students and psychoticism. Neuroticism and extraversion have a statistically significant relationship with cognitive flexibility. There was a negative .05 level negative relationship between cognitive flexibility and neuroticism. A positive relationship was found between cognitive flexibility and extraversion at a positive level .01. Güvenç (2019) also found a positive relationship between cognitive flexibility and extraversion.

Neuroticism includes features such as difficulty in decision making, restlessness, anxiety, emotionality, easy anger and sadness and excessive reactions (Bouchard, Lussier and Sabourin, 1999). It has been stated in the literature that individuals with low level of neuroticism are emotionally stable and their reactions to events are controlled. On the contrary, the high level of neuroticism makes the individual open to mental discomfort in the face of stressful experiences. Considering the definition of cognitive flexibility, it is seen that it includes being open to extraordinary situations and having the skills to cope with these situations (İnanç and Yerlikaya, 2014).

Extroverted individuals have social, aggressive, friendly, talkative and harmonious features. Being in the community is a preferred situation for these individuals and they tend to be flexible in the face of differences. For this reason, they can easily cope with the situations they face and overcome the problems. They are resistant to differences thanks to their compatible structures and this confirms the claim that they are cognitively flexible (İnanç and Yerlikaya, 2014). The finding that there is a great relationship between extraversion and cognitive flexibility obtained in this research supports this.

In this research, students from Karadeniz Technical University English language education, physical education and sports sciences, science education and public relations and advertising departments were included in this study group. Research findings include students who are trained in these departments. Generalization of findings may be wrong in more or larger samples.The use of available and appropriate sampling method in the selection of the research group may be among the limitations of the research.

Some suggestions can be presented according to the results of the research. The implementations for men to support being extroversion can be added to the content of training programs based on the finding that women are more extroverted than men. Besides, additional implementations can be included to keep neurotic and psychoticism levels, which differ due to smoking and alcohol use, at the usual level and to develop personality characteristics positively. Studies to increase the level of awareness of university students, to use effective ways of coping and to improve their problem solving skills may also enable them to be more cognitively flexible. For future studies on cognitive flexibility; It can be suggested to work with different variables and larger samples. Studies on cognitive flexibility generally include the 17-25 age group.
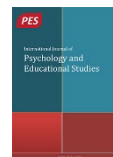
Future studies can focus on different age groups. Qualitative research methods can be used to obtain in-depth reviews, and the results of quantitative research can be supported by qualitative research data.

References

Acet, M., Canbaz, M., Yılmaz, T., Şahin, M. and Işık, U. (2016). Taekwondo hakemleri ile antrenörlerinin ego, kişilik ve saldırganlık düzeylerinin cinsiyet faktörüne göre incelenmesi. *International Journal of Science Culture and Sportt, 4*(1), 156-162.

Başsu, D. A. (2016). *Öğretmenlerin Bazı Demografik Özelliklerine Göre Bilişsel Esneklik ile Öğrencilerinin Bilişsel Esneklik Düzeylerinin İncelenmesi* (Yüksek Lisans Tezi). Çağ Üniversitesi, Sosyal Bilimler Enstitüsü.

Baymur, F. (1993). Genel Psikoloji, İstanbul: İnkılap Kitapevi.

Bedel, A. and Ulubey, E. (2015). Ergenlerde başa çıkma stratejilerini açıklamada bilişsel esnekliğin rolü. *Elektronik Sosyal Bilimler Dergisi, 14*(55), 291-300. Retreived from https://doi.org/10.17755/esosder.91623

Bilgin, M. (2017). Ergenlerin beş faktör kişilik özelliği ile bilişsel esneklik ilişkisi. *Elektronik Sosyal Bilimler Dergisi, 16*(62), 945-954. 14.04.2020 Retreived from http://dergipark.gov.tr/esosder

Bouchard, G., Lussier, Y., and Sabourin, S. (1999). Personality and Marital Adjustment: Utility of the Five-Factor Model of Personality. *Journal of Marriage and the Family, 61*(3), 651. doi:10.2307/353567

Büyükçiçek, Ö., Tuğal, Ö., Cengisiz, C.,Özenli, Y. and Topal, K. (2014). Sigara bırakma merkezine başvuranlarda kişilik özellikleri. *Adana Numune Eğitim ve Araştırma Hastanesi Tıp Dergisi, 2*(1), 1-4. Retrieved from https://www.researchgate.net/publication/310619562

Büyüköztürk, Ş., Çakmak, K.E., Akgün, E.Ö., Karadeniz, Ş. and Demirel, F. (2015). *Bilimsel araştırma yöntemleri.* (19. Baskı). Ankara: Pegem A Yayıncılık.

Cegala, D. J. (1981). Interaction involvement: A cognitive dimension of communicative competence. *Communication Education, 30*(2), 109–121. doi:10.1080/03634528109378460

Canas, J., Quesada, J., Antoli, A., and Fajardo, I. (2003). Cognitive flexibility and adaptability to environmental changes in dynamic complex problem-solving tasks. *Ergonomics, 46*(5), 482–501. doi:10.1080/0014013031000061640

Çatal, M.T. (2014). *Üniversite Öğrencilerinin Kişilik Özelliklerine Göre Psikolojik Yardım Alma Tutumları* (Yüksek Lisans Tezi). Ondokuzmayıs Üniversitesi,Eğitim Bilimleri Enstitüsü.

Çelikkaleli, Ö. (2014). Bilişsel esneklik ölçeğinin geçerlik ve güvenirliği. *Eğitim ve Bilim, 39*(176), 339-346. Retreived from http://dx.doi.org/10.15390/EB.2014.3466

Çuhadaroğlu, A. (2011). *Bilişsel Esnekliğin Yordayıcıları* (Yayınlanmamış Doktora Tezi). Ankara Üniversitesi, Eğitim Bilimleri Enstitüsü.

Deak, G. O. (2003). The development of cognitive flexibility and language abilities. *Advances in Child Development and Behavior, 31*, 271-327.

Demir, S. B. (Translation ed.). (2017). Araştırma deseni: Nitel, nicel ve karma yöntem Yaklaşımları (3. Baskı). Ankara: Eğiten Kitap Yayıncılık.

Deniz, Ü. and Kesicioğlu, O. S. (2012). Okul öncesi öğretmen adaylarının kişilik özelliklerinin bazı değişkenlerle ilişkisinin incelenmesi. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD), 13*(2), 1-13.

Diril, A. (2011). *Lise Öğrencilerinin Bilişsel Esneklik Düzeylerinin Sosyo-demografik Değişkenler ve Öfke Düzeyi ile Öfke İfade Tarzları Arasındaki İlişki Açısından İncelenmesi* (Yüksek Lisans Tezi). Çukurova Üniversitesi, Sosyal Bilimler Enstitüsü.

Eşiyok, S.V. (2016). *Üniversite Öğrencilerinin Cinsiyetlerine ve Bilişsel Esneklik Düzeylerine Göre Romantik İlişki İnançlarının İncelenmesi* (Yüksek Lisans Tezi). Mersin Üniversitesi, Eğitim Bilimleri Enstitüsü.

Francis, LJ, Brown, LB, Philipchalk, R et al. (1992). The development of an abbreviated form of the Revised Eysenck Personality Questionnaire (EPQR-A): its use among students in England, Canada, the USA and Australia. *Personality and Individual Differences, 13*, 443-449.

Güvenç, F. (2019). *Üniversite Öğrencilerinde Bilişsel Esneklik ve Belirsizliğe Tahammülsüzlük ile Kişilik Özellikleri Arasındaki İlişki* (Yüksek Lisans Tezi). Necmettin Erbakan Üniversitesi, Eğitim Bilimleri Enstitüsü.

İnanç, Y. B. and Yerlikaya, E. E. (2014). *Kişilik Kuramları.* (9. Baskı). Ankara: Pegem Akademi.

Karancı, A.N., Dirik, G. and Yorulmaz, O. (2007). Eysenck Kişilik Anketi -Gözden Geçirilmiş Kısaltılmış Formu'nun (EKA-GGK) Türkiye'de Geçerlik ve Güvenilirlik Çalışması.*Türk Psikiyatri Dergisi, 18*(3), 254-261.

Martin, M. M. and Anderson, C. M.(1998). The cognitive flexibility scale: Three validity studies. *Communication Reports, 11*(1), 1-9. doi: 10.1080/08934219809367680

Martin, M. M., and Rubin, R. B. (1995). A new measure of cognitive flexibility. Psychological Reports, *76*(2), 623-626. Retrieved from https://doi.org/10.2466/pr0.1995.76.2.623

Mete, C. (2006). *İlköğretim Okullarında Çalışan Öğretmenlerin Kişilik Özellikleri ile İş Tatminleri Arasındaki İlişkinin İncelenmesi* (Yayımlanmamış Yüksek Lisans Tezi). Yeditepe Üniversitesi, Sosyal Bilimler Enstitüsü.

Murray, N., Hirt, E. R., Sujan, H. and Sujan, M. (1990). The influence of mood on categorization: A cognitive flexibility interpretation. *Journal of Personality and Social Psychology, 59*(3), 411-425.

Öz, S. (2012). *Ergenlerin Cinsiyet, Sosyo-Ekonomik ve Öğrenim Kademesi Düzeylerine Göre Bilişsel Esneklik, Uyum ve Kaygı Puanları Arasındaki İlişkinin İncelenmesi* (Yüksek Lisans Tezi).Çukurova Üniversitesi, Sosyal Bilimler Enstitüsü.

Pallant, J. (2001). SPSS survival manual. Buckingham: Open University Press.

Shevlin M, Bailey F, Adamson G ve ark. (2002) Examining the factor structure and sources of differential functioning of the Eysenck Personality Questionnaire Revised-Abbreviated. Pers Individ Dif, 32: 479-487.

Şahin, H. and Ünüvar, P. (2011). *Eğitim fakütesi öğrencilerinin empatik becerileri ve kişilik özelliklerinin incelenmesi. Education Sciences, 6*(1), 1216-1226.

Turan, N., Durgun, H., Kaya, H., Ertaş, G., ve Kuvan, D. (2019). Hemşirelik öğrencilerinin stres durumları ile bilişsel esneklik düzeyleri arasındaki ilişki. *Jaren, 5*(1), 59-66. doi:10.5222/jaren.2019.43265

Tunç, E. and Aliyev, R. (2015). Lisansüstü öğrencilerinin kişilik özelliklerinin incelenmesi. *Gaziantep University Journal of Social Sciences, 14*(4), 949-963.

Türküm, S. (2000). Stresle Başa çıkma biçimi, iyimserlik, bilişsel çarpıtma düzeyleri ve psikolojik yardım almaya ilişkin tutumlar arasındaki ilişkiler: Üniversite öğrencileri üzerinde bir araştırma. *Sosyal Bilimler Dergisi, 1*(2), 1-16. Retrieved from https://earsiv.anadolu.edu.tr/xmlui/handle/11421/562

International Journal of Psychology and Educational Studies

Does Psychological Maladjustment Mediate the Relationship Between Students' Perception of Teacher Rejection and Educational Stress?

Behire Kuyumcu[1]

[1]Gazi University, Turkey

ARTICLE INFO

ABSTRACT

This study examined the mediating role of psychological maladjustment in the relationship between Turkish high school students' perception of teacher rejection and educational stress levels. The study was based on a sample of 399 high school students located in Turkey (231 students were female; 168 students were male). The Teacher's Acceptance-Rejection Questionnaire: Child Version Short Form, the Personality Assessment Questionnaire: Child Version, Education Stress Scale, and Personal Information Form were used as measures. Result revealed that psychological maladjustment mediated the relationship between perception of teacher rejection and educational stress. Additionally, the results showed that female students' educational stress levels, psychological maladjustment levels, and GPAs were significantly higher than male students. However, male students' perception of teacher rejection levels was significantly higher than female students. Results also documented that younger female and male students tended to recall more educational stress than older female and male students. GPA was significantly and negatively correlated with psychological maladjustment for males. The results may help the expansion of the IPARTheory. At the practical level, school counselors may include individual or group counseling practices to increase students' psychological adjustment in intervention programs to prevent or eliminate educational stress.

Keywords:
psychological maladjustment, perception of teacher rejection, educational stress, adolescent, Turkey.

1. Introduction

The affective quality of dyadic teacher-student relationships influences both students' psychological development (Rohner, 2010) and academic gains (Hamre & Pianta, 2006; Pianta, 1999). Interpersonal acceptance-rejection theory (IPARTheory) attempts to predict and explain major causes, consequences of teacher-student relation as well as other interpersonal relation (Rohner, 2010). In IPARTheory, the teacher is an attachment figure for students and the perception of teacher rejection affects students' both psychological and academic development (Ali, 2011; Khan, Haynes, Armstrong, & Rohner, 2010). Considering the 2019 data in Turkey, the number of students in formal high school was 5 million 649 thousand 594 (Ministry of National Education [MNE], 2019), it may be important to study on the perception of teacher rejection among Turkish high school students.

Teacher rejection is defined as the lack of acceptance or accepting emotions and behaviors, as well as exhibiting various physical or psychological behaviors or emotions that hurt the individual in IPARTheory (Rohner, 2010). Students experience rejection of teachers in four ways: (1) *Coldness/lack of affection* is the opposite of warm and compassionate. (2) *Hostile/aggressive* can be physical or verbal such as hit bite, scratch, shove, pinch, curse, sarcasm, belittling, say thoughtless, unkind, cruel things to or about, etc. (3) *Indifferent/negligent* mean

that pays no attention to needs of students. (4) *Undifferentiated* rejection is an individual's belief that although the significant other parent/spouse/friend/teacher) has no clear behavioral indication and neglects or is unkind or aggressive towards the individual, but believes that the attachment figure does not care or love the individual (Rohner, Khaleque, & Cournoyer, 2005; Rohner, 2010).

Adolescent students, who perceive teachers' behaviors as accepting, have academic intrinsic motivation (Makri-Botsari, 2015), school adaptation (Blankemeyer, Flannery, & Vazsonyi, 2002). Additionally, Turkish adolescent students, who perceive teachers' behaviors as accepting, have high academic achievement, positive attitudes towards school (Erkman, Caner, Sart, Börkan, & Şahan, 2010). It is known that issues related to school life (e.g., school work and school-related situation) are among the stress sources of adolescents in both Western and Asian countries (Isralowitz & Ong 1990; Kouzma & Kennedy, 2004; Stark, Spirito, Williams, & Guevremont, 1989; Sun, Dunne, Hou, & Xu, 2013). Similarly, students in the 10-21 age range in Turkey indicated that academic problems (e.g., failure in school/courses) and school-related problems (e.g., teaching style of teachers) are among the stress sources (Oral, 1994). Since these traits associated with teacher admission were also related to educational stress, it was thought that perceiving rejection of teacher behaviors by students could help to explain the educational stress of students.

The concept of educational stress refers to the connection of pressure, study, workload, and worry about grades, self-expectation stress, and despondency (Sun, Dunne, Hou, & Xu, 2011). Low academic achievement and intensive homework (Burnett & Fanshawe, 1997; Kouzma & Kennedy, 2004), high academic expectations of students and their families (Ang & Huan, 2006), and perceived high academic pressure (Xie, 2007) are the source of educational stress.
In the related literature, this type of student stress is expressed as educational stress or academic stress (e.g., Putwain, 2007; Sun, et all., 2011). In this research, the term of "educational stress" is used.

According to the related studies in Turkey, students with high educational stress level have (1) high school burnout level (Özdemir & Özdemir, 2015), (2) negative attitudes towards mathematics (Metin, 2019), and (3) high perfectionism and procrastination desires in the academic fields (Bayram, 2016). Students with less educational stress levels tend to have subjective well-being (Akpınar, 2016), reflective thinking skills and foreign language success (Yetim, 2014), emotional literacy skills (Balta-Özkan, 2019). However, these studies have not contained teacher-student relationships, which may affect the educational stress (Sun, et all., 2013) and other academic trajectories of children and adolescents (Pianta, 1999). Each year, approximately 2 million high school students study for the university entry exam. It is also known that 15-year-old Turkish students' achievements are below the Organization for Economic Cooperation and Development (OECD) average (OECD, 2019). In light of all this information, the researcher firstly aimed to examine the relationship between perception of teacher rejection and the educational stress among Turkish high school students.

In the IPARTheory, a teacher is a significant attachment figure for students (Rohner, 2010), and students' psychological maladjustment can be influenced by the teacher's rejection behaviors (Ahmed, Rohner, & Carrasco, 2012; Ali, Khaleque, & Rohner, 2015). On the other hand, students' acceptance of teacher perception may change the characteristics of psychological maladjustment into positive (Ali, Khaleque, & Rohner, 2015; Al-Yagon & Mikulincer, 2006; Rohner, Khaleque, Elias, & Sultana, 2010).

Psychological maladjustment included in the personality sub-theory of IPARTheory (Rohner, 2004). The basic assumption of the sub-theory is that over the course of evolution humans have developed the enduring, biologically based emotional need for a positive response from the people most important to them (Rohner, Khaleque, & Cournoyer, 2005). When people can not satisfy these needs, they feel rejection by attachment figure/significant others (e.g.parent, friend, teacher) and this rejection leads to seven negative personality outcomes also defined psychological maladjustment. (1) Dependence is the internal, psychologically felt wish or yearning for emotional support, care, comfort, attention, nurturance, and similar responses from significant others. (2) Emotional unresponsiveness is a person's inability to express freely and openly their emotions. (3) Hostility and aggression. Aggression is any behavior where there is the intention of hurting someone, something, or oneself. It is differentiated into physical, verbal, and symbolic forms. Hostility is an internal or

emotional feeling of enmity, anger, or resentment. (4) Negative self-esteem implies that one dislikes or disapproves of oneself. It means also that one devalues oneself and sometimes feels inferior to others. (5) Negative self-efficacy is feelings of incompetence, the perceived inability to meet day-to-day demands successfully. (6) Emotional instability is individuals' unsteadiness of mood, their inability to withstand minor setbacks, failures, difficulties, and other stresses without becoming upset emotionally. (7) Negative worldview is a person's (often unverbalized) overall evaluation of life, the universe, or the very essence of existence as being essentially negative (Rohner, 2005a).

It is also known that students' aggression, negative mood, and negative worldview (Khaneh & Basavaraj, 2011), low self-esteem (Nguyen, Wright, Dedding, Pham, & Bunders, 2019), and low self-efficacy (Sun, Dunne, Hou, & Xu, 2013) are related with educational stress. A limited number of similar studies in Turkey showed that students with high educational stress have low students' self-esteem (Özdemir & Özdemir, 2015), subjective well-being (Akpınar, 2016), and emotional self-efficacy (Arslan, 2017). Most of these traits (e.g., aggression, negative worldview, self-esteem, self-efficacy) associated with educational stress are also in connection with psychological maladjustment. Due to this relationship between students' perception of teacher rejection and psychological maladjustment, the researcher hypothesized that psychological maladjustment could mediate the relationship between perception of teacher rejection and educational stress.

Specifically, the aim of this study is to examine the mediating role of psychological maladjustment in the relationship between Turkish high school students' perception of teacher rejection and educational stress levels. This study was conducted to address three general questions: (1) Are there significant gender differences between research variables, and do research variables significantly relate to each other? (2) Are adolescents' perception of teacher rejection significantly linked to the level of adolescents' educational stress? (3) To what extent is psychological maladjustment an important generative mechanism that helps explain why adolescents' perception of teacher rejection tends to predict levels of educational stress?

2. Method

2.1. Participants

Participants in this study were recruited via convenience sampling method. Convenience sampling is one of the nonprobability sampling methods in which researchers select participants who are easy to find for targeted research (Erkuş, 2016, p. 138). The participants of this study were 399 high school students living in the rural area of Turkey. While 231 students (57.9 %) were female, 168 students (42.1 %) were male. The age of students ranged from 14 to 18 years (M_{age} =16.09, SD=1.14).

Table 1. Descriptive Statistics

Variables	N	Mean	Sd
Gender	231 Female-168 Male	0.42	0.49
Age	399	16.09	1.14
GPA	399	69.03	14.58
PTR	399	42.89	11.39
ES	399	52.74	9.57
PM	399	98.06	14.39

GPA= grade point average, PTR = perception of teacher rejection, ES = educational stress, PM = psychological maladjustment.

2.2. Procedures

Only students with parental consent and adolescent assent participated in this study. They completed the necessary questionnaires during regular classroom meetings. The researcher of this study stayed in the classroom during the data collection. Before responding, the researcher informed participants about the purpose of research, and anonymity and confidentiality of their responses as required by Institutional Review Board (IRB). All participants responded to the Turkish-language versions of the self-report questionnaires as described below. This process took approximately about 25 minutes to complete.

2.3. Measures

2.3.1. Teacher's acceptance-rejection questionnaire-child version short form

This measure was developed by Rohner (2005b) to estimate the perception of teacher rejection levels. The questionnaire contains 24 items. The measure consists of four scales: (1) Warmth/Affection (e.g. My teachers say nice things about me), (2) Hostility/Aggression (My teachers hit me, even when I do not deserve it), (3) Indifference/Neglect (My teachers pay no attention to me), and (4) Undifferentiated rejection (My teachers seem to dislike me). The TARQ is scored on a 4-point Likert scale ranging from 1 = almost never true to 4 = almost always true. The sum of scores can range from 24 to 96. As commonly used in the worldwide, total scores were used in this study. A high total score shows a low perception of teacher acceptance of students. Scores at or above 60 on the acceptance-rejection portion of the TARQ indicate that the teacher is perceived to be qualitatively more rejection than accepting. Cronbach's alpha coefficient of the Turkish adapted version of the TARQ is .90 (Yıldırım & Erkman, 2008). Cronbach's alpha coefficient of the TARQ in this study was .88.

2.3.2. Personality assessment questionnaire-child version (PAQ)

This measure was developed to estimate the level of psychological maladjustment (Rohner & Khaleque, 2005). It consists of 42 items, six items for each of seven scales containing (a) Hostility/Aggression (e.g. I want to hit something or someone), (b) Dependence (I like my parents to make a fuss over me when I am hurt or sick), (c) Negative Self-Esteem (I get unhappy with myself), (d) Negative Self-Adequacy I think I am a failure), (e) Emotional Unresponsiveness (I have difficulty showing people how I feel), (f) Emotional Instability (I am in a bad mood and grumpy without any good reason), and (g) Negative Worldview (For me the World is unhappy place). The PAQ is scored on a 4-point Likert-type scale, with 1 (almost never true), 2 (rarely true), 3 (sometimes true), and 4 (almost always true). The sum of scores can spread from 42 to 168. A high total score means a low level of psychological adjustment of an individual. As commonly used in the worldwide, total scores obtained via the PAQ were employed in this study. Scores at or above 105 suggest significant psychological maladjustment. The Cronbach's alpha coefficient for the original form of the PAQ is .84. Extensive evidence reported in Rohner and Khaleque (2005) shows the measure to be reliable and valid for research in the United States and cross-culturally. Cronbach's alpha coefficient of the Turkish adapted version of the PAQ was .86 (Varan, 2003). Cronbach's alpha coefficient of the PAQ in this study was .80.

2.3.3. Education stress scale (ESSA)

This measure (Sun et al., 2011) was used to estimate the level of perceived academic stress. It contains 16 items under five factors including (1) Pressure from study (four items), (2) Workload (three items), (3) Worry about grades (three items), (4) Self-expectation stress (three items), and (5) Despondency (three items). Sample items include "I feel a lot of pressure in my daily studying" (Pressure from study), "I feel there is too much homework" (Workload), "I feel that I have disappointed my teacher when my test/exam results are not ideal" (Worry about grades), "I feel stressed when I do not live up to my own standards" (Self-expectation stress), and "I always lack confidence with my academic scores" (Despondency). The ESSA is scored on a five-point Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). The total score, ranges from 16 to 80, with higher values indicating greater perceived stress. Total scores were used in this study. The Cronbach's alpha for original the ESSA is .81. Cronbach's alpha coefficient for the Turkish adapted version of the ESSA was reported as .86 (Çelik, Akın, & Sarıcam, 2014), and the Cronbach's alpha of the ESSA in this study was .78.

2.3.4. Personal Information Form

This form included questions about age, gender, and GPA. GPA was based on students' end-of-the latest-grade transcript records. A higher GPA reflected better academic performance.

2.4. Statistical Analyses

There were no missing values in the data, and there was one outlier detected in the data that was deleted (Mahalonabis $_{(df=4)}$=18.47). Participants were 399 adolescent high school students. Skewness and kurtosis analyses showed values between -1.5 and +1.5 (Tabachnick & Fidell, 2007, p. 79) indicating that the sample was a normal distribution. Descriptive statistics, correlations of the variables, and t-test for independent groups were used to analyze the data. In addition, the SPSS macro PROCESS was run to examine the mediating effect of psychological maladjustment between perception of teacher rejection and educational

stress. As seen in Figure 1, psychological maladjustment was a mediator (PM) of the relationship between perception of teacher rejection (PTR) and educational stress (ES). A confidence interval of 95% deviation correction (bias-corrected confidence intervals) was constructed by extracting 5,000 bootstrap samples. In this procedure, a sample ocases from the complete data set was selected and the effects were determined in the resamples to generate the bootstrapping sampling distributions. When a confidence interval did not span zero, the result was considered statistically significant as noted by Preacher and Hayes (2008).
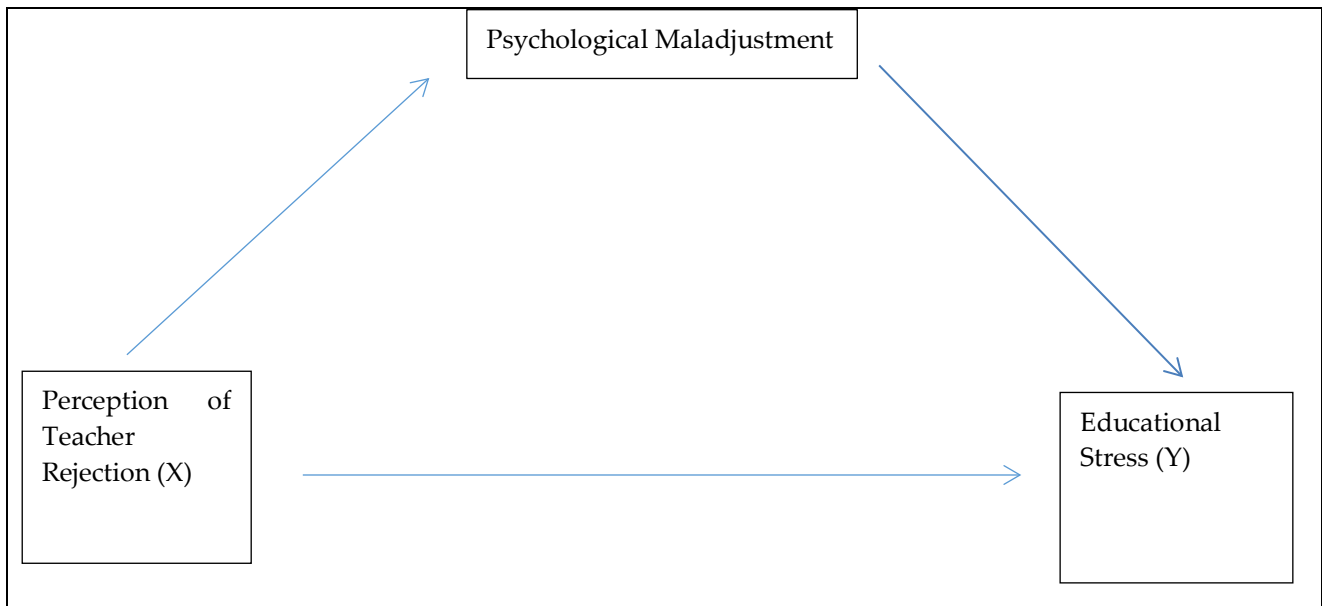
Figure 1. Mediation effect of Psychological Maladjustment on the relation between Perception of Teacher Rejection and Educational Stress.

Since the previous research studies conducted in Turkey (e.g., Balta-Özkan, 2019; Bayram, 2016; Metin, 2014; Yetim, 2014) revealed the relationships between (a) age, sex, and GPA and (b) educational stress levels, these variables were included as a control variable in the mediation model.

2.4. Ethics Clearance

The researcher in this study obtained ethics approval from the Gazi University Human Research Ethics Committee and Gazi University Institutional Review Board. Participation in the study was entirely voluntary and anonymous. This article does not contain any studies with animals performed by the author.

3. Results

3.1. Gender Differences and Correlations

Table 2 displays independent *t* test results for variables assessed in the present study. The results show that the average of female students' educational stress levels, psychological maladjustment levels, and GPAs were significantly higher than male students.

Table 2. *Results of Descriptive Statistics with Gender Differences in Major Variables*

	Males (*n*=168)		Females (*n*=231)		
Variables	*M*	*SD*	*M*	*SD*	*t*
1. Perception of Teacher Rejection	44.31	12.55	41.86	10.38	-2.13*
2. Psychological Maladjustment	94.77	14.30	100.45	14.00	3.96***
3. Educational Stress	50.47	10.14	54.39	8.79	4.13***
4. GPA	63.67	14.47	72.93	13.41	6.59***

$^{*}p < .05$. $^{***}p < .001$.

Additionally, as seen in Table 2, the average of male students' perception of teacher rejection levels was significantly higher than female students. Because of these differences, correlation analyses were conducted among major variables by using total scores as well as scores for each gender.

As shown in Table 3, educational stress was significantly and positively correlated with perception of teacher rejection and psychological maladjustment. Age was significantly and negatively correlated with psychological maladjustment, educational stress, and GPA. GPA was significantly and negatively correlated with perception of teacher rejection.

Table 3. *Results of Correlation Analyses with Correlation Coefficients among Major Variables*

Variables	1	2	3	4	5
1. Perception of Teacher Rejection	-				
2. Psychological Maladjustment	.42**	-			
3. Educational Stress	.17**	.43**	-		
4.GPA	-.18**	-.01	.07	-	
5.Age	-.02	-.12*	-.31**	-.17**	-

*p < .05. **p < .01.

As seen in Table 4, educational stress was significantly and positively correlated with perception of teacher rejection and psychological maladjustment, while educational stress was significantly and negatively correlated with age among both males and females.

Table 4. *Results of Correlation Analyses with Correlation Coefficients among Major Variables by Gender*

Variables	1	2	3	4	5
1. Perception of Teacher Rejection	-	.50**	.25**	-.16*	-.03
2. Psychological Maladjustment	.41**	-	.49**	-.21**	-.04
3. Educational Stress	.14*	.34**	-	-.07	-.32**
4.GPA	-.14*	.02	.07	-	.14
5.Age	-.02	-.15*	-.29**	-.39**	-

Note: Coefficients above the diagonal pertain to males; coefficients below the diagonal pertain to females.
*p < .05. **p < .01.

Results documented that younger female and male students in this study tended to recall more educational stress than older female and male students. GPA was significantly and negatively correlated with psychological maladjustment for males. Age was significantly and negatively correlated with GPA and psychological maladjustment for females. Younger female students tended to have low GPAs and recall less psychological maladjustment than older female students. However, age was not significantly correlated with any variable for males other than educational stress.

3.2. Direct, Indirect, and Total Effects of Perception of Teacher Rejection on Educational Stress

When the direct effect between the variables was examined, it was seen that perception of teacher rejection predicted educational stress ($B_{se.04}$= .15, $t_{(395)}$ = 3.92, p=.001). As shown in the Table 5, the direct effect of perception of teacher rejection on psychological maladjustment was also significant ($B_{se.06}$) = .55, $t_{(395)}$ = 9.94, p<.001).

Table 5. *Results of Mediation Analyses with Estimated Coefficients for Mediation Model of Psychological Maladjustment*

Model	R^2	F	df	B	se	p	Bootstrap Indirect Effect 95% CI LL	UL
PTR -> ES	.16	25.33				.000		
(Path c)			395	.15	.04	.001[**]	.08	.23
PTS -> PM	.24	41.34				.000		
(Path a)			395	.55	.06	.000[***]	.45	.66
PTS -> PM-> ES	.27	36.00				.000		
(Path b)			394	.25	.03	.000[***]	.18	.31
(Path c')			394	.02	.04	.719	-.07	.10

Note. CI = confidence interval; LL = lower limit; UL = upper limit, PTR = perception of teacher rejection, ES = educational stress, PM = psychological maladjustment.
[**]$p < .01$. [***]$p < .001$.

Similarly, the direct effect of psychological maladjustment on educational stress was significant ($B_{se.03}$= .25, $t_{(394)}$ = 7.56, p<.001). Results of mediation analyses revealed that psychological maladjustment mediated the relationship between perception of teacher rejection and educational stress ($B_{se=02}$=.14; LLCI=.10, ULCI=.19 [95% CI]). The mediation model was significant ($F_{(4/394)}$= 36, p<.001) and explained 27% of the educational stress (R^2 = .27). The relationship between perception of teacher rejection and educational stress was not significant when psychological maladjustment was added into the mediation model. This means that it was a complete mediation model (c', $B_{se.04}$=.02, $t_{(394)}$= .360, p=.719). Figure 2 shows standardized paths of the mediation model.
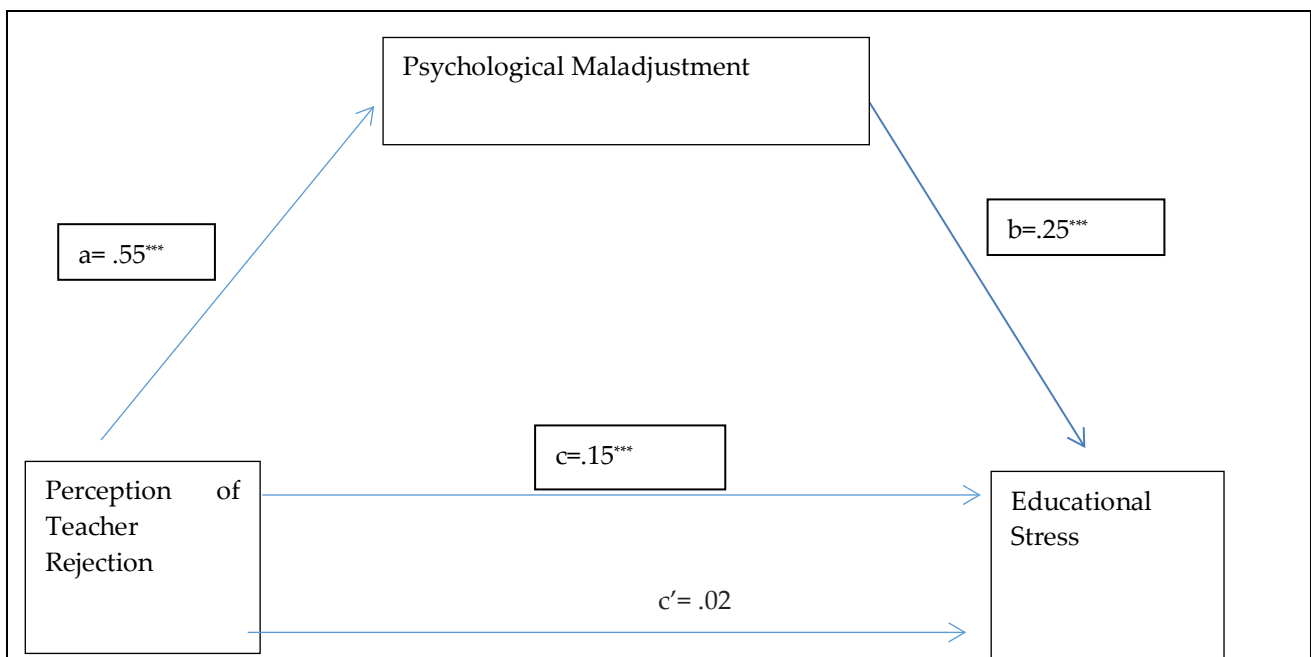
Figure 2. Mediation effect of Psychological Maladjustment on the relation between Perception of Teacher Rejection and Educational Stress. Age, and gender were entered into the model as covariates, but are not depicted(p*** <.001.).

4. Discussion

4.1. Gender Differences and Correlations

Results of the current research indicated that female adolescents tend to have more educational stress than males. This result is consistent with prior research in Turkey (e.g., Bayram, 2016; Yetim, 2014). Female students being more stressed (Jones & Hattie, 1991) and being more sensitive to stress sources than male students (Misra & Castillo, 2004) may have an effect on the result. Additionally, in the collectivistic culture that is widely accepted in Turkey (Göregenli, 1995; Uskul, Hynie, & Lalonde, 2004) parents may believe that their sons are the continuation and future of families and that daughters do not need to go to schools as much as sons (İlhan-Tunç, 2009). These beliefs may cause girls to feel "I must be successful to be able to attend school." and female students to have high academic expectations and worry about their academic success in order to continue their education. Because high academic expectations (Ang & Huan, 2006) and concerns about academic failure (Jones and Hattie, 1991) can cause educational stress, female students may feel higher educational stress than boys.

Another gender related result revealed that female students' psychological maladjustment was higher than male students. Although there are studies in Turkey showing that there is no difference between psychological maladjustment of male and female adolescents (Bilen, 2013; Erkman & Rohner, 2006; Yener, 2005), there are also studies support the result (Gençtoprak, 2010; Kuyumcu & Coşkuner, 2018). This result may be due to factors from the person or the environment, as well as psychological stress that affects psychological well-being was higher in female students (Balta-Özkan, 2019; Bayram, 2016; Xie, 2007; Zhao & Yuan, 2006).

Another result of the study regarding the gender difference was that male students' perception of teacher rejection was more than female students. There are studies supporting this result (e.g., Khan, Haynes, Armstrong, & Rohner, 2010; Parmar & Rohner, 2010; Tulviste & Rohner, 2010). Male students show their undesirable behaviors more frequently than female students such as running away from school, getting involved in fighting, carrying fighting tools, drug usage (Aras, Günay, Özan, & Orçın, 2007), lower academic achievement (Berger, Alcalay, Torretti, & Milicic, 2011). These behaviors may prevent teachers from behaving warmly their male students and away from conflict. Additionally, the behaviors of teachers in order to maintain the school system may be perceived as rejecting by adolescent male students.

The results of the correlation analyses showed that educational stress was significantly and positively related with perception of teacher rejection and psychological maladjustment, and negatively associated with age among both male and female adolescents. Younger males and females tended to have less educational stress than older males and females adolescents. Similar results were obtained in other studies (Balta-Özkan, 2019; Bayram, 2016; Yetim, 2014). The increase in the number of exams that students are required to take, the need to choose a career and determine an education path, and the concern of being able to find a job can play a critical role in this result of higher educational stress in older adolescents. The developmental tasks by age can lead to pressure and educational stress. Another result is that the relationship between educational stress and GPA was not significant among both male and female adolescents. Altought there is a study in the international literature (Arsenio & Loria, 2014) provide similar result, the result of current study contradicts with the study of Yetim (2014) who found that there was a significant, negative, but low relationship between GPA and educational stress among Turkish adolescent students. Other previous studies also provided evidence on the simple relationship between perceived poor academic grade and educational stress (e.g., Bjorkman, 2007; Xie, 2007; Zhao & Yuan, 2006). The result of the insignificant relationship between educational stress and GPA can be due to possible moderator variables in this relationship. Further research studies may use school-related issues such as school type (private or public school), school location (urban or rural), class size, and family-related issues (e.g., income, educational level, and occupation) as moderator variables.

4.2. Direct, Indirect, and Total Effects of Perception of Teacher Rejection on Educational Stress

Results showed that adolescents' perception of teacher rejection independently predicts educational stress. Teacher-child relationships that are characterized by a high level of rejection—cold, hostile and aggressive, indifference and neglect, and undifferentiated rejection—and low acceptance may becloud students to feel emotionally secure. Emotional security, however, may prevent students from the appraisal of their academic

activities, schoolwork, and school-related situations which can be stress resources for adolescents (Isralowitz & Ong, 1990; Kouzma & Kennedy, 2004) as a threat or harm-loss. Additionally, emotional security facilitates students' engagement in academic activities that can result in better academic performance (Bergin & Bergin, 2009). Also, students who perceive that their teachers care about them, respect them, and praise them are more tend to like school than are those who do not (Hallinan, 2008). In this way, the perception of teacher rejection may influence educational stress.

More importantly, the results of this study showed that psychological maladjustment fully mediated the relation between perception of teacher rejection and adolescents' educational stress. This result suggests that the perception of teacher rejection affects educational stress through psychological maladjustment, which is characterized by dependence or defensive independence, emotional unresponsiveness, hostility and aggression, negative self-esteem, negative self-adequacy, emotional instability, and negative worldview. This result is consistent with IPARTheory (Rohner, 2004), where the theory indicates that children's perception of both the parents and teachers were significantly correlated with their psychological adjustment, and perceived teacher acceptance made a unique contribution to variations in the adolescents (both males and females) psychological adjustment. Also, this result supports prior research suggesting that psychological maladjustment may be a consequence of the perception of teacher rejection (Ali, Khaleque, & Rohner, 2015; Erkman et al., 2010; Parmar & Rohner, 2010). Just two research studies (Arslan, 2017; Özdemir & Özdemir 2015) in Turkey investigated the relationship between self-efficacy and self-esteem, which are psychological maladjustment's sub-factors, and educational stress. Arslan (2017) found that students' emotional self-efficacy predicted educational stress levels. Özdemir and Özdemir (2015) documented that there was a significant relationship between secondary school students' self-esteem and educational stress levels. Therefore, it can be said that the result of the research has been consistent with almost similar previous studies in Turkey.

5. Conclusion

This study is one of the first studies examining relations among Turkish high school students' perception of teacher rejection, and educational stress, as fully mediated by their psychological maladjustment. The study does reveal that perception of teacher rejection explains 27% of the educational stress level over the students' psychological maladjustment.

The results of this study have implications for research and practice. Results may help the expansion of the IPARTheory. Based on this information, other factors originating from the person or environment such as achievement goals, academic coping, school conditions, education system, parental attitude towards education and academic achievement can be included in the future similar research.

At the practical level, these findings suggest that school counselors may include individual or group counseling practices to increase students' psychological adjustment in intervention programs to prevent or eliminate educational stress. Since major variables of the current study differ based on gender, the psychological counselor may consider the gender of the participating students when preparing these programs. In addition, teachers can be informed that not only is it important to know one's course materials and deliver information effectively, but also their own accepting behavior is vital for both the psychological adjustment and educational stress of the student. However, the present study has several limitations. Given the cross-sectional methodology, causal conclusions cannot be drawn among the targeted variables in the study. Therefore, future studies need to implement a longitudinal design in order to establish the sequential nature of the relationships among perception of teacher rejection, psychological maladjustment, and educational stress. The participants were recruited using convenience sampling. Thus, the results cannot be generalized to other high school student groups. Replication studies comparing various ages, racial groups, and education levels can be useful in determining the generalizability and specificity of the current findings. Lastly, the present study utilized a mono-source/mono-method research strategy, obtaining information through self-report measures for each study variable. It was possible that participants may have minimized their actual beliefs/behaviors. For this reason, data can be collected from teachers and families. Despite these limitations, the study shows that the Turkish high school students' psychological maladjustment fully mediates the relationships between the perception of teacher and the educational stress and that age and gender are significant variables for major variables.

References

Ahmed, R. A., Rohner, R. P., & Carrasco, M. A., (2012). Relations between psychological adjustment and perceived parental, sibling, best friend, and teacher acceptance among Kuwaiti adolescents. In K. Ripoll-Nuñez, A. L. Comunian, & C. M. Brown (Eds.), *Expanding horizons: Current research on interpersonal acceptance,* (1-10). Boca Raton, Fl: Brown Walker Press.

Akpınar, M. (2016). *Okul tükenmişliği ile akademik stres ve öznel iyi arasındaki ilişkinin incelenmesi.* [The relationships between school burnout, academic stress and subjective well-being] (Unpublished master's thesis). Institute of Education Sciences, Atatürk University, Erzurum, Turkey.

Ali, S. (2011). Perceived teacher and parental acceptance-rejection, and the academic achievement, adjustment, and behavior of children: Literature review. *International Journal of Peace and Development Studies, 2,* 138-147.

Ali, S., Khaleque, A., & Rohner, R. P. (2015). Influence of perceived teacher acceptance and parental acceptance on youth's psychological adjustment and school conduct: A cross-cultural meta-analysis. *Cross-Cultural Research*, *49*, 204-224. doi:10.1177/1069397114552769

Al-Yogan, M., & Mikulincer, M. (2006). Children's appraisal of teacher as a secure base and their socio-emotional and academic adjustment in middle childhood. *Research in Education*, *75*, 1-18. doi: 10.7227/RIE.75.1

Ang, R. P., & Huan, V. S. (2006). Relationship between academic stress and suicidal ideation: Testing for depression as a mediator using multiple regression. *Child Psychiatry and Human Development, 37*, 133-143.

Aras, Ş., Günay, T., Özan, S., & Orçın, E. (2007). Risky behaviors among high school students in İzmir. *Anatolian Journal of Psychiatry, 8,* 186-196.

Arsenio, W. F., & Loria, S. (2012). Coping with negative emotions: Connections with adolescents' academic performance ans stress. *The Journal of Genetic Psychology, 175*, 76-90. doi:10.1080/00221325.2013.806293

Arslan, N. (2017). Investigating the relationship between educational stress and emotional self-efficacy. *Universal Journal of Educational Research, 5*, 1736-1740. doi: 10.13189/ujer.2017.051010

Balta-Özkan, A. (2019). *İlkokul ve ortaokul öğrencilerinin duygusal okuryazarlık ve akademik stres düzeyleri* [Emotional literacy and academic stress levels of primary and secondary school students] (Unpublished master's thesis). Social Sciences Institute, Recep Tayyip Erdoğan University, Rize, Turkey.

Bayram, S. B. (2016). *Ergenlerin mükemmeliyetçilik özellikleri ve akademik alanda arzularının ertelenmesi ile akademik stres arasındaki ilişkinin incelenmesi* [Examination of the relationship between postponement of desires in academic field and academic stress] (Unpublished master's thesis). Social Sciences Institute, İstanbul Sabahattin Zaim University, İstanbul, Turkey.

Berger, C., Alcalay, L., Torretti, A., & Milicic, N. (2011). Socio-emotional well-being and academic achievement: Evidence from a multilevel approach. *Psicologia: Reflexão e Crítica, 24*, 344–351. doi:10.1590/S0102-79722011000200016

Bergin, C. & Bergin, D. (2009) Attachment in the Classroom. *Educational Psychology Review, 21,* 141-170.

Bilen J. (2013). *Anne-baba kabul-reddinin psikolojik uyum üzerindeki etkisinin kimlik duygusu açısından incelenmesi* [The relationship between perceived parental acceptance-rejection, psychological adjustment, and identity] (Unpublished Master's Thesis). Adnan Menderes University, Health Sciences Institute, Aydın, Turkey.

Bjorkman SM. (2007). *Relationships among academic stress, social support, and internalizing and externalizing behavior in adolescence* (Unpublished doctoral dissertations). Northern Illinois University, Illinois.

Blankemeyer, M., Flannery, D. J., & Vazsonyi, A. T. (2002). The role of aggression and social competence in children's perceptions of the child-teacher relationship. *Psychology in the Schools*, *39*, 293-304. doi:10.1002/pits.10008

Burnett, P. C., & Fanshawe, J. P. (1997). Measuring school-related Stressors in Adolescents. *Journal of Youth and Adolescence, 26*, 415-428.

Çelik, İ., Akın, A., & Sarıçam, H. (2014). A scale adaptation study related to the examination of adolescents' levels of educational stres. *Üniversitepark Bülten, 3,* 44-55.

Erkman, F., Caner, A., Sart, H., Borkan, B., & Sahan, K. (2010). Influence of perceived teacher acceptance, self-concept, and school attitude on the academic achievement of school-age children in Turkey. *Cross-Cultural Research, 44*, 295-309. doi:10.1177/1069397110366670

Erkman, F., & Rohner, R. P. (2006). Youths' perceptions of corporal punishment, parental acceptance, and psychological adjustment in a Turkish metropolis. *Cross-Cultural Research, 40,* 250-267. doi:10.1177/1069397106287924

Erkuş, A. (2016). *Davranış bilimleri için bilimsel araştırma süreci* [Scientific research process for behavioral sciences]. Ankara: Seçkin Publisher.

Gençtoprak, S. (2010). *Çocukların anne-babalarıyla ilişkide kabul veya red algıları, psikolojik uyumları ve akademik başarılarının incelenmesi* [The relationship children's' perceptions of parental acceptance-rejection, psychological adjustment, and academic achievement] (Unpublished Master's Thesis). Karaelmas University, Social Sciences Institute, Zonguldak, Turkey.

Göregenli, M. (1995). Kültürümüz açısından bireycilik-toplulukçuluk eğilimleri: Bir başlangıç çalışması [Individualism-collectivism tendencies in terms of our culture: An initial study]. *Turkish Journal of Psychology, 10*, 1-14.

Hallinan, T. M. (2008). Teacher influences on students' attachment to school. *Sociology of Education, 81*, 271–283.

Hamre, B. K., & Pianta, R. C. (2006). Student-Teacher Relationships. In G. G. Bear & K. M. Minke (Eds.), *Children's needs III: Development, prevention, and intervention* (59–71). National Association of School Psychologists.

Isralowitz, R.E., & Ong. T.H. (1990). Singapore youth: the impact of social status on perceptions of adolescent problems. *Adolescence 25,* 357–62.

İlhan-Tunç, A. (2009). Kız çocuklarının okula gitmeme nedenleri Van ili örneği [Reasons why not go to school for girls: Van sample]. *Van Yüzüncü Yıl University Journal of Education, 6*, 237-269.

Jones, R.W., & Hattie, J.A. (1991, April 24–26). *Academic stress amongst adolescents: An examination by ethnicity, grade, and sex.* Paper presented at the Annual Conference of the New England Educational Research Organization, Portsmouth, NH. Retrieved from https://files.eric.ed.gov/fulltext/ED336668.pdf (12.11.19)

Khan, S., Haynes, L. Armstrong, A., & Rohner, R. P. (2010). Mississippi delta region of the united states achievement, and school conduct of middle school students in the perceived teacher acceptance, parental acceptance, academic. *Cross-Cultural Research, 44*, 283. doi:10.1177/1069397110368030

Khaneh K. A., & Basavaraj, A. (2011). The Relationship of academic stress with aggression, depression and academic performance of college students in Iran. *Journal on Educational Psychology, 5,* 24-31.

Kouzma, N. M., & Kennedy, G. A. (2004). Self-reported sources of stress in senior high school students. *Psychological Reports, 94,* 314-316. doi:10.2466/pr0.94.1.314-316

Kuyumcu, B., & Çoşkuner, K. (2018, September 6-8). *The relationship between perception of teacher acceptance psychologial adjustment and school attachment among secondary school students.* Paper presented at the meeting of 13. International Balkan Education & Science Congress, Edirne, Turkey.

Makri-Botsari, E. (2015). Adolescents' unconditional acceptance by parents and teachers and educational outcomes: A structural model of gender differences. *Journal of Adolescence*, *43*, 50-62. doi:10.1016/j.adolescence.2015.05.006

Metin, Ö. F. (2019). *Lise öğrencilerinin akademik streslerinin, matematik kaygılarının ve matematiğe yönelik tutumlarının incelenmesi* [Analysing high school student's academic stress, their maths anxieties and attitudes towards math](Unpublished Master's Thesis). Social Sciences Institute, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Turkey.

Ministry of National Education (2019). *National Education Statistics: Formal Education 2018/2019.* Retrived from http://sgb.meb.gov.tr/meb_iys_dosyalar/2019_09/30102730_meb_istatistikleri_orgun_egitim_2018_2019.pdf

Misra, R., & Castillo, L. G. (2004). Academic stress among college students: Comparison of American and international students. *International Journal of Stress Management*, *11*, 132-148. doi: 10.1037/1072-5245.11.2.132

Nguyen DT, Wright EP, Dedding C, Pham TT, and Bunders J (2019). Low Self-Esteem and Its Association With Anxiety, Depression, and Suicidal Ideation in Vietnamese Secondary School Students: A Cross-Sectional Study. *Frontiers in Psychiatry, 10,* 698. doi: 10.3389/fpsyt.2019.00698

Oral, A. (1994). *Source of stress and coping stretegies during adolescence.* (Unpublished Master's Thesis). Graduate School of Social Sciences. Middle East Technical University, Ankara, Turkey.

Özdemir, Y., & Özdemir, M. (2015). Eğitim stresi ve benlik saygısının ortaokul öğrencilerinin okul tükenmişliği üzerindeki doğrudan ve dolaylı etkileri [Direct and indirect effect of educational stess and self-esteem on school burnout among secondary school students]. *Adnan Menderes University Journal of Educational Science, 2,* 1-10.

Organization for Economic Cooperation and Development (OECD, [2019]). *The Programme for International Student Assessment (PISA) Results from PISA 2018.* Retrived from https://www.oecd.org/pisa/publications/PISA2018_CN_TUR.pdf (12.04.2019)

Parmar, P., & Rohner, R. P. (2010). Perceived teacher and parental acceptance and behavioral control, school conduct, and psychological adjustment among school-going adolescents in India. *Cross-Cultural Research, 44,* 253-265. doi:10.1177/1069397110367613

Pianta, R. (1999). *Enhancing relationships between children and teachers.* Washington, DC: American Psychological Association.

Preacher, K. J., & Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (Eds.), The Sage sourcebook of advanced data analysis methods for communication research (pp. 13-54). Thousand Oaks, CA: Sage.

Putwain, D. 2007. Researching academic stress and anxiety in students: Some methodological considerations. *British Educational Research Journal 33,* 207–219. doi:10.1080/01411920701208258

Rohner, R. P. (2004). The parental "acceptance–rejection syndrome": Universal correlates of perceived rejection. American Psychologist, 59, 830–840. doi:10.1037/ 0003-066X.59.8.830

Rohner, R. P. (2005a). Grossary of significant concepts in parental acceptance-rejection theory. In R. P. Rohner & A. Khaleque (Eds.), Handbook for the study of parental acceptance and rejection (4th ed., pp. 379–397). Storrs, CT: Rohner Research.

Rohner, R. P. (2005b). Teacher acceptance-rejection/control questionnaire (TARQ/ Control): Test manual. In R. P. Rohner & A. Khaleque (Eds.), Handbook for the study of parental acceptance and rejection (4th ed., pp. 327–334). Storrs, CT: Rohner Research.

Rohner, R. P. (2010). Perceived teacher acceptance, parental acceptance, and the adjustment, achievement, and behavior of school-going youth internationally. *Cross-Cultural Research*, *44,* 211-221. doi:10.1177/1069397110366849

Rohner, E. C., Chaille, C., & Rohner, R. P. (1980). Perceived parental acceptance-rejection and the development of children's locus of control. *Journal of Psychology*, 104, 83-86.

Rohner, R. P., Cournoyer, D., & Khaleque, A. (2007). Basic principles of parenting. *Contemporary Family,* 1, 16-17.

Rohner, R. P., & Khaleque, A. (2005). Personality assessment questionnaire (PAQ): Test manual. In R. P. Rohner & A. Khaleque (Eds.), Handbook for the study of parental acceptance and rejection (4th ed., pp. 187–226). Storrs, CT: Rohner Research.

Rohner, R. P., Khaleque, A., & Cournoyer, D. E. (2005). Parental acceptance-rejection theory, methods, evidence, and impliactions. In R. P. Rohner & A. Khaleque (Eds.), Handbook for the study of parental acceptance and rejection (4th ed., pp. 1–37). Storrs, CT: Rohner Research.

Rohner, R. P., Khaleque, A., Elias, S., & Sultana, S. (2010). The relationship between perceived teacher and parental acceptance, school conduct, and the psychological adjustment of Bangladeshi adolescents. *Cross-Cultural Research*, *44,* 239-252. doi:10.1177/1069397110366900

Stark, L. J., Spinto, A., Williams, C. A., & Guevremont, D. C. (1989). Common problems and coping strategies: Findings with normal adolescents. *Journal of Abnormal Child Psychology, 17,* 203-212.

Sun, J., Dunne, P. M., Hou, X., & Xu, X. (2011). Educational stress scale for adolescents: Development, validity, and reliability with Chinese students. *Journal of Psychoeducational Assessment*, *26,* 534-546. doi:10.1177/0734282910394976

Sun, J., Dunne, M. P., Hou, X., & Xu, A. (2013). Educational stress among Chinese adolescents: individual, family, school and peer influences, *Educational Review*, *65,* 284-302. doi: 10.1080/00131911.2012.659657

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics.* Boston, MA: Pearson Education.

Tulviste, T., & Rohner, R. P. (2010). Relationships among perceived teachers and parental behavior, and adolescent outcomes in Estonia. *Cross-Cultural Research, 44*, 222-238. doi:10.1177/1069397110366797

Uskul, A.K., Hynie, M., & Lalonde, R. N. (2004). Interdependence as a mediator between culture and interpersonal closeness for Euro–Canadians and Turks. *Journal of Cross-Cultural Psychology, 35,* 174-191. doi:10.1177/0022022103262243

Xie, L.N. 2007. *Study on learning stress, social support and their relationship among senior high school students: An investigation of two senior high schools in hennan province* (Unpublished Master's Thesis). East Huadong Normal University, China.

Varan, A. (2003). *EKAR kuramı değerlendirme araçlarının Türkiye güvenirlik ve geçerlik çalışması* [Reliability and validity study of the Turkish version of IPARTheory's measures](Unpublished study). Ege University, Department of Psychiatry, Turkey.

Yener, N. (2005). *Çocukların algıladıkları ebeveyn kabul veya reddinin okul başarısı ve okul uyumu ile ilişkisi* [The relationship between perception of parental acceptance-rejection, school achievement and school adaptation of children] (Unpublished Master's Thesis). Ege University, Social Science Institute, İzmir, Turkey.

Yetim, N. (2014). *Ortaöğretim öğrencilerinde yansıtıcı düşünme becerisi, akademik stres düzeyi ve yabancı dil dersi akademik başarısı ilişkisi* [The relationship between reflective thinking skills, academic stress level and academic achievement in foreign language course in secondary school students](Unpublished Master's Thesis). Institute of Education Sciences, Gazi Osman Paşa University, Tokat, Turkey.

Yıldırım, S., & Erkman, F. (2008). Validity, reliability, and partial norm study of the Turkish Teacher Acceptance-Rejection/Control Questionnaire: Child, Short Form. In F. Erkman (Ed.), Acceptance: The essence of peace (pp. 257-273). Istanbul, Turkey: Turkish Psychology Association.

Zhao, L.X., & Yuan, L. (2006). Investigation on the current status of acadmic stress among secondary school students. *Journal of Tianjin Academy of Educational Science 67*, 18-21.

Middle School Students' Epistemological Beliefs: Development of A Scale Based on Vignettes and Scenarios

Servet Üztemur[1]

[1]*Gaziantep University*

ARTICLE INFO

ABSTRACT

This study aims to develop a scale based on vignettes and scenarios to determine the epistemological beliefs of middle school students. The study group of this cross-sectional study is investigated by random sampling and consists of 257 middle school students studying in Manisa province in western Turkey in the 2019-2020 academic year. For construct validity, exploratory factor analysis and confirmatory factor analysis were performed respectively. The research findings revealed that the scale, which accounts for 56% of the total variance, consisted of 25 items and five dimensions. In line with reliability calculations, the alpha internal consistency coefficients for innate ability, quick learning, omniscient authority, simple knowledge, and certain knowledge dimensions were respectively calculated as .83, .77, .77, .71, and .64. The research results showed that scenarios based on vignettes support the multi-dimensional structure of epistemological beliefs. Several suggestions were also made regarding the use of vignette-based scenarios as a novel approach in identifying the epistemological beliefs of middle school students.

Keywords:
epistemological beliefs, middle school students, scale development, vignette, scenario

1. Introduction

Epistemological beliefs are defined as individuals' views on the nature of knowledge and knowing while making sense of life (Hofer & Pintrich, 1997). Due to the close relationship between epistemological beliefs and a number of learning-related variables, many studies have been conducted in the domain of education (Schraw, 2013). A review of the relevant literature indicates that epistemological beliefs have been conceptualized in two different ways as unidimensional developmental and multi-dimensional (Greene, Sandoval & Bråten, 2016).

The first research on epistemological beliefs based on the unidimensional developmental model was conducted by Perry (1970). Perry developed a unidimensional epistemological developmental model for the epistemological beliefs of individuals, consisting of several stages (dualism, multiplicity, relativism, commitment) that followed a certain sequence (Deryakulu, 2014). The undimensional developmental models developed based on Perry's model have similar characteristics (Baxter Magolda, 1992; Belenky et al., 1986; King & Kitchener, 1994; Kuhn et al., 2000). The epistemological development path progresses from an objectivist, dualist (black or white) understanding where authority is the source of knowledge to another understanding where individuals gain multiperspectivity and start to believe that their views are also valuable. In the last stage of this path, knowledge is not transferred by experts or authority, but rather it is produced by the individual him/herself. Knowledge has a dynamic structure that is not stable but changes according to time and place (Deryakulu, 2014).

Recent epistemological belief researchers are of the opinion that the multi-dimensional structure of epistemological beliefs is more valid and applicable than developmental models (Hofer, 2016). The multi-dimensional epistemological belief model was first developed by Schommer (1990). Accordingly, epistemological beliefs consist of five independent dimensions (structure of knowledge, certainty of knowledge, source of knowledge, control of knowledge acquisition, and speed of knowledge acquisition).

Schommer (1994) stated that an individual's epistemological beliefs vary along the continuum from naive (undeveloped) to sophisticated (developed) beliefs and emphasized that it is not possible to make a definite distinction between them. For example, the "structure of knowledge" dimension, on the one hand, includes naive beliefs that knowledge is simple and composed of separate parts, while, on the other hand, it involves sophisticated beliefs that knowledge is tightly interconnected, integrated, and complex (Schommer-Aikins, 2002). In the "certainty of knowledge" dimension, individuals with naive beliefs believe that knowledge is unchanging and absolute, while individuals with sophisticated beliefs believe that knowledge changes in the context in which it exists. In the "source of knowledge" dimension, individuals with naive beliefs hold that the source of knowledge is experts (authority). In contrast, those with sophisticated beliefs consider the source of knowledge as both experts and evidence and reasoning. In the "control of knowledge acquisition" dimension, individuals with naive beliefs think that the ability to learn is innate and does not change. On the other hand, individuals with sophisticated beliefs believe that the ability to learn is acquired later and improvable with time and experience. Finally, in the "speed of knowledge acquisition" dimension, individuals with naive beliefs believe knowing is either "quick all" or "not at all." In contrast, those with sophisticated beliefs believe that knowing is gradual: it takes some time for individuals to learn something (Schommer, 1990).

According to Schommer (1990), these five dimensions are not necessarily synchronized. For example, a student who has naive beliefs in the source of knowledge dimension can develop sophisticated beliefs in the speed of knowledge acquisition dimension. Studies on the multi-dimensional structure of epistemological beliefs, which began with Schommer (1990), have been carried out by different researchers (Chinn, Buckland & Samarapungavan, 2011; Greene, Azevedo & Tourney-Purta, 2008; Hammer & Elby, 2002; Hofer & Pintrich, 1997), who provided different perspectives to the relevant literature.

Measuring Middle School Students' Epistemological Beliefs: An Approach based on Vignettes and Scenarios

An investigation of studies on epistemological beliefs in the domain of education showed that most of these studies have been conducted with adults (Schraw, 2013). This can be attributed to the difficulties in determining children's epistemological beliefs (Üztemur & Dinç, 2018). In studies that adopted unidimensional developmental epistemological models, middle school students' epistemological beliefs have generally been collected with qualitative data. Such studies have employed vignettes (Mansfield & Clinchy, 2002) and interviews (Duran & Mıhladız, 2014; Feucht, 2017; Yang & Tsai, 2010) as measurement tools.

In studies adopting multi-dimensional models, on the other hand, middle school students' epistemological beliefs have generally been measured through scales (Cano, 2005; Conley et al., 2004; Elder, 2002; Schommer-Aikins, Brookhart & Hutter, 2000; Schommer-Aikins, Duell & Hutter, 2005; Üztemur, Dinç & İnel, 2018). Studies using new techniques such as "draw-write-tell" that combine different data collection tools under one roof are also noteworthy (Brownlee et al., 2017; Üztemur & Dinç, 2018). In early studies adopting multi-dimensional models, various scales were developed to measure middle school students' epistemological beliefs (Conley et al., 2004; Elder, 2002; Schommer et al., 2000). These scales were adapted to many different cultures, and multi-dimensional epistemological beliefs were tested with samples consisting of middle school students. Cultural characteristics of students lead to differences in their views on the nature of knowledge and knowing (Deryakulu & Büyüköztürk, 2002; Chan & Elliot, 2004). As a consequence of this, it was seen that the items in the scale were not collected under the supposed dimensions and that different dimensions emerged (Schommer et al., 2000; Üztemur et al., 2018).

In this study, Schommer's (1990) model was used to measure the middle school students' epistemological beliefs, and vignettes and scenarios were used in combination. The vignettes involved the conversations of imaginary characters with epistemological beliefs at the two extremes (naive-sophisticated). The students were asked to explain which of these views they agreed with and why (Wainryb et al., 2004). Pajares (1992) stated that vignettes and scenarios could be used to reveal individuals' beliefs, noting that beliefs would thus be

described more effectively and more accurately. According to Grossman (1994), the use of scenarios rather than open-ended questions during classroom discussions makes it easier for students to express their views. Considering the studies which utilized scenarios as an assessment tool, the participating students were more willing to share their views with their peers after reading the scenarios. Since scenarios are built on certain events, students are better able to focus on their own views (Echiejile, 1994; Grossman, 1994; Nist & Holschuh, 2005). Similarly, vignettes allow target-oriented data collection by limiting the scope of the subject of the study. In this way, students who have difficulty expressing themselves can choose from opposing views and thus express their views more comfortably (Brownlee et al., 2017; Moschner et al., 2008).

A thorough search of the literature indicated that the studies in which children's (preschool-primary school-middle school) epistemological beliefs were measured through vignette-based scenarios adopted unidimensional developmental models (Kuhn et al., 2000; Mansfield & Clinchy, 2002; Sandoval & Cam, 2011; Wainryb et al., 2004; Walker et al., 2019; Wildenger et al., 2010). Holschuh (1998), in his study based on the multi-dimensional epistemological belief model, measured epistemological beliefs through scenarios. He compared the results of his study with university students with the results obtained from Schommer's (1990) original scale. His results showed that scenarios are useful in measuring epistemological beliefs (Holschuh, 1998). The lack of a scale in the literature to determine the multi-dimensional structure of middle school students' epistemological beliefs through vignette-based scenarios constitutes the problem of this research. Taking these as a starting point, this paper aims to develop a scale to determine the multi-dimensional structure of middle school students' epistemological beliefs through vignette-based scenarios and to make validity and reliability studies of this scale.

2. Method

2.2. Research Design

This scale development study was performed with the cross-sectional screening model. In cross-sectional studies where the sample is very large and has many different characteristics, the variables to be investigated are measured at one time (Fraenkel, Wallen & Hyun, 2012: 394).

2.2. Study Group

The study group consists of 257 middle school students, who were selected by simple random sampling technique, studying in public schools in the Manisa in the 2019-2020 academic year. Table 1 presents the demographic characteristics of the participating students.

It can be inferred from Table 1 that the participants are equally distributed in terms of their sex. When the educational background of the parents of the participants is examined, it can be said that the majority of the students' parents are middle or high school graduates. It can also be said that the participants are quite equally distributed in terms of their grades.

2.3. Steps

When developing this scale to determine middle school students' epistemological beliefs through vignette-based scenarios, we followed the steps recommended by Crocker and Algina (1986) and Cronbach (1984). These steps are given below.

1. Determination of the Structure to be measured

The "Vignette and Scenario-based Epistemological Beliefs Scale" (VSBEBS) developed in this study aims to measure middle school students' epistemological beliefs.

2. Expressing the Behaviours that meet the Structure to be measured

The vignette-based scenarios were developed on the basis of the sub-dimensions of the epistemological beliefs model developed by Schommer (1990) (structure of knowledge, certainty of knowledge, source of knowledge, control of knowledge acquisition, and speed of knowledge acquisition).

Table 1. Personal information of the participants

Variable	Category	Frequency f	Percentage %
Gender	Male	147	57.2
	Female	110	42.8
Graduation (Mother)	Uneducated	17	6.6
	Primary	90	35
	Middle	80	31.1
	High School	57	22.2
	Graduate and Postgraduate	13	5.1
Graduation (Father)	Uneducated	10	3.9
	Primary	57	22.2
	Middle	79	30.7
	High School	82	31.9
	Graduate and Postgraduate	29	11.3
Class Level	Fifth	38	14.8
	Sixth	70	27.2
	Seventh	86	33.5
	Eighth	63	24.5

3. Creation of Vignette-Based Scenarios and Item Pool

When we examined the studies in which epistemological beliefs were measured through vignettes, we realized that the vignettes involved the conversations of imaginary characters with epistemological beliefs at the two extremes. In most of these studies, the samples consisted of pre-school and primary school students. In the studies, the students were asked to state the views of which character they agreed with and why (Kuhn et al., 2000; Mansfield & Clinchy, 2002; Wainryb et al., 2004; Walker et al., 2019; Wildenger et al., 2010). In the present study, we created imaginary characters representing two opposite poles (naïve-sophisticated) of the five dimensions of epistemological beliefs in Schommer's (1990) model. Then, we stated the components of the dimension for each scenario. After each scenario, we wrote six five-point Likert-type items (strongly disagree, strongly agree). To illustrate, the scenarios and items for the control of knowledge acquisition dimension are given in Table 2.

The participating students were asked to express their level of agreement with each item. When creating the scenarios and items, studies measuring middle school students' epistemological beliefs were taken into consideration (Conley et al., 2004; Elder, 2002; Schommer et al., 2000).

4. Obtaining Expert Opinion for the Scenarios and Items

The scale consisting of five scenarios and 30 items based on the multi-dimensional structure of epistemological beliefs was submitted for the approval of three assessment and evaluation experts and one Turkish language expert. They were asked to give their opinions about to what extent the scenarios explain the relevant dimension and whether the items are consistent with the scenarios. Besides, we asked five middle school Turkish teachers about their opinions whether the scenarios and items were appropriate for the students' levels. Then, we edited the scenarios and items in accordance with the expert opinions we received.

5. Pilot Implementation

A pilot study was conducted with 36 students selected from each grade level. We asked these students if there were any words in the scenarios or items with which they were not familiar. During the pilot implementation, we realized that it took approximately 30 minutes for the students to complete the scale. Then, necessary editions were made considering the feedback of the students.

Table 2. Scenario and items for the control of knowledge acquisition dimension

Ayşe and Leyla, who both got low grades from the mathematics test, are having a conversation:

Ayşe: *"No matter how hard I work; I still don't get math. No matter how hard I try, it's futile. As I have an innate mathematical disability, I can't succeed in this lesson. I will never be able to learn mathematics since I don't have innate mathematical intelligence. Students who are successful in mathematics do not need to study for this course because they have innate mathematical intelligence. I wish I was born with mathematical intelligence like them.*

Leyla: *"I haven't studied enough for the math test. If I work hard enough, I'm sure I'll get high marks. If I try and work hard enough, there's no lesson I can't succeed. If I try, I can get very high grades from the math test. I don't believe in innate mathematical intelligence. When one works hard enough, one learns everything. If a student works hard and tries hard, she will solve even complex problems."*

1= Strongly disagree, 2= Disagree, 3= Undecided/not sure, 4= Agree, 5= Strongly Agree

I agree with Ayşe: to be successful in mathematics class, it is necessary to have innate mathematical intelligence.
I agree with Ayşe: students with innate mathematical intelligence do not need to study for the math lesson.
I agree with Leyla: to be successful in mathematics class, there is no need to have innate mathematical intelligence.
I agree with Ayşe: no matter how hard some students try, they cannot learn some subjects because of their innate intelligence capacity.
I agree with Leyla: if a student works hard enough, he/she can be successful in the math lesson.
I agree with Leyla: if a student works hard and tries hard, he/she will solve even complex problems.

6. Main Implementation and Analysis of the Data

The scale was applied between October and November 2019. The students were informed about the purpose of the study. In addition to the instructions in the data collection form, the researcher also provided the necessary explanations to the students about the scenarios and items. SPSS and AMOS were used for analysis. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed respectively for the construct validity of the scale. Correlation analysis was performed to detect the multicollinearity problem. Then, alpha reliability coefficient was calculated for the reliability. In order to interpret the scores obtained from the sub-dimensions of the scale, the score ranges in Table 3 were used.

Table 3. Score ranges for interpreting the scores from the sub-dimensions

Statements	Range of Scores	Epistemological Belief Level
Strongly disagree	1.00-1.80	Highly sophisticated/ highly developed
Disagree	1.81-2.60	Sophisticated /developed
Undecided/not sure	2.61-3.40	Moderately sophisticated/moderately developed
Agree	3.41-4.20	Naive/ underdeveloped
Strongly agree	4.21-5.00	Very naive/ not developed at all

It can be inferred from Table 3 that high scores from the sub-dimensions of the scale indicate underdeveloped epistemological beliefs. For ease of scoring and interpretation, items 3, 5, 6, 9, 11, 12, 15, 17, 18, 19, 21 22, 28, 29, and 30 were reverse coded. For the fit of the data obtained from CFA, the chi-square value divided by the degree of freedom ($\chi2/df$), the root mean square error of approximation (RMSEA), adjusted goodness of fit index ((AGFI), the comparative fit index (CFI), the incremental fit index (IFI), and the general fit index (GFI) values were taken as criteria (Hu & Bentler, 1999). The criterion values of the fit indices are shown in Table 7.

In order to determine the criterion validity of the scale, the "Middle School Students' Epistemological Beliefs Scale" (MSSEBS) developed by Üztemur et al. (2018) was applied to the study group. The scale developed on the basis of Schommer's (1990) model consists of four dimensions (omniscient authority, innate ability, simple knowledge, quick learning) and 20 items (Üztemur et al., 2018). According to the results of the CFA performed to test the construct validity of the scale on the data set in this study, the fit indices of the scale were found to be excellent ($\chi2$). Alpha internal consistency coefficients calculated in this study are as follows: Omniscient

authority (α: .82), innate ability (α: .62), simple knowledge (α: .43), quick learning (α: .56). These findings indicated that the scale developed by Üztemur et al. (2018) could be used for the criterion validity in this study.

3. Findings

Findings from EFA

Prior to performing EFA, Kaiser Meyer Olkin (KMO) and Bartlett's Test of Sphericity were performed to determine the suitability of the data for factor analysis. KMO value greater than .50 and a significant result from Bartlett's Test of Sphericity indicate that each variable in the scale can predict other variables (Field, 2013). As a result of the analyses, KMO value was calculated as .81, and the result of Bartlett's Test of Sphericity was significant ($\chi2$= 2464.658, df= 300; p<.01). Then, EFA was then applied to the scale. The eigenvalues and variances of the factors are given in Table 4.

Table 4. Factor structure of vignette and scenario-based epistemological beliefs scale

Rank	Factors	Factor Eigenvalue	Percentage of Variance (%)	Total Variance Percentage (%)
1	Innate Ability	6.035	24.138	24.138
2	Quick Learning	3.058	12.232	36.370
3	Omniscient Authority	1.960	7.838	44.208
4	Simple Knowledge	1.677	6.706	50.915
5	Certain Knowledge	1.274	5.097	56.012

It can be inferred from Table 4 that the five-dimensional scale explains 56.01% of the total variance. According to Kline (2011), the total variance explained in multi-dimensional scales should be above 41%. The distribution of the items according to factor loadings and dimensions are shown in Table 5.

Table 5. Factor Loadings of the Items after Rotation and the Items by Dimensions

Factors	Item Number	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Innate Ability	15	,80				
	18	,76				
	14	,67				
	17	,67				
	13	,60				
Quick Learning	26		,75			
	27		,73			
	28		,61			
	25		,53			
	29		,48			
	30		,46			
Omniscient Authority	1			,77		
	4			,75		
	2			,73		
	3			,66		
	5			,60		
	6			,56		
Simple Knowledge	12				,74	
	11				,69	
	9				,64	
	10				,43	
Certain Knowledge	22					,74
	19					,70
	21					,67
	23					,63

It can be inferred from Table 5 that items 7, 8, 16, 20, and 24 were excluded from the scale due to the fact that their factor loadings were lower than .32 and that they had high factor loadings in more than one dimension. The factor loadings ranged from .59 to .80, from .46 to .75, from .55 to .77, from .43 to .74, and from .63 to .74 for the items of the innate ability dimension, the quick learning dimension, the omniscient authority dimension, the simple knowledge dimension, and the certain knowledge dimension, respectively. To test the reliability of the scale, alpha internal consistency coefficients of each dimension were calculated. Accordingly, alpha internal consistency coefficients calculated for the innate ability, quick learning, omniscient authority, simple knowledge, and certain knowledge dimensions are .83, .77, .77, .71, and .64, respectively. These findings indicate that the scale is reliable (Cortina, 1993).

Findings from CFA

CFA was performed to confirm the factor structure obtained after EFA and to see the relationships between the resulting factor structures. Figure 1 presents the standardized value coefficients for the parameters of the model.
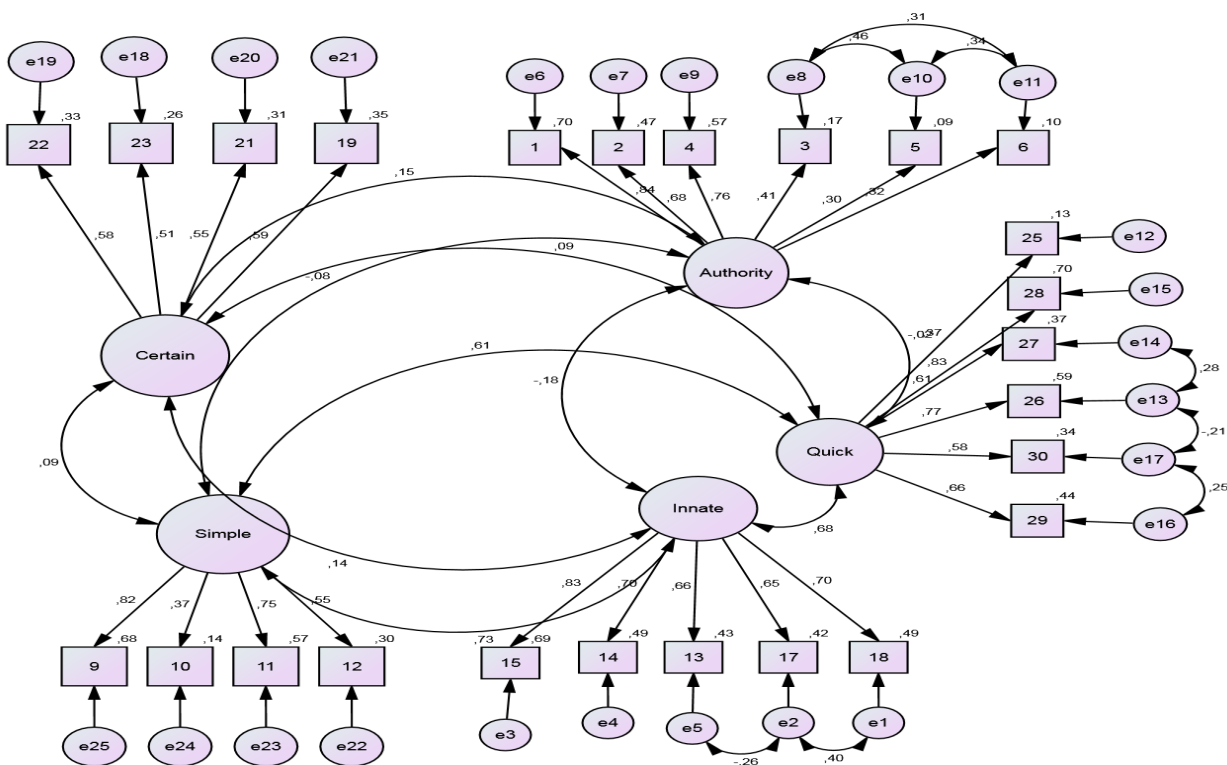
Figure 1. Standardized value coefficients for the model

As can be seen in Figure 1, the proposed modifications were made for the items under the same sub-dimension. Table 6 presents the values resulting from these modifications.

Table 6. Fit index values for the CFA model

Model	χ2	df	χ2/df	IFI	GFI	AGFI	CFI	RMSEA
The model without modification	696.107	265	2.627	.810	.826	.772	.809	.080
modification between e8 and e10	642.725	264	2.435	.834	.836	.786	.832	.075
modification between e1 and e2	599.067	263	2.278	.853	.846	.797	.851	.071
modification between e13 and e14	579.302	262	2.211	.861	.853	.805	.859	.069
modification between e16 and e17	563.002	261	2.157	.869	.866	.818	.866	.067
modification between e10 and e11	548.830	260	2.111	.891	.879	.826	.883	.066
modification between e8 and e11	524.291	259	2.024	.896	.885	.832	.889	.063
modification between e2 and e5	508.277	258	1,970	.901	.896	.846	.896	.062
modification between e13 and e17	499.166	257	1.942	.906	.903	.851	.901	.061

When the fit indices of the unmodified model are examined according to the data in Table 6, it can be seen that although RMSEA and χ2/df values are acceptable, CFI, AGFI, IFI, and GFI values are not acceptable. In accordance with the proposed modification indices, firstly, error correlation was performed between the error variances of items 3 and 5 (e8 and e10). Following this procedure, the AMOS program was run again. The chi-square difference test ($\chi2$ difference test) was performed to compare the resulting new model with the previous model (Tabachnick & Fidell, 2013). As a result of the chi-square difference test, the modification process made the model statistically more fit [$\chi2$ (1, N = 257) = 53.38, p< .05]. Although there was an increase in the fit indices of the resulting new model, the findings were still not acceptable. For this reason, modifications were performed between the errors of items 17 and 18 [$\chi2$ (1, N = 257) = 43.65, p< .05], 26 and 27 [$\chi2$ (1, N = 257) = 19.76, p< .05], 29 and 30 [$\chi2$ (1, N = 257) = 16.30, p< .05], 5 and 6 [$\chi2$ (1, N = 257) = 14.17, p< .05], 3 and 6 [$\chi2$ (1, N = 257) = 24.53, p< .05], 13 and 17 [$\chi2$ (1, N = 257) = 16.01, p< .05] and 26 and 30 [$\chi2$ (1, N = 257) = 9.11, p< .05]. Table 7 presents the criterion values of fit indices referenced to determine the adequacy of the final model and the fit values of the model.

Table 7. Fit values of the fit indices* and fit values of the model

Fit Indexes	Perfect Correspondence Criteria	Acceptable Correspondence Criteria	Model's Fit Indexes	Result
χ2/df	0 ≤ χ2/df ≤ 2	2 ≤ χ2/df ≤ 5	1.942	Perfect Correspondence
RMSEA	.00 ≤ RMSEA ≤ .05	.05 ≤ RMSEA ≤ .08	.06	Acceptable Correspondence
CFI	.95 ≤ CFI ≤ 1.00	.90 ≤ CFI ≤ .95	.90	Acceptable Correspondence
GFI	.95 ≤ GFI ≤ 1.00	.90 ≤ GFI ≤ .95	.90	Acceptable Correspondence
AGFI	.95 ≤ AGFI ≤ 1.00	.85 ≤ AGFI ≤ .90	.85	Acceptable Correspondence
IFI	.95 ≤ IFI ≤ 1.00	.90 ≤ IFI ≤ .95	.90	Acceptable Correspondence

*= Hu & Bentler, 1999

According to Table 7, the division of chi-square by the degree of freedom shows a perfect fit. The fact that the other fit indices are acceptable shows that the model fits the data.

Findings for Criterion Validity

To determine the criterion validity of the scale, the "Middle School Students' Epistemological Beliefs Scale" developed by Üztemur et al. (2018) was used. The correlation values between the sub-dimensions of the scales are given in Table 8.

Table 8. Findings for criterion validity of VSBEBS

	Sub factors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
EBSBVS	Innate Ability	1								
	Quick Learning	,529**	1							
	Omniscient Auth.	,005	,041	1						
	Simple Knowledge	,528**	,479**	,080	1					
	Certain Knowledge	,107	,069	,190**	,078	1				
EBSMSS	Omniscient Auth.	.138**	.176**	.721**	.114	.247**	1			
	Innate Ability	.647**	.56**	.089	.434**	.148*	,141*	1		
	Quick Learning	.482**	.68**	.074	.413**	.075	,197**	,442**	1	
	Simple Knowledge	.29**	.458**	.168*	.679**	.094	,215**	,329**	,344**	1

*: p<0.05 **: p< 0.01, VSBEBS = Vignette and Scenario-based Epistemological Beliefs Scale, MSSEBS= Middle School Students' Epistemological Beliefs Scale

According to Table 8, the sub-dimensions of VSBEBS have positively significant relationships with the sub-dimensions of MSSEBS. Therefore, it can be said that the scale has criterion validity. In addition, the correlation values of the sub-dimensions of VSBEBS are not higher than .80. The variance inflation factor (VIF) value was less than .10. In addition, the tolerance value was above .20. According to these findings, it can be said that there is no multicollinearity problem among the sub-dimensions of the scale (Field, 2013).

4. Conclusion, Discussion, and Recommendations

This study aimed to develop a scale based on vignettes and scenarios in order to determine middle school students' epistemological beliefs. Vignette and scenarios were created according to Schommer's (1990) multi-dimensional epistemological belief system. Accordingly, a scenario was prepared for the "structure of knowledge," "certainty of knowledge," "source of knowledge," "control of knowledge acquisition," and "speed of knowledge acquisition" dimensions, and six items were added under each scenario. The results of the research show that the scale, which explains 51% of the total variance, covers the five-dimensional structure of epistemological beliefs. As a result of validity and reliability studies, the scale included five dimensions and 25 items. These results are quite remarkable because they show that vignette-based scenarios are very successful in explaining the multi-dimensional structure of epistemological beliefs with a sample of middle schools. Schommer's (1990) original scale does not include the "omniscient authority" dimension, which corresponds to the "source of knowledge" dimension. Similarly, the epistemological beliefs scale developed by Schommer et al. (2000) for middle school students includes only certain knowledge, quick learning, and innate ability dimensions. The scale, which was developed by Üztemur et al. (2018) based on Schommer's (1990) model to measure middle school students' epistemological beliefs and which was used for the criterion validity in the present study, does not include the "certain knowledge" dimension. In a study conducted by Schommer-Aikins et al. (2005) with middle school students, aimless studying, constant/quick learning, certain knowledge, and omniscient authority dimensions emerged. In the study conducted by Cano (2005) with middle school students, certain knowledge, quick learning, and simple knowledge dimensions emerged. Accordingly, it is difficult to obtain the five-dimensional structure of epistemological beliefs with a sample of middle school students. In the present study, a structure measuring all five dimensions was obtained through vignettes and scenarios. This aspect of the study is valuable because even a very small number of studies with adults have been able to reveal the five-dimensional structure of epistemological beliefs (Schraw, Bendixen & Dunkle, 2002).

The scale developed by Üztemur et al. (2018) for middle school students was used for the criterion validity of the scale. There were moderately significant positive correlations among the sub-dimensions of the scales. According to these results, it can be said that the scale has criterion validity and measures the same structure as the scales in the literature. The reliability coefficients of the scale used for criterion validity were .76, .56, .49, and .35 for omniscient authority, innate ability, quick learning, and simple knowledge dimensions, respectively (Üztemur et al., 2018). In the current study, alpha internal consistency coefficients were found to be .83, .77, .77, .71, and .64, for innate ability, quick learning, omniscient authority, simple knowledge, and certain knowledge, respectively. When we reviewed the relevant literature, we saw that most of the epistemological beliefs scales based on Schommer's model and applied in different cultures and with different samples had the problem of low reliability coefficients (Bath & Smith, 2009; Chan & Elliott, 2004; Cam et al., 2012; Chan et al., 2011; Dinç et al., 2016; Nussbaum & Bendixen, 2003). In Schommer's (1990) scale, which was the first epistemological beliefs scale, alpha internal consistency coefficients ranged from .51 to .78. Even in the Epistemic Beliefs Inventory, which was developed to obtain a scale with alpha internal consistency coefficients higher than those in Schommer's (1990) scale, alpha internal consistency coefficients ranged from .58 to .68. Cam et al. (2012) stated that alpha internal consistency coefficients might be low due to cultural differences and poor translation of original scales. Considering all these results, it can be said that the reliability of VSBEBS consisting of 25 items is relatively high.

In this study, rather than Likert type scales, vignette-based scenarios were used to measure the middle school students' epistemological beliefs. Our results show that vignette-based scenarios helped the participating students understand the items better. Considering that it is not easy to measure younger students' epistemological beliefs, and it is difficult to obtain a five-dimensional structure, vignette-based scenarios based can be said to be useful. Nevertheless, since the scale is a new approach in measuring epistemological beliefs, future research can apply it with different samples and compare the results.

References

Bath, D. M. & Smith, C. D. (2009). The relationship between epistemological beliefs and the propensity for lifelong learning. *Studies in Continuing Education*, *31*, 173–189.

Baxter, M. (1992). *Knowing and reasoning in college: Gender-related patterns in students Intellectual Development.* S. Francisco: Jossey Bass.

Belenky, M. F., Clinchy, B. M., Goldberger, N. R. & Tarule, J. M. (1986). *Womens' ways of knowing: The development of self, voice and mind*. USA: Basic Books.

Brownlee, J. Curtis, E. Spooner-Lane, R. & Feucht, F. (2017) Understanding children's epistemic beliefs in elementary education. *Education 3-13, 45*(2), 191-208. doi: 10.1080/03004279.2015.1069369

Cam, A., Topcu, M. S., Sulun, Y., Guven, G. & Arabacioglu, S. (2012). Translation and validation of the Epistemic Belief Inventory with Turkish pre-service teachers. *Educational Research and Evaluation, 18*(5), 441-458.

Cano, F. (2005). Epistemological beliefs and approaches to learning: Their change through secondary school and their influence on academic performance. *British Journal of Educational Psychology*, *75*, 203–221.

Chan, K. W. & Elliott, R. G. (2004). Relational analysis of personal epistemology and conceptions about teaching and learning. *Teaching and Teacher Education, 20,* 817-831.

Chan, N. M., Ho, I. T. & Ku, K. Y. (2011). Epistemic beliefs and critical thinking of Chinese students. *Learning and Individual Differences*, *21*(1), 67-77. doi:10.1016/j.lindif.2010.11.001

Chinn, C.A., Buckland, L.A. & Samarapungavan, A. (2011). Expanding the dimensions of epistemic cognition: Arguments from philosophy and psychology. *Educational Psychologist, 46*, 141-167.

Conley, A. M., Pintrich, P. R., Vekiri, I. & Harrison, D. (2004). Changes in epistemological beliefs in elementary science students. *Contemporary educational psychology*, *29*(2), 186-204.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*, 98–104.

Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. Holt, Rinehart and Winston, 6277 Sea Harbor Drive, Orlando, FL 32887.

Cronbach, L. J. (1984). Essentials of physiological testing. *New York: Horner & Row Publisher*.

Deryakulu, D. (2014). Epistemolojik İnançlar. Y. Kuzgun ve D. Deryakulu (edt). *Eğitimde bireysel farklılıklar*. (p. 261-289). ÜçüncüBasım. Ankara: Nobel Yayınevi.

Deryakulu, D. & Büyüköztürk, Ş. (2002). Epistemolojik inanç ölçeğinin geçerlik ve güvenirlik çalışması. *EğitimAraştırmaları*, *2*(8), 111-125.

Dinç, E. İnel, Y. & Üztemur, S. (2016). Epistemik inanç ölçeği: Türkçeye uyarlama, geçerlik ve güvenirlik çalışması. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, *17*(3), 767-783.

Duran, M. & Mıhladız, G. (2014). A study on 6th grade students' epistemological beliefs. *Procedia-Social and Behavioral Sciences*, *116*, 4328-4332.

Echiejile, I. (1994). Training as an instrument of change: The effectiveness of case studies. *Training and Management Development Methods, 8*, 609-620.

Elder, A. D. (2002). Characterizing fifth grade students' epistemological beliefs in science. In B. Hofer and P. R. Pintrich (Eds.). *Personal epistemology: the psychology of beliefs about knowledge and knowing* (pp. 347-364). New Jersey: Lawrence Erlbaum.

Feucht, F. (2017). The epistemic beliefs of fourth graders about the verification of second-hand knowledge and its knowledge sources. *Journal of Education and Human Development*, *6*(1), 7-26.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. (4th Edition). Sage.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education*. (8th edt). New York: McGraw-Hill Humanities/Social Sciences/Languages.

Greene, J.A., Azevedo, R., &Torney-Purta, J. (2008). Modeling epistemic and ontological cognition: Philosophical perspectives and methodological directions. *Educational Psychologist, 43*, 142-160. doi:10.1080/00461520802178458

Greene, J. A., Sandoval, W. A., &Bråten, I. (2016). An introduction to epistemic cognition. *Handbook of epistemic cognition* (pp. 13-28). Routledge.

Grossman, R. W. (1994). Encouraging critical thinking using the case study method and cooperative learning techniques. *Journal on Excellence in College Thaching, 5*, 7-20.

Hammer, D., & Elby, A. (2002). On the form of a personal epistemology. In Hofer, B.K., & Pintrich, P. R., (Ed.), *Personal Epistemology: The Psychology of Beliefs* (pp. 169-190). London: Lawrence Erlbaum Associates Publishers.

Hofer, B. K. (2016). Epistemic cognition as a psychological construct: Advancements and challenges. *Handbook of epistemic cognition* (pp. 31-50). Routledge.

Hofer, B. & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research, 67*(1), 88-144.

Holschuh, J. L. (1998). *Epistemological beliefs in introductory biology: addressing measurement concerns and exploring the relationships with strategy use.* Unpublished doctoral dissertation, The University of Georgia, Athens.

Hu, L. T. & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.

King, P. M. & Kitchener, K. S. (1994). *Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults.* San Francisco: Jossey-Bass.

Kline, R. B. (2011). *Principles and practice of structural equation modeling.* (3. Edition). New York/London: The Guilford Press.

Kuhn, D., Cheney, R. & Weinstock, M. (2000). The development of epistemological understanding. *Cognitive Development.* 15, 309-328.

Mansfield, A. F., & Clinchy, B. M. (2002). Toward the integration of objectivity and subjectivity: Epistemological development from 10 to 16. *New Ideas in Psychology, 20*, 225–262.

Moschner, B., Anschuetz, A., Wernke, S. & Wagener, U. (2008). Measurement of epistemological beliefs and learning strategies of elementary school children. M. S. Khine (edt). *Knowing, knowledge and beliefs* (pp. 113-133). Springer, Dordrecht.

Nist, S. L., & Holschuh, J. P. (2005). Practical applications of the research on epistemological beliefs. *Journal of College Reading and Learning, 35*(2), 84-92.

Nussbaum, E. & Bendixen, L. D. (2003). Approaching and avoiding arguments: The role of epistemological beliefs, need for cognition, and extraverted personality traits. *Contemporary Educational Psychology, 28*(4), 573-595.

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review o f Educational Research, 62*, 307—332.

Perry, W. G. (1970). *Forms of Intellectual and Ethical Development in the College Years*. New York: Holt, Rinehart and Winston.

Sandoval, W. A. & Cam, A. (2011). Elementary children's judgments of the epistemic status of sources of justification. *Science Education*, *95*(3), 383-408. doi:10.1002/sce.20426

Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology, 82*(3), 498-504.

Schommer, M. A. (1994). Synthesising epistemological belief research: Tentative understandings and provocative confusions. *Educational Psychology Review, 6*(4), 293-319.

Schommer-Aikins, M. (2002). An evolving theoretical framework for an epistemological belief system. (Eds. Hofer, B & Pintrich, P, R.). P*ersonal epistemology: the psychology of beliefs about knowledge and knowing,* (pp. *103-119*). New Jersey: Lawrence Erlbaum.

Schommer-Aikins, M., Duell, O. K. & Hutter, R. (2005). Epistemological beliefs, mathematical problem-solving beliefs, and academic performance of middle school students. *The Elementary School Journal*, *105*(3), 289-304.

Schommer-Aikins, M., Mau, W. C., Brookhart, S. & Hutter, R. (2000). Understanding middle students' beliefs about knowledge and learning using a multidimensional paradigm. *The Journal of Educational Research*, *94*(2), 120-127.

Schraw, G. (2013). Conceptual integration and measurement of epistemological and ontological beliefs in educational research. *ISRN Education*. doi:10.1155/2013/327680

Schraw, G., Bendixen, L. D. & Dunkle, M. E. (2002). Development and validation of the Epistemic Belief Inventory (EBI). B. Hofer, & P. R. Pintrich (Eds.). *Personal epistemology: the psychology of beliefs about knowledge and knowing.* (pp. 261-277). New Jersey: Lawrence Erlbaum.

Tabachnick, B. G. & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson Education, Inc.

Üztemur, S. & Dinç, E. (2018). Ortaokul öğrencilerinin epistemolojik inançlarının keşfedilmesinde öğrenci merkezli biryaklaşım: çiz-yaz-anlat tekniği. *Journal of History Culture and Art Research, 7*(3), 566-592. doi: 10.7596/taksad.v7i3.1579

Üztemur, S., Dinç, E. & İnel, Y. (2018). Ortaokul öğrencilerinin epistemolojik inançlarının ölçülmesi: Bir ölçek geliştirme çalışması. *YYU Journal of Education Faculty, 15*(1), 1459-1489.

Wainryb, C., Shaw, L. A., Langley, M., Cottam, K., & Lewis, R. (2004). Children's thinking about diversity of belief in the early school years: Judgments of relativism, tolerance, and disagreeing persons. Child Development, 75, 687–703. doi:10.1111/j.14678624.2004.00701.x

Walker, S., Lunn-Brownlee, J., Scholes, L. & Johansson, E. (2019). The development of children's epistemic beliefs across the early years of elementary school. *British Journal of Educational Psychology*. doi:10.1111/bjep.12280

Wildenger, L. K., Hofer, B. K. & Burr, J. E. (2010). Epistemological development in very young knowers. In L. D. Bendixen & F. C. Haerle (Eds.), Personal epistemology in the classroom: Theory, research, and implications for practice (pp. 220–257). Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9780511691904

Yang, F. & Tsai, C. C. (2010). Reasoning about science-related uncertain issues and epistemological perspectives among children. *Instructional Science, 38*(4): 325–354. doi:10.1007/s11251008-9084-3

Investigation of the personality, anger and anxiety situation of the professional and amateur football players and the veteran footballers

Mustafa Said Erzeybek[1], Rahmi Giritlioğlu[2]

[1, 2]*Kütahya Dumlupınar University School of Physical Education and Sports*

ARTICLE INFO

ABSTRACT

The aim of this study is to investigate the anger, personality and anxiety levels of the football players who actively play football and the football players who have left football. A total 496 football players, 162 women and 334 men, participated in the research in Istanbul in 2018. Spielberger's Anger Style scale, the Eysenck Personality Inventory short form, and Spielberger's continuous anxiety inventory were used as data collection tools. The percentage distribution and frequency values of the athletes participating in the research were determined with descriptive statistics and Shapiro Wilk test was applied as the normality test. Depending on the athletes' situation, Mann Whitney U test was performed to compare the anger, personality and anxiety levels of the athletes. Kruskal Wallis test was used to compare the anger, personality and anxiety levels of the athletes depending on the level of the athlete, and Tamhane was used as the second level test to identify meaningful groups. Sperman correlation test was used to determine the relationship between the anger, personality and anxiety levels of the athletes. All the tests performed were done at $\alpha = 0.05$ significance level. Microsoft Excell 2017 for Windows was used to enter the data into the computer environment and SPSS 25 package program was used to create graphics and tables. As a result of the findings obtained from the study, it was observed that there were significant differences between anger and inward anger scores according to the athletes' status, and anger, personality and trait anxiety dimensions according to the level of athletics. On the other hand, it was seen that there was a significant relationship between anger, personality and trait anxiety levels of the athletes participating in the research. As a result, it was determined that normal athletes were angrier than veteran athletes, and professional footballers had better level of anger controls and anger levels than amateur athletes. On the other hand, it has been determined that the personality and anxiety levels of professional athletes are higher than amateur athletes.

Keywords:
Football, Anxiety, Personality, Anger, Veteran.

1. Introduction

Sports gives individuals a personal and social identity besides physical activities. Sport is an event where important interactions take place that enable people to socialize and to be accepted in their environment. The various personalities and characters that individuals encounter help them draw a different route. Thanks to the sport, new friends are made, and if the personality and character match overlap, these friendships can turn into long-term friendship. In the concept of personality, intelligence is an important detail that attracts attention. Through recent research, emotional intelligence enables expansions in different areas. The studies in this area are followed by topics related to the development of emotional intelligence in terms of determining his abilities about defining and measuring emotional intelligence (Yeşilyaprak, 2001).

Today, as we can talk about how important personality is in choosing sports branches, sports branches also have an undeniable effect on personality. Today, experts have not been able to agree on a common definition of personality. Personality traits are patterns that distinguish people from other people and exhibit consistent

behaviors on certain topics, in other words, all of the reactions that lead people's mental, physical and emotional life (Burger, 2006). Despite the fact that hundreds of definitions have been made by many academics for almost a century, there is no definition of a personality that fully expresses the personality.

In terms of personality traits, the performance and success levels of the players are influenced by the control of thoughts, emotions and mental processes in line with the body-mind interaction as well as genetic structure and training in a certain order (Syer & Connolly, 1998). High communication value in some of the sports branches has an accelerating effect on individual and social development. It can be said that this is more evident especially in sports branches where physical contact is intense (Gibson, 1975).

Anger, which has an important place in human emotions, generally occurs due to problems such as work, family, health problems, legal restrictions. The feeling of anger is an innate emotional state that is felt by everyone. The social environment and economic situation in which people live play a decisive role in the formation of this situation. Moreover, recently it has been discussed in the literature that genetics plays an important role in anger emotion.

Today, anger has become one of the issues of high importance, explored by social science experts. When all the studies related to this subject are examined, it is seen that there is a scientific interest in the concept of anger that started with Navoco in 1975. Nacova said in his researches that anger has a positive effect along with a negative effect on human life. Tahran states that anger removes the individual from mistakes and dangers (Karadal, 2009).

In order for the anger to be fully experienced and controlled, first of all, this emotional state must be internalized, that is, the acceptance of the person, the reasons and types of this emotional state must be understood, and also clearly transferred and internalized (Tuna, 2012). There are many studies in the literature on anxiety. In this study, we include the anxiety states of veteran and active athletes. The place and meaning of anxiety in sports is very important. The change in anxiety levels undeniably manifests itself, especially when athletes see winning as the primary focus and realize that things are not going well. There are many factors that affect anxiety levels of young athletes. It is possible to gather some of them under the headings such as social environment, family, friend environment, personality traits.

It is known that coaches play a certain role in athlete's performances. The behaviour and attitude of the coaches against the athletes may affect the anxiety of the players as well as their performance positively or negatively. Spielberger dealt with this situation in two ways: State Anxiety and Trait Anxiety. State Anxiety is defined as a form of anxiety which is caused by the stress experienced by metabolism depending on the environmental conditions in humans, mostly based on logical reasons, accepted by others and depending on the temporary situation in which every person can live (Öner & Le Compte 1985).

An increase in anxiety generally causes athletes in any branch to perform below the standards they have always shown. For many athletes anxiety contains very familiar feelings such as fear, inspiration, anxiety, and tension (Karageorghis & Terry, 2015).

Anxiety has a noticeable effect on athletes when the studies are reviwed. Athletes must learn to keep this emotional state under control in order to be able to compete and achieve success. For this, sports psychologists work in professional clubs. It can be said that the athletes are more successful in controlling these emotional states thanks to the therapies they see. In this study, we tried to reveal the level of anxiety emotions of athletes after and before quitting football. The place of the concept of personality in sports is very important. Athletes can shape their personalities according to their branch. The answer to two questions is needed to accurately reveal the sports personality relationship: Is there a change in the personality of individuals who do sports and what kind of importance do people's personality traits have in order to perform a type of sport? In the field of sports psychology, many studies have been conducted to investigate the personality traits, similarities and differences of successful and unsuccessful athletes. Personality tests were applied in various fields and afterwards a result analysis was made. The results have produced contradictory situations every time.

If the researchers know their personality of elite athletes traits when determining them, or if the personality traits of the athletes who will compete in any sport branch are suitable for that branch, it will be possible to raise more athletes and champions (Teşneli, 2007; Tiryaki, 2000).

Başer (1998) mentioned a number of factors that may affect the emotions and behaviors of the athlete: Despite all kinds of negative external factors, the athlete must increase his capacity physically and spiritually in order to achieve the performance he wants to achieve (Başer, 1998; Teşneli, 2007). Athletes must follow the training program to succeed and make the necessary sacrifices. Sport affects people both mentally and physically. The performances shown in training and competitions may differ from each other. Community pressure is obvious on athletes. The type and severity of oppression may result from policy, economy and social reasons. The athlete competes in a hostile atmosphere (Peabody & Goldberg, 1989; Teşneli, 2007). Under such frustration and pressure, athletes must be able to demonstrate their performance and be in control. There are examples of different behaviors that athletes cannot control their anger and act aggressively.

2. Method

In 2018, a total of 496 football players, 162 women and 334 men, participated in the research in Istanbul. Spielberger's Anger Style scale, the Eysenck Personality Inventory short form, and Spielberger's trait anxiety inventory were used as data collection tools. The percentage distribution and frequency values of the athletes participating in the research were determined with descriptive statistics and Shapiro Wilk test was applied as the normality test. Depending on the athlete situation, Mann Whitney U test was performed to compare the anger, personality and anxiety levels of the athletes. Kruskal Wallis test was used to compare the anger, personality and anxiety levels of the athletes depending on the level of the athlete, and Tamhane was used as the second level test to determine meaningful groups. Sperman correlation test was used to determine the relationship between the anger, personality and anxiety levels of the athletes. All the tests performed are done at the level of $\alpha = 0.05$ significance. Microsoft Excell 2017 for Windows was used to enter the data into the computer environment and SPSS 25 package program was used to create graphics and tables.

3. Findings

Table 1. Distribution By Age

Age Groups	%	n
21-25 Age	24,6	122
26-30 Age	16,5	82
31-35 Age	17,5	87
36-40 Age	18,5	92
41 Age and over	22,8	113
Group total	100	496

When the distribution by age was analyzed, it was seen that 24,6% of the participants were 21-25 years old, 16,5% of them were 26-30 years old, 17,5% of them 31-35 years old, 18,5of them 36-40 years old and 22,8 % of them 41 years old or older.

Table 2. Distribution by Athlete Status

Athlete Status	%	(n)
Normal Athlete	52,2	259
Veteran Athlete	47,8	237
Group Total	100	496

When the distribution of the athletes participating in the research was analyzed, it was seen that 52,2% were normal athletes and 47,8% were veterans.

Table 3. Distribution by Educational Level

Education Level	%	(n)
High School	24,4	121
Universty	66,3	329
High Licence or Doctorate	9,3	46
Total Group	100	496

When the distribution of the athletes participating in the research according to their education levels was analyzed, it was seen that 24,4% were at high school, 66,3% at university and 9,3% at graduate and doctorate levels.

Anger Scores of Athletes Participating in the Study

Table 4. Trait Anger Points by Athlete Status

Anger	Athlete Status	N	$\overline{X}$ line	$\sum$ line	U	z	p
Trait	**Normal**	259	262,91	68093,50	26959,500	-2,346	**0,019**
	Veteran	237	232,75	55162,50			

It was observed that there was a significant difference between the trait anger scores of the individuals participating in the study, depending on the sports situation ($Z_{0.05}$; -2.346; $P<0.05$).

Internal Anger Scores by Athlete Status

Table 5. Internal Anger Scores According to the Athlete's Status

Anger	Athlete Status	N	$\overline{X}$ line	$\sum$ line	U	z	p
Internal	**Normal**	259	236,97	61376,50	27706,500	-1,876	0,061
	Veteran	237	261,09	61879,50			

There was no significant difference in the anger scores of the individuals who participated in the study depending on the athletic status ($Z_{0.05}$; -1.876; $P>0.05$).

Table 6. External Anger Scores by Athlete Status

Anger	Athlete Status	N	$\overline{X}$ line	$\sum$ line	U	z	p
External	**Normal**	259	256,38	66401,50	28651,500	-1,287	0,198
	Veteran	237	239,89	56854,50			

It was observed that there was no significant difference between the external anger scores of the individuals participating in the study, depending on the sports situation ($Z_{0.05}$; -1.287; P>0.05).

Table 7. Anger Control Scores by Athlete Status

Anger	Athlete Status	N	$\overline{X}_{line}$	$\sum_{line}$	U	z	p
Anger Control	Normal	259	258,25	66887,50	28165,500	- 1,592	0,111
	Veteran	237	237,84	56368,50			

There was no significant difference between the anger control scores of the individuals participating in the study, depending on the sports situation ($Z_{0.05}$; -1.592; P>0.05).

Table 8. Trait Anger Scores by Level of Athletics

Anger	Athletics Level	N	$\overline{X}_{line}$	Chi Square	df	p	
Trait Anger	1- Amateur	225	272,90	25,437	2	0,000	1-2 2-3
	2- Professionel	154	200,48				
	3-National Athlete	117	264,79				

It was observed that there was a significant difference between the anger scores of the individuals participating in the study depending on the level of sportsmanship (X^2 (2), n=496, 25,437 P<0,05). Tamhane was used as a second level test for non-parametric data to determine in which groups the significant difference was detected.

Table 9. Trait Anxiety Points by Athlete Status

Anxiety	Athlete Status	N	$\overline{X}_{line}$	$\sum_{line}$	U	z	p
Trait Anxiety	Normal	259	255,28	66118,50	28934,500	-1,103	0,270
	Veteran	237	241,09	57137,50			

It was observed that there was no significant difference between the trait anxiety scores of the individuals participating in the study, depending on the sports situation ($Z_{0.05}$; -1.103; P>0.05).

Anger, Personality and Anxiety Correlation of Athletes

Table 10. Anger, Personality and Anxiety Correlation Scores of Athletes

Sperman correlation	Constant anger	anger towards the inside	outward anger	anger control	neuroticism	extraversion	psychotism	lie	constant anxiety
Constant anger									
Anger towards the indside	-3,39								
Outward anger	0,589	-166							
Anger Control	0,738	-340	0,635						
Neuroticis	0,449	-0,445	0,361	0,352					
Extraversion	0,302	-0,208	-0,002	0,258	0,36				
Psychotis	0,308	-2,99	0,208	0,314	0,065	0,343			
Lie	0,432	0,193	-324	-0,372	-0,24	-0,275	-0,442		
Constant anxiety	0,416	-0,487	0,436	0,365	0,646	-0,084	0,171	-0,186	

** Refers to situations where P <0.05

Spearman correlation test was applied at α = 0.05 significance level to determine the relationship between anger, personality and anxiety scores of the athletes participating in the research. In the test results, there was a high level of positive (r = 0.738: P <0.05), trait anger and anger control and a positive moderate correlation was observed between trait anger and external anger (r = 0.589: P <0.05), external anger and anger control (r=0,635:P<0.05) neurotism and trait anxiety (r = 0.646: P <0.05) scores.

4. Discussion

334 of the total 496 players participating in the research are male and 162 are female. While the number of veteran footballers participating in the research is 237, the number of football players who continue their professional and amateur football life is 259. 121 of the footballers are high school, 329 university, 46 of them are doctorate and graduate degree.

According to the findings obtained from this study, it was observed that the normal anger scores of the normal athletes were higher than the veteran athletes. It was observed that there was a significant difference between the trait anger scores of the individuals participating in the study depending on the sports situation ($Z_{0.05}$; -2.346; P<0.05). Test results show that normal athletes (18.64 ± 4,428) have significantly higher trait anger scores than veterans (17.94 ± 5.043).

Yıldız et al. (2008) in their parallel study, they found a significant difference in the trait anger, anger and anger control dimensions of the footballers that they examined in terms of educational status variable. They stated that as the level of education increased, football players were more successful in anger control (Yıldız, Güçlü, & Bayraktar, 2008). In their study about adolescents, Kesen et al. (2007), as their age progresses, it is stated that the anger level of adolescents has a significant increase in their anger and their outward expression (Kesen, Deniz, & Durmuşoğlu, 2007).

There is a significant difference between anger control scores of the individuals participating in the study depending on the level of sportsmanship (X2 (2), n = 496, 27,840 P <0,05). Tamhane was used as a second level test for non-parametric data to determine between which groups the significant difference was detected. The test results show that anger control scores of professional athletes (13.82 ± 3.440) are significantly lower than national (15.61 ± 3.306) and amateur (15.53 ± 4.068) athletes, respectively.

Contrary to this study, Yıldız (2008) stated that there is no variation in anger control due to the long or short time of the athletes as a result of the study they carried out on football players (Yıldız, 2008).

In the research, it was found that there was no significant difference in self-confidence, self-sufficiency, self-respect, trait anger, internal anger, external anger and anger control depending on whether the athletes were national or not. Özer (1994); Balkaya and Şahin (2003) and Özkamalı (2005) investigated the relationship between anger and education in their research and stated that the level of education was an important factor in the control and tolerance of anger (Balkaya and Şahin, 2003; Özer, 1994; Özkamalı, 2005).

In our study, we can associate the biggest factor in the difference of anger control levels with the training of athletes. Apart from this, it can be thought that the leagues played by the athletes and their social status are among the factors that change this situation. It is seen that there is no significant difference between the trait anxiety scores of the individuals participating in the study depending on the sports situation ($Z_{0.05}$; -1.103; P> 0.05). The test results show that normal athletes (40.54 ± 6.945) have a significantly higher scores of trait anxiety than veterans (39.51 ± 8.032).

As a result of the research conducted by Civan et al. (2010) with individual and team athletes, there was no significant difference in terms of trait anxiety scores in terms of gender status (Civan et al., 2010).

Determined that the problem solving skills of physical education teachers did not change according to the duration of service in the profession (Pehlivan and Konukman, 2004).

Kutanis and Tuna (2013), in their study with nurses, did not reveal a significant relationship between working time in the profession and their anxiety scores (Kutanis and Tuna, 2013).

Başaran et al. (2009), in their study with different branch athletes, showed that there was a relationship between the trait anxiety score of the duration of doing sports and that the athletes with less sports years have significantly higher scores than those who have more sports years (Başaran, 2009).

In this study, the proximity of the veteran athletes and the trait anxiety scores of the players who continue their active life can be associated with the environment, time and place in which the athletes are located. It can be said that personality and self-respect are one of the determining and important factors against this situation. In the study, it was observed that there was a positive high level relationship (r = 0.738: P <0.05) between trait anger and anger control scores. It can be said that the athletes act directly with success in the competitions and have difficulties in maintaining trait anger and anger controls in case of a situation. In addition, it is possible for them to bill the negative result and the negative result of losing to others.

It was observed that there was a moderate positive relationship between trait anger and external anger (r = 0,589: P <0.05). Athletes may not keep their anger under control in the face of the events they encounter. Athletes who cannot control their anger status may have to export. This situation may increase or decrease according to the action status of the athletes. In our study, the positive moderate significance in the anger and external anger situations can be considered as the determinant of the violent situation of the athletes.

It was observed that there was a moderate positive relationship between external anger and anger control (r = 0,635: P <0.05). It is thought that personalities play a decisive role in the anger of the athletes. Therefore, athletes who have difficulty in dominating themselves during the competition may lose their anger control and express their anger status. In the research conducted, it can be thought that the reason for the failure of the athletes to control their anger controls is related to the success of the competitions. In case of not being successful, it can be said that they externalize this feeling and could not control it. As a result, it was determined that normal athletes were more enraged than veteran athletes; the anger controls and anger levels of the professional athletes were better than the amateur athletes. On the other hand, it was determined that the level of personality and anxiety of professional athletes was better than that of amateur athletes.

References

Balkaya, F. & Şahin, N. H. (2003). Çok boyutlu öfke ölçeği. *Türk Psikiyatri Dergisi, 14*(3): 192-202.

Başaran, M. H., Taşkın, Ö., Sanioğlu, A., & Taşkın, A. K. (2009). Examxination Of The Level Of State - Trial Anxiety Of Sportsmen According To Some Variables. *Selçuk üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (21). Konya.

Başer, E. (1998). Uygulamalı spor psikoloji.: Sporsal Kuram Dizisi, Bağırgan Yayınevi, Ankara

Burger, J. M. (2006). Kişilik. Sarıoğlu Ġ D E (Çev). 1. Basım: Kaknüs yayınları. . İstanbul

Civan, A., Arı, R., Görücü, A., & Özdemir, M. (2010). Bireysel ve takım sporcularının müsabaka öncesi ve sonrası durumluk ve sürekli kaygı düzeylerinin karşılaştırılması. Uluslararası İnsan Bilimleri Dergisi, 7(1), 193-206.

Gibson, B. (1975). Persönlichkeit und Sportliche Leistung. ein Überlick die Theorien von.

Karadal, F. (2009). Öfke yönetimi ve niğde üniversitesinde bir araştırma, (Yüksek Lisans Tezi). Niğde Üniversitesi Sosyal Bilimler Enstitüsü, Niğde.

Karageorghis, C. I., & Terry, P. C. (2015). Spor Psikolojisi; Nobel Akademik Yayıncılık, Ankara.

Kesen, N.F., Deniz, M. & Durmuşoğlu, N. (2007). Ergenlerde saldırganlık ve öfke düzeyleri arasındaki ilişki: Yetiştirme Yurtları Üzerinde Bir araştırma. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 17*, 353-364.

Kutanis, Ö. R., & Tunç, T. (2013). Hemşirelerde Benlik Saygısı ile Durumluk Ve Sürekli Kaygı Arasındaki ilişki: Bir üniversite Hastanesi örneği, "iş, güç". *Endüstri ilişkileri ve insan Kaynakları Dergisi, 15*(2), 1-15.

Öner, N., & Compte, A. L. (1985). Durumluk-Sürekli kaygı envanteri el kitabı. 2. Baskı. Boğaziçi Üniversitesi Matbaası. İstanbul.

Özer, A.K. (1994). Sürekli Öfke ve Öfke İfade Tarzı Ön Çalışması. *Türk Psikoloji Dergisi, 9*(31), 26–35.

Özkamalı E. (2005). 20–30 Yaş Grubu Bireylerin Öğrenim Düzeylerine Göre Öfke Düzeyleri ve Öfke İfade Tarzları, Yüksek Lisans Tezi, On Dokuz Mayıs Üniversitesi, Samsun

Peabody, D. & Goldberg, L.R. (1989). Some Determinants of Factor Structures From Personality- Trait Descriptors. *Personality and Social Psychology, 57*, 557- 562.

Pehlivan, Z., & Konukman, F. (2004). Beden Eğitimi öğretmenleri ile Diğer Branş öğretmenlerinin Problem çözme Becerisi açısından Karşılaştırılması. *Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi, 2* (2), 55-60.

Syer, J., & Connolly, C. (1998). Sporcular için Zihinsel Antrenman, (Çev. Erkan, F.U).: Bağırgan Yayınevi. Ankara

Teşneli, Ö. (2007). Teşneli Ö, Elit Seviyedeki Değişik Spor Branşlarının Fiziksel Benlik Algısı Üzerine Etkisi. Master's Thesis. Sakarya: Sakarya University

Tiryaki, Ş. (2000). Tiryaki Ş. Spor Psikolojisi: Kavramlar, Kuramlar ve Uygulama, Eylül Kitabevi, Ankara.

Tuna, D. (2012). Çözüm odaklı kısa süreli yaklaşıma dayalı öfke kontrolü eğitim programının lise öğrencilerinin öfke kontrolü ve iletişim becerileri düzeylerine etkisi. Yayımlanmamış yüksek lisans tezi. Dokuz Eylül Üniversitesi Eğitim Bilimler Enstitüsü, İzmir.

Yeşilyaprak, B. (2001). Duygusal zekâ ve eğitim açısından doğruları. *Eğitim Yönetim Dergisi, 25*, 139-146.

Yıldız, M. (2008). Farklı liglerde yer alan futbolcuların kişilik tipleri ile sürekli öfke-öfke ifade tarzlarının incelenmesi. (Doktora Tezi). Gazi Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara.

Yıldız, M.; Güçlü, M. ve Bayraktar, M. (2008). Farklı liglerde yer alan futbolcuların kişilik tipleri ile sürekli öfke-öfke ifade tarzlarının incelenmesi. Ataturk Journal of Physical Education and Sport Sciences, 10(1): 39-5.

Special Education Candidate Teachers' Metaphors about Social Media[*]

Hakkı Bağcı[1] & Özlem Aslan Bağcı[2]

[1, 2] *Sakarya University, Turkey*

ARTICLE INFO

ABSTRACT

Because technology is developing each day and internet is getting easier to access, the types of communication among the people also have a constant alteration. Social media being one of the leads, especially the students undergoing an education frequently use these new communication styles. Studies in this context suggest that students do not use social media only to communicate with each other but also to exchange information, cooperate and share their class materials. In this regard, the perspectives of those who will be teaching students with special needs regarding social media are important to focus on. Therefore, this inquiry aims to identify the approaches of special education candidate teachers about social media courses through metaphors. The phenomenological research design was applied in this study. Participants were chosen from the candidate teachers who studied Special Education Teaching at Sakarya University Education Faculty in 2017 and 2018. The data was collected through the forms which had expressions as "because it is … social media is like … "and content analysis was used to examine this data. The forms were filled by 87 participants and the results show that they have developed 81 different metaphors. Based on the reasons for these metaphors researchers formed 6 categories: life colour, side effect, object, dependency, necessity and waste of time. It was also observed that the perspectives of special education candidate teachers about social media courses were typically positive.

Keywords:
Social media, metaphor, special education, teacher candidate

1. Introduction

Types of communication within the changing world are mostly supported by technology and the internet. Education systems in recent times also have been influenced by these rapid developments and alterations. Technology has then become an indissoluble part of education. These changes have reflected on the education of teachers as well. However, this reflection has become a matter of dispute. While some teachers find this speedy evolution quite scary and dizzy, some others find it as an advantage of education. Particularly students usually benefit from these communication methods.

Today, people's communication environments take a different form, especially with the rapid development of the internet. After increasing proper internet usage in the late 1990s, spreading webs in 2000s and approval of social media, these platforms became the most popular environments for individuals of all ages (Vural and Bat, 2010). People using social media do not perform unidirectional communication but they instantly interact and exchange information (Alav, 2014). Therefore, social media allow diverse opinions, perspectives and experiences to be shared on the internet (Weinberg, 2009). In another definition, social media is what allows people to express themselves, convey their thoughts to other people on the same courses such as blogs, social networks and video games (Kaplan and Haenlein 2010). Thanks to all these opportunities people almost at all

---

ages use social media. Distances get closer, even disappear and people can share anything without a need for face to face communication. Because it can be constantly updated, accessed by everyone and allows sharing on digital platforms, social media is one of the most practised communication tools.

In terms of the opportunities, social media features can be ordered as (Mayfirld, 2008):

Encourages participants and receives feedback from all users.

Social media is the most open platform for feedbacks by the users and them. Therefore, these services trigger their users for issues such as commenting, voting and information exchange. These platforms are prohibited though rarely.

Because social media allows dual conversation it is better than traditional media organisations.

It allows users to produce rapid and efficient content. Thus, users share photos, opinions, entertainment and tabloids in which they are interested.

Since social media has these immersive features, it does inform people and direct communities. Through various platforms it has, the influence of social media on education, shopping and health increase each day.

People from different ages use social media for different purposes. It has become a stage and tool for recreation, entertaining, chatting, exchanging information and following the daily news (Solmaz, Tekin, Herzem and Demir, 2013). It is one of the most favoured communication tools by university students. Studies suggest that university students do not use social media only to communicate with each other but also to exchange information, cooperate and share their class materials. The literature about social media and why it is used increasing in recent years. The research conducted by Vural and Bat (2010) indicates that students use social media to spend time, chat online, update their profiles, check what their friends are doing, find new friends and play non-interactive video games. Horzum (2016) investigated whether the objectives of using Facebook are related to gender and five major personalities in the case of a Turkish university student. As a result of the study, it was seen that male students use Facebook mostly for social purposes and female students use educational purposes. Küçükali (2016) observed that students' intensive social media use is due to the intensity of cultural structure, affinity and friendship. Karaboga (2018) in a similar study found that university students actively use social media and they mostly use it to communicate their friends and speak with them. Another result demonstrated that students believe that people on social media do not behave frankly, are not helpful and do not develop sincere friendships. Correa, Hinsley and Zuniga (2010) similarly found that teenagers used social media to communicate and interact and structure a digital platform. Aküzüm & Saraçoğlu (2017), on the other hand, found that teacher candidates think that social media cause isolation and do not help to gain a social capacity.

Recent studies show that social media is increasing its importance in today's technology and information era. In other words, social media courses support university students, academics, institutions in enriching their experiences, widening participation and social connection and peer support (Jones, Blackey, Fitzgibbon & Chew, 2010). Besides, because these courses help with cooperative learning, intergroup interaction, instant feedback and information exchange, social media has a role in teacher education.

Unlike traditional media, digital media allows users to be active producers (Karasu & Arıkan, 2016). In this sense, it is possible to state that the perceptions of teachers that start to improve in their undergraduate educations and teacher education before service keep improving throughout their professional life (Aktekin, 2010).

The main purpose of special education is providing education for all people with all types of disability based on their needs. Technology usage in special education might be handled in three main areas: assisting technologies to cross specific hurdles, computerized technologies to support academic studies and social networks easing learning processes (Ludlow, 2001). Therefore, familiarity, attitudes and perceptions of special education teachers regarding social media have a direct effect on their teaching methods. Social media in this context help with teachers' communication with parents, open the ways for those who cannot contact their friends at school due to their disability. Furthermore, being able to use new technologies is one of the first rules of professional practice and education standards (CEC, 2014). In this regard, studying perspectives of special education teachers about social media is critical, as they will be teaching handicapped individuals in

future. Using metaphors as a data collection method in defining the perceptions of special education teachers about social media will be able to exhibit a different point of views. Metaphors could be seen as cognitive strategies to develop our perceptions about events and find an extra point of view (Palmquist, 1996). Although they are performed much in daily usage, not only in language, metaphors also have a significant effect on thought and movement (Lakoff & Mark, 2005).

Metaphor is a tool as it reveals how a human mind percept a concept. Through metaphors, it gets possible to comment on a concept and relate it to past issues. Using them for a social media study conducted on candidate teachers will allow understanding what social media is and if candidate teachers have any information regarding these platforms.

This study aims to identify the approaches of special education candidate teachers about "social media" concept through metaphors. Based on this main aim, we have tried to answer the following questions:

1. What kind of metaphors special education candidate teachers use in describing social media?
2. How these metaphors which are related to social media could be categorized according to their common traits.

2. Methodology

In this part of the article the model of the research, participants, data collection tools and analyzing data will be given.

2.1. The model of the research

Because this study identifies the experiences and knowledge of special education candidate teachers about social media courses, phenomenological research design, a qualitative method, was applied. Phenomenology is an inductive approach to qualitative research that focuses on the commonality of a lived experience within a particular group. The fundamental goal of the approach is to arrive at a description of the nature of the particular phenomenon (Saban & Ersoy, 2017).

2.2 Participants

Participants were chosen from 87 candidate teachers who studied Special Education Teaching at Sakarya University Education Faculty in 2017 and 2018. As a sampling method, we applied convenience sampling that is used in qualitative studies. Convenience sampling is a method which helps the researchers to gain practicality and run up as they are working on an accessible and close situation (Yıldırım & Şimşek, 2005).

2.3. Data Collection Tool

Researchers developed two forms as a way to collect the data. One is for the instructions and the second is for the social media questions.

Metaphors as a research and data collection method is an important technique through which notions are verified based on a wide range of variables (Jensen, 2006). Particularly in social sciences metaphors are indirectly benefitted when data cannot impartially be collected (Jensen, 2006; Saban, 2008). A metaphor which is meaningful and assessed is formed of two components called analogy and assimilable (Kovecses, 2002). Therefore, it is important to ask "why" to attribute a meaning to metaphors. These meanings are used to analyse metaphors (Yıldırım & Şimşek, 2005). To identify the perceptions of special education candidate teachers about social media courses they are requested to complete sentences as "because it is … social media is like …". These forms which were written by the participants were collected and analysed by the researchers. Although at the beginning we have explained the data process we tried not to direct/influence the teacher candidates. Candidate teachers were given 20-25 minutes to specify their metaphors and then the forms were collected.

2.4. Analysing the Data

Data gathered from the special education candidate teachers were organised after reading by the researchers. Some of the forms were not included in the analyses as they did not have metaphors, they were unclear or there were more than one metaphors. After excluding the inappropriate ones, 81 forms were metaphorically analysed. To analyse this data, we pursued the method developed by Saban, 2008; Güven & Güven, 2009; Ulukök, Bayram & Selvi, 2015. Phases of this analyse are ordered as: naming the metaphors, choosing, coding, categorising, verifying its validity and credibility.

At the level of naming, the metaphors mentioned by the special education candidate teachers were noted with their reasons and the convenience between the metaphors and reasons was examined.

At the level of choosing and coding, the metaphors mentioned by the special education candidate teachers were checked and carefully selected. They were then temporarily classified in terms of their similarities and common traits.

At the level of categorising, the metaphors mentioned by the special education candidate teachers were analysed in terms of their common traits.

At the level of validity and credibility, to double-check if the metaphors were represented by the categories, the credibility of the study were found by 90% after comparing the answers of two researchers separately based on the formula developed by Miles and Huberman in 1994 which is called divergence+agreement. Data which were found credible and suitable for analysing changed into codes; the codes were changed into themes and then they were interpreted in titles.

3. Findings

The metaphors which were developed by the special education candidate teachers about social media were interpreted after analysing them individually. The metaphors which were developed by 87 participants intended for inclusion analysed. Firstly, we checked what these metaphors were used for and then we classified them according to the results. 81 metaphors were obtained out of 87 special education candidate teachers and these metaphors were classified under 5 titles (Table 1).

Table 1. Distribution of developed metaphors by categories

Categories	N	%
Colour of Life	27	33,33
Side Effect	19	23,46
Object	14	17,28
Addiction	9	11,11
Necessity	7	8,64
Waste of Time	5	6,18
Total	**81**	**100**

Table 1 demonstrates that the "colour of life" is one of the most evident metaphors by 33.33%. "Side effect" by 23 % and "object" by 17 % are the following rates. Addiction by 11%, necessity by 8% and "waste of time" by 6% are some other metaphors developed by the special education candidate teachers. These categories have been ordered in titles below.

The Metaphors Developed by the Special Education Candidate Teachers about Social Media in Terms of "Colour of Life" Category

The most preferred category by the special education candidate teachers was "Colour of Life" and the metaphors forming this category are showed in Table 2.

Table 2. Metaphors intended for Social Media Used in the "Color of Life" Category

Color of Life	f	%
Well	3	11,1
A Small World	3	11,1
Free Thinking Environment	2	7,41
News Environment	2	7,41
Rich Dump	2	7,41
Swamp	2	7,41
Space Void	2	7,41
Warehouse	2	7,41
A Closed Box	2	7,41
Virtual World	1	3,7
Swimming in the Wavy Sea	1	3,7
Brave Heart	1	3,7
Pit	1	3,7
Mountain	1	3,7
Village	1	3,7
Show Square	1	3,7
Total	**27**	**100**

Table 2 suggests that 27 special education candidate teachers used 16 different metaphors regarding the "colour of life" category. These metaphors also imply that special education candidate teachers see social media as "shining colour" of life. In other words, it can be stated that the majority of special education candidate teachers see social media as the bright color of life. The most visible metaphors in the "colour of life" category are "well" and "a small world".

Some examples regarding "colour of life" category have been given below:

- *Because we can express our thoughts social media is like the platform for freedom of expression.*
- *Social media is like a bog which you cannot survive once you are down.*
- *It is just like the world. It has both enlightened and dark parts.*
- *It is just like a garbage dump. Like an enthalpy where some people find what they need and some others do not.*

The Metaphors Developed by the Special Education Candidate Teachers about Social Media in Terms of "Side Effect" Category

One of the most preferred categories by the special education candidate teachers was "side effect" and the metaphors forming this category are given in Table 3.

Table 3. Metaphors intended for Social Media Used in the "Side Effect" Category

Side Effect	f	%
Drug	9	47.37
Alcohol	3	15.79
Medicine	3	15.79
Cigarette	2	10.53
Scorpion	1	5.26
Snake	1	5.26
Total	**19**	**100**

Table 3 shows that 19 special education candidate teachers used 6 different metaphors regarding the "side effect" category. These metaphors indicate that social media has "side effects" on users. The metaphor which has the highest frequency about social media is "drug". "Alcohol" and "medicine" metaphors also were mentioned.

Some examples regarding "side effect" category have been given below:

- *Because once check you cannot leave until morning times it is like drugs.*
- *It is like medicine which helps only when you have it at the suggested dose.*
- *Social media is like a scorpion, poisons new generations.*
- *It like a snake. It has poison at head part but also antivenin at the tale which means it is both beneficial and harmful.*

The Metaphors Developed by the Special Education Candidate Teachers about Social Media in Terms of "Object" Category

One of the most preferred categories by the special education candidate teachers was "object" and the metaphors forming this category are given in Table 4.

Table 4. Metaphors intended for Social Media Used in the "Object" Category

Objcet	f	%
Book	1	7.14
Tire	1	7.14
Key	1	7.14
Flower	1	7.14
Bulb	1	7.14
Coriander	1	7.14
Construction Machine	1	7.14
Ivy	1	7.14
Tree	1	7.14
Fossil fuel	1	7.14
Gum	1	7.14
Pebbles	1	7.14
Black cloud and sun	1	7.14
Cotton candy	1	7.14
Total	**14**	

Table 4 shows that 14 special education candidate teachers used 14 different metaphors regarding "object" category. These metaphors indicate that special education candidate teachers see social media something like a hand-held object. In other words, it can be stated that some of the special education candidate teachers see social media as a tangible object.

Some examples regarding "object" category have been given below:

- *Social media is like rubber. It goes wherever you pull it. Either good or bad.*
- *Social media is like pebbles. They are small but also, unlike each-other. Different approaches to social media are like pebbles.*
- *It is like a flower. If you are too much interested in you may kill it which means if we give too much time to it, it might become harmful for us.*

The Metaphors Developed by the Special Education Candidate Teachers about Social Media in Terms of "Addiction" Category

One of the most preferred categories by the special education candidate teachers was "addiction" and the metaphors forming this category are given in Table 5.

Table 5. Metaphors intended for Social Media Used in the "Addiction" Category

Addiction	f	%
Whirlpool	3	33.33
Spider web	2	22.23
Bridge	1	11.11
Octopus	1	11.11
Tornado	1	11.11
Neighbourhood Gossip Headman	1	11.11
Total	**9**	**100**

Table 5 shows that 9 special education candidate teachers used 6 different metaphors regarding the "addiction" category. These metaphors indicate that special education candidate teachers think social media is addictive. The most visible metaphors in the "addiction" category are "whirlpool" and "spider web".

Some examples regarding "addiction" category have been given below:

- *Social media is a spider web. Although it is a communication web we must always keep in mind that it is still a web which may imprison us.*
- *It is like a whirlpool. Once you start you cannot stop yourself. You simply want to stay in it.*
- *It is like an octopus. Through social media, our hands can access anywhere and any information.*

The Metaphors Developed by the Special Education Candidate Teachers about Social Media in Terms of "Necessity" Category

One of the most preferred categories by the special education candidate teachers was "necessity" and the metaphors forming this category are given in Table 6.

Table 6. Metaphors intended for Social Media Used in the "Necessity" Category

Necessity	f	%
Food and Water	4	57.14
Oxygen	2	28.57
Friend	1	14.29
Total	**7**	**100**

Table 6 shows that 7 special education candidate teachers used 3 different metaphors regarding the "necessity" category. These metaphors indicate that special education candidate teachers think social media is a necessity which is a must. People need it. The most visible metaphors in the "necessity" category are "water" and "food". "Oxygen" is also another metaphor that has a high frequency.

Some examples regarding the "necessity" category have been given below:

- *Because life is based on it, social media is like the breath we take.*
- *It is like oxygen which enables me to breath.*
- *It is like a friend who can either make or break. Yet you can still control this.*

The Metaphors Developed by the Special Education Candidate Teachers about Social Media in Terms of "Waste of Time" Category

One of the preferred categories by the special education candidate teachers was "waste of time" and the metaphors forming this category are given in Table 7.

Table 7. Metaphors intended for Social Media Used in the "Waste of Time" Category

Waste of Time	f	%
Time killer	2	40.00
Virus	1	20.00
Bacterium	1	20.00
The habit we can't leave	1	20.00
Total	**5**	**100**

Table 7 figures that 5 special education candidate teachers used 4 different metaphors regarding "waste of time "category. These metaphors indicate that special education candidate teachers think social media is a waste of time. The most noticeable metaphor in the "waste of time "category is "time killer".

Some examples regarding "waste of time" category have been given below:

- *Because you do not understand how time goes there, social media is like a time stealer.*
- *It is like an addictive habit which we can either use in a good way or bad way.*
- *It is a time killer and we spend all our time there, necessarily or not.*

4. Conclusion and Recommendations

Social media enables people to get information and exchange it by presenting them with different alternatives. Especially university students intensively use social media while they are sharing information and experience with their friends wherever they are. It is crucial to study the approaches of the teacher candidates regarding social media in today's world where and when information, communication and internet develop that fast. In this regard, studying the thoughts of 87 teacher candidates about social media, we have obtained the results below.

The approaches of special education teacher candidates about social media have been classified under 6 categories: life colour, side effect, object, dependency, necessity and waste of time. Analyses of these categories demonstrate that social media has influenced almost all life phases of special education teacher candidates.

The research conducted by Vural & Bat (2010) on university students indicates that students actively use social media and mostly use it to spend time. Ulusoy & Bostancı (2014) also concluded that people under 18 years are spending their times mostly on social media to communicate with others and create contents. Solmaz, Tekin, Herzem & Demir (2013) in their study about the social media usage of university students found that almost all of the students use social media and spend an important part of their daily lives on social media. Gül & Diken (2018) also found out that science teacher candidates are addicted to social media at a medium level. Aslan-Bağcı & Bağcı (2016) tell that child development students use social media to get informed most and to receive education least. In Karaboğa's (2018) study where he examined the opinions of university students regarding social media, found that university students actively use social media and they mostly use it to communicate their friends and speak with them. Another result demonstrated that students believe that people on social media do not behave frankly, are not helpful and do not develop sincere friendships. Kucukali's study suggests that most of the university students use social media to have enjoyment and to relax. Aküzüm & Saraçoğlu (2017), on the other hand, found that teacher candidates think that social media cause isolation and do not help to gain a social capacity. Ajjan & Harsthone (2008) state that it is better to use social media for educational aims and that social networks help students with learning.

The results of this study suggest that the most visible metaphors in the "colour of life" category are "well" and "a small world". In other words, special education teacher candidates see social media as well that includes life apart from real life. This also shows that teacher candidates approach social media as a virtual world. Another finding indicates that special education candidate teachers think social media is a time killer in the "waste of time "category which means that teacher candidates find social media where people spend their times mostly in a negative way. This approach implies that teacher candidates believe that social media is separating them from the real world and kill their times.

Although they think social media is a waste of time, on the other hand, they also think it is a necessity. It is almost a must just like food and water in this century. Accordingly, the most visible metaphors in the "necessity" category are "water" and "food" which shows how much importance they give social media and what a noteworthy need the social media is. Another result suggests that the metaphor which has the highest frequency about social media is "drug" in the "side effects" category. These metaphors indicate that social media has an enormous effect on users which in the long run generates addiction. In parallel with this, a similar outcome suggests that the most visible metaphor in the "addiction" category is *a whirlpool*. In this
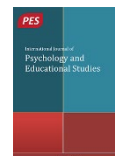
regard, special education teachers believe that social media puts people into a spiral which is difficult to escape. On the contrary, the more they escape the more they stuck in it.

Based on all outcomes, it is possible to indicate that special education teacher candidates' metaphors are mostly positive (colour of life, object, necessity). However, they also developed negative metaphors such as side effect, addiction and waste of time. These remarks suggest that special education teacher candidates need to be supported by social media literacy. Developing technology proves how much education will be influenced by digital media courses. Future education platforms will affect all components of education from design to use, from teachers to students and parents. The use of social media in teacher education programs is limited. Therefore, for special education teacher candidates to effectively use social media, they must have a social/new media literacy class at least as an elective one. People with weak access to online education platforms sometimes need to use social media courses. To help teacher candidates with improving their new media capabilities, authorities should organize seminars and conferences. In further studies, special education teacher candidates' perspectives can be studied through different methodologies.

References

Ajjan, H. & Hartshorne, R. (2008). Investigating faculty decisions to adopt web 2.0 technologies: Theory and empirical tests. *The Internet and Higher Education, 11*(2), 71–80. doi: 10.1016/j.iheduc.2008.05.002.

Aktekin, S. (2010). *Hayat boyu öğrenme ve sürekli mesleki gelişim. (Ed. M.Safran), Tarih Nasıl Öğretilir? Tarih Öğretmenleri İçin Özel Öğretim Yöntemleri (377-384)*, İstanbul: Yeni İnsan Yayınevi.

Aküzüm, C. & Saraçoğlu, M. (2017). Üniversite öğrencilerinin sosyal medyaya ilişkin tutumlarının incelenmesi. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi, 32*, 803-817. doi: 10.14582/DUZGEF.789.

Alav, O. (2014). Sosyal medya'nın birey ve toplumsal yapıya etkileri. *Elektronik Sosyal Bilgiler Eğitimi Dergisi, 1*(1), 1-22.

Aslan-Bağcı, Ö. & Bağcı, H. (2016). *Çocuk gelişimi programı öğrencilerinin sosyal medya kullanım amaçları ve sosyal medya hakkındaki görüşleri.* International Academic Research Congress. 3-5 November 2016. Antalya-Side. 1186-1191.

Correa, T., Hinsley, A. W., & De Zuniga, H. G. (2010). Who interacts on the Web?: The intersection of users' personality and social media use. *Computers in human behavior, 26*(2), 247-253. doi: 10.1016/j.chb.2009.09.003.

Council for Exceptional Children (CEC, 2014). CEC Professional Standards. https://www.cec.sped.org/Standards.

Gül, Ş. & Diken, E. H. (2018). Fen bilgisi öğretmeni adaylarının sosyal medya bağımlılıklarının incelenmesi. *Kafkas Üniversitesi, e-Kafkas Eğitim Araştırmaları Dergisi, 5*(1), 41-50. doi: 10.30900/kafkasegt.386531.

Güven, B. & Güven S., (2009). İlköğretim öğrencilerinin sosyal bilgiler dersinde metafor oluşturma becerilerine ilişkin nicel bir araştırma. *Kastamonu Eğitim Fakültesi Dergisi, 17*(2), 503-512.

Horzum, M. B. (2016). Examining the relationship to gender and personality on the purpose of Facebook usage of Turkish university students. Computers in Human Behavior, 64, 319-328. doi: 10.1016/j.chb.2016.06.010

Jensen, F.N. (2006). Metaphors as a bridge to understanding educational and social contexts. *International Journal of Qualitative Methods*, 5(1), 1-17. doi: 10.1177/160940690600500104.

Jones, N., Blackey, H., Fitzgibbon, K., & Chew, E. (2010). Get out of MySpace!. *Computers&Education, 54*, 776-782. doi: 10.1016/j.compedu.2009.07.008.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons, 53*(1), 59-68. doi: 10.1016/j.bushor.2009.09.003

Karaboğa, M. T. (2018). Üniversite öğrencilerinin bir sosyalleşme alanı olarak sosyal medya hakkındaki görüşleri. *Mersin Üniversitesi Eğitim Fakültesi Dergisi, 14*(3), 912-936. doi: 10.17860/mersinefd.475515

Karasu, M., & Arıkan, D. (2016). Öğretmen adaylarının sosyal medya kullanım durumları ve medya okuryazarlık düzeyleri arasındaki ilişkinin incelenmesi. *Ege Eğitim Dergisi, 17*(2), 549-566. doi: 10.12984/egeefd.280757.

Kovecses, Z. (2002). *Metaphor: A Practical Introduction,* Oxford University Pres, New York.

Küçükali, A. (2016). Üniversite öğrencilerinin sosyal medya Kullanımı: Atatürk üniversitesi örneği. Bartın Üniversitesi İ.İ.B.F Dergisi, 7(13), 531-546.

Lakoff, G. & Mark, J. (2005). Metaforlar: Hayat, Anlam ve Dil. (Çev. Gökhan Yavuz Demir), İstanbul: Paradigma Yayınevi.

Ludlow, B. L. (2001). Technology and teacher education in special education: Disaster or deliverance? *Teacher Education and Special Education, 24*(2), 143-163. doi: 10.1177/088840640102400209

Mayfield, A. (2008). What Is Social Media?. http://www.icrossing.co.uk/fileadmin/uploads/ eBooks/What_is_Social_Media_iCrossing_e book.pdf.

Palmquist, R. (1996). The Search for an Internet Metaphor: A Comparison of Literatures, American Society of Information Science Conference.

Solmaz, B., Tekin, G., Herzem, Z. & Demir, M. (2013). İnternet ve sosyal medya kullanımı üzerine bir uygulama. Selçuk İletişim, 7(4), 23-32.

Saban, A. (2008). Okula ilişkin metaforlar. *Educational Administration: Theory and Practice, 55*, 459-496.

Saban, A. & Ersoy, A. (2017). Eğitimde Nitel Araştırma Desenleri. Ankara: Anı Yayıncılık

Ulukök, Ş., Bayram, K. & Selvi, M. (2015). Fen bilgisi öğretmen adaylarının biyoloji kavramına ilişkin zihinsel imgeleri (Metafor analizi örneği). *International Online Journal of Educational Sciences, 7*(3), 244-259.

Ulusoy, A. & Bostancı, M. (2014). Çocuklarda sosyal medya kullanımı ve ebeveyn rolü. *The Journal of Academic Social Sciences Studies, 28*, 559-572. doi: 10.9761/JASSS223.

Vural, Z. B. A. & Bat, M. (2010). Yeni bir iletişim ortamı olarak sosyal medya: Ege üniversitesi iletişim fakültesine yönelik bir araştırma. *Journal of Yasar University, 20*(5), 3348-3382.

Weinberg, T. (2009) The New Community Rules: Marketing On The Social Rules, O'Reilly Media, USA.

Yıldırım, A. & Şimşek, H. (2005). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri* (5. baskı), Ankara: Seçkin Yayıncılık.

The Relationship between Social Justice Leadership and Sense of School Belonging

Suzan Canlı[1]

[1]Nigde Omer Halisdemir University, Turkey

ARTICLE INFO

ABSTRACT

This research aims to examine the correlation between students' sense of school belonging and social justice leadership behaviours of school principals. This research is conducted in correlational screening model. Research data are collected by "Students' Sense of School Belonging Scale" and "Social Justice Leadership Scale". Data social obtained from scales, which were applied on 510 high school students, are analyzed in the research. In the research, it is determined that students' sense of school belonging is at moderate level and that school principals exhibit social leadership behaviours in moderate level. No significant difference is determined in students' sense of school belonging in terms of the gender of students, socio-economical level of school and grade level of students. While any significant difference was not found in terms of socio-economical status of the school in terms of the way that students' perceive the social justice leadership behaviours of school principals, a significant difference was determined in terms of the gender of students and grade levels. A positive significant correlation of moderate level was found between the way students' perceive the social justice leadership behaviours of school principals and students' sense of school belonging. It was determined that the way that students' perceive the social justice leadership behaviours of school principals predict their sense of school belonging and that it clarifies 17% of the variance related with their sense of school belonging.

1. Introduction

In social sphere and education, there are inequalities between individuals due to various differences, such as race, socio-economical status, gender, sexual orientation, language, and physical and mental skills etc. With the increase of the awareness on such inequalities, it is prioritized to show an effort for a world order, in which there are no inequalities and which is fair for everyone. Schools are also expected to do their bit in this respect. Such situation caused traditional leadership approaches, which fail to pay sufficient amount of interest in inequalities in schools, to be criticized, and occurrence of various leadership models that focus on inequalities. One of these leadership models is social justice leadership (Ryan, 2006).

Today, social justice has become the focus of interest of many scientists and implementers engaged in the field of education, and in terms of leadership researches, many researches were conducted to conceptualize and practices related with the understanding of social justice leadership (Furman, 2012). However, it is criticized that case studies were conducted mostly and that certain inequalities were neglected therein by focusing on one or two types of inequities. Another criticism is that researches are mostly focused on the

roles of school principals for establishing more fair schools and that the roles of school stakeholders are neglected (DeMatthews, 2014). Furthermore, the insufficiency of researches related with the type of effects that school principals' exhibiting social justice leadership behaviours may make on students may be considered as another issue, which must be criticized.

Although there is an extensive literature on the effect of teacher-student relations to student outputs, the effect of administrator-student relationship is not a subject that is researched frequently. In this context, sufficient amount of data is not available on the effect of administrator-student relationship to student outputs (Cemalcilar, 2010). However, the effect of the leadership of administrators on student outputs is being prioritized recently. One of the reasons for that is the fact that, it is believed that school administrators play a critical role in decreasing the difference between academic achievements of students from groups that are different on social and ethnical basis. Thus, there are evidences that prove the direct or indirect effects of school principals' leadership on student outputs (Robinson, Lloyd & Rowe, 2008). Furthermore, in a research that analyzed the effect of the leadership of school administrators and teachers on the student engagement (Leithwood & Jantzi, 1999), it was determined that the leadership of administrators had a significant effect on the student engagement, although it was weak, and that the leadership of teachers had no effect on the student engagement. In another research, it was determined that the social justice leadership of school principals had a positive moderate level correlation with the attitudes of students towards school and their engagement (Özdemir, 2017). In another research, it was determined that there was a significant correlation of moderate level between social justice leadership behaviours of school principals and student engagement (Büyükgöze, Şayır, Gülcemal & Kubilay, 2018). In this research, it was aimed to analyze the correlation between social justice leadership behaviours of school principals and students' sense of school belonging, and thus, to make a contribution to the literature in this field.

1.1. Social Justice Leadership

Social justice is a concept where social and cultural inequalities, which source from various differences, are criticized, such as racism, sexism, poverty and disability etc. People, who adopt the concept of social justice, believe that the fact that certain groups that are available in a society have a more disadvantageous livelihood opportunities compared to others make a negative effect on the members of such group, and they lay emphasis on impartiality, equality and justice (Berkovich, 2014). In this respect, social justice is an umbrella concept that contains several concepts, which may have various meanings in different nations, such as impartiality, affirmative action, equality of opportunity, inequality and diversity etc. Thus, it makes it difficult to define social justice explicitly (Furman, 2012). Also, one may not state that inequalities, which are observed in today's conditions, may continue to exist in the future, whether different inequalities shall be experienced in the future in a way that is different than the ones we experience today or that inequalities are/shall be experienced on same issues in every society. In this respect, we may not provide a single definition of social justice that suits to any circumstance. Therefore, the concept and understanding of social justice must be renewed continuously, and must be defined transiently on situational basis (Turhan, 2010).

There is a common understanding on the fact that social justice leaders are focused on equality and that they work towards establishing equality (McKenzie et al., 2008). Social justice leaders are leaders, who address the marginalizing conditions that existed in the past and that exist today in their leadership practices and visions, who support disadvantageous individuals and who endeavour to destroy marginalization (Theoharis, 2007). In this respect, they are considered as the architects of a social order, in which equal education and social opportunities are offered to all of the individuals (Jean-Marie, Normore & Brooks, 2009). Social justice leaders question school policies, cultures and expectations of the society, and they determine oppressive and unfair practices, and they replace unfair practices by ones that are suitable and fair culturally (DeMatthews, 2014, 2015). Social justice leaders aim to increase the success levels of all of the students (Capper & Young, 2014; McKenzie et al., 2008), and they have a critical perspective, and they create conditions required to create such critical consciousness in their personnel and students. Also, they believe that all of the students have the right to receive education with their peers in the same class, no matter what their educational requirements are, and they ensure that all of the students receive education in heterogeneous classes (McKenzie et al., 2008).

All of the stakeholders, particularly disadvantageous groups, must be involved in corporate practices and processes significantly in order to secure social justice (Ryan, 2006). In this respect, as social justice leaders, school principals perform inclusive practices for students from different races, sexual identities, languages, social classes, disabilities, religions and skills (Capper & Young, 2014). By performing inclusive and democratic practices, they endeavour to create a society that is comprised of individuals from different cultural groups (Furman, 2012). They lay emphasis on collaboration and solidarity (Theoharis, 2007). They believe that all of the stakeholders are important (DeMatthews, 2014). They realize social justice not by themselves, but in collaboration with school's stakeholders (Capper & Young, 2014). In this respect, they establish trust-based relations with the school's stakeholders and with different cultural groups mutually (Furman, 2012). Therefore, social justice leaders must have various characteristics, i.e. they must have effective communication skills, must have emotional awareness and must be capable of establishing long-term relations etc. (DeMatthews, 2014).

1.2. School Belonging

The sense of belonging, which sources from the need of people to get in contact with each other and to maintain such relationship (Baumeister & Leary, 1995), is a subject that is researched by educational researchers frequently. One of the reasons of giving importance to the sense of school belonging is that schools provide academic information and they also support the psychological development of students (Chiu, Chow, McBride, & Mol, 2016). School is defined as a social process, which ensures that students learn by establishing relationships with and by interacting with the persons around them, particularly with their teachers and classmates (S´anchez, Col´on & Esparza, 2005). In this respect, schools play a critical role in allowing individuals to establish social relations, and they provide unique opportunities that affect the sense of belonging and that ensure satisfaction of the need to establish relationships (Allen & Bowles, 2012; Cemalcilar, 2010). Furthermore, as long as the school is perceived as a society, various concepts related with the society, such as school belonging, must be discussed and analyzed. Since an individual's sense of belonging to a society and group shall produce the sense of protecting and improving such structure, it is critical for any student to feel like a part of the school so that he/she may protect and improve the school (Akar-Vural, Yılmaz-Özelçi, Çengel & Gömleksiz, 2013). Thus, the sense of school belonging is prioritized due to the increase in the rate of violence at schools (Ma, 2003). Also, the sense of belonging to the class is positively related to students' intrinsic motivation, task value (i.e. that they consider any academic events performed in the class as important and beneficial) and academic self-efficacy (Freeman, Anderman & Jensen, 2007). In another research (Kia-Keating & Ellis, 2007), it was concluded that the sense of school belonging was negatively related to depression, and that the same was positively related to self-efficacy. S´anchez et al. (2005) determined that school belonging predicted academic motivation, absence and academic effort, which was included to academic output classification. Lam, Chen, Zhang and Liang (2015) emphasized that school belonging was related to academic achievements. Thus, we may state that the sense of school belonging is prioritized in education due to its correlation with psychological and academic factors.

Belonging, which has a crucial role in internalization and transfer of cultural norms and values (Johnson, 2009), is defined in various ways in the field of education. For example, according to Hamm and Faircloth (2005), school belonging determines the students' perceptions, which source from their interpersonal relations with the individuals at school, with regards to their being loved, respected and valued by others. According to Booker (2004), it refers to the students' emotions with regards to them being important and respectable members of schools; and according to Goodenow and Grady (1993), it is a personal mood state with regards to a student's level of acceptance, being respected, being included and supported by their teachers and other persons in the school.

In the literature, there is a general consensus that the sense of belonging is a need and that positive results are obtained by meeting this need (Anderman, 2002). In case the sense of belonging is met, then individuals become happy, satisfied, joyful and peaceful (Baumeister & Leary, 1995). Students, whose school belonging is high, believe that school more fun and beneficial (Gillen-O'Neal & Fuligni, 2013), and they have a high self-esteem, and their general health condition is good (Ma, 2003), and they perceive themselves as more competent and independent, and their internal motivation levels are higher, and they have a stronger sense of identity, and they are keen to conform to established norms and values, and to adopt the same. They have more positive attitudes towards the school, class, their teachers and peers. They have a higher potential to

love school, and they participate to school activities more and they are more committed to the school (Osterman, 2000). In case the sense of belonging is not met, student may endeavour to satisfy his/her need for belonging in a gang (Akar-Vural et al., 2013). Also, such individuals may come up with various psychological, academic and behavioural problems, such as jealousy, anxiety, stress, depression, loneliness, sadness, suicide, dissonance, neurotic behaviours (Baumeister & Leary, 1995), violence, low level of interest in the school, low level of success, leaving school (Osterman, 2000), and exhibiting illegal behaviours (Doğan, 2015) etc.

1.3. The Relationship between Social Justice Leadership and Sense of School Belonging

Social justice is about ensuring individuals who are disadvantaged in terms of race, social class, economic level, culture, gender, disability, sexual orientation, etc for developing their opportunities and possibilities and having equal opportunities and possibilities with other individuals (Chiu & Walker, 2007). Especially in schools, where students have characteristics of different race, religion, culture, socioeconomic level etc., school principals should adopt social justice leadership to offer educational opportunities with equal opportunities to all students and to implement inclusive practices for all students (Zembylas & Lasonos, 2017). Social justice leadership requires creating an environment where individuals respect each other's differences, care for each other, and include inclusive and democratic practices (Furman, 2012). Such an environment can increase students' belonging to school. As a matter of fact, belonging is to feel that the individual is connected to a community without being worried that she/he will be exposed to any exclusionary behavior due to gender, culture, race, language, sexual orientation and other differences (Gardiner, Tenuto & Yamamoto, 2015). Belonging of individuals increases in the school environment where individuals are accepted by others, their needs are given importance, respected, included and supported (Johnson, 2009). On the other hand, it is emphasized that an environment based on belonging should be created in order to ensure social justice in schools (Theoharis, 2009). So, one of the focal points of the actions of the school principals trying to provide social justice in the school is to make the student feel belonging to the school (Arar, 2015). In this case, it can be said that the relationship between social justice leadership and school belonging is theoretically stated. However, there is a deficiency in supporting this relationship with empirical evidence. This research contributes to the elimination of this deficiency by revealing the relationship between school principals 'social justice leadership behaviors and students' belonging to school with empirical evidence.

1.4. Objective of the Research

The objective of this research is to analyze the correlation between students' sense of school belonging and social justice leadership behaviours of school principals. Thus, in this research, school belonging of students and the level of the perceptions of school principals towards social justice leadership behaviours were analyzed, whether these perceptions vary on the basis of certain variables (gender and grade level of students and socio-economic status of the school), whether there is a significant correlation between school belonging of students and social justice leadership behaviours of school principals, and whether social justice leadership behaviours of school principals is the predictor of school belonging of students.

2. Method

This research is in correlation screening model. In correlation screening model, it is analyzed whether two or more variables affect each other, and the correlation between variables is analyzed without making any interference to these variables in order to determine how they are affected from each other (Walliman, 2011), and the direction and degree of this correlation are determined (Fraenkel, Wallen & Hyun, 2012). In this respect, the correlation between social justice leadership behaviours of school principals and school belonging of students were analyzed, and the direction and degree of this correlation were determined. Also, the prediction level of social justice leadership behaviours of school principals for school belonging of students were examined.

2.1. Participants

The population of the research is comprised of the students, who are studying in official secondary education institutions available within the borders of Central district, Adıyaman province. Cluster sampling method is used in the research. Population is divided into clusters in the cluster sampling method, and

sample is created out of the clusters selected randomly out of these clusters (Bhattacherjee, 2012). It may be required often to divide clusters into sub-clusters and to make selections out of these sub-clusters randomly. Therefore, there may be more than one stage in cluster sampling methods, and in this case, it may also be referred to as multistage cluster sampling method (Babbie, 2011). In this respect, high schools were grouped as low-moderate and high socio-economic levels, and two schools were selected randomly from each socio-economic level, and one class was selected randomly from each grade level in each school. Thus, total of 625 students, who were receiving education in grades 9, 10, 11 and 12 in 6 schools, was subjected to the scales in the 1st semester of 2017-2018 academic year. The scales that were completed incompletely (more than 10%) and deficiently and the scales with extreme value were cleaned, and the data obtained from remaining 510 scales was analyzed. 294 of the students, who participated to the research, were female, and 216 of the same were male. 146 of the students were studying in 9th grade, 153 of the same were studying in 10th grade, 112 of the same were studying in 11th grade, 99 of the same were studying in 12th grade, and 134 of these students were studying in schools, in which socio-economic status was low, 221 of the same were studying in schools, in which socio-economic status was moderate, and 155 of the same were studying in schools, in which socio-economic status was high.

2.2. Data Collection Tools

In the research, "Students' Sense of School Belonging Scale" and "Social Justice Leadership Scale" were used as data collection tool. "Social Justice Leadership Scale" was developed by Özdemir and Kütküt (2015), and it is a 5-point Likert scale comprised of three dimensions and 24 items in total. Support dimension of the scale is comprised of 12 items, and critical consciousness dimension was comprised of 9 items, and participation dimension was comprised of 3 items. The increase in scale scores indicates that the level of school principals' to exhibit social justice leadership behaviours has increased. While the Cronbach Alpha internal consistency coefficient of the scale was .94, it is determined as .92 in this study. "Sense of School Belonging Scale" was developed by Goodenow (1993), and this scale was adapted to Turkish by Sarı (2015) on students studying in the second level of primary education. Then, Sarı (2013) adapted the scale to high school students, and the "Sense of School Belonging Scale" that high school students were subjected is used in the research. Scale is a 5-point Likert scale that is comprised of 2 dimensions and 18 items in total, including rejection dimension (5 items) and belonging dimension (13 items). While the Cronbach Alpha internal consistency coefficient of the scale was .89, it is determined as .83 in this study. An increase in scores related with the rejection dimension of the scale indicates that the sense of belonging has decreased, and an increase in scores related with the belonging dimension indicates that the sense of belonging has increased. As the total score of the scale was being calculated, the scores related with the items of rejection dimension were reversed. Mean scores, which were used in assessment of the scales, were shown in Table 1.

Table 1. Mean scale scores used in scales for assessment of arithmetic averages

Scale	Dimension	Number of items	Not True at all	Not True	I am Hesitant	True	Completely True
Sense of school belonging scale	Rejection dimension	5	5-9	9.1-13	13.1-17	17.1-21	21.1-25
	Belonging dimension	13	13-23.4	23.5-33.8	33.9-44.2	44.3-54.6	54.7-65
	Total	18	18-32.4	32.5-46.8	46.9-61.2	61.3-75.6	75.7-90

Scale	Dimension	Number of items	I disagree	I agree very little	I agree a little	I mostly agree	I totally agree

		12	12-21.6	21.7-31.2	31.3-40.8	40.9-50.4	50.5-60
Social justice leadership scale	Support dimension						
	Critical consciousness dimension	9	9-16.2	16.3-23.4	23.5-30.6	30.7-37.8	37.9-45
	Participation dimension	3	3-5.4	5.5-7.8	7.9-10.2	10.3-12.6	12.7-15
	Total	24	24-43.2	43.3-62.4	62.5-81.6	81.7-100.8	100.9-120

2.3. Data Collection and Analysis

The scales that are used in the research were applied by the researcher by visiting schools in 2017-2018 academic year. The scales that consisted of extreme data (32 units) as well as incomplete and defective scales (83 units), were removed from the data set. Since the skewness values of data (between -.367 and 1.158) were below 3 and Kurtosis values (between -.980 and .376) were below 10 , it was considered that data distributed normally (Kline, 2011). Also, the fact that the bivariate correlation value between independent variables is below .80 (between .346 and .737), that the tolerance value is above .20 (between .438 and .844), that the VIF value is below 10 (between 1.185 and 2.285) and that the CI value is below 30 (between 5.114 and 14.359), it may indicate that there is no multicollinearity problem between independent variables (Büyüköztürk, 2012). Data are analyzed by using descriptive statistical analyzes, t-test, one-way analysis of variance, correlation analysis and multiple linear regression analysis. The r value of the correlation and regression analysis was interpreted as for values .00 and .29 low, .30 and .69 average, and .70 high (Büyüköztürk, 2012).

3. Results

In Table 2, you may find the level of the students' perception of the social justice leadership behaviours of school principals and of their school belonging.

Table2. Students' perception of social justice leadership and school belonging

Dimensions of the scales	N	Min	Max	$\bar{X}$	SS	Level
Rejection dimension	510	5.00	22.00	12.70	3.88	Not true
Belonging dimension	510	19.00	65.00	43.76	9.63	I am Hesitant
Sense of school belonging scale	510	31.00	89.00	61.06	12.07	I am Hesitant
Support dimension	510	12.00	60.00	38.24	10.02	I agree a little
Critical consciousness dimension	510	9.00	45.00	30.10	9.06	I agree a little
Participation dimension	510	3.00	15.00	6.31	3.35	I agree very little
Social justice leadership scale	510	31.34	118.00	74.64	19.35	I agree a little

According to Table 2, the students' perception of the rejection dimension of the sense of school belonging scale was categorized under the option of "Not True", and the students' perception in the belonging dimension and the sense of school belonging was categorized under the option of "I am Hesitant". The students' perception in the entire social justice leadership scale and in the dimensions of support and critical consciousness were categorized as "I agree a little", and their perception of the participation dimension was categorized under the option of "I agree very little".

In Table 3, you may find the results of the analysis made on students' perception of school principals' social justice leadership behaviours and their school belonging by gender.

Table 3. Social justice leadership and school belonging by gender

Dimensions	Gender	N	$\bar{X}$	S	sd	t	p
Rejection dimension	Female	294	12.53	3.80	508	-1.152	.250
	Male	216	12.93	3.98			
Belonging dimension	Female	294	44.19	9.73	508	1.160	.247
	Male	216	43.19	9.48			
Sense of school	Female	294	61.65	11.90	508	1.296	.195

					sd	F	P	
belonging scale	Male	216	60.25	12.28				
Support dimension	Female	294	39.91	9.82	508	4.476	.000	
	Male	216	35.96	9.86				
Critical consciousness dimension	Female	294	31.36	9.32	487.024	3.757	.000	
	Male	216	28.39	8.41				
Participation dimension	Female	294	6.45	3.34	508	1.169	.243	
	Male	216	6.10	3.35				
Social justice leadership scale	Female	294	77.72	19.60	481.044	4.307	.000	
	Male	216	70.46	18.21				

Note. Critical consciousness (Levene=7.096, p=.008), social justice (Levene=4.631, p=.032).

According to the findings in Table 3, there were significant differences in the students' perception of the social justice leadership scale in its entirety (t(481.044)=4.307, p<.05), and of the dimensions of support (t(508)=4.476, p<.05) and critical consciousness (t(487.024)=3.757, p<.05). This significances were in favour of the female students.

In Table 4, you may find results of the analysis made on students' perception of school principals' social justice leadership behaviours and their school belonging in terms of socio-economic status of the school.

Table 4. Social justice leadership and school belonging in terms of socio-economic status of the school

Dimensions	Socio-economic Status	N	$\bar{X}$	S	sd	F	P	Difference
Rejection dimension	Low	134	13.19	4.06	2	1.488	.227	
	Moderate	221	12.59	3.84	507			
	High	155	12.45	3.77	509			
	Total	510	12.70	3.88				
Belonging dimension	Low	134	42.20	9.67	2	2.531	.081	
	Moderate	221	44.11	9.65	507			
	High	155	44.62	9.47	509			
	Total	510	43.76	9.63				
Sense of school belonging scale	Low	134	59.01	12.19	2	2.766	.064	
	Moderate	221	61.52	12.01	507			
	High	155	62.17	11.91	509			
	Total	510	61.06	12.07				
Support dimension	Low	134	36.91	10.11	2	3.503	.031	Low-High
	Moderate	221	37.87	9.99	507			
	High	155	39.90	9.82	509			
	Total	510	38.24	10.02				
Critical consciousness dimension	Low	134	31.31	8.57	2	4.591	.011	Low-Moderate
	Moderate	221	28.73	8.98	507			
	High	155	31.02	9.37	509			
	Total	510	30.10	9.06				
Participation dimension	Low	134	5.13	2.65	2	23.240	.000	Low-Moderate, Moderate-High
	Moderate	221	7.34	3.46	486.989			
	High	155	5.85	3.30				
	Total	510	6.31	3.35				
Social justice leadership scale	Low	134	73.34	18.48	2	1.388	.250	
	Moderate	221	73.94	19.63	507			
	High	155	76.77	19.62	509			
	Total	510	74.64	19.35				

Not: Participation (Levene= 5.414, p=.005)

According to Table 4, there were significant differences in students' perception of the dimensions of social justice leadership in terms of socio-economic status of the school, i.e. support $(F(2, 507)= 3.503, p<.05)$, critical consciousness $(F(2, 507)= 4.591, p<.05)$ and participation (Brown-Forsythe $(2, 486.989)= 23.240, p<.05)$. According to the Scheffe test, which was performed for the support dimension of social justice leadership, there was a significant difference between low socio-economic status $(\bar{X}=36.91)$ and high socio-economic status $(\bar{X}=39.90)$ in favour of high socio-economic status, and in the critical consciousness dimension, there was a significant difference between low socio-economic status $(\bar{X}=31.31)$ and moderate socio-economic status $(\bar{X}=28.73)$ in favour of low socio-economic status. According to the Dunnett's C test, which was performed for the participation dimension of social justice leadership, there was a significant difference between moderate socio-economic status $(\bar{X}=7.34)$ and low socio-economic status $(\bar{X}=5.13)$ and high socio-economic status $(\bar{X}=5.85)$ in favour of moderate socio-economic status.

In Table 5, you may find results of the analysis made on students' perception of school principals' social justice leadership behaviours and their school belonging in terms of grade levels of students.

Table 5. Social justice leadership and school belonging in terms of grade levels of students

Dimensions	Grade Level	N	$\bar{X}$	S	sd	F	P	Difference
Rejection dimension	9th Grade	146	13.09	4.00				
	10thGrade	153	12.41	3.72	3			
	11thGrade	112	12.34	3.92	506	1.316	.268	
	12thGrade	99	13.01	3.88	509			
	Total	510	12.70	3.88				
Belonging dimension	9th Grade	146	44.24	9.27				
	10thGrade	153	43.88	10.43	3			
	11thGrade	112	43.67	9.60	506	.339	.797	
	12thGrade	99	42.99	8.99	509			
	Total	510	43.76	9.63				
Sense of school belonging scale	9th Grade	146	61.15	11.64				
	10thGrade	153	61.48	13.03	3			
	11thGrade	112	61.33	11.77	506	.345	.793	
	12thGrade	99	59.98	11.59	509			
	Total	510	61.06	12.07				
Support dimension	9th Grade	146	40.12	9.70				
	10thGrade	153	38.45	9.81	3			9-12, 10-12, 11-12
	11thGrade	112	39.31	9.57	506	8.716	.000	
	12thGrade	99	33.91	10.18	509			
	Total	510	38.24	10.02				
Critical consciousness dimension	9th Grade	146	31.59	8.37				
	10thGrade	153	29.66	8.93	3			
	11thGrade	112	31.26	9.30	506	5.430	.001	9-12, 11-12
	12thGrade	99	27.26	9.35	509			
	Total	510	30.10	9.06				
Participation dimension	9th Grade	146	6.20	3.27				
	10thGrade	153	6.58	3.38	3			
	11thGrade	112	6.69	3.72	470.964	2.347	.072	
	12thGrade	99	5.61	2.86				
	Total	510	6.31	3.35				
Social justice leadership scale	9th Grade	146	77.92	18.05				
	10thGrade	153	74.70	18.98	3			9-12, 10-12, 11-12
	11thGrade	112	77.26	19.40	506	7.831	.000	
	12thGrade	99	66.78	19.75	509			
	Total	510	74.64	19.35				

Note. Participation (Levene= 3.598, p=.014)

According to Table 5, there were significant differences in students' perception of the social justice leadership scale in its entirety (F(3, 506)= 7.831, p<.05) and of the dimensions of support (F(3, 506)= 8.716, p<.05) and critical consciousness (F(3, 506)= 5.430, p<.05) in terms of grade levels of students. According to the Scheffe test, which was performed for the social justice leadership scale in its entirety, there was a significant difference between students of 12th Grade ($\bar{X}$=66.78) and 9th Grade ($\bar{X}$=77.92), 10th Grade ($\bar{X}$=74.70) and 11th Grade ($\bar{X}$=77.26) against students of 12th grade; in support dimension, there was a significant difference between students of 12th Grade ($\bar{X}$=33.91) and 9th Grade ($\bar{X}$=40.12), 10th Grade ($\bar{X}$=38.45) and 11th Grade ($\bar{X}$=39.31) against students of 12th grade; in critical consciousness dimension, there was a significant difference between students of 12th Grade ($\bar{X}$=27.26) and 9th Grade ($\bar{X}$=31.59) and 11th Grade ($\bar{X}$=31.26) against students of 12th grade.

In Table 6, you may find results of the analysis made on the correlation between students' perception of school principals' social justice leadership behaviours and their school belonging.

Table 6. Correlation analysis results of variables

Variables	1	2	3	4	5	6	7
Rejection dimension	1						
Belonging dimension	-.506**	1					
Sense of belonging scale	-.725**	.961**	1				
Support dimension	-.191**	.413**	.391**	1			
Critical consciousness dimension	-.173**	.401**	.376**	.737**	1		
Participation dimension	-.049	.194**	.171**	.384**	.346**	1	
Social justice leadership scale	-.189**	.435**	.408**	.930**	.910**	.534**	1

According to Table 6, there was a significant negative correlation of low level between the rejection dimension and support (r= -.191, p<,01) and critical consciousness (r= -.173, p<,01), and there was no significant correlation with the participation dimension (p>,05). There was a significant positive correlation of moderate level between the belonging dimension and support (r= .413, p<,01) and critical consciousness (r=.401, p<,01), and there was a significant positive correlation of low level with the participation dimension (r= .194, p<,01). There was a significant positive correlation of moderate level between the sense of school belonging and social justice leadership behaviours of school principals (r= .408, p<,01).

In Table 7, you may find results of the analysis made on the prediction of students' perception of the social justice leadership behaviours of school principals in terms of their perception of school belonging.

Table 7. Multiple linear regression analysis results

Dependent variable	Variables	B	Standard Error B	β	t	p
Rejection dimension	Stable	15.627	.681		22.932	.000
	Support	-.058	.025	-.150	-2.275	.023
	Critical Consciousness	-.032	.028	-.074	-1.142	.254
	Participation	.039	.055	.034	.717	.474
	R= .200 R^2 = .040 F(3.506)= 6.992 p= .000					
Belonging dimension	Stable	27.465	1.553		17.684	.000
	Support	.239	.058	.248	4.107	.000
	Critical Consciousness	.222	.063	.209	3.513	.000
	Participation	.077	.125	.027	.617	.538
	R= .438 R^2 = .191 F(3.506)= 39.942 p= .000					
Sense of belonging scale	Stable	41.838	1.972		21.216	.000
	Support	.297	.074	.246	4.021	.000
	Critical Consciousness	.254	.080	.191	3.161	.002
	Participation	.038	.159	.010	.238	.812

R= .412	R^2 = .170	F(3.506)= 34.463	p= .000

According to Table 7, in consideration of the three dimensions of social justice leadership, there was a significant correlation of low level with rejection dimension (R=.200 ,R^2 = .040,   p< .01), there was a significant correlation of moderate level with belonging dimension (R=.438 , R^2 = .191,   p< .01) and the sense of school belonging (R=.412 , R^2 = .170,   p< .01). Social justice scale with its three dimensions predicted the dimensions of rejection, belonging, and sense of school belonging significantly. By the three dimensions of social justice leadership, 4% of total variance correlated with rejection dimension was explained; approximately 19% of the total variance correlated with belonging dimension was explained; and 17% of the total variance correlated with the sense of school belonging was explained. While only support dimension was a significant predictor of rejection dimension, support and critical consciousness dimensions were a significant predictor of belonging dimension and the sense of school belonging.

4. Discussion and Conclusion

In the research, it was detected that students' perception of the sense of school belonging scale was categorized as "I am Hesitant" in its entirety. Accordingly, it may be concluded that students' school belonging is at moderate level. This finding that was obtained may indicate that students' need for school belonging is not satisfied sufficiently. It is believed that emotional requirements of students are satisfied out of the class or school, and required level of emphasis is not laid on the sense of belonging (S´anchez, Col´on & Esparza, 2005). However, it is determined that it is important to satisfy the need for belonging in schools at any age and in any level of education (Osterman, 2000). In the researches conducted in the past, it may be observed that different results were obtained in relation with school belonging of high school students. For example, school belonging levels of high school students was found as high by Aşlamacı and Eker (2016) and Altınsoy and Karakaya-Özyer (2018), while Sarı (2013) determined that the same was above average. Moreover, in a qualitative research conducted on vocational high schools (Ulusoy & Erkuş, 2017), it was observed that the number of students, who feel that they belong to the school and who do not feel like that, were close to each other. When social relations in schools predict students' school belonging was considered (Cemalcilar, 2010), this difference is the literature may be correlated with the character of the social relations in the schools of individuals included to the sample group.

The level of the perception of students' on school principals' exhibiting social justice leadership behaviours was categorized as "I agree a little". According to this finding, it may be concluded that school principals exhibit social justice leadership behaviours at a moderate level. This finding is consistent with the findings obtained in other researches (Büyükgöze et al., 2018; Özdemir, 2017). Accordingly, it may be concluded that school principals do not exhibit social justice leadership behaviours at a sufficient level. School principals may across to various impeding factors that source internally and externally as they perform social justice leadership practices, such as impeding attitudes and beliefs of the personnel, privileged and narrow minded expectations of parents, bureaucratic practices, lack of funds and laws and regulations etc. (Theoharis, 2007). In Turkey, legal regulations are determined as the factors that prevent social support studies the most. Other factors are not being able to obtain sufficient level of information of disadvantageous students, unsuitability of the physical facilities of the school, social insensitivity and restricted economic opportunities in schools (Tomul, 2009).

In the research, no significant difference was found in the school belonging of students by gender. This finding is consistent with certain researches (S´anchez et al., 2005; Sarı, 2013). However, Aşlamacı and Eker (2016) determined that school belonging of female students was higher than male students. Babakhani (2014) concluded that the sense of school belonging of males was higher than female students. The inconsistency in the literature may make us comment that there is a need to make more number of researches on whether gender is an effective variable on belonging or not.

Another finding that was obtained from the research was that there is a significant difference in favour of female students in the perception of students' with regards to the social justice leadership of school principals by students' gender. When findings are analyzed in terms of dimensions, it may be observed that there was a significant difference in favour of female students in terms of the dimensions of "support" and "critical consciousness". This situation may indicate that school principals are more understanding, interested and supportive in female students. The fact that female students are more satisfied in their

relations with school administration in comparison to male students may support this idea. Furthermore, this finding may be correlated with the study of Özdemir (2012) which addresses that female students and male students perceive the school. Female students perceive schools more like a place for protection-development and a home, but male students perceive schools as a place of oppression.

In the research, it was determined that students' school belonging do not differ in terms of the socio-economic status of the school. This finding indicated that the sense of school belonging of students studying at schools, which have different socio-economic statuses, is similar. Likewise, Cemalcilar (2010) obtained the same finding in secondary school students. However, according to Sarı (2013), who analyzed the school belonging of high school students, there was a significant difference between schools, in which socio-economic status was low, and schools, in which socio-economic status was moderate and high, against schools, in which socio-economic status was low. According to Özgök (2013), who studied school belonging of secondary school students, there was a significant difference between schools, in which socio-economic status was high, and schools, in which socio-economic status was moderate and low, in favour of schools, in which socio-economic status was high. This inconsistency in the literature may indicate that, it is not clarified whether the socio-economic status of a school may be considered as an effective variable on school belonging of students.

In the research, it was determined that the perceptions of students, who were studying in schools with different socio-economic statuses, with regards to the social justice leadership behaviours of school principals were similar. However, it must be considered that, in support dimension of social justice leadership, there was a significant difference between schools of low socio-economic status and schools of high socio-economic status in favour of the schools of high socio-economic status; in critical consciousness dimension, that there was a significant difference between schools of low socio-economic status and schools of moderate socio-economic status in favour of schools of low socio-economic status; and in participation dimension of social justice leadership, that there was a significant difference between schools of moderate socio-economic status and schools of low socio-economic status and schools of high socio-economic status in favour of schools of moderate socio-economic status. This situation may indicate that social justice leadership practices are different in schools with different socio-economic statuses. The difference between schools in terms of social justice leadership practices (Slater, Potter, Torres & Briceno, 2014) may source from the fact that individual, social, politic and organizational variables that affect schools and societies are different from each other (DeMatthews, 2015).

According to this research, there was no significant difference in students' perception of school belonging in terms of grade levels of students. However, according to the research conducted by Sarı (2013), 9th grade students had the sense of school belonging more than 10th and 11th grade students. Furthermore, according to Aşlamacı and Eker (2016), there was a significant difference between the school belonging levels of students studying in 12th grade and school belonging levels of students studying in 10th and 11th grade in favour of 12th grade students. This difference in the literature may source from the factors that affect the sense of belonging of students from different grade levels. For example, Ma (2003) determined that the sense of belonging and self-esteems of 6th and 8th grade students were different. When the variables that affect the sense of belonging were analyzed, it was determined that self-esteems of students were a strong predictor of their sense of belonging. In this respect, examination of the variables, which affect school belonging of students, at grade level comparatively may clarify such inconsistency in the literature.

Another finding that was obtained from the research is that there was a significant difference between 12th grade students and 9th, 10th and 11th grade students, against students studying in 12th grade, in terms of students' perception of the social justice leadership behaviours of school principals in terms of the grade level of students. According to this finding, 12th grade students believed that school principals exhibit social justice leadership behaviours less in comparison to students studying in other grade levels. When one considers that social justice leaders exhibit relative behaviours towards students and that they care about them (Slater et al., 2014), this finding may indicate that school principals are less caring and supportive towards 12th grade students. These students may be considered as graduates since it will be their last academic year in their schools.

In this research, it was found a positive correlation of moderate level between students' perception of the social justice leadership behaviours of school principals and their school belonging. Students' perception of the social justice leadership of school principals correspond to approximately 17% of the variance related with their school belonging. This finding may indicate that, students may feel that they belong to the school more, in case school principals exhibit social justice leadership behaviours. In the literature, although it is emphasized that teachers and peer groups are important in general in the development of the sense of school belonging, it was determined that students' value their relations with their administrators, and that their social interactions with their administrators affect their feelings towards the school (Cemalcilar, 2010). On the other hand, according to Ma (2003), when compared with teachers, administrators also make a great impact to affect the sense of belonging of students. Although school administrators do not establish one-on-one relations with students, the affect of administrators must be considered in development of school belonging since they affect the atmosphere of the school as the final legal regulators and decision-makers of the school (Cemalcilar, 2010). Thus, it was determined that the climate of the school is related with the leadership behaviours of school principals (Şentürk & Sağnak, 2012), and that the sense of belonging may develop in a school climate, in which students are treated fairly and which makes students feel safe (Ma, 2003). School principals, who exhibit social justice leadership behaviours, exhibit caring behaviours towards students and they care about students (Slater et al., 2014), and they aim to create a warm and reliable climate, and an equal and fair environment in schools (Theoharis, 2007). In this context, it may be stated that it would be expected for the school belonging of students to increase as a result of realization of social justice leadership behaviours by school principals.

In the research, it was concluded that the school belonging of students shall increase, in case school principals exhibit social justice leadership behaviours. In this context, school principals may exhibit sensitive behaviours as social justice leaders; they may treat students respectfully. They may include students to decision-making processes by laying emphasis on collaboration and solidarity. They may endeavour to meet the requirements of students, and they may ensure that students are relaxed and happy in the school; and they may try to adopt that education is beneficial for them. They may spare time to listen to and discuss the ideas of students in order to show that they care about students. They may develop new ways to include families to education by laying emphasis on the families of students. By organizing various events and activities in the school, in which students may improve their skills (sports activities and music activities etc.), they may ensure that students adopt the school and that they perceive the school as a place, in which they may improve their skills. Furthermore, it is advised to school principals to treat students as individuals, to lay emphasis on their emotions, to ignore the mistakes they made in the past, and to not to judge them by their looks and place they come from (Slater et al., 2014).

Social justice leaders are the leaders, who focus on any inequalities that disadvantageous groups experience in their lives, design and implement the policies that shall eliminate such inequalities (DeMatthews & Mawhinney, 2014). Inequalities that are in question for disadvantageous groups may bring a negative perspective to the school community, and may decrease the sense of belonging (Booker, 2004). For example, students coming from different races and ethnic groups may come across to negative templates due to their social identities. Therefore, such persons may be trivialized in social groups. In this case, concerns of a group may increase in connection with negative intellectual template stereotypes that target them, and individuals, who are among the members of such labelled groups, may have concerns that they do not belong to such environments. Such situation may make negative effects on the school belonging and performance of students included to the group (Murphy & Zirkel, 2015). Thus, the sense of school belonging is analyzed as one of the reasons of the difference between the achievements of minority and majority students (Booker, 2006). Therefore, one may analyze the effect that social justice leadership behaviours, which are exhibited by school principals, make on the school belonging of disadvantageous students. Furthermore, one may make a contribution to the literature in terms of the effect of social justice leadership on students by researching the correlation between social justice leadership justice of school principals and students' burnout, critical thinking competencies and problem solving competencies etc. Also, one may analyze in detail the effect of social justice leadership behaviours exhibited by school principals by conducting qualitative researches.
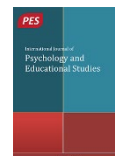
References

Akar-Vural, R., Yılmaz-Özelçi, S., Çengel, M., & Gömleksiz, M. (2013). The development of the "Sense of Belonging to School" scale. *Eurasian Journal of Educational Research, 53*, 215-230. doi:10.14689/ejer.2013.53.12

Allen, K. A., & Bowles, T. (2012).Belonging as a guiding principle in the education of adolescents. *Australian Journal of Educational & Developmental Psychology, 12*, 108-119.

Altınsoy, F. & Karakaya-Özyer, K. (2018). Liseli ergenlerde okula aidiyet duygusu: Umutsuzluk ve yalnızlık ile ilişkileri. [School belonging sense for high school adolescence: The relationship with hopelessness and loneliness]. *Elementary Education Online,17*(3), 1751-1764. doi:10.17051/ilkonline.2018.466429

Anderman, E. M. (2002). School effects on psychological outcomes during adolescence. *Journal of Educational Psychology, 94*(4), 795–809. doi:10.1037/0022-0663.94.4.795

Arar, K. H. (2015). Leadership for equity and social justice in Arab and Jewish schools in Israel: Leadership trajectories and pedagogical praxis. *International Journal of Multicultural Education, 17*(1), 162-187.

Aşlamacı, İ., & Eker, E. (2016). İmamhatip lisesi öğrencilerinin okul aidiyet ve dinî tutum düzeyleri arasındaki ilişkinin incelenmesi. [The investigation on relations between religious attitudes and school belonging levels of students of Imam Hatip High School]. *Journal of Values Education, 14*(32), 7-38.

Babakhani, N. (2014). Perception of class and sense of school belonging and selfregulated learning: A causal model. *Procedia - Social and Behavioral Sciences, 116*, 1477 – 1482. doi:10.1016/j.sbspro. 2014.01.420

Babbie, E. (2011). *The basics of social research.* Belmont: Wadsworth.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bullettin, 117*(3), 497-529. doi:10.1037/0033-2909.117.3.497

Berkovich, I. (2014). A socio-ecological framework of social justice leadership in education.*Journal of Educational Administration, 52*(3), 282-309. doi:10.1108/JEA-12-2012-0131

Bhattacherjee, A. (2012). Social science research: Principles, methods, and practices. *USF Tampa Library Open Access Collections.* Retrieved from https://scholarcommons.usf.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com.tr/&httpsredir=1&article=1002&context=oa_textbooks

Booker, K. C. (2004). Exploring school belonging and academic achievement in African American adolescent. *Curriculum and Teaching Dialogue, 6*(2), 131-143.

Booker, K. C. (2006). School belonging and the African American adolescent: What do we know and where should we go? *The High School Journal, 89*(4), 1-7. doi:10.1353/hsj.2006.0005

Büyükgöze, H., Şayır, G., Gülcemal, E., &Kubilay, S. (2018). Examining the relationship between social justice leadership and student engagement among high school students. *Çukurova University Faculty of Education Journal, 47*(2), 932-961. doi:10.14812/cuefd.373808

Büyüköztürk, Ş. (2012).*Sosyal bilimler için very analizi el kitabı.* [Manual of data analysis for social sciences]. Ankara: Pegem.

Capper, C. A., & Young, M. D. (2014). Ironies and limitations of educational leadership for social justice: A call to social justice educators. *Theory Into Practice, 53*(2), 158-164. doi:10.1080/00405841.2014. 885814

Cemalcilar, Z. (2010). Schools as socialisation contexts: Understanding the impact of school climate factors on students' sense of school belonging.*Applied Psychology: An İnternational Review, 59*(2), 243–272. doi:10.1111/j.1464-0597.2009.00389.x

Chiu, M. M., Chow, B. W., McBride, C., & Mol, S. T. (2016). Students' sense of belonging at school in 41 countries: Cross-cultural variability. *Journal of Cross-Cultural Psychology, 47*(2), 175–196. doi:10.1177/0022022115617031

Chiu, M. M., & Walker, A. (2007). Leadership for social justice in Hong Kong schools: Addressing mechanisms of inequality. *Journal of Educational Administration*, *45*(6), 724-739. doi:10.1108/09578230710829900

DeMatthews, D. (2014). Dimensions of social justice Leadership: A critical review of actions, challenges, dilemmas, and opportunities for the inclusion of students with disabilities in U.S. schools. *RevistaInternacional de Educaciónpara la Justicia Social, 3*(2), 107-122.

DeMathews, D. (2015). Making sense of social justice leadership: A case study of a principal's experiences to create a more inclusive school. *Leadership and Policy in Schools, 14*(2), 139-166. doi:10.1080/15700763.2014.997939

DeMatthews, D., & Mawhinney, H. (2014). Social justice leadership and inclusion: exploring challenges in an urban district struggling to address inequities. *Educational Administration Quarterly, 50*(5), 844-881. doi:10.1177/0013161X13514440

Doğan, A. (2015). *Ortaöğretim öğrencilerinin kuraldışı davranış göstermelerinde öğrenim hayatlarını denetleyememe inancı, özsaygı ve okula aidiyet duygularının rolü.* [The role of sense of futility, self-esteem and sense of school belonging in secondary school students' misbehaviours].(Unpublished master's thesis). Mersin University Institute of Educational Sciences, Mersin.

Durmaz, A. (2008). *Liselerde okul yaşam kalitesi (Kırklareli ili örneği).* [Quality of school life in high schools (The case of Kırklareli province)]. (Unpublished master's thesis). Trakya University Institute of Social Sciences, Edirne.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education.* New York: McGraw Hill.

Freeman, T. M., Anderman, L. H., & Jensen, J. M. (2007). Sense of belonging in college freshmen at the classroom and campus levels. *The Journal of Experimental Education, 75*(3), 203-220. doi:10.3200/JEXE.75.3.203-220

Furman, G. (2012). Social justice leadership as praxis: Developing capacities through preparation programs. *Educational Administration Quarterly, 48*(2), 191-229. doi:10.1177/0013161X11427394

Gardiner, M. E., Tenuto, P. L., & Yamamoto, J. K. (2015). Leading for student belongingness in P-12 schools: A teaching case for school administrators and teacher leaders. In P. L. Tenuto (Ed.), *Renewed accountability for access and excellence: Applying a model for Democratic professional practice in education* (pp. 243–260). London: Lexington Books.

Gillen-O'Neel, C., & Fuligni, A. (2013).A longitudinal study of school belonging and academic motivation across high school. *Child Development, 84*(2), 678–692. doi:10.1111/j.1467-8624.2012.01862.x

Goodenow, C. (1993).The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*(1), 79-90. doi:10.1002/1520-6807(199301)30:1<79::AID-PITS2310300113>3.0.CO;2-X

Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent student. *The Journal of Experimental Education, 62*(1), 60-71. doi:10.1080/00220973.1993.9943831

Hamm, J. V., & Faircloth, B. S. (2005). The role of friendship in adolescents' sense of school belonging. *New Directions for Child and Adolescent Development, 107,* 61-78. doi:10.1002/cd.121

Jean-Marie, G., Normore, A. H., & Brooks, J. S. (2009). Leadership for social justice: preparing 21st century school leaders for a new social order. *Journal of Research on Leadership Education, 4*(1), 1-31. doi:10.1177/194277510900400102

Johnson, L. S. (2009). School contexts and student belonging: A mixed methods study of an innovative high school. *The School Community Journal , 19*(1), 99-118.

Kia-Keating, M., & Ellis, B. H. (2007). Belonging and connection to school in resettlement: Young refugees, school belonging, and psychosocial adjustment. *Clinical Child Psychology and Psychiatry, 12*(1), 29-43. doi:10.1177/1359104507071052

Kline, R. B. (2011). *Principles and practice of structural equation modeling.* New York: Guilford Press.

Lam, U. F., Chen, W. , Zhang, J., & Liang, T. (2015). It feels good to learn where I belong: School belonging, academic emotions, and academic achievement in adolescents. *School Psychology International, 36*(4), 393-409. doi:10.1177/0143034315589649

Leithwood, K., & Jantzi, D. (1999).The relative effects of principal and teacher sources of leadership on student engagement with school. *Educational Administration Quarterly, 35*(5), 679-706. doi:10.1177/0013161X99355002

Ma, X. (2003). Sense of belonging to school: Can schools make a difference? *The Journal of Educational Research, 96*(6), 340-349. doi:10.1080/00220670309596617

McKenzie, K. B., Christman, D. E., Hernandez, F., Fierro, E., Capper, C. A., Dantley, M., …Scheurich, J. J.(2008). From the field: A proposal for educating leaders for social justice. *Educational Administration Quarterly, 44*(1), 111-138. doi:10.1177/0013161X07309470

Murphy, M. C., & Zirkel, S. (2015). Race and belonging in School: How anticipated and experienced belonging affect choice, persistence, and performance. *Teachers College Record, 117*(12), 1-40.

Osterman, K. F. (2000). Students' need for belonging in the school community. *Review of Educational Research, 70*(3), 323-367. doi:0.3102/00346543070003323

Özdemir, M. (2012). Lise öğrencilerinin metaforik okul algılarının çeşitli değişkenler bakımından incelenmesi. [Examination of high school students' metaphorical school perceptions in terms of various variables]. *Education and Science, 37*(163), 96-109.

Özdemir, M. (2017).Examining the relations among social justice leadership, attitudes towards school and school engagement. *Education and Science, 42*(191), 267-281.doi: 10.15390/EB.2017.6281

Özdemir, M. & Kütküt, B. (2015). Sosyal adalet liderliği ölçeği'nin (SALÖ) geliştirilmesi: Geçerlik ve güvenirlik çalışması. [Development of social justice leadership scale (SJLS): The validity and reliability study]. *Journal of Kirsehir Education Faculty, 16*(3), 201-218.

Özgök, A. (2013). *Ortaokul öğrencilerinde okula aidiyet duygusunun arkadaşlara bağlılık düzeyinin ve empatik sınıf atmosferi algısının incelenmesi.* [Investigation of the sense of school belonging, peer attachment and empathic classroom atmosphere among secondary school students]. (Unpublished master's thesis).Çukurova University Institute of Social Sciences, Adana.

Robinson, V. M. J., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly, 44*(5), 635-674. doi:10.1177/0013161X08321509

Ryan, J. (2006). Inclusive leadership and social justice for schools.*Leadership and Policy in Schools, 5*(1), 3-17. do:10.1080/15700760500483995

S´anchez, B., Col´on, Y., & Esparza, P. (2005). The role of sense of school belonging and gender in the academic adjustment of latino adolescents. *Journal of Youth and Adolescence, 34*(6), 619-628. doi:10.1007/s10964-005-8950-4

Sarı, M. (2015). Adaptation of the psychological sense of school membership scale to Turkish. *Global Journal of Human-Social Science: G Linguistics & Education, 15*(7), 58-64.

Sarı, M. (2013). Lise öğrencilerinde okula aidiyet duygusu. [Sense of school belonging among high school students]. *Anadolu University Journal of Social Sciences,13(*1), 147-160.

Slater, C., Potter, I., Torres, N., & Briceno, F. (2014). Understanding social justice leadership: An international exploration of the perspectives of two school leaders in Costa Rica and England. *Management in Education, 28*(3) 110–115. doi:10.1177/0892020614537516

Şentürk, C., & Sağnak, M. (2012). İlköğretim okulu müdürlerinin liderlik davranışları ile okul iklimi arasındaki ilişki. [Relationship between primary school principals' leadership behavior and school climate].*The Journal of Turkish Educational Sciences, 10*(1), 29-47.

Theoharis, G. (2007). Social justice educational leaders and resistance: Toward a theory of social justice leadership. *Educational Administration Quarterly, 43*(2), 221-258. doi:10.1177/0013161X06293717

Theoharis, G. (2009). The school leaders our children deserve: Seven keys to equity, social justice, and school reform. New York, NY: Teachers College Press.

Tomul, E. (2009). İlköğretim okullarındaki sosyal adalet uygulamalarına ilişkin yönetici görüşleri, [Opinions of administrators on social justice practices in elementary schools]. *Education and Science, 34*(152), 126-137.

Turhan, M. (2010). Social justice leadership: Implications for roles and responsibilities of school administrators. *Procedia Social and Behavioral Sciences, 9,* 1357–1361. doi:10.1016/j.sbspro.2010.12.334

Ulusoy, K., & Erkuş, B. (2017). Türk eğitim tarihinin mihenk taşlarından meslek liselerine karşı öğrencilerin ilkokuldan itibaren yönelimleri ve okula aidiyet duyguları. [The students' from primary school years on tendencies and their emotion of belonging to school against vocational high school among the touchstones of history of Turkish education]. *Electronic Journal of Social Sciences, 16*(61), 676-685.

Walliman, N. (2011). *Research methods the basics.* London and Newyork: Routledge Taylor & Francis Group.

Zembylas, M., & Lasonos, S. (2017). Social justice leadership in multicultural schools: The case of an ethnically divided society. *International Journal of Leadership in Education*, *20*(1), 1-25. doi:10.1080/13603124.2015.1080300

Gender Differences in Academic Motivation: A Meta-Analysis

Nihan Sölpük Turhan[1]

[1]Fatih Sultan Mehmet Vakıf University, İstanbul, Turkey

ARTICLE INFO

ABSTRACT

The purpose of this study is to carry out a meta-analysis study on the results of the studies on the effect of gender on academic motivation in Turkey between 2004 and 2019. For this purpose, this study aims to present a comprehensive study in which the results of the studies on this matter were combined and extended by using meta-analysis method. The study contains the gender comparison by the size value of its effect on academic motivation and the sub-group analyses. In addition, meta-analysis study was made on the effect of gender on sub-dimensions of the academic motivation in the studies that were made by using the scale "Academic Motivation Scale" developed by (Bozanoğlu, 2004). First of all, relevant studies were pooled in the meta-analysis study; then, 22 studies that comply with the research criteria were included in the analysis based on the total of academic motivation scale. The analysis based on the total point of academic motivation scale in the study contains 8010 students. 8 studies on the effect of gender on the sub-dimensions of academic motivation were included in the analysis. The analysis based on the sub-dimensions of academic motivation contains 3017 students. According to study findings, random effects model demonstrates that the effect of gender on the sub-dimensions of academic motivation is at low significance level (Cohen d value -0.07). In this study, analog ANOVA was employed for sub-group analysis by publication type and sample group of the research subject. Therefore, the sample group of the research subject differed by variance (Qb = 5.96, df= 2, p<.05). The effect of gender on exploration dimension (Cohen d value -0.12), self-transcendence dimension (Cohen d value -0.08), and dimension of using knowledge (Cohen d value -0.18) which are the sub-dimensions of academic motivation is at low significance level.

Keywords:
Academic motivation; gender; meta-analysis

1. Introduction

We found that it is important to analyse validity of the effect of gender on academic motivation in the Turkish context to contribute to Turkish literature. First of all, we examined the concept and properties of motivation and found that the concept of motivation is generally defined by scientists as objectives (Scholer and Higgins, 2008). Motivation may contain various processes such as focusing on a specific subject and developing plans. In other words, motivation is defined as a drive to take action. Accordingly, there isn't any drive to approach an object without a drive for motivation. Besides, levels of motivation are defined according to Elliot (2008) and they range from relatively lower analysis levels to higher ones.

Motivation has become one of the important qualifications in education process. The reason is that, motivation level is influential for students to complete a qualified and efficient learning process. We found that academic outputs vary by difference in motivation level in the studies (Vallerand and Bissonnette, 1992; Vallerand et al., 1992). In other words, there are significant differences between academic outputs of an individual with high motivation level and the one with low motivation level. Participation of the students in

activities such as doing homework, preparing for exams and attendance to lesson may vary by their motivation level.

Academic motivation is shortly defined as "production of the energy required for academic works" (Bozanoğlu, 2004, p.84). Most of the recent studies on academic motivation are comprised of definition of motivation structure of students and assessments on organizing the process and results of their achievement (Schunk, Pintrich and Meece, 2008). In addition, many studies were conducted on academic motivation and academic deferral. According to the results of the studies, the reason is that tendency to academic motivation decreases as the tendency to academic deferral increases (Bond and Feather, 1988; Senecal, Koestner and Vallerand 1995; Orpen, 1998; Lee, 2005; Balkıs et al., 2006; Lekich, 2006; Klassen, Krawchuk and Rajani 2007).

The studies on the effect on academic motivation in the literature analysed academic motivation in terms of such different variables as gender, socio-economic status, and educational background. Studies that analyse the effect levels of gender on academic motivation by various variables are also found in the literature (Ertem, 2006; Gündüz, Şahin, and Önal, 2009; Hotaman, and Yüksel-Sahin, 2010; Bedel, 2013; Polat, 2013; Aktaş, 2017; Demir and Arı, 2013; Eroğlu, Yıldırım and Şahan, 2017; Özgül and Diker, 2017; Pala, 2019;).

In this study, studies on the effect of gender on academic motivation were made on different fields of study. A study was found on the effect of gender on academic motivation which is focused on the students of faculty of education (Saracaloglu, 2008; Saracaloğlu, Kumral, and Kanma, 2009; Şahin and Çakar, 2011; Terzi, Mahmut, and Gürbüz, 2012; Demir and Arı, 2013; Özgül and Diker, 2017; Terzi, Uyangor, and Dulker, 2017; Titrek, Çetin, Kaymak, and Kaşikçi, 2018; Pala, 2019). A study was also found on the effect of gender on academic motivation which is focused on the students of faculty of theology (Aktaş, 2017; Yıldız, Sezen and Yenen, 2007). Another study was on the effect of gender on academic motivation which is focused on the university students in all faculties (Hotaman and Yüksel-Sahin, 2010; Ramazan and Kutlu, 2018).

It is noted that there are many studies in Turkey which analyse the effect of gender on academic motivation. Therefore, it is aimed to demonstrate the effect of gender on academic motivation by combining the results of the articles and thesis published on this subject separately.

The hypothesis sentences examined in the research are as follows.

- Hypothesis 1: There is a significant difference of gender differences in academic motivation.
- Hypothesis 2: There is a significant difference of sub-dimension effect on gender differences in academic motivation.
- Hypothesis 3: There is a significant difference of type of publication effect on gender differences in academic motivation.
- Hypothesis 4: There is a significant difference of sample group effect on gender differences in academic motivation. Display quotations of over 40 words or as needed.

2. Method

Study Design

The effect of gender on academic motivation was revealed by using meta-analysis method in this study. The studies made by using meta-analysis method are focused on a subject determined by the researcher. A generalizable result is achieved by integrating the results of the studies on a specific subject in the studies where this method is used (Littel, Corcoran and Pillai, 2008). Meta-analysis studies aims to identify the effect values through the data obtained from the studies on a specific subject and perform analysis suitable for the purpose of study by using the quantitative data obtained from the studies (Cohen, Manion and Morrison, 2001).

Scanning Strategy and Inclusion/Exclusion Criteria

Literature review was made in the databases of Google scholar, YOK National Thesis Center, ERIC,

ULAKBIM National Database, and DergiPark in order to determine the studies to be included in the meta-analysis in this study. Review studies were made based on academic motivation and gender. We searched the Turkish pages in Google scholar database by entering the keywords "academic motivation" and "gender". September 2019 was set as deadline for the studies included in the meta-analysis study. The articles, postgraduate theses, and doctoral theses in the peer-reviewed journals were included in the analysis.

The inclusion criteria determined for the meta-analysis study on the effect of gender on academic motivation are as follows;

- The study was made after the year 2004,
- Presence of the data required for determining the effect sizes in the meta-analysis study,
- Presentation of sample size (n) value, mean (X) value, p value, and standard deviation (Sd) value based on gender,
- The studies are thesis, articles or full-text studies in Turkish or English languages,

The inclusion criteria for the meta-analysis study on the effect of gender on the sub-dimensions of academic motivation are as follows:

- The study was made after the year 2004,
- "Academic Motivation Scale" developed by Bozanoğlu, (2004) was used, and sample size (n), mean (X) value, p value and standard deviation (Sd) values related to the three sub-dimensions "Self-Transcendence", "Using Knowledge" and "Exploration" were presented on gender basis,
- Presence of the data required to determine the effect sizes in the meta-analysis study,
- The studies are thesis, articles or full-text studies in Turkish or English languages

The reasons for non-inclusion of studies in the meta-analysis are as follows:

- There isn't any quantitative data,
- The necessary data on gender basis are not presented in the studies,
- Full-text version of the studies cannot be accessed acquiring data.

Academic Motivation Scale

"Academic Motivation Scale" was developed by Bozanoğlu, (2004) and grouped in three sub-dimensions. These sub-dimensions were named as "Self-Transcendence", "Using Knowledge" and "Exploration". The scale consists of 20 items in total. 5-point Likert scale was used for the measurement tool AMS as (1) 'Definitely Not Applicable' and (5) 'Definitely Applicable'. Only the item 4 has negative meaning in the measurement tool. All the other items except for this one have positive meanings. Analysis was performed on validity, reliability, and usefulness of the measurement tool. Test-retest method was used for reliability analysis. The correlation between the two applications was found 0.87 as a result of the analysis. There is a high correlation between the two applications. In the meantime, the coefficient of internal consistency was calculated. The coefficients of Cronbach Alpha internal consistency were found 0.80, 0.75, and 0.67 respectively for the sub-dimensions. Cronbach Alpha value of the whole scale was found 0.86.

The data obtained from the databases by using scanning strategy were pooled (N = 190). They are analysed by the inclusion criteria, 22 studies were included in the study. Descriptive statistics on the studies which are suitable for the study criteria are presented in Table 1 below.

Table 1. Characteristics of the studies included in the meta-analysis on the effect of gender on academic motivation

Year of Publication		2013-2017	2018-2019	Total
	n	4	4	8

	%	0,50	0,50	100
		Article	Thesis	
Publication Type	**n**	3	5	8
	%	0,38	0,62	100
		High school student	Teacher candidate	
Sample group	n	2	6	8
	%	0,25	0,75	100

Coding Process

In coding process of the study, data were identified first; then the data were made suitable for the study by organizing the complex data in the studies comprehensibly. A coding form was prepared for the data of the studies included in the analysis by using this method.

References, publication date, Type of Publication (thesis, article), sample type (high school or middle-school student, university student, teacher candidate) and quantitative values (sample size, mean and standard deviation or p value) of the studies were coded in this form.

Table 3. Descriptive characteristics of the studies included in the meta-analysis on the effect of gender on Academic Motivation

Study	Year of publication	Type of publication	Sample group	Male	Female
Aktaş, H. 2017	2017	Article	Uni. Student	126	219
Bedel, 2013	2013	Article	High school or middle-school student	188	156
Demir and Arı, 2013	2013	Article	Teacher candidate	105	178
Eroğlu, Yıldırım and Şahan, 2017	2017	Article	Uni. student	171	177
Ertem, 2006	2006	Thesis	High school or middle-school student	438	279
Gündüz, Şahin, and Önal, 2009	2009	Article	Uni. student	1090	469
Hotaman, and Yüksel-Sahin, 2010	2010	Article	Uni. student	116	218
Özgül, and Diker, 2017	2017	Article	Teacher candidate	61	39
Pala, 2019	2019	Thesis	Teacher candidate	177	303
Polat, 2013	2013	Thesis	Uni. student	64	101
Ramazan, and Kutlu, 2018	2018	Article	Uni. student	112	331
Şahin and Çakar, 2011	2011	Article	Teacher candidate	86	118
Saracaloglu, 2008	2008	Article	Teacher candidate	142	176

Saracaloğlu, Kumral and Kanma, 2009	2009	Article	Teacher candidate		41	65
Şeker, 2017	2017	Article	Uni. student		205	147
Terzi, Mahmut, and Gürbüz, 2012	2012	Article	Teacher candidate		48	200
Terzi, Uyangor, and Dulker, 2017	2017	Article	Teacher candidate		102	269
Titrek, Çetin, Kaymak, and Kaşikçi, 2018	2018	Article	Teacher candidate		96	226
Toplu, 2019	2019	Thesis	High school or middle-school student		100	100
Tuncer, Yelken, and Tanrıseven, 2018	2018	Article	Uni. student		29	101
Uluışık, Beyleroğlu, Suna, and Yalçın, 2016	2016	Article	High school or middle-school student		194	191
Yıldız, Sezen, and Yenen, 2007	2007	Article	Uni. Student		126	130

Table 4. Descriptive characteristics of the studies included in the meta-analysis on the effect of gender on the sub-dimensions of academic motivation

Author Name	Year of Publication of the Study	Branch	Study Type	Sample Group	Male	Female
					N	N
Akbaba, 2019	2019	High School	Thesis	High School Students	280	360
Alemdağ, Öncü, & Yılmaz, 2014.	2014	Physical Education	Article	Teacher Candidate	127	75
Deniz, 2019	2019	High School	Thesis	High School Students	265	185
Eğmir, Ödemiş, Bayar, Bayar, & Kayır, 2013	2013	Educational Sciences	Article	Teacher Candidate	54	53
Pala, 2019	2019	Educational Sciences	Thesis	Teacher Candidate	177	303
Şeker, 2017	2017	Music Education	Thesis	Teacher Candidate	205	147
Terzi, Uyangor, & Dulker, 2017	2017	Educational Sciences	Article	Teacher Candidate	102	269
Yusupu, 201	2018	Educational	Thesis	Teacher	218	197

Sciences   Candidate

Statistical Processes

Main objective of meta-analysis which is one of the scientific research methods is to identify net effect size based on the data obtained from the studies on a specific subject (Littell et al., 2008). The researcher then comes to a conclusion on the study subject as a result of the analysis based on the effect size value. Therefore, effect size value is important for meta-analysis studies.

This vale is the effect size value obtained through statistical processes. It is a standard measurement value used to identify the level and direction of the correlation in the study (Borenstein, Hedges, Higgins and Rothstein, 2009). Various applications were developed to calculate effect size value in meta-analysis studies. A researcher who uses this method must pay attention to the purpose and design of the studies, and the data while deciding which effect size is suitable (Littell et al., 2008).

 These approachers consist of three groups as follows:

- Standardized mean difference
- Correlation
- Odd ratio/risk ratio

In this study, the measurement tools and study groups in the studies that were determined according to the inclusion criteria vary significantly. Therefore, the studies were analysed based on the adjusted standardized effect size. Data of the studies included in this study were combined by means of the coding. Statistical interpretation of the results obtained from the data requires determination of a suitable model (Yıldız, 2002). There are two effect models in meta-analysis method, and these are fixed effect model and random effect model. Analyses and findings vary by the two meta-analytic effect size models. For this reason, determining the effect size suitable for the study is important. In this study, we deemed suitable to use random effects model instead of fixed effects model in meta-analysis processes. The reason is that generalization can be made based on the specific effect size if studies are not functionally equal in random effects model (Borenstein et al., 2009). Besides, the statistical packaged softwares Microsoft Excel and Comprehensive Meta-Analysis are used in this study.

Subgroup Analysis

The subgroups which may be influential in the effect size and were analysed in this study were identified as Type of Publication (thesis, article) and sample type (high school or middle-school student, university student, teacher candidate). Subgroup analysis helps finding if there is difference between subgroups based on the data obtained from the studies included (Littel et al., 2008). This study assessed if the difference between the subgroups are statistically significant by effect size. Only Q values were used in these analyses, and Q-statistics indicates if the difference between the subgroups is statistically significant.

Data Analysis

Two different researchers compared the article inclusion-exclusion processes, the processes of effect size value calculation and the analysis results in order to ensure reliability in the research process that was developed by using meta-analysis method. Results of the comparison made by the two researchers reveal that consistence is achieved. The limits set for interpretation of the standardized mean differences of Cohen (1988) and the effect sizes are specified below.

- If Cohen d ≤ .20, the effect is insignificant,

- If .20 ≤ Cohen d ≤ .50, the effect is weak,
- If .50 ≤ Cohen d ≤ .80 the effect is moderate,
- If Cohen d ≥ .80 the effect is strong.

Besides, test statistics were checked for heterogeneity in the data analysis, and the findings are presented according to the value I^2 in addition to the q-statistics.

- $I^2 < 25$ indicates low heterogeneity,
- $25 < I^2 < 50$ indicates moderate heterogeneity,
- $75 < I^2$ and above indicates high heterogeneity (Higgins and Thompson, 2002).

Upon evaluation of fixed effects or random effects model for using in the study for effect sizes, random effects model was preferred by reason of the fact that characteristics of sample groups and data collection tools in the studies vary significantly. There are subgroup variables in the study, so analog ANOVA analysis was performed for the subgroups. The main objective of analog ANOVA is to analyse if the effect size in meta-analyses vary in subgroups, and share similarities with ANOVA analysis. This analysis is a chi-square based subgroup analysis method (Lipsey ve Wilson, 2001). In this research, data analysis calculated using the CMA-3 software program.

3. Findings

This section presents the findings related to the effect of gender on academic motivation, effect size and subgroups analysis.

This study consists of 22 different studies included according to the previously-stated criteria, and they consist of 8010 students in total. Of the students, 48% are male and 52% are female. 1646 of them (920 males, 726 females) are high school or middle-school students while 3932 (2039 males, 1893 females) are university students, and 2432 (858 males, 1574 females) are university students who are teacher candidates.

Hypothesis 1: There is a significant difference of gender differences in academic motivation.

According to the analysis results, gender has weak effect on academic motivation (n=22, p<.001). Accordingly, male students exhibited higher levels of academic motivation behaviors than those of female students.

Table 5. Size of academic motivation effect of gender and heterogeneity test

	n	Mean Effect Size	z	Standard Error	CI (Confidence Interval)		Df	Q	p	I^2
					Lower Limit	Upper Limit				
Random Effects Model	22	-.07	1.42	.05	-.16	.03	21	79.12	.00	73.46

According to the data in the studies included in the meta-analysis, effect size was found -0.07 in random effects model. In this context, the data were analysed in homogeneity/heterogeneity test in order to find the effect size of both genders on academic motivation (Borenstein et al., 2009). According to table 4 above, the study was found heterogeneous as a result of the heterogeneity test (Q= 79.12, p= .00, I^2= 73.46). In addition, I^2 statistics which was developed as a complementary to Q-statistics helps achieving better results in heterogeneity (Petticrew and Roberts, 2006). The statistical value I^2= 73.46 revealed that the study has high heterogeneity rates (Cooper, Hedges and Valentine, 2009). Consequently, the effect size values in the study

were found by using random effects model.

Hypothesis 2: There is a significant difference of sub-dimension effect on gender differences in academic motivation.

Table 6. Effect size of gender on the sub-dimensions of academic motivation and heterogeneity test

Subdimensins of Academic Motivation	Mean Effect Size	z	Standard Error	CI (Confidence Interval)		sd	Q	p	I^2
				Lower Limit	Upper Limit				
Exploration dimension	-.12	3.14	.03	-.19	.04	3	45.474	.003	49.421
Self-transcendence dimension	-.08	2.19	.04	-.16	-.01				
Dimension of using knowledge	-.18	-4.81	.04	-.25	-.11				

Gender exhibits significantly weak effect in the sub-dimensions of academic motivation (Cohen d value -0.12), self-transcendence dimension (Cohen d value -0.08), and dimension of using knowledge (Cohen d value -0.18). According to table 4 above, the study was found heterogeneous as a result of the heterogeneity test (Q= 45.47, p= .00, I^2= 49.42). The statistical value I^2 49.42 revealed a moderate heterogeneity in the study (Cooper, Hedges and Valentine, 2009). Consequently, the effect size values in the study were found by using random effects model

Table 7. Summary of the study characteristics in analysis findings
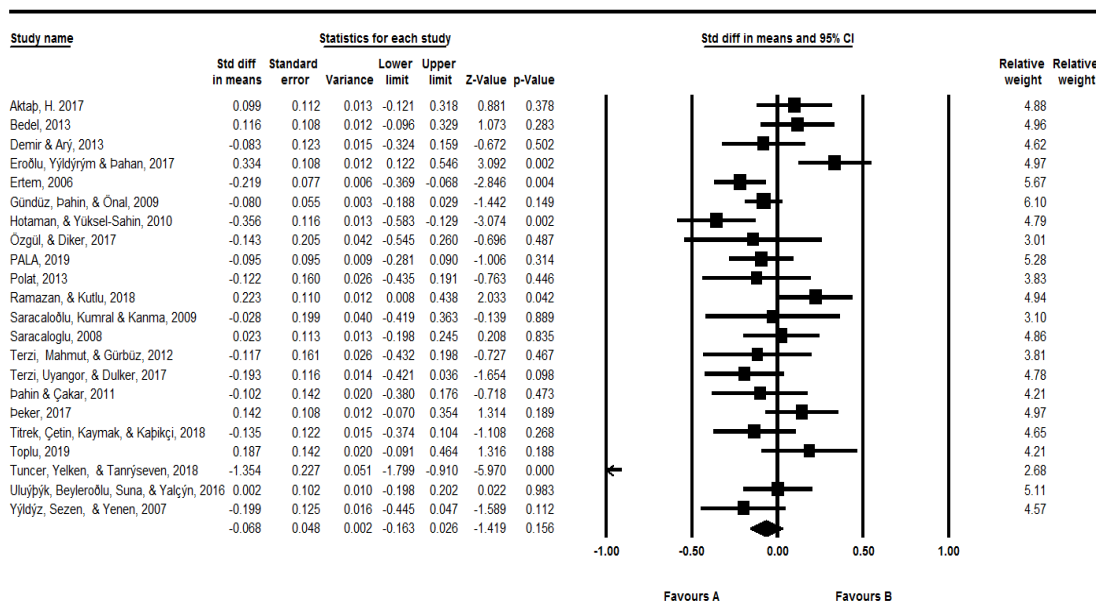
Meta Analysis

Subgroup Analysis

In addition to the analyses for determining the common effect value, the findings of subgroup analysis are presented to indicate that the findings are heterogeneous. Analog ANOVA test was conducted to examine if the effect of gender on academic motivation varies by subgroups according to random effects model.

Subgroup analysis was performed for the Type of Publication (thesis and article) and sample group (high school or middle-school student, teacher candidate and university student). Findings are presented considering the values in the homogeneity test Qb (Q-between) in the subgroup analysis. According to the results of the subgroup analysis, no significant difference was found in the effect of gender on academic motivation by Type of Publication (Qb = 1.21, df= 1, p>.05). In other words, the effect of gender on academic motivation doesn't vary by Type of Publication.

Hypothesis 3: There is a significant difference of type of publication effect on gender differences in academic motivation.

Table 8. Subgroup analyses in random effects model

Variable		n	Average Effect Size	Standard Error	CI (Confidence Interval) Lower Limit	CI (Confidence Interval) Upper Limit	sd	,05 confidence level X^2	*Qb*	*p*
Type of publication	Article	18	-.04	.04	-.12	.05				
	Thesis	4	-.31	.24	-.78	.17				
	Total	22	-.04	.04	-.13	.04	1	3.84	1.21	.27

According to the table 9 below and the other subgroup analysis, significant difference was found on the effect of gender on academic motivation by sample group in the analysis on sample group (Qb = 5.96, df= 2, p<.05). In other words, the effect of gender on academic motivation varies by sample group.

Hypothesis 4: There is a significant difference of sample group effect on gender differences in academic motivation.

Table 9. Subgroup analysis in random effects model

Variable		N	Mean Effect Size	Standard Error	CI (Confidence Interval) Lower Limit	CI (Confidence Interval) Upper Limit	sd	,05 confidence level X^2	Q	*p*
Sample group	High school or middle school student	4	.12	.08	.04	.29				
	Teacher candidate	9	-.09	.05	.17	.02				
	University student	9	-.16	.10	.36	.04				
	Total	22	-.05	.04	-.13	.03	2	.99	.96	.05

Publication bias

Publication bias influences the total effect negatively in meta-analysis studies, so it should also be discussed as well. Publication bias can be calculated by various statistical analyses. Funnel plot method was used in this study for the meta-analysis. According to Figure 1 below, there isn't any finding on publication bias in the studies included in the meta-analysis.
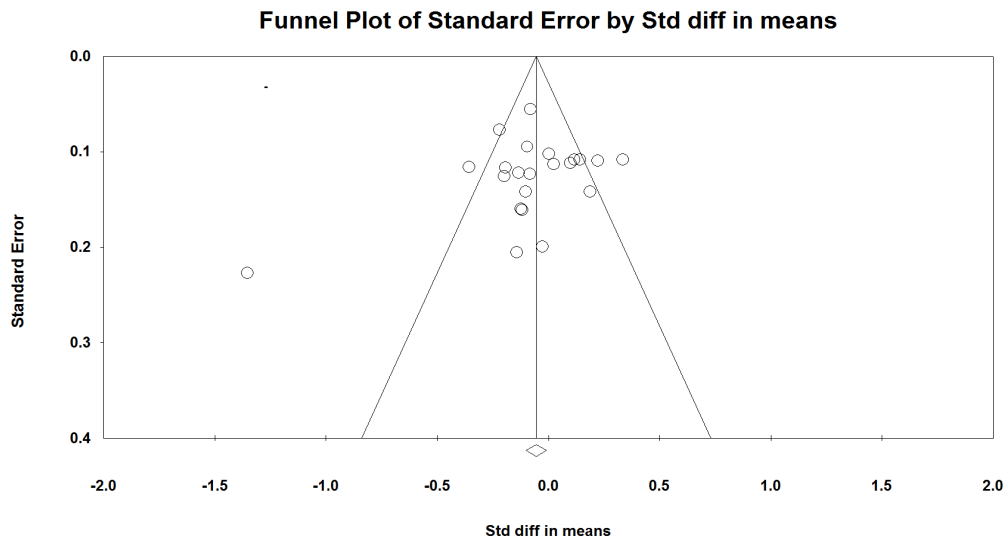
Figure 1. Effect size funnel on publication bias

Another analysis was also examined to check for publication bias; this analysis was performed for Duval, Tweedie's trim and fill test. The results of Duval, Tweedie's trim and fill test are given in Table 3.

Table 10. Results of Duval, Tweedie's trim and fill test on the effect of gender on academic motivation

	Excluded Study	Point Estimate	CI (Confidence Interval)		Q
			Lower Limit	Upper Limit	
Observed values		-.05467	-.1009	-.0084	79.1219
Adjusted values	1	..0754	-.1206	-.0302	95.9709

According to the findings on publication bias, no difference was found between the observed effect size value and the virtual effect size value for adjusting the effect caused by publication bias.

Table 11. Results of Duval, Tweedie's trim and fill test on the effect of gender on the sub-dimensions of academic motivation

	Excluded Study	Point Estimate	CI (Confidence Interval)		Q
			Lower Limit	Upper Limit	
Observed values		-.12662	-.16903	-.08421	45.47359
Adjusted values	0	-.12662	-.16903	-.08421	45.47359

According to the findings on publication bias in Table 6 above, no difference was found between the

observed effect size value and the virtual effect size value for adjusting the effect caused by publication bias.

4. Discussion and Conclusions

This study aims to conduct a meta-analysis study based on the results of experimental studies that examine the effect of gender on academic motivation in Turkey between 2004 and 2019. In this context, sample group size, mean, and standard deviation values and p value obtained from 22 studies that match the study criteria. Quantitative values from the articles and theses in the literature were reported. Besides, analog ANOVA analysis was performed on the effect of gender on the following subgroups of academic motivation; Type of Publication and sample group. The data that were reported in the study were obtained from 8010 students in total. Of these, 48% are male and 52% are female. 1646 of them (920 males, 726 females) are high school or middle-school students while 3932 of them (2039 males, 1893 females) are university students and 2432 of them (858 males, 1574 females) are university students who are teacher candidates.

According to the findings of this study, gender has significant effect on academic motivation. In examination of the effect size, it was concluded that the effect size is found insignificant (Cohen d ≤ .20) according to the limits set for interpretation of the effect sizes and the standardized mean differences of Cohen'in (1988). It was also concluded that gender doesn't have a significant effect on academic motivation in the studies (Bedel, 2013; Pala, 2019; Demir and Arı, 2013; Saracaloğlu, Kumral and Kanma, 2009).

In examination of the findings on gender-based differences on academic motivation in the relevant literature, the effect may vary by Type of Publication and sample group. Type of variable studies (article and thesis), the effects of which were examined in the subgroup analysis are dealt in this study. Analog ANOVA test was conducted for this purpose, and no significant variable was found on the effect of gender on academic motivation by study types (article and thesis). In short, the effect of gender on academic motivation doesn't vary by article and thesis studies. The study published by Çıkrıkçı and Erzen (2016) dealt and analysed the variable of publication type in the meta-analysis on the concept of academic deferral which is the opposite of academic motivation. The researchers found that publication type is not a significant moderator in the study on examination of the effect of gender on academic deferral.

Sample groups (high school or middle-school student, teacher candidate and university student) were analysed as variables in another subgroup analysis. According to the findings of the study, sample groups are significant variables on the effect of gender on academic motivation. It was concluded that studying at different education stages is influential in the effect of gender difference on academic motivation. The effect of gender on academic motivation varies by teacher candidates and university students. In addition, the variable of personality characteristics in the sample group is the most influential variable in academic motivation according to the results of the analysis performed by other researchers (Ünal, 2013). Another meta-analysis study in the same field revealed that the effect of gender on academic deferral is not a significant moderator for the sample group (Çıkrıkçı and Erzen, 2016).

A meta-analysis was performed in this study based on the results of the experimental studies that examine the effect of gender on the sub-dimensions of academic motivation by using "Academic Motivation Scale" (Bozanoğlu, 2004) between 2004 and 2019. In this context, sample group size, mean, and standard deviation values and p value obtained from 8 studies that match the study criteria were examined. The data reported in the study were obtained from 3017 students in total. Of these, 1428 are male and 1589 are females. According to the findings of the study, it was concluded that gender has a significant effect on the sub-dimensions of academic motivation. In examination of the effect size, the effect was found insignificant Cohen d ≤ .20 according to the limits set for interpretation of the effect sizes and standardized mean differences of Cohen (1988).

Different findings were obtained from the studies on the effect of gender on academic motivation in literature review. According to McDonald (2001), there are differences in comparison of anxiety levels by gender. Michie, Glachan and Bray (2001) found that females are more stressed and less self-confident in assessment of their academic skills by their peers. Bialis White (2013) carried out a study on the study group

consisting of European, American and Amerasian students. He concluded that satisfaction of basic psychological needs, motivation and academic achievement vary by gender. According to the study by Misra and Mc Kean (2000) on university students, anxiety level of students varies by gender.

In addition, there are findings in various studies in this field which present that gender doesn't have effect on academic motivation. According to Steinberg (2013) attitudes, capabilities and behaviors of teenagers are similar rather than varying by gender. According to Pala (2019), the points in all the dimensions in Academic Motivation Scale don't exhibit a significant difference by gender. According to Bedel (2013), gender doesn't cause any significant difference in academic motivation.

In general, this meta-analysis study is important in analyzing the effect of gender on academic motivation. There are many studies on the effect of gender on academic motivation in the literature, but this study became necessary as there isn't any meta-analysis study on this subject. This study presents an integrated conclusion of the data reported in different studies.

References

Akbaba, T. (2019). Investigation of the effect of problematic internet usage on academic motivation among high school students. (Master's thesis) Bayburt University Institute of Social Sciences, Bayburt.

Aktaş, H. (2017). The relationship between academic motivation and academic self-efficacy: an empirical research on theology faculty students. *Journal of Human and Social Sciences Research, 6*(3), 1376-1398.

Alemdağ, C., Öncü, E., & Yılmaz, A. K. (2014). Academıc motıvatıon and academıc self-competencıes of physıcal educatıon teacher candıdates. *Journal of Sport Sciences, 25*(1), 23-35.

Balkis, M., Invention, M., Duru, E., & Duru, S. (2006). Investigation of academic procrastination tendency among university students in terms of various variables. *Ege Education Journal, 7*, 57-73.

Bedel, A. (2013). Comparıson of academıc empowerment and anxıety levels of students wıth and wıthout grade repaır. *Journal of National Education, 43*(200), 111-122.

Bialis-White, L. H. (2013). Needs-satisfaction, motivation, and achievement in high school students: testing predictive models by gender and ethnicity (Doctoral dissertation) UC Berkeley.

Bond, M. J., & Feather, N. T. (1988). Some correlates of structure and purpose in the use of time. *Journal of Personality and Social Psychology, 55*, 321-329.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). Introduction to Meta-Analysis. UK: Wiley.

Bozanoğlu, İ. (2004). Academic motivation scale: Development, validity, reliability. *Ankara University Faculty of Educational Sciences Journal, 37* (2), 83-98.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Erlbaum.

Cooper, H., Hedges, L. V., & Valentine, J. C. (Eds.). (2009). The handbook of research synthesis and metaanalysis (2nd ed.). New York: Russell Sage Publication.

Cohen, L., Manion, L., & Morrison, K. (2002). Research methods in education. Routledge.

Cikrikci, O., & Erzen, E. (2016). Gender Differences on Academic Procrastination: Meta-Analysis. *Hacettepe University Journal of Education, 31*(4), 750-761.

Demir, M., & Arı, E. (2013). Examination of prospective teachers' academic motivation levels in terms of various variables. *Theory and Practice in Education, 9*(3), 265-279.

Deniz, Ç. (2013). The relationship between high school students' critical thinking dispositions, academic motivation and perfectionism levels and academic achievement (Master's thesis) Erciyes University, Institute of Educational Sciences.

Eğmir, E., Ödemis, İ. S., Bayar, V., Bayar, A., & Kayır, G. (2013). Academic motivation levels of graduate students. Sakarya University Institute of Educational Sciences. VI. National Graduate Education Symposium. Proceedings, 95 (6), 97-103.

Ertem, H. (2006). Examination of motivation type (internal and external) and levels of secondary school students in terms of some variables (Master's thesis) Balıkesir University Institute of Science and Technology.

Elliot, A. J. (2008). Approach and avoidance motivation. In A. J. Elliot (Ed.), Handbook of approach and avoidance motivation. New York, NY: Psychology Press.

Eroglu, O., Yildirim, Y., & Sahan, H. (2017). Investigation of the relationship between academic self-efficacy and academic motivation levels of students in the faculty of sports sciences: The case of Akdeniz University. *Turkey Journal of Sports Sciences, 1*(1), 38-47.

Gunduz, S., Sahin, S., & Önal, F. (2009). Evaluatıon of websıtes of teachıng staff of department of computer and ınstructıonal technologıes educatıon.

Hotaman, D., & Yüksel-Sahin, F. (2010). The Effect of ınstructors' enthusiasm on university students' level of achievement motivation. *Egitim ve Bilim, 35*(155), 89.

Klassen, R.M., Krawchuk, L.L., & Rajani, S. (2007). Academic procrastination of undergraduates low self-efficacy to self-regulate predicts higher levels of procrastination. *Contemporary Educational Psychology, 33*, 915-931.

Littel, H. J., Corcoran, J., & Pillai, V. (2008). Systematic reviews and meta-analysis. New York: Oxford University Press.

Lee, E. (2005). The relationship of motivation and flow experience to academic procrastination in university students. *Journal of Genetic Psychology, 166*, 5-14.

Lekich, N. (2006). The relationship between academic motivation, self-esteem, and academic procrastination in college student. (Unpublished masters's thesis) Truman State University, Kirksville. Missouri, USA.

Lipsey, M. W., & Wilson, D. B. (2001). Practical meta-analysis. Sage Publications, Inc.

Littell, J. H., Corcoran, J., & Pillai, V. (2008). Systematic reviews and meta-analysis. Oxford University Press.

McDonald, A. S. (2001) The prevalence and effects of test anxiety in school children. *Educational Psychology*: *An International Journal of Experimental Educational Psychology, 21*(1), 89-101.

Michie, F., Glachan, M., & Bray, D. (2001). An evaluation of factors influencing the academic self-concept, self-esteem and academic stress for direct and re-entry students in higher education. *Educational Psychology, 21*(4), 455-472.

Misra, R., & McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American journal of Health studies, 16*(1), 41.

Orpen, C. (1998). The causes and consequences of academic procrastination: A research note. *Westminister Studies in Education, 21*, 73-75.

Özgül, F., & Diker, G. (2017). Examination of academic self-efficacy and motivation according to demographic characteristics of graduate education candidates (Cumhuriyet University example) Lisansüstü eğitim adaylarının akademik öz-yeterlik ve güdülenmelerinin demografik özelliklerine göre incelenmesi (Cumhuriyet Üniversitesi örneği). *Journal of Human Sciences, 14*(2), 2129-2139.

*Pala, G. (2019). The mediating role of psychological needs in the relationship between adolescent identity development and academic motivation and hope. (Master's thesis) Hacettepe Univeristy Institute of Educational Sciences, Ankara

Petticrew, M., & Roberts, H. (2006). Systematic reviews in the social sciences. MA-USA: Blackwell.

Polat, A. (2013). Investigation of Perceptions of Interrogation Group of Distance Education Students in Terms of Academic Motivation and Various Variables (Cumhuriyet University Case). (Master Thesis) Sakarya University Institute of Educational Sciences Department of Computer Education and Instructional Technology.

Ramadan, Ç. O. K., & Kutlu, M. (2018). Investigation of university students' extracurricular internet usage behaviors and academic motivation levels according to various variables. *The Journal of International Lingual Social and Educational Sciences, 4*(1), 1-21.

Saracaloglu, A. S. (2008). The relationship between academic motivation levels, research anxiety and attitudes and research competencies of graduate students. *Yüzüncü Yıl University Journal of the Faculty of Education, 5*(2), 179-208.

Saracaloglu, A. S., Kumral, A. G. O., & Blood, A. G. A. (2009). Secondary Education Social Fields Teacher Education Non-Thesis Students' Competencies, Concerns And Academic Motivation Levels Towards Teaching Profession (pp. 38-54). *Yüzüncü Yıl University Journal of the Faculty of Education, 6*(2), 38-54.

Scholer, A. A., & Higgins, E. T. (2008). Distinguishing levels of approach and avoidance: An analysis using regulatory focus theory. In A. J. Elliot (Ed.), Handbook of approach and avoidance motivation. New York, NY: Psychology Press

Schunk, DH, Pintrich, PR, & Meece, JL (2008). Motivation in education: Theory, research and applications (3rd ed.), Upper Saddle River, NJ: Merrill-Prentice Hall.

Senecal, C., Koestner, R., & Vallerand, R. J. (1995). Self-regulation and academic procrastination. *Journal of Social Psychology, 135*, 607-619.

Steinberg, L. (2013). Adolescence. USA: McGraw-Hill Education.

Şahin, H., & Çakar, E. (2011). The effect of learning strategies and academic motivation levels of faculty of education on academic achievement. *Turkish Journal of Educational Sciences, 9*(3), 519-540.

Şeker, S. S. (2017). Academic motivation and academic self-efficacy levels of music education department teacher candidates. Journal of Education Faculty of Abant İzzet Baysal University.

Terzi, M., Mahmut, Ü. N. A. L., & Gürbüz, M. Ç. (2012). Examining the academic motivation levels of elementary mathematics teacher candidates in terms of some variables. *Pegem Journal of Education and Training, 2*(1), 51-60.

Terzi, A. R., Uyangor, N., & Dulker, A. P. (2017). Academic motivation and academic procrastination: A research on formation teacher candidates. *Route Educational and Social Science Journal, 4*(7), 52-62.

Titrek, O., Cetin, C., Kaymak, E., & Kasikci, M. M. (2018). Academic Motivation and Academic Self-efficacy of Prospective Teachers. *Journal of Education and Training Studies, 6*(11a), 77-87.

Toplu, G. (2019). Examination of the relationship between self-esteem and academic motivation of 5th grade students who started primary school in different age groups (Master's thesis) Maltepe University, Institute of Social Sciences, İstanbul.

Tuncer, G., Yelken, T. Y., & Tanrıseven, I. (2018). Investigation of the relationship between academic motivation and questioning skills of philosophy group students. *Mersin University Journal of the Faculty of Education, 14*(3), 1156-1175.

Uluışık, V., Beyleroğlu, M., Suna, G., & Yalcin, S. (2016). Attitudes of secondary school students towards physical education course and academic motivation levels according to some variables (sample of Burdur province center). *Journal of Human Sciences, 13*(3), 5092-5106.

Ünal, M. (2013). Estimation of academic motivation levels of high school students in terms of some variables (Doctoral dissertation) DEU Institute of Educational Sciences

Vallerand, R., & Bissonnette, R. (1992). On the predictive effects of intrinsic, extrinsic, and amotivational styles on behavior: A prospective study. *Journal of Personality, 60*, 599–620.

Vallerand, R., Pelletier, L., Blais, M., Briere, N., Senécal, C., & Vallieres, E. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Education and Psychological Measurement, 52*, 1003–1017.

Yıldız, N. Ç. (2002). Meta-Analysis of Data Evaluation (Unpublished Master's Thesis). Marmara University, Istanbul.

Yıldız, M., Sezen, A., & Yenen, İ. (2007). Examination of the relationship between state-trait anxiety levels and academic motivation among theology faculty students. *Journal of Theology Faculty, 15*, 213-239

Yusupu, R. (2018). Relationships between career decisions and perfectionism, learning motivation and academic success in university students. (Master's thesis) Dokuz Eylül University, Institute of Educational Sciences, İzmir.

Examination of the Curriculum Knowledge Levels of Pre-Service Teachers in Terms of Different Variables

E. Seda KOÇ[1]

[1]Namık Kemal University, Tekirdağ, Turkey

ARTICLE INFO

ABSTRACT

The teaching profession is an area of expertise that combines many professional and academic competencies. While all of these competencies are important for the quality of learning-teaching processes, the curriculum and content knowledge that teachers are expected to have is one of the main characteristics that are directly determinative in achieving the learning objectives. This study aimed to examine the pre-service teachers' knowledge of curriculum in terms of different variables. The study group of the study, which was conducted according to the descriptive research model, consisted of 237 students in the 4th grade of the faculty in the 2018-2019 academic year. In the study, the pre-service teachers' general curriculum knowledge, the average points they received from curriculum development questions and the average points they received only from the questions related to the curriculum in their field of study were handled. As a result of the findings, it was seen that pre-service teachers' curriculum knowledge in their field showed a significant difference in favor of female teacher candidates. Also, it was observed that the average of all three points of pre-service teachers differed significantly according to their branches and general curriculum knowledge differed significantly according to their branches.

Keywords:
Curriculum, Pre-service Teachers, Teacher Competencies

1. Introduction

The rapid developments in the scientific, technological, economic and social fields in the world bring changes in the field of education as well and as a result, there are some differences in the understanding of teaching and learning (Arslan & Özpınar, 2008). Although many important variables enable these differences to be reflected in educational processes, curricula are the most functional tools that can be used to achieve this goal. Because the curriculum helps to adapt to change in the shortest and practical ways through the planned and guided experiences it contains.

In addition to the aforementioned changes, the curricula have a direct impact on the creation of qualified manpower needed by the communities. In this regard, many countries make important arrangements in the field of education, especially in curriculum development studies and make great efforts to prepare curricula that can help reach social and educational goals. One of the determining factors in achieving the desired outcomes at the end of these studies is the qualifications of the curriculum. Another factor that is as decisive as the qualifications of the curricula is the teachers who are the practitioners of these curricula. The individual and professional competencies that teachers have are important for the effectiveness of the curricula.

Some of the personal features expected of teachers may be listed as; being open-minded and objective towards students, considering the expectations and needs of students, being able to investigate problems related to education by scientific methods, considering individual differences, being open to innovations and

developments, understanding and interpreting social developments, and developments in educational technologies. (Çelikten, Şanal & Yeni, 2005: 207-237). When considering their professional competencies, teachers are expected to have sufficient knowledge and skills in three main areas: general culture and general talent knowledge, professional knowledge and field knowledge (Demirel, 1999: 192). When pedagogical content knowledge components are examined in general; it is handled in four dimensions as "subject area knowledge", "knowledge of student understanding", "knowledge of teaching strategies" and "curriculum knowledge" (Grossman, 1990; Shulman, 1987). Curriculum knowledge includes how the concepts related to a subject are understood by the student and the process of concept development in the student (Shulman, 1986).

Although all these competencies vary from society to society and from culture to culture; the detailed determination of the competence areas that teachers should have is important for each country (Gökçe, 2003) because there is a difference between a teacher who fulfills the requirements of the teaching profession and teachers who do not have the minimum qualifications and therefore cannot fulfill the requirements of the profession and this situation directly affects the student success (Özer and Gelen, 2008). In line with this perspective, the Ministry of National Education has been determined in several competencies in 3 main areas: professional knowledge, professional skills, attitudes and values to carry out the teaching profession effectively and efficiently. Some items in the field education subtitle, which are among these fields, and the program information expected to be prospective teachers are mentioned. The items in question are:

1. Explain the curriculum of the field with all its elements.

2. Associates the forehead curriculum with other related curricula (MEB, 2017).

As it is seen, it is underlined that teachers need to have sufficient knowledge about not only curricula related to their fields but also curricula related to different courses. As stated by the ministry of education, teachers should have a good command of certain topics, contents, skills, goals and all the elements that make up the content of the program (Posner, 1995). Because teachers have to organize their learning lives according to their curricula. For this reason, the curricula should be understood and applied correctly by the teachers. This situation raises the need for teachers and prospective teachers to be good literate students (Tabak and Çetinkaya, 2019).

Teacher competencies are among the main factors that determine quality and efficiency in education. For this reason, apart from this study carried out by the Ministry of National Education, different studies were carried out to determine the competencies in question. In the study carried out by one of them, the Turkish Education Association (TED), teacher competencies are expressed as follows;

1. The teachers are dedicated to their students and students' learning.

2. Technological pedagogical content knowledge: To be knowledgeable about curriculum and subject area, how the curriculum will be taught and its relation with other fields, the latest developments in the field, the basic concepts, tools and structures of the field, the integration of the content to be taught with technology.

3. Planning and implementing teaching: Planning based on knowledge of teaching area, students, community and curriculum objectives; Sequentially effectively design and apply learning within a set of topics and subjects based on the knowledge of the curriculum. Understanding how students' learning approaches differ and creating adaptable learning opportunities for different students; planning for the development of different age and ability groups; know how to individualize strategies so that individual learning potential can be fully developed.

4. Assessment and monitoring: Understanding and using formal and informal assessment strategies to ensure students' intellectual, social and physical continuous improvement.

5. To be able to provide effective communication and manage student behaviors in the teaching and learning environment: Using information about effective verbal, nonverbal media communication techniques to provide active learning, collaboration and supportive interaction in the classroom. Understanding and using individual and group motivation to create a learning environment that will encourage positive interaction, active participation in learning and self-motivation.

6. Planning and realizing individual and professional development: Continuously questioning their own applications, ensuring their professional development, systematically thinking about their own applications and learning from their experience.

7. Collaboration, teamwork and collaboration with other teachers, parents and school staff: Building relationships with colleagues, parents and other institutions to support students' learning and development.

8. To know and understand the professional duties and legislation related to the job.

9. Acting responsibly and critically within the legal and ethical framework (TED, 2009)

As can be seen from the explanations above, although teacher competencies cannot be expressed with standard criteria yet, it is useful to underline that there are some features that a qualified teacher should have. The curriculum knowledge included in these features is an important competence that can be directly effective to increase the efficiency of teaching processes and accompany students to the desired level. In addition to being knowledgeable and able to teach what they know very well, teachers are also the ones who facilitate learning and teach the ways of learning, implement the curriculum, manage education and evaluate both education and student (Sönmez, 2003). For this reason, curriculum knowledge provides benefits to teachers to carry out appropriate assessment-evaluation processes as well as to plan and implement learning-teaching processes.

It is possible with the pre-service and in-service training programs to gain curriculum knowledge competency to prospective teachers and teachers. However, it can be said that it is important for teachers who are obliged to teach and have some qualifications to fulfill their responsibilities in this regard and to start the profession by gaining these qualifications before the service (Taşgın and Sönmez, 2010). For this reason, the education received by pre-service teachers during their undergraduate education is very important to increase their professional competencies.

The general aim of this research is to evaluate the pre-service teachers' curriculum information in terms of various variables. In line with this goal, answers to the following questions were sought;

1. How do pre-service teachers' curriculum knowledge levels change by gender?

2. How the pre-service teachers' curriculum knowledge levels change according to their status of attending KPSS (Public Personnel Selection Exam) course?

3. How do the pre-service teachers' curriculum knowledge levels change according to the status of taking the curriculum development course content in the KPSS course?

4. How do the pre-service teachers' curriculum knowledge levels change according to their branches?

5. How do the pre-service teachers' curriculum knowledge levels change according to their grade point average?

6. How do the pre-service teachers' curriculum knowledge levels change according to the type of high school they graduated from?

7. How do the pre-service teachers' curriculum knowledge levels change according to the order of university preference of the department they study?

Considering that pre-service teachers will be the practitioners of the curriculum related to their branches soon, the results to be obtained in the research are expected to provide important feedback on the success of both curriculum development mechanisms and educational processes. It is also predicted that results will contribute to the evaluation of pre-service training processes of teacher candidates. In the literature, there are many studies to determine the professional competencies of teacher candidates. However, there is a limited study conducted by Çetinkaya and Tabak (2019), Süral and Dedebali, (2018), Erdem ve Eğmir (2018), Dönmez and Baştürk (2010) with pre-service teachers, and to determine the curriculum information of pre-service teachers. For this reason, it is thought that the results of this study, which was carried out with prospective teachers in different fields, will also contribute to the elimination of the deficiency in the literature.

2. Methodology

2.1. Research Design

In this study, which aims to determine which variables related to the curriculum knowledge levels of pre-service teachers studying in the last year, descriptive screening model was used. In the screening researches, researchers are generally concerned with how individuals and samplers are distributed rather than why opinions and features originate (Fraenkel & Wallen, 2006).

2.2. Study Group

The study group of this research consists of students studying in the 4th grade in the education faculty of a public university in Ankara in the spring term of the 2018-2019 academic year. Volunteering was based on participation in the study. After removing 6 incorrectly and incomplete forms from the data collection tools that were answered and returned, the remaining 257 forms were evaluated. Firstly, one-way extreme value analysis based on z scores was performed and 9 people were excluded from the evaluation. After the versatile extreme value analysis made according to the Mahalanobis distances, 11 people were removed from the dataset and the necessary analyzes were made on the remaining 237 people.

When the demographic characteristics of the pre-service teachers who constitute the study group of the study are examined, the first five preferences of the participants are the women (f = 197) and they attend the KPSS course (f = 146), the vast majority of them attend the university. (f = 105), they do not see the curriculum development course content in the KPSS course (f = 213) and the GPA is between 2.5-3.00 (f = 126).

2.3. Data Collection Tools

Two data collection tools were used to collect data within the scope of this research. These are "Personal Information Form" and "Curriculum Information Achievement Test".

Personal Information Form: In the study, "Personal Information Form" was applied to the participants, first of all, the status of going to the KPSS course, the status of seeing the content of the curriculum development course in the KPSS course, the section they read, the order they prefer the section they read, the general grade point average. This form was prepared by the researchers.

Curriculum Knowledge Achievement Test: The test, which was developed by researchers to measure the curriculum knowledge of pre-service teachers, consists of two parts and each part contains 20 questions. In the first part, general questions about the content of curriculum development are included and in the second part, questions about the curriculum of the teacher candidates' branches are included. While preparing the questions, the relevant literature and curriculums of various courses were used. While developing the success test in question, the following steps were followed:

1. In the test development process, firstly, the objectives, topics and the weight of the topics in the curriculum of the curriculum development were determined. A five-choice multiple-choice test item was written for both parts to measure each gain. In this direction, attention was paid to overlapping objectives and questions and a table of symptoms was prepared.

2. To ensure the content validity of the prepared test, the opinions of 2 curriculum developers in terms of compliance with the assessment-evaluation principles, 2 curriculum development specialists and grammar in the examination of the suitability in terms of content (symptom table and degree of achievements) and 1 Turkish Language specialist were asked for clarity. In line with the opinions of the experts, necessary corrections were made in the item roots and options.

3. After the corrections, to learn about the understandability of questions, application time, etc. application period, etc. a preliminary trial one-on-one application was carried with a group of 10 people.

4. After the information obtained from the pre-application and the necessary corrections, the pilot application was started. To determine the validity and reliability of the 53 items in the trial form, an application was made to a different group (210 people) than the group where the final application will be performed.

5. As a result of pilot implementation, item and test statistics were calculated using TAP and SPPS 23 package programs. For item analysis, the discrimination and difficulty indices of each item were calculated and 13 items that did not meet the criteria were removed from the test.

6. As a result, the item difficulty indexes ranged from 0.40 to 0.56, and the item discrimination force indexes ranged from 0.32 to 0.61. When the test statistics were examined, it was determined that the average difficulty of the test was 0.48 and the KR-20 reliability coefficient was 0.83. These results show that the developed 40-item success test is valid and reliable.

7. After the validity and reliability analyzes were completed, a 40-item achievement test consisting of 20 items related to the content of the curriculum development course and 20 items related to the curriculum of the branches was created.

8. Finally, the achievement test was applied to pre-service teachers studying in the final year and the knowledge levels of the candidates regarding the curriculum were tried to be revealed. While the lowest score that can be obtained from the scale is 0, the highest score is 40. While the actual application is being made, with a guideline per test, the purpose of this test, how long it will take, etc. information was written.

2.4. Data Analysis

To decide which statistical techniques to use in the analysis of the data, whether the data were normally distributed and the homogeneity of the variances was statistically tested. First of all, whether the data obtained from the groups show normal distribution or not was analyzed by descriptive methods, graphical methods and hypothesis testing. For descriptive methods, the skewness and kurtosis indices obtained by dividing the skewness, kurtosis coefficients and skewness and kurtosis coefficients by their standard error were examined. For graphical methods, it is examined whether the distribution is normal by looking at "box plot, histogram and line chart". "Kolmogorov-Smirnov test" was used for hypothesis testing. As a result of the Kolmogorov-Smirnov test using the methods mentioned above, it can be said that the distribution of the data is normal since the p values are greater than .05, the skewness-kurtosis coefficients and indices are in the desired range, and the graphs show notation for normality. Also, the homogeneity of the variances was examined with the "Levene's Test of Equality of Error Variances" and it was observed that the variances were homogeneous. As a result, parametric statistics were used since it was seen that the data met the parametric test conditions after the analyses. In this context, on the knowledge levels of prospective teachers participating in the research regarding the curriculum; With the t-test for independent samples, whether gender, going to KPSS course, seeing the content of the course development course in KPSS course affects; Whether the department they studied, the type of high school graduated, and whether the grade point average has an effect was examined with one-way analysis of variance (ANOVA). However, in the research, effect sizes () were calculated to determine the strength of the relationship between variables and values at the levels of 0.01, 0.06 and 0.14 were interpreted as small, medium and large effect sizes in the same order (Cohen, 1988).

In the research, the department's grade point average, graduated high school type and the high number of groups in its variables cause the error to increase. For this reason, Bonferroni correction was made to check the Type I error in comparing these variables. Bonferroni correction is determined by the formula of the significance level/number of groups (Vialatte & Cichocki, 2008). In this study, since the number of groups for teacher candidates was three, the level of significance was determined as .05/3 = .016 with the Bonferroni correction, while the number of groups for the graduated high school type and grade point average was four, this number was .05/4 = 0.012. In the comparisons made according to gender, going to KPSS course and taking curriculum development course in KPSS course, Bonferroni correction was not used since the number of groups was only two and the significance level was taken as .05 for these variables. The analysis of the data was done in SPSS 23.0 package program.

3. Findings

In this section, an answer was sought for the question of which variables related to the curriculum knowledge levels of pre-service teachers studying in the last year of the education faculty.

Findings of whether pre-service teacher candidates' curriculum knowledge level differs by gender

T-test for independent groups was used to determine whether the pre-service teachers' curriculum knowledge levels (in terms of curriculum development knowledge, curriculum knowledge of the field and total test score) differ according to gender and the results have been given in Table 1.

Table 1. The t-test for independent groups results of the pre-service teachers' curriculum knowledge by gender

Type of Knowledge	Gender	N	$\overline{X}$	ss	t	p	η2
Curriculum development knowledge	Woman	197	10.32	3.40	1.06	.29	
	Man	40	9.55	4.34			
Curriculum knowledge of the field	Woman	197	8.47	2.94	2.16	.03*	
	Man	40	7.13	3.72			
General curriculum knowledge	Woman	197	18.80	5.21	1.73	.09	.09
(Total test score)	Man	40	16.68	7.41			

When Table 1 is examined, it can be seen that the pre-service teachers' general curriculum knowledge and curriculum development knowledge did not differ significantly according to gender (t (47) = 1.73, t (47) = 1.06; p> 0.05) and curriculum knowledge related to their own fields showed a significant difference by gender (t (47) = 1.73, t (47) = 1.06; p> .05)). Female pre-service teachers' curriculum knowledge of fields (= 8.47) was higher than male candidates (= 7.13). As a result of the analyses, when the effect sizes for the t-test were examined, the degree of the effect (η) was found to be. 09. Accordingly, the effect was moderate and only 9% of the difference between the knowledge levels of women and men can be explained by gender.

Findings of whether pre-service teacher candidates' curriculum knowledge level differs according to their status of attending KPSS course

The results of the t-test for the independent groups, which were conducted to reveal whether the pre-service teachers' curriculum knowledge levels differ according to the situation they attend the KPSS course, have been given in Table 2.

Tablo 2. The t-test for independent groups results of the pre-service teachers' curriculum knowledge according to their status of attending KPSS course

Type of Knowledge	Status of attending KPSS course	N	$\overline{X}$	ss	t	p
Curriculum development knowledge	Yes	146	10.21	3.47	.31	.76
	No	91	10.07	3.70		
Curriculum knowledge of the field	Yes	146	8.18	2.87	.37	.71
	No	91	8.34	3.48		
General curriculum knowledge	Yes	146	18.40	5.46	.01	.99
(Total test score)	No	91	18.41	5.97		

As it can be seen in Table 2, pre-service teachers' curriculum development knowledge, curriculum knowledge of the field and general curriculum knowledge did not differ their status of attending KPSS course (t (235) =. 31, t (235) =. 37 t (235) =. 01; p> 0.05).

Findings of whether pre-service teacher candidates' curriculum knowledge level differs according to the status of taking the curriculum development course content in the KPSS course

The results of the t-test for the independent groups, which were conducted to reveal whether the knowledge levels of the pre-service teachers about the curriculum differ according to the status of taking the curriculum development course content in the KPSS course, have been given in Table 3.

Table 3. The t-test for independent groups results of the pre-service teachers' curriculum knowledge according to the status of taking the curriculum development course content in the KPSS course

Type of Knowledge	Status of taking the curriculum development course content	N	$\overline{X}$	ss	t	p
Curriculum development knowledge	Yes	24	9.47	2.75		
	No	213	10.30	3.63	1.01	.31
Curriculum knowledge of the field	Yes	24	8.33	2.61		
	No	213	8.27	3.15	.09	.93
General curriculum knowledge (Total test score)	Yes	24	17.81	5.01	.59	.55
	No	213	18.57	5.70		

According to Table 3, it was seen that the pre-service teachers' pre-service teachers' curriculum development knowledge, curriculum knowledge of the field and general curriculum knowledge did not differ according to the status of taking the curriculum development course content in the KPSS course (t (232) = 1.01, t (232) = .09, t (232) =. 59, p> 0.05).

Findings of whether pre-service teacher candidates' curriculum knowledge level differs according to their branches

Descriptive analysis and one-way analysis of variance (ANOVA) results have been presented in Table 4 and Table 5 to reveal whether the level of knowledge of teacher candidates regarding curriculum differs according to their branches.

Table 4. The results of the descriptive analysis in which pre-service teachers' curriculum knowledge were compared according to their branches

Type of Knowledge	Branches	N	$\overline{X}$	Ss
Curriculum development knowledge	Pre-school teaching	121	10.65	2.96
	Classroom teaching	75	10.99	3.94
	Science teaching	41	7.34	3.21
	Total	237	10.19	3.57
Curriculum knowledge of the field	Pre-school teaching	121	8.82	2.58
	Classroom teaching	75	9.01	3.25
	Science teaching	41	5.17	2.41
	Total	237	8.25	3.11
General curriculum knowledge (Total test score)	Pre-school teaching	121	19.47	4.41
	Classroom teaching	75	20.00	5.94
	Science teaching	41	12.51	4.73
	Total	237	18.44	5.67

Table 5. The results of one-way analysis of variance (ANOVA) where pre-service teachers' curriculum knowledge were compared according to their branches

Type of Knowledge	Source	Sum of squares	Df	F	p
Curriculum development knowledge	Between groups	405.82	2		
	In-groups	2620.05	235	18.20	.00*
	Total	3025.87	237		
Curriculum knowledge of the field	Between groups	472.05	2		
	In-groups	1822.82	235	30.43	.00*
	Total	2294.87	237		
General curriculum knowledge (Total test score)	Between groups	1751.94	2		
	In-groups	5858.61	235	35.14	.00*
	Total	7610.56	237		

*p < .05

When Table 5 is examined, it can be seen that the pre-service teachers' curriculum development knowledge, curriculum knowledge of the field and general curriculum knowledge regarding the field differ significantly according to their branches (F (2-237) = 18.20, F (2-237) = 30.43, F (2-237) = 35.14,; (p <.05).

A multiple comparison (post-hoc) test was carried out to reveal the difference between which groups this difference was due to. Since the variances are homogeneously distributed but the sample numbers in the groups were not equal, the results of the Scheffe test, one of the post-hoc tests were taken into consideration and the results were given in Table 6.

Table 6. The results of the Scheffe test in which pre-service teachers' curriculum knowledge levels were compared according to their branches

Type of Knowledge	Branche (i)	Branche (j)	Mean difference (i-j)	Standard error	p
Curriculum development knowledge	Pre-school teaching	Classroom teaching	-.34	.49	.79
		Science teaching	3.31	.60	**.00***
	Classroom teaching	Pre-school teaching	.34	.49	.79
		Science teaching	3.65	.65	**.00***
	Science teaching	Pre-school teaching	-3.31	.60	**.00***
		Classroom teaching	-3.65	.65	**.00***
Curriculum knowledge of the field	Pre-school teaching	Classroom teaching	-.19	.41	.89
		Science teaching	3.65	.50	**.00***
	Classroom teaching	Pre-school teaching	.19	.41	.89
		Science teaching	3.84	.54	**.00***
	Science teaching	Pre-school teaching	-3.65	.50	**.00***
		Classroom teaching	-3.84	.54	**.00***
General curriculum knowledge (Total test score)	Pre-school teaching	Classroom teaching	-.53	.73	.77
		Science teaching	6.96	.90	**.00***
	Classroom teaching	Pre-school teaching	.53	.73	.77
		Science teaching	7.49	.97	**.00***
	Science teaching	Pre-school teaching	-6.96	.90	**.00***
		Classroom teaching	-7.49	.97	**.00***

*p <.016

As can be understood from Table 6, it was determined that the differentiation of pre-service teachers according to the branches of their general curriculum was due to the pre-service teachers studying in the science education branch. The difference between the general curriculum knowledge of pre-service teachers studying in science education and the general curriculum knowledge of pre-service teachers of the classroom and pre-school teaching turned out to be significant (p <.016). It was observed that the general

curriculum knowledge of pre-service teachers studying in science education was lower than in other branches (Table 4). It was determined that the differentiation of pre-service teachers' curriculum knowledge of field levels was again due to the pre-service teachers studying in science education. The difference between the curriculum development knowledge levels of pre-service science teachers and pre-school and classroom pre-service was found to be significant (p <.016). It was observed that the pre-service science teachers' curriculum development knowledge level was lower than that of the other branches (Table 4).

Finally, it was determined that the differentiation of pre-service teachers' curriculum knowledge level of the field was again due to the pre-service teachers studied in science education. The difference between the curriculum knowledge of field levels of science pre-service teachers the pre-school and classroom pre-service teachers was found to be significant (p <.016). It was observed that the pre-service teachers' curriculum knowledge level of the field were lower than those in other branches (Table 4). Also, when the averages of the pre-service teachers according to their knowledge types were examined, it was determined that the curriculum development knowledge of the pre-service teachers in all three branches was better than the curriculum knowledge of the field (Table 4).

Findings of whether pre-service teacher candidates' curriculum knowledge level differs according to their GPA

The results of descriptive analysis and one-way analysis of variance that was carried out to reveal whether pre-service teacher candidates' curriculum knowledge level differ according to their GPA were presented in Table 7 and Table 8.

Table 7. The results of the descriptive analysis in which pre-service teachers' curriculum knowledge were compared according to their GPA

Type of Knowledge	GPA	N	$\overline{X}$	Ss
Curriculum development knowledge	between 2-2.5	14	8.50	3.53
	between 2.5-3	126	9.81	3.69
	between 3-3.5	85	10.97	3.25
	between 3.5-4	12	10.58	3.73
	Total	237	10.19	3.57
Curriculum knowledge of the field	between 2-2.5	14	6.71	3.58
	between 2.5-3	126	7.72	3.18
	between 3-3.5	85	9.15	2.74
	between 3.5-4	12	9.25	2.67
	Total	237	8.25	3.11
General curriculum knowledge (Total test score)	2-2.5 arası	14	15.21	6.42
	2.5-3 arası	126	17.54	5.98
	3-3.5 arası	85	20.12	4.55
	3.5-4 arası	12	19.83	5.36
	Total	237	18.44	5.67

Table 8. The results of one-way analysis of variance in which pre-service teachers' curriculum knowledge were compared according to their GPA

Type of Knowledge	Source	Sum of Squares	df	F	p	Eta-squared
Curriculum development knowledge	Between groups	111.09	3			
	In-groups	2914.78	234	2.97	.032*	.04
	Total	3025.87	237			
Curriculum knowledge of the field	Between groups	149.40	3			
	In-groups	2145.47	234	5.43	.00*	.06
	Total	2294.87	237			
General curriculum knowledge (Total test score)	Between groups	512.12	3			
	In-groups	7098.44	234	5.63	.00*	.07
	Total	7610.56	237			

*p < .05

When Table 8 was analyzed, it was seen that the pre-service teachers' general curriculum knowledge, curriculum development knowledge and curriculum knowledge of field showed a significant difference according to their GPA (F (2-237) = 35.14, F (2-237) = 18.20, F (2- 237) = 30.43; p <.05). When the effect size values were analyzed, it can be said that 7% of the variance in the general curriculum, 4% in the curriculum development knowledge and 6% curriculum knowledge of field were explained with GPA and it can be said that the effect was approximately medium in all types of knowledge. Also, multiple comparison (post-hoc) tests were conducted to determine which groups the resulting difference was between. Since the variances were distributed homogeneously but the sample numbers in the groups were not equal, the results of the Scheffe test, one of the post-hoc tests, were taken into consideration and the results were given in Table 9.

Table 9. The results of the scheffe test in which pre-service teachers' curriculum knowledge levels were compared according to their GPA

Type of knowledge	GPA (i)	GPA (j)	Mean Difference (i-j)	Standard error	P
Curriculum development knowledge	Between 2-2.5	Between 2-2.5	-1.31	.99	.629
		Between 2.5-3	-2.47	1.02	.122
		Between 3.5-4	-2.08	1.39	.523
	Between 2.5-3	Between 2-2.5	1.31	.99	.629
		Between 2.5-3	-1.15	.50	.145
		Between 3.5-4	-.77	1.07	.913
	Between 3-3.5	Between 2-2.5	2.47	1.02	.122
		Between 2.5-3	1.15	.50	.145
		Between 3.5-4	.38	1.09	.989
	Between 3.5-4	Between 2-2.5	2.08	1.39	.523
		Between 2.5-3	.77	1.07	.913
		Between 3.5-4	-.38	1.09	.989
Curriculum knowledge of the field	Between 2-2.5	Between 2-2.5	-1.01	.85	.705
		Between 2.5-3	-2.44	.87	.053
		Between 3.5-4	-2.54	1.19	.213
	Between 2.5-3	Between 2-2.5	1.01	.85	.705
		Between 2.5-3	-1.43	.42	.011*
		Between 3.5-4	-1.53	.92	.428
	Between 3-3.5	Between 2-2.5	2.44	.87	.053
		Between 2.5-3	1.43	.42	.011*
		Between 3.5-4	-.10	.93	1.000
	Between 3.5-4	Between 2-2.5	2.54	1.19	.213
		Between 2.5-3	1.53	.92	.428
		Between 3.5-4	.10	.93	1.000
General curriculum knowledge	Between 2-2.5	Between 2-2.5	-2.32	1.55	.525
		Between 2.5-3	-4.90	1.59	.025
		Between 3.5-4	-4.62	2.17	.211

(Total test score)		Between 2-2.5	2.32	1.55	.525
	Between 2.5-3	Between 2.5-3	-2.58	.77	.012
		Between 3.5-4	-2.30	1.66	.529
		Between 2-2.5	4.90	1.59	.025
	Between 3-3.5	Between 2.5-3	2.58	.77	.012
		Between 3.5-4	.28	1.70	.999

*p < .012

As can be understood from Table 9, it was determined that the difference of the curriculum knowledge levels of the pre-service teachers according to the grade averages was caused by the difference between the pre-service teachers with a grade point average of 2.5-3 and the pre-service teachers with a grade point average of 3-3.5. The difference between the curriculum knowledge levels of pre-service teachers who have a grade point average of 2.5-3 and the knowledge level of their teachers about their areas between 3-3.5 is significant (p <.05). It was observed that the pre-service teachers' knowledge level of their areas with a grade point average of 2.5-3 was higher than the pre-service teachers with a grade point average of 3-3.5. However, no significant difference was found in the bilateral comparisons made according to the overall grade point average of the pre-service teachers' curriculum knowledge and curriculum development knowledge.

Findings of whether pre-service teacher candidates' curriculum knowledge level differ according to the type of high school they graduated from

Descriptive analysis and one-way analysis of variance analysis were carried out to reveal whether the pre-service teachers' knowledge levels regarding the curriculum differ according to the type of high school they graduated from. The results of this analysis were presented in Table 10 and Table 11.

Table 10. The results of the descriptive analysis in which pre-service teachers' curriculum knowledge were compared according to the type of high school they graduated from

Type of knowledge	High school type	N	$\overline{X}$	Ss
Curriculum development knowledge	Anatolian H.S	72	10.94	3.56
	Teacher H.S	12	11.67	4.44
	Vocational H.S	78	9.83	3.36
	Other	75	9.59	3.54
	Total	237	10.19	3.57
Curriculum knowledge of the field	Anatolian H.S	72	8.36	3.13
	Teacher H.S	12	8.92	3.23
	Vocational H.S	78	8.50	3.33
	Other	75	7.79	2.83
	Total	237	8.25	3.11
General curriculum knowledge (Total test score)	Anatolian H.S	72	19.31	5.61
	Teacher H.S	12	20.58	6.72
	Vocational H.S	78	18.33	5.61
	Other	75	17.39	5.49
	Total	237	18.44	5.67

Table 11. The results of one-way analysis of variance in which pre-service teachers' curriculum knowledge were compared according to the type of high school they graduated from

Type of knowledge	Source	Sum of squares	sd	F	p
Curriculum development knowledge	Between groups	104.23	3		
	In-groups	2921.63	234	2.78	.04*
	Total	3025.87	237		

Curriculum knowledge of the field	Between groups	27.22	3	.94	.42
	In-groups	2267.66	234		
	Total	2294.87	237		
General curriculum knowledge (Total test score)	Between groups	195.09	3	2.05	.11
	In-groups	7415.46	234		
	Total	7610.56	237		

*p < .05

As it can be seen in Table 11, the pre-service teachers' general curriculum knowledge and the curriculum knowledge of field did not differ significantly from the high school type they graduated from ((F (3-237) = 2.05, F (3-237)= 0.94; p> .05), it was seen that the curriculum development knowledge showed a significant difference according to the type of high school they graduated ((F (3-237) = 2.78; p <.05). However, since the level of significance was quite low, no difference was detected.

Findings of whether pre-service teacher candidates' curriculum knowledge level differs according to the order of university preference of the department where they study

The results of descriptive analysis and one-way analysis of variance made to reveal whether pre-service teacher candidates' curriculum knowledge level differ according to the order of university preference of the department where they study were presented in Table 12 and Table 13.

Table 12. The results of the descriptive analysis in which pre-service teachers' curriculum knowledge were compared according to the order of university preference of the department where they study.

Type of knowledge	Order of preference	N	$\overline{X}$	sd
Curriculum development knowledge	Between 1-5	105	0.05	3.42
	Between 6-10	83	10.14	3.60
	Between 11-15	18	11.33	3.65
	Between 16-20	16	9.69	2.50
	21 and above	15	10.53	5.19
	Total	237	10.19	3.57
Curriculum knowledge of the field	Between 1-5	105	8.21	2.75
	Between 6-10	84	7.89	3.30
	Between 11-15	18	9.39	2.68
	Between 16-20	16	8.38	3.03
	21 and above	15	9.07	4.64
	Total	233	8.25	3.11
General curriculum knowledge (Total test score)	Between 1-5	105	18.26	5.02
	Between 6-10	83	18.04	6.21
	Between 11-15	18	20.72	5.83
	Between 16-20	16	18.06	4.51
	21 and above	15	19.60	7.45
	Total	237	18.44	5.67

Table 13. The results of one-way analysis of variance in which pre-service teachers' curriculum knowledge were compared according to the order of university preference of the department where they study.

Type of knowledge	Source	Sum of squares	sd	F	p
Curriculum development knowledge	Between groups	31.65	4	.62	.652
	In-groups	2994.22	233		
	Total	3025.87	237		
Curriculum knowledge of the field	Between groups	44.49	4	1.15	.333
	In-groups	2250.39	233		

	Total	2294.87	237		
General curriculum knowledge (Total test score)	Between groups	133.46	4	1.04	.387
	In-groups	7477.10	233		
	Total	7610.56	237		

As a result of one-way analysis of variance; it was determined that the pre-service teachers' curriculum development knowledge, curriculum knowledge of the field and general curriculum knowledge did not change significantly in the order they preferred the section they studied (F (4-237) =. 62, F (4-237) =. 1.15, (F (4-237) = 1.04;p> .05).

4. Discussion, Conclusion and Suggestions

Teaching is a profession that consists of competencies in three fields: general culture, field knowledge and teaching knowledge. Although the teaching knowledge included in these competencies has many sub-component; the curriculum, which is one of those components and content knowledge is one of the characteristics that a teacher should have to be a good instructive. For this reason, teacher candidates need to be trained in such a way that they can have this competence from the beginning of the teacher training process, not only for teachers but also for improving the quality of teaching processes.

With this study, it has been tried to determine the curriculum knowledge levels of pre-service teachers and to investigate whether the curriculum knowledge levels of them differ according to various variables. For this purpose, the knowledge levels of pre-service teachers were determined by using the average scores they obtained from the achievement test used in the study (general curriculum knowledge), their average scores obtained only from curriculum development questions and the average scores they received only from the questions related to the curriculum of the field they studied; and the relationship between these averages and each variable was handled separately. Accordingly, it was first examined whether the knowledge levels of teacher candidates differ according to the gender variable and as a result of the obtained findings, it was concluded that the curriculum knowledge of the field of pre-service teachers significantly differed in favor of female pre-service teachers.

In the study the relationship between pre-service teachers' curriculum knowledge level and their status of attending Kpss course; and if they are attending the relationship with the status of taking the curriculum development course in these courses was also examined. No significant difference was found in the analysis results for both variables. According to this result, it can be said that the relevant courses taken by pre-service teachers in the education faculty were determinant on the curriculum knowledge and other supplements for supplementary purposes did not have a noticeable effect. This situation reminds us once more of the importance of pre-service teachers' education.

Teacher education, which is a comprehensive and multidimensional process, covers all issues such as the selection of pre-service teachers, pre-service education, implementation period, monitoring-evaluation studies and in-service education (Çelikten, Şanal and Yeni, 2005). Education faculties are the institutions that are involved in these issues and are responsible for the organization of pre-service education processes. The main element that should be taken into consideration in the regulation of these processes is undoubtedly the competencies and features determined for the teaching profession. For this reason, most of the courses offered in education faculties, especially pedagogy courses, should be qualified to increase the professional competencies and qualifications of prospective teachers. Considering that the primary responsibilities of pre-service teachers in their future professional lives are "teaching" and expected to realize these responsibilities within the "curricula" offered to them, it is thought that organizing these lessons in a way that will enable them to define the curriculum as much as possible will contribute to them to fulfill this responsibility in the best way possible.

Since the participant teacher candidates in the study were from different branches, it was also aimed to determine whether the curriculum knowledge levels differ according to their branches. Accordingly, it was determined that the average of all three points of teacher candidates differed significantly according to their branches. According to the findings, it was concluded that the current difference resulted from pre-service teachers studying at science teaching and that science teacher candidates had a relatively low level of

curriculum knowledge for all three types of points. The results of similar studies support these findings. In their studies, Çetinkaya and Tabak (2019) concluded that the pre-service classroom teachers' curriculum knowledge levels were higher than that of mathematics and pre-school teachers. Süral and Dedebali, in their studies (2018), concluded that the curriculum levels of social studies teacher candidates were higher than pre-school teacher candidates. Erdem and Eğmir (2018), on the other hand, obtained the conclusion that Turkish teacher candidates' education curriculum knowledge levels were higher than that of mathematics teacher candidates. As can be seen, the level of curriculum knowledge of teacher candidates in different studies in the literature varies according to the field they are studying. It is thought that this difference may have resulted from the lecturers who are responsible for the courses they have taken during their undergraduate education. Pre-service teachers studying in different departments or even in different branches in the same department can take many common courses from different instructors. This situation may result in the diversity of the lessons being taught by reflecting on the teaching process of many professional and personal characteristics that depend on the instructors. Considering that there are some common competencies and features that are expected to be acquired for all teacher candidates during their pre-service education; it is envisaged that the content of the courses offered in the education faculties will be facilitated to train qualified teachers who do not have any professional deficiencies, including the curriculum knowledge, by all responsible lecturers in line with these competencies and features.

In the study, it was also determined that the level of curriculum development knowledge were commonly higher than the curriculum knowledge of their fields. All of the pre-service teachers did not take the curriculum development course during their pre-service education but they took other pedagogy courses. Considering this with the results of the study it is thought that they had seen the basic concepts related to curriculum development in the relevant pedagogy courses, especially teaching principles and methods; but the contents of these courses and the applications made to recognize the curriculum of their fields in the courses were inadequate. It is thought that in the courses given in the education faculties, benefiting more from the curricula of teacher candidates' branches and increasing the number of applications related to the curricula will be beneficial in eliminating the said inadequacy.

When the relationship between pre-service teachers' grade point averages and curriculum knowledge levels; it was observed that the general curriculum knowledge and the branches that they studied were significantly different. According to this, the general curriculum knowledge of pre-service teachers with a grade point average of 3-3.5 was higher than the pre-service teachers with a grade point average between 2-2.5 and 2.5-3. It was also observed that the curriculum knowledge of fields of the pre-service teachers' whose grade point average were between 2.5-3 was the higher than the pre-service teachers whose grades were between 3-3.5. Although it is expected that pre-service teachers' general curriculum knowledge increased compared to the average of their grades, it is thought that the curriculum knowledge of their fields changed in favor of the students with a low grade point average was since they had taken the course from different lecturers as in the previous variables or since the grades of the courses other than pedagogy courses were included in the averages. On the other hand, when the relationship between pre-service teachers' high school type and curriculum knowledge was examined; it was observed that only the curriculum development knowledge differed significantly according to the type of high school they graduated but this level of significance remained at a very low level. Finally, it was determined that there was no significant difference between the pre-service teachers' preferences of the department in which they are trained and the curriculum knowledge levels.

When the results obtained in the study are evaluated as holistic, it can be said that the variables that are determinant on the curriculum knowledge of pre-service teachers are gender, branch and grade point average. Apart from these variables, which are related to the knowledge levels of prospective teachers, another finding that is thought to be important is the values related to the averages taken by the participants from the entire achievement test (general curriculum knowledge). Considering that the test averages of teacher candidates in different branches are at most half of the total score that can be obtained from the test; it would be correct to say that the curriculum knowledge levels are insufficient (Table 4). Similarly; Dönmez and Baştürk (2010) showed that prospective mathematics teachers have superficial knowledge about mathematics curriculum. Accordingly, it is thought that there is a need to include the curriculum development course, which is offered only in the social studies teaching program in the education faculties,

in the common pedagogy courses for all programs. Due to the stated reasons, it is thought that taking precautions to increase the curriculum knowledge in the courses to be taken by pre-service teachers, especially this course, will benefit from the deficiencies identified in the study.

On the other hand, it is thought that the low level of pre-service teachers' curriculum knowledge level may be since they did not take into account the curriculum adequately during their pre-service education. Baştürk and Dönmez (2010) attributed the pre-service teachers' failure to take into account the curriculum adequately and the fact that institutional responsibility had not yet occurred. On the other hand, Robert, Lattuati and Penninckx (1999) stated that one of the most important factors affecting the formation of corporate responsibility awareness in teachers was the institution-based sanctions studied. Therefore, as emphasized by Baştürk and Dönmez (2011), although the curriculum was explained within the scope of related courses in education faculties; pre-service teachers might not take enough attention to the program because they are far from the administrators and inspectors who question their lectures. In this context, it was thought that increasing the internship practices of teacher candidates during their pre-service education and following these practices seriously by both the internship coordinators of the faculties and the school administrators where they do internship may provide the prospective teachers to consider the curriculum more.

References

Arslan, S., Özpınar, İ. (2008). Öğretmen nitelikleri: İlköğretim programlarının beklentileri ve eğitim fakültelerinin kazandırdıkları. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi, 2*(1).

Basturk, S., & Donmez, G. (2011). Examining pre-service teachers' pedagogical content knowledge concerning curriculum knowledge. *International Online Journal of Educational Sciences, 3*(2), 743-775.

Basturk, S. & Donmez, G. (2010). Pedagojik Alan Bilgisinin Bir Bileşeni Olarak Matematik Öğretmen Adaylarının Öğretim Programı Bilgisi, Uluslararası Öğretmen Yetiştirme Politikaları ve Sorunları Sempozyumu II 16–18 Mayıs 2010 – Hacettepe Üniversitesi, Beytepe-ANKARA

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Erlbaum.

Çelikten, M. Şanal, M. & Yeni, Y. (2005), Öğretmenlik Mesleği ve Özellikleri, *Erciyes Üniversitesi, Sosyal Bilimler Enstitüsü Dergisi,* 19(2), 207-237.

Çetinkaya, S., & Tabak, S. (2019). Öğretmen Adaylarının Eğitim Programı Okuryazarlık Yeterlilikleri. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi, 38*(1), 296-309. doi:10.7822/omuefd.535482

Demirel, Ö. (1999). Planlamadan Değerlendirmeye Öğretme Sanatı, Ankara: Pegem A.

Erdem, C., & Eğmir, E. (2018). Öğretmen adaylarının eğitim programı okuryazarlığı düzeyleri. *Afyon Kocatepe University Journal of Social Sciences, 20*(2), 123-138.

Fraenkel & Wallen (2006). How to Design and Evaluate Research in Education, (6th Ed.). McGraw-Hill.

Gökçe, E. (2003). Gelişmiş Ülkelerde Sınıf Öğretmeni Yetiştirme Uygulamaları, Uluslararası Dünya Öğretmen Eğitimi Konferansı (27 Ağustos-2 Eylül 1995), Ankara, MEB Öğretmen Yetiştirme ve Eğitimi Genel Müdürlüğü.

Grossman, P. (1990). The making of a teacher: Teacher knowledge and teacher education. New York: Teachers College Press.

Milli Eğitim Bakanlığı [MEB]. (2017). Öğretmenlik mesleği genel yeterlikleri. http://oygm.meb.gov.tr/meb_iys_dosyalar/2017_12/11115355 Date of Access: 21.03.2020

Özer, B., & Gelen, İ. (2008). Öğretmenlik mesleği genel yeterliklerine sahip olma düzeyleri hakkında öğretmen adayları ve öğretmenlerin görüşlerinin değerlendirilmesi. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *5*(9), 39-55.

Posner, G. J. (1995). Analyzing the curriculum. Second Ed. New York: McGraw-Hill, Inc

Robert, A., Lattuati, M., & Penninckx, J. (1999). L'enseignement des mathématiques au Lycée: Un Point de vue Didactique. Paris: Ellipses.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4–14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1-22.

Süral, S., & Dedebali, N. C. (2018). Study of curriculum literacy and information literacy levels of teacher candidates in department of social sciences education. *European Journal of Educational Research, 7*(2), 303-317. doi: 10.12973/eu-jer.7.2.303

Taşgın, A., & Sönmez, S. (2010). Öğretmenlik Mesleği Genel Yeterliklerinin Sınıf Öğretmenleri ve Sınıf Öğretmeni Adaylarının Görüşlerine Göre Değerlendirilmesi (Öğretme ve Öğrenme Süreci Yeterlikleri-Öğrenmeyi, Gelişimi İzleme ve Değerlendirme Yeterlikleri). Yayımlanmamış yüksek lisans tezi, Atatürk Üniversitesi Sosyal Bilimler Üniversitesi, Erzurum.

Türk Eğitim Derneği. (2009). Öğretmen Yeterlikleri: Özet Rapor 1. Baskı, Ankara

Sönmez, V. (2003). Öğretmenlik mesleğine giriş. Ankara: Anı Yayıncılık.

Vialatte, F. B. & Cichocki, A. (2008). Split-test Bonferroni correction for QEEG statistical maps. Biological Cybernetics, 98(4), 295-303. doi:10.1007/s00422-008-0210-8