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## Investigation of Marital Satisfaction in terms of Proactive Personality, Meaning in Life, Offense-Specific Forgiveness

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### ABSTRACT

This research aimed to investigate marital satisfaction with respect to proactive personality, meaning in life, and offense-specific forgiveness in marriage. Research data were collected from 350 married using the, Marital Offence-Specific Forgiveness Scale (MOFS), Satisfaction with Married Life Scale, Proactive Personality Scale, and Meaning in Life Questionnaire. The data were analyzed with regression and Pearson correlation coefficient to test the hypotheses of this research. The results showed that there is a positive correlation between marital satisfaction and meaning in life and proactive personality. It is also concluded that there is a negative correlation between marital satisfaction and resentment-avoidance, one of the sub-dimensions of offense-specific forgiveness in marriage. According to the regression analysis in the study, proactive personality, meaning in life, and resentment-avoidance variables, which are sub-dimensions of offense-specific forgiveness in marriage, were found to predict marital satisfaction significantly.

#### Keywords:

Marital satisfaction, proactive personality, meaning in life, offense-specific forgiveness in marriage

### 1. Introduction

When human life is considered, the majority of people's lives seem to be spent within the marriage process. The marriage bond affects the individual in many aspects. It is stated that marriage enables the fulfillment of essential needs such as belonging, loving, and being loved, allowing the person to survive (Çelik, 2012). It is emphasized that individuals expect to be happy when they step into marriage (Derebaşı, 2004). The fulfillment of this expectation determines satisfaction and gratification obtained from marriage (Üncü, 2007). In addition, another critical point is that marital satisfaction affects the psychological status of individuals (Güven, 2005). A good and strong marital relationship is the key to a happy life and psychological well-being (Amato & Keith, 1991). Backing this hypothesis, Tufan Çetin (2010) concluded that individuals with higher fulfillment in their marriage had higher life satisfaction and were less likely to experience depression. Another study concluded that individuals with high marital satisfaction had lower blood pressure and stress levels, slept better, and went to see a doctor fewer times (Craig & Olsen, 1995). In summary, marital satisfaction is a crucial variable contributing to both the biological and psychological health of individuals.

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The social institution of family, which is the core of the society, is based on the fact that two adult people, a man, and a woman, are in a long-term, satisfying relationship (Levinger & Huston, 1990). Marriage is described as creating an environment where two people come together and fulfill their needs (Erbek et al., 2005). While marriage is a root of joy and satisfaction for some people, it may bring many negativities for some people. It is considered that having an unhappy and dissatisfied marriage may be negatively related to life satisfaction, general happiness, self-confidence, as well as general wellness (Laub et al., 1998). The findings of researches reveal that the high marital satisfaction of couples positively affects the mental and physical health of the spouses (Mascaro & Rosen, 2005; Taş, 2011). The increase in divorce rates affects not only the families, i.e. the couples and their children, but it also affects the general society. While happy and satisfying marriages ensure the welfare of couples and their children, they also play an important role by contributing to the general peace of society (Bradbury et al., 2000). In this context, it is significant for individuals to get satisfaction from their marriage to maintain the marriage union and not result in divorce (Rosen-Grandon et al., 2004). From this perspective, studies on marital satisfaction are considered necessary in providing an opportunity for couples to develop some interventions to prevent marital problems and divorce for the benefit of society through healthy marriages and the welfare of the individual and the family (Bradbury et al., 2000).

Conflict is an inevitable relationship experience, and all couples are faced with coping with conflict (Marchand, 2004). It is emphasized that solving problems is more important than conflict in the marital relationship (McCabe, 2006). People with proactive personalities are regarded to be willing to talk about disagreements, think flexibly, and constructive problem-solving skills are essential for them in terms of marital satisfaction. Besides problem-solving skills, meaning in life might have an impact in marital satisfaction. It is believed that the meaning of life is a motivational tool that provides the rhythm of life. In this context, Frankl (1963) stated that individuals who do not have meaning in their lives will be meaningless, unplanned, and aimless. Literature points out that individuals who make their life meaningful have positive emotions, so they consider themselves happy and satisfied in life (Hicks & King, 2007). In addition, people who want to make their lives meaningful need others. In this respect, it is thought that there may be a correlation between marital satisfaction and the meaning of life. Another important consideration with regard to marital satisfaction is forgiveness. Although marriage is a root of joy and contentment for individuals, it can also be a source of problems and conflicts (Güven & Sevim, 2007). For a happy marriage and consequently a happy life, the ability to forgive in marriage is considered essential. Fenell (1993) states that in long-lasting marriages, the partners' behaviours to forgive and ask for forgiveness have a significant contribution to their marital satisfaction and the longevity of their marriage.

Family, marriage and romantic relationships in the literature review of the information obtained as a result of a general review of personality traits (Bateman & Crant, 1993; Cihan-Güngör, 2007), forgiveness (Çitil & Durmuş, 2015; Fincham & Beach, 2002), psychological factors closely related to mental health, such as the meaning in life (Mascaro & Rosen, 2005; Taş, 2011) can be concluded that marital satisfaction and the quality of marriage relationship is important. From a general review of literature about family, marriage and romantic relationships, it can be concluded that personality traits (Bateman & Crant, 1993; Cihan-Güngör, 2007), forgiveness (Çitil & Durmuş, 2015; Fincham & Beach, 2002), psychological factors closely related to mental health, such as the meaning in life (Mascaro & Rosen, 2005; Taş, 2011) are influential in marital satisfaction and the quality of marriage relationship. Furthermore, marriage is a joint life where two people combine their lives. It is an institution that accepts and aims to be happy. Satisfaction in marriage is highly significant to realizing each other's expectations and for individuals to be happy. It is known that marriages with a lack of satisfaction can result in divorce, negatively affecting both spouses and children, especially nowadays, when divorce rates are increasing. Therefore, this research investigated the relationship between proactive personality, meaning in life, and forgiveness in marriage and marital satisfaction, which are thought to be substantial determinants of marital satisfaction.

### **1.1. Marital Satisfaction**

Marital satisfaction can affect the dynamics of the connection between couples and all individuals in the family. Marital satisfaction is defined as a situation involving married individuals' mutual interactions and subjective evaluation of all emotional and cognitive experiences in marriage (Collard, 2006). It is stated that the communication style of the spouses, the language of love, and sexual satisfaction are important elements

influencing marital satisfaction in the functioning of the marriage relationship (Sokolsi & Hendrick, 1999). Marital satisfaction is thought to be considerably related to life fulfillment, happiness, subjective well-being, and resilience (Çelik, 2012; Heller et al., 2006). In addition, studies found that depression and sexual dysfunction were high in individuals with low marital satisfaction, and their quality of life was negatively affected (Güleç, 2012; Hünler & Gençöz, 2003).

In addition, marital satisfaction was negatively affected due to insufficient submissive behaviours to solve problems between spouses (Hünler & Gençöz, 2003), whereas marital satisfaction was positively impacted in individuals using collaborative conflict resolution methods (Greeff & Bruyne, 2000). In the research studies on marital satisfaction; job satisfaction of married individuals (Litzinger & Gordon, 2005); high self-efficacy and self-regulation (Cihan-Güngör, 2007); being open to development (Bouchard et al., 1999), and having meaning in life (Güven, 2005; Taş, 2011) positively correlated with marital satisfaction; while unrealistic relationship expectations (Güven, 2005) neuroticism (Karney & Bradbury, 1997), hedonistic personality traits (Najarpourian et al., 2012), depression (Cohan & Bradbury, 1997), and stress (Craig & Olsen, 1995) were found to be negatively related. As observed in the literature, a large body of research examined the connection between personality traits and marital satisfaction. However, no studies have investigated the relationship between marital satisfaction and proactive personality.

## **1.2. Proactive Personality**

People who have a proactive personality can influence and alter the environment (Bateman & Crant, 1993), take individual responsibilities, and deal with different solutions to eliminate the problem (Gupta & Bhawe, 2007). Studies conclude that the proactive personality trait is related to being determined (Crant, 2000), having extrovert and leading characteristics (Bateman & Crant, 1993), and success in career (Seibert et al., 1999). Instead of accepting the conditions they face while creating change, proactive people take action by taking advantage of opportunities rather than emotions (Seibert et al., 1999). When the studies on marital satisfaction as well as proactive personality are evaluated together, it is seen that both variables are related to factors such as being open to innovation, being extroverted and empathic, being able to express their feelings, and having problem-solving skills. Therefore, it is assumed that there may be a positive connection between marital satisfaction and proactive personality in the present research.

## **1.3. Meaning in Life**

The meaning in life, which is a crucial motivation tool for individuals' subjective well-being, can also be a structure that facilitates adaptation. The meaning in life, which encourages people to get out of inertia and takes their primary responsibilities towards their own goals, is seen as a psychological necessity. According to Frankl (1963), one can find it in three ways; by creating work, developing an attitude towards pain, and interacting with a human being. When subjective well-being, one of the concepts related to meaning in life, is analyzed, it is understood that increased life satisfaction and happiness are reported in married individuals (Taş, 2011). What life means for us is also connected with our mood, while meaninglessness is associated with mental disorders. In literature, however, the connection between meaning of life and marital satisfaction has not been investigated. Studies examined the connection between close relationships and the meaning sought in life; and the findings suggest that while the meaning level increases in life, a considerable amount of focus on relationship satisfaction and self-confidence increase in the relationship (Güven, 2005). The meaning in life may also be related to marital satisfaction in married individuals because both variables are related to concepts such as hope, satisfaction, psychological well-being, and forgiveness as positive mood states.

## **1.4. Offense-Specific Forgiveness in Marriage**

Forgiveness can have a positive effect on overcoming stressful experiences in human life. The concept of forgiveness is described as an attempt to improve good skills such as kindness, helpfulness by deliberately getting rid of the negative emotions against the person whose feelings such as anger and vengeance are felt (Bugay & Demir, 2011). The concept of forgiveness, which is essential in maintaining relations without harm, has been examined in romantic relationships (Reed & Enright, 2006) and marriage relationships (Ezerçe, 2016; Paleari et al., 2005). To forgive each other in married individuals, negative emotions such as payback and rage are replaced by good feelings such as trust and hope. Therefore, forgiveness can be used as an

intervention method to solve marital problems (Gordon & Baucom, 2003). In addition, forgiveness increases the quality and continuity of family relationships (Fichman, 2015; Kato, 2016).

Through resentment and avoidance behaviours in marriage, couples tend to avoid resolving the conflict verbally and directly. Resentment and avoidance in marriage can be understood by many indicators such as avoiding talking, keeping physical distance, avoiding eye contact, and being silent. Therefore, it can be said that resentment and avoidance can affect satisfaction in marriage negatively (Fincham, 2003). On the other hand, forgiveness in marriage facilitates conflict resolution between couples, and it increases life satisfaction by moving away from negative feelings. Gordon and Baucom (2003) state that forgiveness is a crucial point for recovery in relationships, and they identify three components for forgiveness to occur. These involve a pragmatic and rational perspective of a relationship that sees the whole picture; a decreased desire for negative thoughts and punishment towards the partner; and the reorganization or restructuring of beliefs about the relationship and the partner.

## 2. Method

### 2.1. Research Model

The study was conducted with the relational survey method. Karasar (2006) stated that investigating a former or current state without intervention can be achieved with this research method. In this context, the relationships between marital satisfaction, proactive personality, meaning in life, and offense-specific forgiveness in marriage were analyzed in the current study with this technique.

### 2.2. Participants

The participants consisted of 350 married individuals (252 female and 98 male) who were willing to take part in the research. Participants were determined by the convenience sampling method. This method allows collecting data from individuals who want to participate voluntarily and are easily accessible. Furthermore, the research data were collected online.

### 2.3. Data Collection Tools

**Satisfaction with Married Life Scale.** This scale improved by Diener et al. (1985) was remodelled by Johnson et al. (2006) as satisfaction with married life scale. It was adapted to Turkish by Çelik (2014). It has a single factor consisting of five items with a 7-point Likert type scoring. In the study where the measurement was adapted to Turkish, the exploratory and confirmatory factor analysis implemented to decide the availability of the scale's structure showed that the Turkish form was consistent with the original element's structure. In the confirmatory factor analysis, the Chi-square test result ( $\chi^2 = 7.08$ ,  $SD = 5$ ,  $p = 0.21$ ) was significant, and fit indexes were acceptable (RMSEA = .03, SRMR = .01, CFI = 1.00, AGFI = .97, and GFI = .99). The internal consistency coefficient was found to be .85.

**Proactive Personality Scale.** The scale developed by Bateman and Crant (1993) was adapted to Turkish by Akin et al. (2011). It has a single factor consisting of 10 items with a 7-point Likert-type scoring. Confirmatory factor analysis to determine the availability of the measurement in the Turkish adaptation study indicated that the Turkish form of the scale had an acceptable level of fit index ( $\chi^2 / df = 1.65$ ,  $p = 0.01502$ , RMSEA = .044, SRMR = .033, CFI = .99, AGFI = .95, GFI = .97, and NFI = .99). The internal consistency coefficient of the scale was found to be .86.

**Meaning in Life Questionnaire.** The scale developed by Steger et al. (2006) was adapted to Turkish by Akin and Taş (2015). It has a two-factor structure (present meaning and expected meaning) consisting of 10 items with a 7-point Likert type scoring. In the adapted study, it was observed that the fit indexes obtained for the the structure of the scale were within the acceptance range ( $\chi^2 = 77.77$ ,  $df = 31$ ,  $p = 0.00001$ , RMSEA = .065, SRMR = .065, AGFI = .93, GFI = .96, and CFI = .97). In the Turkish version of study, the internal consistency coefficients calculated for the scale's reliability were found to be .77 for the present meaning in life subscale, .83 for the expected meaning in life subscale, and .81 for the whole scale.

**Marital Offence-Specific Forgiveness Scale (MOFS).** The scale was designed by Paleari et al. (2009), and it was adapted to Turkish by Akin et al. (2012). The scale has a two-factor structure (resentment-avoidance and benevolence) consisting of 10 items with a 6-point Likert type scoring. The results of the CFA to decide the

availability of the scale in the Turkish adaptation were found to be within the acceptance range of the factor structure of the scale ( $\chi^2 = 82.16$ ,  $df = 30$ ,  $RMSEA = .084$ ,  $SRMR = .057$ ,  $GFI = .94$ , and  $CFI = .96$ ).

### 2.4. Data Analysis

Regression and Pearson correlation coefficient were used to test the hypotheses of the research. In this context, the research data were first examined in terms of the normal distribution and regression analysis assumptions, and the data of 13 participants that disrupted the normal distribution were deleted. Skewness and kurtosis values and normal distribution graphs were examined to determine whether the data showed normal distribution, and whether the data were suitable for regression analysis were tested by VIF (Variance Increase Factor Method), CI (Conditional Index Number Method), and correlation coefficients between variables. The results of normal distribution and regression analysis are presented in Table 1.

**Table 1.** Descriptive Statistics, Findings Regarding Normal Distribution and Multiple Regression Assumptions

	N	$\bar{X}$	SD	Skewness	Kurtosis	VIF	CI
Marital Satisfaction	337	24,6499	6,21554	-,615	,001		1,000
Proactive Personality	337	46,2938	10,22368	-,221	-,278	1,087	6,658
Meaning in Life	337	51,8427	7,31979	-,686	,619	1,076	7,811
Resentment-Avoidance	337	18,1751	7,13114	,183	-,748	1,127	12,911
Benevolence	337	14,2404	4,98317	-,183	-,670	1,123	22,658

### 2.5. Ethical

In this study, all rules stated to be followed within the scope of “Higher Education Institutions Scientific Research and Publication Ethics Directive” were followed.

Ethical Review Board Name: Sakarya University Ethics Committee

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### 3. Findings

Pearson correlation coefficient was used to investigate whether marital satisfaction is related to proactive personality, meaning in life, and sub-dimensions of forgiveness in marriage (resentment-avoidance and benevolence). The findings of the analysis are indicated in Table 2.

**Table 2.** Correlation Analysis and Descriptive Statistics Results

	1	2	3	4	5
Marital Satisfaction (1)	1				
Proactive Personality (2)	.185**	1			
Meaning in Life (3)	.231**	.262**	1		
Resentment-Avoidance (4)	-.491**	.098	-.004	1	
Benevolence (5)	-.087	.083	.044	.326**	1
Mean	24.65	46.29	51.84	18.17	14.24
SD	6.22	10.22	7.32	7.13	4.98

\*\* =  $p < .01$ , \* =  $p < .05$

As Table 2 indicates, the relationships of marital satisfaction with proactive personality ( $r = .185$ ,  $p < .01$ ) and with meaning in life ( $r = .231$ ,  $p < .01$ ) were positively. It is also identified that there is a statistically significant negative relationship with the resentment-avoidance variable ( $r = -.491$ ,  $p < .01$ ), which is one of the sub-dimensions of forgiveness in marriage. However, as shown in Table 2, the correlation analysis revealed no statistically important connection between marital satisfaction and benevolence. Multiple regression analysis was used to see if marital satisfaction is predicted by proactive personality, meaning in life, or sub-dimensions of forgiveness in marriage (benevolence and avoidance-forgiveness). The analysis results are indicated in Table 3.

**Table 3.** Multiple Regression Analysis Result

Dependent Variable	Independent Variables	B	B	$\beta$	t	p	F	R <sup>2</sup>
	Constant	18.895	2.286		8.264	.000		
	Proactive Personality	.113	.028	.186	3.972	.000		
Marital Satisfaction	Meaning in Life	.150	.040	.177	3.802	.000	40.832	.330
	Resentment-Avoidance	-.461	.042	-.529	-11.088	.000		
	Avoidance	.077	.059	.062	1.295	.196		

As demonstrated in Table 3, it is observed that marital satisfaction is predicted by proactive personality ( $\beta = .186$ ,  $p < .001$ ), meaning in life ( $\beta = .177$ ,  $p < .001$ ) and resentment-avoidance ( $\beta = -.529$ ,  $p < .001$ ); but it was not predicted by benevolence ( $\beta = .062$ ,  $p > .05$ ).

#### 4. Discussion and Conclusion

This study examined marital satisfaction with regard to proactive personality, meaning in life, and offense-specific forgiveness in marriage. As a result of the research, it was found that there is a positive connection between marital satisfaction and proactive personality and meaning in life. The findings of the study are consistent with the literature that analyzed the connection between marital satisfaction and meaning in life (Güven, 2005; Taş, 2011). However, studies investigating the connection between marital fulfillment and proactive personality could not be found. Proactive people can influence their behaviour, environment, and events (Bateman & Crant, 1993), always focus on the positive aspects of the events they encounter (Aybatan, 2018), take risks to create change and bear the responsibility of the risk taken (Bolino et al., 2010). It is also related to high self-esteem (Seibert et al., 1999) that helps to evaluate and successfully manage new situations and opportunities that develop outside the individual.

It is stated that people who are able to find the meaning of life can solve the problems they face efficiently by taking responsibility (Frankl, 2010), aiming to improve themselves continuously, and approaching change positively by playing an active role in the problems encountered. When the proactive personality and meaning in life variables are evaluated together, it can be concluded that individuals with proactive personalities and enjoying meaning in life are active in coping with the issues they face in life, taking responsibility and approaching life, and in changing more positively. In this context, both proactive personality and meaning in life are positively connected to marital fulfillment because individuals with these characteristics may be insensitive to the problems experienced in marital relationships instead of being insensitive to the problems in general and trying to take an active role. In addition, in this research, proactive individuals may have higher levels of marital satisfaction than non-proactive married individuals because of their ability to solve problems, to express their feelings, to establish quality relationships, to be open to innovation, and to be empathic. Hopeful and satisfying individuals with meaning in life demonstrate a positive connection between meaning in life and marital satisfaction since it makes it easier for them to be more constructive in the event of mismatch and conflict in marriage. Proactive individuals can be more sensitive to their own psychological demands such as love, interest, and properties as well as to those of their spouses. This situation may influence increasing marital satisfaction between spouses.

With reference to the literature, it is observed that some variables such as self-control, being open to improvement, and problem-solving skills are connected to marital fulfillment, proactive personality, and meaning in life. It is stated that in the marriage process when self-controlled individuals encounter a stressful situation, they take an active role to eliminate the problem, and their taking responsibility for this issue will increase the satisfaction of individuals from marriage (Bouchard et al., 1999). Botwin et al., (1997) found that marital satisfaction levels of individuals with high self-control were also high. In addition, it is stated that the self-control score is high in individuals with proactive personality characteristics who use coping skills positively in conflict in marital relationship. From this perspective, since self-control levels of proactive individuals will be high, it may be concluded that there is a connection between marital satisfaction and the proactive personality trait. Effective use of stress resistance and coping skills (Edwards & Holden, 2001), acting with a sense of responsibility (Akin & Taş, 2015), and being self-controlled (Bouchard et al., 1999) positively affect marital adjustment.



Once the literature is analyzed, it is seen that forgiveness is an important factor for marital satisfaction. Forgiveness in marriage is from a negative to a neutral or positive outlook towards the person who made a mistake, the response to the mistake itself, and its consequences (Fincham et al., 2005). It contains positive emotions such as compassion instead of revenge and payback to the other person (Karakaş, 2014), and it has positive reflections on the continuation of the marital relationship in couples (Fincham et al., 2002; Kato, 2016), improving the quality of life (Burchard et al., 2003). It is stated that thanks to the renewing and restorative effects of the relationships that are inherent in forgiveness, it reduces the damaging properties of the couple relationship and makes the relationship sustainable (Kaya, 2015). It was found that forgiveness was higher in individuals with higher relationship satisfaction (McCullough et al., 1998). This study indicates a negative connection between marital fulfillment and resentment-avoidance, one of the sub-dimensions of offense-specific forgiveness in marriage. When the literature is examined, the results of studies examining the relationship between forgiving guilt in marriage and marital satisfaction, marital adjustment and marital quality (Fincham et al., 2002; Fincham et al., 2006; Paleria et al., 2005) is consistent with the finding of this study. In addition, Paleari et al. (2009) found a negative relationship between resentment avoidance and empathy, marital quality, marital assistance, self-confidence, and life satisfaction. It is stated that it is crucial to decide how the damaged person in the relationship can regain trust, how to allow compensation to the damaged person, and what to do for a more reliable communication (Hargrave & Sells, 1997).

With respect to the studies on marital satisfaction and forgiveness in marriage, some other research results (Gordon & Baucom, 2003; Kato, 2016) show that forgiveness positively affects marital satisfaction. In some research results (Alpay, 2009; Ermumcu, 2014) it was found that forgiveness becomes more difficult as the severity of the damage increases, and there is a negative connection between having an insecure attachment style and forgiveness. In this study, it was found that there is no significant relationship between marital fulfillment and forgiveness in marriage. According to Williamson and Gonzales (2007), forgiveness has a complex structure involving many processes and many variables. Fincham et al. (2005) emphasized that forgiving someone does not mean forgetting, having no compromise and problem-solving behaviour (Sells & Hargrave, 1998). An individual's empathy with the injured person is an important factor in forgiveness (McCullough et al., 1998; Paleari et al., 2005).

On the other hand, Alpay's (2009) study revealed that empathy predicted forgiveness and that the avoidance behaviour increased as empathy decreased. However, there are many factors that affect forgiveness. Besides asking for forgiveness, the level of empathy in couples' relationships with each other is thought to be important in changing each other's perspectives and showing mutual understanding (Ermumcu, 2014). From this point of view, there may be a need for empathy, understanding, and problem-solving skills to find alternative solutions along with forgiveness, which may influence marital fulfillment.

In this study, the connections between marital satisfaction and proactive personality, meaning of life, and offense-specific forgiveness in marriage were investigated. This study aims to understand the factors affecting marital satisfaction, which are essential in having a healthy family structure, and to contribute to future psychological research. The use of measurement tools that the participants utilized to assess themselves, the small size of the study group, and the lack of a causal relationship between the variables discussed are the crucial limitations of this study. It is important for the generalizability of these findings that research is conducted on larger sample sizes. In line with the findings of this study, psychoeducation or group counseling services involving married couples can be developed by experts working in marriage to increase the marital satisfaction of married individuals. With these programs and supportive training, marital adjustment and satisfaction of married individuals can be improved, and the relationship quality can be strengthened.

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# Parents' Mathematics Anxiety and Their Contribution to Mathematics Education

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## ABSTRACT

This study aims to investigate the mathematics anxieties of primary and middle school parents and their contributions to the teaching of mathematics. The data of the research were collected using "Mathematics Anxiety Scale for Parents," "Parents' Contribution to the Mathematics Education Scale," and "Parent Form," developed by the researcher. This research was designed as a survey study, and obtained data were analyzed using SPSS 16. Some of the conclusions that are achieved in this investigation are as follows: mathematics anxiety of parents were found to be low whereas their participation in their children's mathematics education was high, there was no difference in the mathematics anxiety of the children in accordance with the grade level they were enrolled in, the participation of primary school parents in mathematics education was found to be higher than that of the middle school parents, there was no difference between mathematics anxiety of mothers and fathers, mothers participated in the mathematics education more than fathers did, mathematics anxiety of parents decreased as their graduation and mathematics knowledge increased, thus, their participation in mathematics education increased, there was a high and inverse relationship between mathematics anxiety and participation in mathematics education.

### Keywords:

Mathematics, mathematics anxiety of parents, participation in mathematics education.

## 1. Introduction

Mathematics is a branch of science used in all areas of life. Mathematics anxiety is one of the factors restraining individuals to learn mathematics (Bai, 2011; Cates & Rhymer, 2003; Pajares & Miller, 1994). Mathematics anxiety is defined as a "feeling of tightness, helplessness, anxiety, panic, incompetence, paralysis and mental derangement that occur when an individual is required to make an operation by numbers or is solving a mathematics problem" (Ashcraft & Faust, 1994; Fiore, 1999). From past to present, mathematics anxiety has been a common problem for many primary, middle, high school, and even university students. This situation, which is a problem when being a student, may continue in adulthood. The mathematics anxiety of individuals is based on their prior experiences. It can be urged that the term named after spillover effect in psychology is functional in explaining the effect of parents' mathematics anxiety on that of their children's. In this respect, parents' mathematics anxiety may cause their children to develop mathematics anxiety (Mutlu et al., 2018). Thus, parents may transfer their mathematics anxiety to their children (Whyte & Anthony, 2012; Soni & Kumari, 2017; Şenol et al., 2015). According to Bandura's (1971) Social Learning Theory, in observational learning, people can acquire general and integrated learning patterns without any need for trial and error. Children develop their behaviors by taking others as models and observing the behaviors of other people, including those of their parents, teachers, and friends (Soni & Kumari, 2017). Many parents are also role models of their children; thus, children are in a tendency to adopt

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their parent's beliefs, attitudes, values, and feelings (Soni&Kumari, 2017). For this reason, many studies discussed the fact that parents' mathematics anxiety is one of the factors contributing to the mathematics anxiety of children (Casad et al., 2015; He, 2007; Kesici, 2018; Maloney et al., 2015; Sarıgöl, 2019; Soni & Kumari, 2017; Yenilmez et al., 2007; Yenilmez & Midilli, 2006). Therefore, parents should be communicated in order to develop learning of students and to provide students with a better education (Price, 1997). As parents are one of the most important elements of the education and training process, they should participate in their children's education and training. Parent involvement in education increases their children's academic success (Anderson & Minke, 2007; Bean et al., 2003; Cai, 2003; Englund, et. al, 2004; Kotaman, 2008; Loomans, 2014; Mutlu et al., 2018; Schickedanz, 2003; Werf et al., 2001) and helps children learn mathematical concepts and how to perform mathematical operations (Pan et al., 2006).

When examining the related literature, many studies have been carried out on the mathematics anxiety of parents (Casadet al., 2015; Dahmer, 2001; Mutlu et al., 2018; Kesici, 2018; Öztop & Toptaş, 2019; Sarıgöl, 2019; Soni & Kumari, 2017; Yenilmez & Midilli, 2006) and the parents' participation in the education process (Akay, 2012; Aytekin, et. al, 2016; Cai, 2003; Civil, et. al., 2008; Deringöl, 2020; Nyabuto & Njoroge, 2014; Özcan, 2016; Yenilmez, 2006; Yenilmez et al., 2006). When we look at the studies done so far, there is no study that examines both the mathematics anxiety of parents and their children's mathematics education at the same time. As parents are significant factors in the children's success, this research aimed to investigate the mathematics anxiety of parents and their participation in mathematics education. Answers to the following research questions were sought in this regard:

1. How are parents' mathematics anxiety and their participation in their children's mathematics education?
2. Do parents' mathematics anxiety and their participation in mathematics education differ according to their children's grade level, their role as parents, their educational status, and their level of knowledge in mathematics, whether their children are successful in mathematics course, and whether they help their children adequately in mathematics?
3. Is there a significant relationship between parents' mathematics anxiety and their participation in their children's mathematics education?

## 2. Method

In terms of data, this research follows a quantitative approach. The study was conducted using a correlational survey model because the major goal was to evaluate parents' mathematical anxiety and participation in their children's mathematics education. The survey model, according to Karasar (2004), tries to "describe a scenario that existed in the past or lately as it is.

### 2.1. Sample

The sample of this study consisted of a total of 1071 (481 (44.9%) from primary school and 590 (55.1%) from middle school) parents (922 (86.1%) were mothers, and 149 of them (13.9%) were fathers) of students receiving education in Istanbul in 2019–2020, selected using a random sampling method. The distributions of the parents in the study group are as follows:

**Table 1.** Parental Representation

	Mother		Father		Total	
	n	%	n	%	n	%
Primary School	433	90.0	48	10.0	481	44.9
Middle School	489	82.9	101	17.1	590	55.1
Total	922	86.1	149	13.9	1071	100.0

The sample comprised of 1071 student parents, 481 (44.9%) primary school, 590 (55.1%) middle school 922 (86.1%) of the parents were mothers while 149 of them (13.9%) were fathers.

### 2.2. Data Collection Tools

In this study, the "Parent Form, "Mathematics Anxiety Scale for Parents" (MASP), and "Parents' Contribution to Mathematics Education Scale" (PCMES) were used as data collection tools.

*Parent Form:* The researcher came up with the Parent Form. This form asked about the parents'

demographics as well as their children's grade levels, their role as parents, their educational status, their level of mathematics knowledge, whether their children were successful in the mathematics course, and whether they adequately assisted their children in mathematics.

*MASP*: Developed by Öztöp (2018), this scale has 27 items and 3 sub-scales. These sub-scales are as follows: "Mathematics anxiety in parents' academic life," "Mathematics anxiety in the parents' daily life," and "Parents' anxiety about their child's mathematics course." Developed to determine mathematics anxiety of parents, this scale is rated from 1 to 5: 1 "Never," 2 "Rarely," 3 "Sometimes," 4 "Generally," and 5 "Always." The scores obtained from this scale vary between 135 and 27 points. This scale has an internal consistency coefficient of .95, which is the same as in this study.

*PCMES*: Developed by Yenilmez et al. (2006), this scale consists of 22 items. It has 6 sub-headings: "in-Classroom," "homework," "exam," "out-of-class," "monitoring," and "assessment." A maximum of 110 and a minimum of 22 points are obtained from this scale. The internal consistency coefficient of this scale is .88, which was found to be .80 in this study.

**2.3. Data Collection**

In the parent meetings organized by the teachers in 2020, the measurement tools selected in accordance with the aims of the study were presented to the parents. They were sent online to some parents who filled them out. Incomplete forms were removed, and data entries were made for the remaining forms.

**2.4. Data Analysis**

SPSS 16.0 was used to conduct statistical analyses of the measuring tools. Before beginning the analyses, the Kolmogorov–Smirnov test was used to determine whether the data was suitable for normal distribution and to assess the Skewness–Kurtosis values of the scores. The level of significance was less than .05, and the Skewness–Kurtosis coefficient (.911, .526, .463, .036) was between +2.0 and 2.0, according to the Kolmogorov–Smirnov test findings. The data was found to have a normal distribution, according to George and Mallery (2010), and parametric tests were employed. Because it did not supply the one-way MANOVA assumptions, one-way analysis of variance was used in the data analysis. The Pearson moment correlation test and the independent-samples t-Test were also used.

**3. Findings**

Based on several variables, the results collected related parents' mathematical anxiety and participation in their children's maths education are presented below. Table 2 summarizes the findings linked to the first sub-problem.

**Table 2.** Mean Scores Obtained from the Scales

Scale	N	Mean	Ss
MASP	1071	2.04	.78
PCMES	1071	3.45	.54

Table 2 summarizes the results of the MASP and PCMES tests. The scores collected from the scales were calculated using the scale's range width, "array width/number of groups to be conducted" (4/5=0.80) calculation to determine their levels. The scale's arithmetic mean ranges were 1.00–1.79 for Very low, 1.80–2.59 for Low, 2.60–3.39 for Intermediate, 3.40–4.19 for High, and 4.20–5.00 for Extremely high. As a result, parents' mathematical anxiety was found to be low, while their participation in mathematics education was high.

Tables 3, 4, 5, 6, 7 and 8 present the findings of the second problem.

**Table 3.** The Scores Obtained from the Scales According to the Grades of Children: Independent Sampling t-Test Results

Scale	Grade	N	Mean	S	t	p
MASP	Primary School	481	2.03	.78	-3.373	.709
	Middle School	590	2.05	.77		
PCMES	Primary School	481	3.69	.45	14.615	.000
	Middle School	590	3.25	.52		



A significant difference was not found between the MASP mean scores ( $t = 1.036$ ,  $p > .05$ ) and the grades of the children. There is a statistically significant difference between the mean PCMES score ( $t = -1.505$ ,  $p < .01$ ) and the grades of the children. In this respect, the primary school parents ( $\bar{x} = 3.69$ ) obtained higher scores than the middle school parents ( $\bar{x} = 3.25$ ) (Table 3).

**Table 4.** The Scores Obtained from the Scales According to Role as Parents: Independent Sampling *t*-Test Results

Scale	Parents	N	Mean	S	t	p
MASP	Mother	922	2.05	.78	1.415	.157
	Father	149	1.96	.72		
PCMES	Mother	922	3.47	.53	4.179	.000
	Father	149	3.28	.59		

While there was no significant difference between the MASP mean scores ( $t = 1.036$ ,  $p > .05$ ) and role as parents, a statistically significant difference was found between the PCMES mean scores ( $t = -1.505$ ,  $p < .01$ ) and role as parents in favor of mothers. Accordingly, mothers ( $\bar{x} = 3.47$ ) participated more in mathematics education than fathers did ( $\bar{x} = 3.28$ ) (Table 4).

**Table 5.** One-Way Analysis of Variance (ANOVA) Results of the Educational Background of the Parents According to the Scale Scores

Scales	Educational Background	N	Mean	Std. Deviation	Sum of squares	Mean square	F	p
MASP	Primary	157	2.18	.86	15.043	3.761	6.287	.000
	Middle	92	2.23	.85	637.626	.598		
	High	431	2.05	.72	652.669			
	Undergraduate	357	1.95	.78				
	Master's degree	34	1.63	.58				
	Total	1071	2.04	.78				
PCMES	Primary	157	3.38	.59	5.876	1.469	5.035	.001
	Middle	92	3.48	.61	311.062	.292		
	High	431	3.39	.58	316.938			
	Undergraduate	357	3.55	.44				
	Master's degree	34	3.41	.43				
	Total	1071	3.45	.54				

MASP [ $F_{(4-1066)} = 6.287$ ,  $p < .01$ ] and PCMES [ $F_{(4-1066)} = 5.035$ ,  $p < .01$ ] mean scores were found to have significant difference regarding the educational background of the parents (Table 5). The parents of primary ( $\bar{x} = 2.18$ ) and middle school ( $\bar{x} = 2.23$ ) students were specified to have higher mathematics anxiety compared with the parents of undergraduate ( $\bar{x} = 1.95$ ) and master's degree ( $\bar{x} = 1.63$ ) students. High school students also had higher mathematics anxiety than master's degree students. As to the participation of the parents in the mathematics education, it was concluded that the parents of undergraduates ( $\bar{x} = 3.55$ ) participated more in their children's education than the parents of primary ( $\bar{x} = 3.38$ ) and high school ( $\bar{x} = 3.39$ ) students.

**Table 6.** One-Way Analysis of Variance (ANOVA) Results of the Parents' "Mathematics Knowledge Level" According to the Scale Scores

Scales	Mathematics Knowledge Level	N	Mean	Std. Deviation	Sum of squares	Mean square	F	p
MASP	Low	130	2.61	.95	73.577	36.789	67.848	.000
	Intermediate	764	2.04	.72	579.091	.542		
	High	177	1.62	.60	652.669			
	Total	1071	2.04	.78				
PCMES	Low	130	3.16	.51	12.879	6.439	22.618	.000
	Intermediate	764	3.47	.54	304.059	.285		
	High	177	3.56	.50	316.938			
	Total	1071	3.45	.54				

MASP [ $F_{(2-1068)} = 67.848, p <.01$ ]and PCMES [ $F_{(2-1068)} = 22.618, p <.01$ ] mean scores were determined to have a statistically significant difference regarding the parents' level of knowledge in mathematics. The mathematics anxiety of the parents who considered their mathematics knowledge level to be low ( $\bar{x} = 2.61$ ), was found to be higher than that of the parents who considered their mathematics knowledge level to be intermediate ( $\bar{x} = 2.04$ )' and high ( $\bar{x} = 1.66$ ). In addition, the parents who considered their mathematics knowledge level to be intermediate ( $\bar{x} = 2.04$ ) had a higher mathematics anxiety compared with the parents who considered their mathematics knowledge level to be high ( $\bar{x} = 1.66$ )'. Regarding their participation in the mathematics education, it was determined that the parents who considered their mathematics knowledge level to be intermediate ( $\bar{x} = 3.47$ ) participated more in the mathematic education than the parents who considered their mathematics knowledge level to be low ( $\bar{x} = 3.16$ )'. It was also concluded that the parents who considered their mathematics knowledge level to be high ( $\bar{x} = 3.56$ )' participated more in the mathematics education than parents who considered their mathematics knowledge level to be low ( $\bar{x} = 3.16$ ).

**Table 7.** The Scores Obtained from the Scales: Independent Sampling t-Test Results "Is your child successful in the maths course?" asks the inquiry.

Scale	Successful	N	Mean	S	t	p
MASP	Yes	784	1.92	.74	-8.199	.000
	No	287	2.35	.78		
PCMES	Yes	784	3.53	.50	8.126	.000
	No	287	3.23	.58		

There was a statistically significant difference between the MASP ( $t = -8.199, p <.01$ ) and PCMES ( $t = 8.126, p <.01$ ) scores in the answers provided for the question, "Is your child successful in the mathematics course?" Accordingly, the mathematics anxiety of the parents who considered their children successful in mathematics ( $\bar{x} = 1.92$ ), was lower than that of the parents who considered their children unsuccessful in mathematics ( $\bar{x} = 2.35$ ). In this regard, the participation of the parents who considered their children successful in mathematics ( $\bar{x} = 3.53$ ) was specified to be higher than that of the parents who considered their children unsuccessful in mathematics ( $\bar{x} = 3.23$ ).

**Table 8.** The Scores Obtained from the Scales: Independent Sampling t-Test Results According to the question, 'Do you believe you are sufficiently assisting your child in mathematics?'

Scale		N	Mean	S	t	p
MASP	Yes	764	1.92	.72	-8.328	.000
	No	307	2.34	.83		
PCMES	Yes	764	3.59	.49	14.481	.000
	No	307	3.10	.51		

There was a statistically significant difference between the MASP ( $t = -8.328, p <.01$ ) and PCMES ( $t = 14.481, p <.01$ ) scores in the answers provided for the question, "Do you think you help your child adequately in mathematics?" The mathematics anxiety of the parents who helped their children adequately in mathematics ( $\bar{x} = 1.92$ ) were lower than that of the parents who did not provide adequate help to their children in mathematics ( $\bar{x} = 2.34$ ). The participation of the parents who helped their children adequately in mathematics ( $\bar{x} = 3.59$ ) was higher than that of the parents who did not provide adequate help to their children in mathematics ( $\bar{x} = 3.10$ ).

The findings regarding the third problem are provided in Table 9.

**Table 9.** Analysis of Pearson Product Moment Correlation The MASP and PCMES Scores are the results of the tests

Scales	N	r	p
MASP	1071	-.097	.001
PCMES			

As can be understood in Table 9, an inverse and high relationship was specified between the MASP and PCMES ( $r = -.097$ ;  $p < .01$ ).

#### 4. Discussion and Conclusion

After investigating the mathematics anxiety of the primary and middle school parents and their participation in the mathematics education, this research concludes that the parents with a low mathematics anxiety had a high participation in mathematics education. According to Kesici (2018), mathematics anxiety is transferred from parents to children, similar to a cultural inheritance. However, the low mathematics anxiety of the parents in this study may be considered a positive conclusion. In the investigation carried out by Metlilo (2017) who received the opinions of 300 teachers and 105 parents on participation in education, it was found that the participation of parents in education was high according to the teachers and was intermediate according to the parents.

The mathematics anxiety of parents was investigated in line with the grade level their children were enrolled in. Accordingly, there was no difference in the mathematics anxiety of parents of students from all grade levels, and primary school parents participated more in mathematics education than middle school parents did. It is considered that primary school parents participate in mathematics education more as they think that their children need more help in mathematics. Similar to this study, the research carried out by Metlilo (2017) also showed that the participation level of families in terms of their children's education was high in primary school and intermediate in middle school. Although the study conducted by Özcan (2016) specified that parents were mostly informed about what their children learned at school, this rate was low in middle school parents. The research performed by Yenilmez (2006) reported that the in-classroom participation level of families was higher in lower grade levels but decreased in the higher-grade levels. Many studies support this conclusion (Fa, et. al, 2017; Özcan, &Yıldız, 2016).

While there was no significant difference in parents' mathematics anxiety in their position as parents, it was found that mothers were more involved in their children's mathematical education than fathers. The higher participation of mothers can be due to the fact that they are more concerned about their children's homework. As found in this study, Yenilmez and Midilli (2006) reported that the mathematics anxiety of parents did not show a significant difference according to gender. In Dahmer's (2001) study of 66 parents, it was specified that the mathematics anxiety of parents did not have any significance in their role as parents. When examining another study investigating the participation of parents in mathematics education in their role as parents, Shumow and Miller (2001) concluded that the participation of mothers was higher than that of fathers. In a study by Deringöl (2020) who investigated the participation of families in mathematics education, mothers' attitude, interest regarding mathematics, and their participation in mathematics were higher than that of fathers. In the research conducted by Yenilmez (2006), it was determined that mothers participated in the mathematics education process more than fathers did, as in this study. In his study, Karan (2019) reported that there was a difference between mothers and fathers regarding their participation in their children's education process, and it was found that mothers were more involved in communicating with the school and teacher, supporting their children's homework and studies, participating in parents' self-development, voluntary active participation, communicating with their children, creating a home environment that supports learning, supporting their children's personality development, and participating in the educational process.

When examining the mathematics anxiety of parents regarding their educational background, it was concluded that the parents of primary school and middle school students had higher mathematics anxiety compared with that of the parents of undergraduate and master's degree students. The parents of high school students also had higher mathematics anxiety than the parents of master's degree students. As expected, the mathematics anxiety of parents decreases as their level of mathematics knowledge increases. This suggests that they consider themselves more competent in helping their children and are therefore more

able to help. Dahmer (2001) reported an inverse relationship between the parents' mathematics anxiety and their educational levels. In other words, as the educational levels of parents increase, their mathematics anxiety also decreases. Öztop&Toptaş (2019) determined that the mathematics anxiety of the parents with a lower educational degree was found to be higher compared with that of the parents with a higher educational degree. The parents with a university degree participated more in their children's education than the parents with primary school and high school degrees. This suggests that the higher their educational level, the more parents feel competent. Similar to the findings in this study, Şaban (2011) also reported that the parents with university degrees participated more in their children's education process than the parents with a primary school degree.

The mathematics anxiety of parents who considered their level of mathematics knowledge to be low were higher than that of the parents who considered their mathematics knowledge to be intermediate and high. In addition, the parents who considered their mathematics knowledge to be intermediate had higher mathematics anxiety than the parents who considered their mathematics knowledge to be high. According to Yenilmez&Midilli (2006), as the success of parents increase in their primary school years, their mathematics anxieties decrease. As to their participation in the mathematics education, the parents who considered their level of mathematics knowledge to be intermediate participated more in their children's mathematics education than the parents who considered their level of mathematics knowledge to be low. In addition, the parents who considered their level of mathematics knowledge to be high participated more in their children's mathematics education than the parents who considered their level of mathematics knowledge to be below.

For the question, "Is your child successful in mathematics?," it was found that the parents who considered their children successful in mathematics had lower mathematics anxiety than those who considered their children unsuccessful in mathematics. Dahmer (2001) stated that parents' math anxiety has a negative relationship with their children's success in math. In a research of 595 students and their parents, carried out by Soni&Kumari (2017), they found that parents' mathematics anxiety affected their children's mathematics success, which is similar to the findings in this study. In this study, the participation of the parents who considered their children successful in mathematics was higher than those who considered their children unsuccessful in mathematics. Cruz (2012) reported that parental support and encouragement have a positive relationship with mathematics success. In the meta-analysis study carried out by Jeynes (2007) who examined 41 investigations on family participation, a positive relationship was found between the academic success of children and the participation of families in education. Shumow and Miller (2001) suggested that the parents of successful children participated more in school activities. In addition, in the research conducted by Caiet al. (1999) on the parents of 220 middle school students, they found that more supportive and participating parents affected their children's mathematics success and mathematics attitudes positively. To conclude, many studies have reported that the participation of parents in mathematics education is important in student success, as is also shown in this study (Dinç, 2017; Erbay, 2013; Fan & Chen, 2001; Voorhis, 2011; Vukovicet al., 2013; Yenilmez, 2006).

The mathematics anxiety of parents who helped their children adequately in mathematics is lower than that of the parents who did not help their children adequately in mathematics. The participation of the parents who helped their children adequately in mathematics is higher than that of parents who did not help their children adequately in mathematics. In a research conducted by Özcan&Yıldız (2016) who examined the opinions and participation of the parents in their children's mathematics homework, it was found that 59% of 206 parents supported their children properly, 37% partially supported their children, and 4% did not. It has been determined in many studies (Deringöl, 2019; Fantuzzoet al., 2004; Şaban, 2011) that parents showed a home-based participation, especially by helping their children with homework.

The purpose of this study was to see if there was a link between parents' math anxiety and their engagement in mathematics education. It was discovered that they have a high-level inverse connection. Accordingly, parents with a lower mathematics anxiety participated more in their children's mathematics education.

In conclusion, parents with a low mathematics anxiety are more willing to participate in their children's mathematics education, which is significant because parents have an important place in education. As carried out in this study, it is considered that the literature may be contributed by conducting the studies

determining not only the mathematics anxieties of parents but also specifying the mathematics anxieties of children. This research is a quantitative study on the mathematics anxiety of parents and their participation in their children's mathematics education. In this setting, qualitative research is believed to add to the discipline by allowing for a more comprehensive analysis.

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# Social Anxiety among College Students: Predictive Roles of Attachment Insecurity and Emotional Schemas

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## ABSTRACT

The associations between social anxiety, attachment insecurity, and emotional schemas were investigated among college students in the current study. A correlational design was used, and 502 college students (64.7% female, 35.3% male) participated in the study. In data collection, the Experiences in Close Relationships Scale (ECR), Social Anxiety Scale (SAS), and Leahy Emotional Schema Scale (LESS) were used. In data analysis, the Pearson correlation and hierarchical regression analysis were used. Before conducting hierarchical regression analysis, multivariate outliers, multicollinearity, and normality were assessed. Results revealed that female students had higher scores on the dimension of social avoidance. Moreover, attachment insecurity (avoidant and anxious) and emotional schemas were significant predictors of social anxiety of college students.

### Keywords:

Attachment, emotional schema, social anxiety, college students

## 1. Introduction

Defined as constant fear and embarrassment in social situations and society (Diagnostic and Statistical Manual of Mental Disorders V, DSM-V), social anxiety refers to individuals' concerns and fears in situations that will result in embarrassment (Stein & Stein, 2008). Social anxiety disorder is an anxiety disorders that affects adolescents and adults (Ollendick & Hirshfeld-Becker, 2002). People with social anxiety have intense fears about being evaluated and monitored by others (Stein & Stein, 2008). Their expectations toward positive life events are also lower than others (Gilboa-Schechtman, Franklin, & Foa, 2000). Being interviewed for a job or speaking in public may create anxiety among people, but these anxiety symptoms are temporary and manageable for most individuals (Antony & Swinson, 2008). However, it is difficult to manage these situations for socially anxious people, affecting their daily lives and routines (Vertue, 2003).

Social anxiety generally appears in intimate, peer, or authority relationships characterised by distress (Beidel & Turner, 2007; Leary & Kowalski, 1997; Turk, Heimberg, Magee, & 2001). Negative cognitions (e.g., Blanco & Joorman, 2017), shyness (e.g., Blöte, Miers, Van den Bos, & Westenberg, 2019), or dysregulated social emotions (e.g. Nikolic, 2020) play an important role in social anxiety disorder. Moreover, socially anxious people have lower peer relations (Su, Pettit & Erath, 2016) and intimacy with partners (Sparrevoorn & Rapee, 2009). These impairments in intimate relationships among socially anxious people may be explained from an "Attachment" framework to understand social anxiety better. Vertue (2003) proposed a theoretical framework that attachment systems may have an important role in developing social anxiety. Bowlby (1973) developed the "Attachment Theory", conceptualising how attachment patterns shape and develop our intimate relationships. According to Bowlby (1973), infants' birth with an evolutionary system to maintain

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contact with their caregivers toward a world which later shapes future relationships. Based on our interactions with our primary caregivers, we humans develop internalised working models of others and self about worthiness and dependency. Bowlby theorised that (1969, 1973) attachment figures are available if the infant perceives them as available, responsive, and caring. On the other side, uncertainty about the attachment figure may lead infants to develop anxiety.

After Bowlby's theory of attachment in infants, several researchers extended and classified this theory to adult intimate relationships (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987; Main, Kaplan, & Cassidy, 1985). Hazan and Shaver (1987) classified attachment styles into three categories. According to their classification, the secure attachment style refers to positive, friendly, and caring relationship experiences. On the other side, the anxious attachment includes ambivalent love experiences in which people desire to be closer to their partners. Furthermore, a fear of intimacy characterizes the avoidant attachment style.

Bowlby (1969, 1973) presented "The internal working model" in his theory, if children start to develop cognitive schemas based on their attachment figures at the ages of two or three. These working models are presented in the perception of self and others. Vertue (2003) argued that negative internal working models of self are associated with social anxiety, whereas negative internal models of others are related to social avoidance, leading to dependence. Studies revealed significant associations between social anxiety and insecure attachment in recent years (e.g., Adams, Wrath, Mondal, & Asmundson, 2018; Yu, Liu, Song, Fan, & Zhang, 2019) and that internal working models of self and others which infants develop during the developmental period might have a prominent role in the development of social anxiety.

Emotions have an important role in human functioning as classification, emotion-cognition, and emotion-regulation processes (Izard, 2007). Even labelling or differentiating emotions are the first steps in emotional processing; people also differ in their interpretations of their own emotions (Leahy, 2007). Individuals differ according to their emotion regulation strategies called "Emotional schemas" (Leahy, 2002) and respond to emotions that include cognitive strategies (Leahy, Tirsch, & Napolitano, 2011). Emotional schemas provide a framework for interpreting emotions (Leahy, Tirsch, & Melwani, 2012). The events and their related emotions may activate emotional schemas. For example, Silberstein, Tirsch, Leahy, and McGinn (2012) stated that one might feel anxious and sad after a break-up, activating their negative emotional schemas. These negative emotional schemas may then lead to problematic coping strategies (Leahy et al., 2012). Leahy (2002) proposed a theory of emotional schemas by revealing different emotional schemas. These are validation by others, comprehensibility, guilt, simplistic view of emotion, higher values, control, and numbness.

Leahy (2007) stated that each anxiety disorder involves interpretations and strategies of emotions (emotional schemas) based on controlling anxiety from the perspective of social anxiety disorder. Thus, negative interpretations of emotions might especially play a dominant role in the development of social anxiety.

### **1.1. The Present Study**

In the current study, we aim to reveal the predictive role of insecure attachment and emotional schemas on social anxiety among college students. We hypothesise that anxious and avoidant attachment and emotional schemas significantly predict college students' social anxiety levels. Attachment styles have been studied in numerous studies in recent years with different variables in the context of close relationships such as anxiety (e.g. Dilmac, Hamarta, & Arslan, 2009; Nielsen, Lønfeldt, Wolitzky-Taylor, Hageman, Vangkilde, & Daniel, 2017), problem-solving (e.g. Arslan, Arslan, & Arı, 2012; Lovimi, Nazarzadeh, Moini, Aminyazdi, & Rostae, 2018), nomophobia (e.g. Arpacı, Baloglu, Kozan, Kesici, & 2017), and social anxiety (e.g. Chen, Li, Zhang, & Liu, 2020; Manning, Dickson, Palmier-Claus, Cunliffe, & Taylor, 2017; Yu, Liu, Song, Fan, & Zhang, 2019). Vertue (2003) argued the theoretical model of attachment and social anxiety, emphasising that the internal working model of self and others may play a crucial role in developing social anxiety. Moreover, emotional schemas (Leahy, 2002) –how we interpret emotions and develop strategies to regulate them– may have predictive roles in people's social anxiety levels. People interpret and regulate their emotional schemas to deal with anxiety. We expect that attachment styles and emotional schemas predict the social anxiety levels of college students in the current study. We assume that the predictive roles of attachment orientations and emotional schemas on social anxiety would bring insight to understand the roots of anxiety disorders in the literature. Current research will bring a unique contribution to the literature in close relationships. When we tackle Vertue (2003)'s model, internal working models have a significant role in developing social anxiety.

Internal working models that the child develops (who the attachment figure is and how to find them) (Bowlby, 1973) and emotional schemas (how we handle and interpret our emotions) (Leahy, 2002) is important in predicting social anxiety. Cognitions play an important role in social anxiety, such as self-evaluation in social situations or negative interpretations (Rape & Heimberg, 1997). These cognitions also have a crucial role in developing attachment styles and emotional schemas in close relationships. Thus, we assume that the current study provides a link between these variables in the literature of psychology.

## **2. Methodology**

### **2.1. Research Model**

The correlational research design was used in the current study. Correlational research designs measure the statistical relationship between two variables or more variables (Karasar, 2008).

### **2.2. Participants**

A total of 502 college students studying at Necmettin Erbakan University in Konya participated in the study voluntarily. Of the group, 64.7% (325 women) were women, and 35.3% (177 men) were men. Their age ranged from 18 to 48, and their age mean was 22.80 years ( $SD=3.96$ ). Students in the Faculty of Education and students who got a teaching formation participated in the study. Students participated in the study from different majors such as Counseling Psychology (55.5%), History (13.2%), Literature (7.3%), Philosophy (7.9%), Health (5.7%), English (4.5%), and Art (5.9%).

### **2.3. Data Collection Tools**

In addition to the personal information form, the Experiences in Close Relationships Scale (ECR), Social Anxiety Scale (SAS), and Leahy Emotional Schema Scale (LESS) were used in the data collection process. ECR was used to assess participants' attachment patterns, SAS was used to evaluate their social anxiety levels, and LESS was used to their emotional schemas.

**2.3.1. Experiences in Close Relationships Scale (ECR).** Experiences in Close Relationships Scale was developed by Brennan, Clark, and Shaver (1998) to assess individuals' attachment patterns. The scale was adapted into Turkish by Sümer (2006). It is a self-report scale with two subscales: Anxiety ("I worry a lot about my relationships") and avoidance ("I get uncomfortable when a romantic partner wants to be very close"). The scale is a 7-point Likert type ranging from 1 (strongly disagree) to 7 (strongly agree). Higher points refer to higher avoidant and anxious attachment levels. In the current study, we found the Cronbach alpha coefficients as .84 for avoidance and .87 for anxiety. For the total, a .84 Cronbach alpha coefficient was found, which was acceptable.

**2.3.2. Leahy Emotional Schema Scale (LESS).** The Emotional Schema Scale was developed by Leahy (2002). The scale was adapted to Turkish by Yavuz, Türkçapar, Demirel, and Karadere (2011). The scale includes 50 items with Likert type. The scale has fourteen subscales called control, emotions against weakness, comprehensibility, acceptance of feelings, rumination, ignoring emotions, duration, discrepancy, validation, consensus, rational, seeing emotions as dangerous guilt, and avoidance of feelings. These factors explain 56.88% of the total variance, and the test-retest correlations were ranged between .37 to .75. In the current study, the Cronbach alpha coefficient was found .80.

**2.3.3. Social Anxiety Scale (SAS).** The Social Anxiety Scale was developed by Özbay and Palancı (2001) to reveal college students' social anxiety levels. This 30 item 5-Likert type scale has three sub-dimensions: social avoidance, criticism anxiety, and self-depreciation, respectively. These three sub-dimensions explain 32.9% of the total variance. The Cronbach alpha coefficient was found .89 in the adaptation study. In the current study, the Cronbach alpha coefficient was .93.

### **2.4. Procedure and Data Analysis**

College students were informed about the study before data collection, and all voluntary students participated in the study. All procedures in the current study were suitable with the ethics committee and with the Belmont Report-1979. The data collection process lasted approximately 40 minutes. In the analysing process, first, the data were screened for incorrect or incomplete coding. Multivariate outliers and normality of variances were tested before the analysis. At the beginning of the study, we had 505 data; after calculating

Mahalanobis distances, 502 data remained. Before conducting hierarchical regression analysis, multivariate outliers, multicollinearity, and normality were assessed. Skewness and kurtosis, VIF, and TV scores were assessed, and the data was suitable for the hierarchical regression analysis.

### 3. Findings

In this section, the correlation matrix and hierarchical regression results were presented. Table 1 below gives the results of correlations between social anxiety, attachment styles, and emotional schemas. There are significant positive correlations between the dimensions of social anxiety (social avoidance, criticism anxiety and self-depreciation) and attachment styles (anxiety and avoidance). Moreover, there are significantly positive and negative correlations between the dimensions of social anxiety and emotional schemas (Please see Table 1 below for more information).

**Table 1.** Correlation Matrix for Social Anxiety, Attachment Styles, and Emotional Schemas

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>SAS</b>																			
1. Social avoidance	-	.77**	.72**	.35**	.30**	.39**	.29**	-.32**	.03	.10*	-.32**	.24**	.32**	-.16**	.08	-.04	.05	.28**	.30**
2. Criticism anxiety		-	.74**	.46**	.25**	.45**	.36**	-.36**	.15**	.14**	-.20**	.37**	.33**	-.12**	.11**	-.01	.09*	.30**	.31**
3. Self-depreciation			-	.40**	.24**	.41**	.31**	-.35**	.02	.06	-.28**	.26**	.39**	-.14**	.10*	-.05	.12**	.25**	.37**
<b>ECR</b>																			
4. Anxiety				-	.07	.44**	.42**	-.35**	.07	.01	-.05	.43**	.29**	-.05	.17**	-.03	-.08	.15**	.18**
5. Avoidance					-	.25**	.16**	-.28**	.02	.25**	-.34**	.06	.16**	-.06	.16**	-.07	.00	.20**	.22**
<b>LESS</b>																			
6. Control						-	.49**	-.62**	.12**	.28**	-.23**	.49**	.53**	-.16**	.19**	.05	-.01	.47**	.35**
7. Emotions toward weakness							-	-.47**	.18**	.17**	-.04	.52**	.40**	-.12**	.11**	.02	-.00	.27**	.19**
8. Comprehensibility								-	-.14**	-.25**	.18**	-.50**	-.49**	.14**	-.15**	-.04	.05	-.30**	-.32**
9. Avoidance of feelings									-	.30**	.20**	.25**	.10*	-.04	.06	.15**	.04	.19**	.01
10. Rationale										-	.11**	.20**	.19**	-.00	.11*	.01	.07	.23**	.20**
11. Acceptance of feelings											-	.10*	-.20**	.09*	-.05	.09*	.03	-.10*	-.17**
12. Rumination												-	.36**	-.04	.11*	.06	-.01	.24**	.21**
13. Discrepancy													-	-.13**	.05	-.00	-.03	.29**	.29**
14. Ignoring emotions														-	.00	-.07	-.10*	-.13**	-.10*
15. Duration															-	.05	-.01	.06	.10*
16. Validation																-	.17**	.24**	.02
17. Consensus																	-	.09*	.09*
18. Seeing emotions as dangerous																		-	.25**
19. Guilt																			-
Mean	17.59	15.97	9.37	68.81	63.60	18.08	18.54	10.45	21.60	14.59	22.57	15.32	14.38	7.54	6.97	6.49	5.10	6.30	7.36
SD	9.33	7.33	5.84	18.32	16.92	6.64	5.01	3.95	4.46	4.35	3.91	4.15	4.37	1.68	1.96	2.09	2.41	2.69	2.98

\* $p < .05$ , \*\* $p < .01$ , (SAS= Social Anxiety Scale, ECR= Experiences in Close Relationships, LESS= Leahy Emotional Schema Scale).

Table 2 below represents the hierarchical regression results for social anxiety dimensions. Three hierarchical regression analyses were run and given in Table 2. In each analysis, gender and age were entered in the first step as control variables, attachment styles (avoidance and anxiety) were entered in the second step, and emotional schemas were entered in the third step for each dimension of social anxiety.

For social avoidance, demographical variables –gender and age– were entered in the first step as control variables and explained 1% of the total variance. It revealed a main effect for gender  $-\beta = -.11$ ,  $p < .05$ . Women's social avoidance levels were higher than men. In the second step, attachment orientations were entered into the analysis, and a 19% increase in the  $R^2$  was provided. Both anxiety  $-\beta = .33$ ,  $p < .001$ - and avoidance  $-\beta = .26$ ,  $p < .001$ - had a main effect (participants who had higher scores on anxiety and avoidance also had higher scores on social avoidance). Regression analysis for social avoidance was revealed as the main effect for acceptance of feelings  $-\beta = -.20$ ,  $p < .001$ -, seeing emotions as dangerous  $-\beta = .12$ ,  $p < .01$ -, and guilt  $-\beta = .12$ ,  $p < .01$ -, suggesting that acceptance of feelings are related to less social avoidance, whereas seeing emotions as dangerous and guilt are related to more social avoidance.

**Table 2.** Hierarchical regression analysis predicting social anxiety

Predictors	Social avoidance		Criticism anxiety		Self-depreciation	
	$\Delta R^2$	B	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$
<b>Step 1 (Control variables)</b>	.01*		.00		.00	
Gender		-.11*				
Age						
<b>Step 2 (Attachment)</b>	.19***		.27***		.21***	
Anxiety		.33***		.45***		.38***
Avoidance		.26***		.22***		.21***
<b>Step 3 (Emotional schemas)</b>	.13***		.12***		.17***	
Control						
Emotions ag. weak.						
Comprehensibility						
Avoidance of feelings				.09*		
Rational						
Acceptance of feelings		-.20***		-.11**		-.13**
Rumination						
Discrepancy						.15***
Ignoring emotions						
Duration						
Validation						-.08*
Consensus				.11**		.15***
Seeing emotions as dangerous		.12**		.09*		
Guilt		.12**		.12**		.18***
<b>TOTAL R<sup>2</sup></b>	<b>.33***</b>		<b>.39***</b>		<b>.38***</b>	

\*\*\*p&lt;.001, \*\*p&lt;.01, \*p&lt;.05

For criticism anxiety, demographical variables were entered into the model in the first step as control variables and had no main effect. In the second step, attachment orientations were entered into the model and provided an increase of 27% in the  $R^2$ . Anxiety  $-\beta=.45$ ,  $p<.001$ - and avoidance  $-\beta=.22$ ,  $p<.001$ - had a main effect, suggesting that the participants who had higher scores on anxiety and avoidance also had higher scores on criticism anxiety. In the third step, emotional schemas were entered into the model and provided a 12% increase in the  $R^2$ . It revealed a main effect for the avoidance of feelings  $-\beta=.09$ ,  $p<.05$ -, acceptance of feelings  $-\beta=-.11$ ,  $p<.01$ -, consensus  $-\beta=.11$ ,  $p<.01$ -, seeing emotions as dangerous  $-\beta=.09$ ,  $p<.01$ -, and guilt  $-\beta=.12$ ,  $p<.01$ -. Participants who had higher scores on avoidance of feelings, consensus, seeing emotions as dangerous, and guilt also had higher scores on criticism anxiety. On the other side, participants who had higher scores on acceptance of feelings had lower scores on criticism anxiety.

For self-depreciation, demographical variables –gender and age– were entered into the model in the first step as control variables, but they had no main effect. Insecure attachment dimensions were entered into the model in the second step and provided a 21% increase in the  $R^2$ . Participants who had higher scores on anxiety  $-\beta=.38$ ,  $p<.001$ -, and avoidance  $-\beta=.21$ ,  $p<.001$ - also had higher self-depreciation scores. In the third step, emotional schemas were entered into the model and provided a 17% increase in the  $R^2$ . Acceptance of feelings  $-\beta=-.13$ ,  $p<.01$ -, discrepancy  $-\beta=.15$ ,  $p<.001$ -, validation  $-\beta=-.08$ ,  $p<.05$ -, consensus  $-\beta=.15$ ,  $p<.001$ - and guilt  $-\beta=.18$ ,  $p<.001$ - had a main effect suggesting that participants who had higher scores on discrepancy, consensus, and guilt also had higher scores on self-depreciation. On the other hand, participants who had higher scores on acceptance of feelings and validation had lower scores on self-depreciation.

#### 4. Discussion

In the current study, the predictive roles of attachment insecurity and emotional schemas on social anxiety levels of college students were revealed. We found significant positive correlations between the dimensions of social anxiety (Social avoidance, criticism anxiety, and self-depreciation) and attachment styles (anxiety and avoidance). There were significant positive and negative correlations between the dimensions of social anxiety and emotional schemas in the correlation analysis. In the hierarchical regression analysis, demographical variables –gender and age– were entered into the model as control variables. We found that only gender has a significant role in social avoidance. Female students' social anxiety levels were higher than male students. Different results were discussed in the literature; females' social anxiety scores were higher than males in general (e.g., Desalegn, Getinet, & Tadie, 2019; MacKenzie & Fowler, 2013; Ohayon & Schatzberg, 2010), but different studies revealed that men's scores were found higher than females (e.g. Baloglu, Özteke-Kozan, Kesici, 2018). Additionally, according to DSM-V, women's social anxiety disorder scores are higher than men (American Psychiatric Association, 2013), supporting our study findings. In a longitudinal study, Beesdo et al. (2007) found a larger decrease in men's scores of social anxiety disorder than women.

Attachment insecurity was found to be a significant predictor of the social anxiety level of college students. Students who had higher scores on attachment anxiety and avoidance also had higher scores on social anxiety dimensions. In a recent systematic review study investigating associations between attachment and social anxiety, Manning, Dickson, Palmier-Claus, Cunliffe, and Taylor (2017) found that of the 30 studies, 28 showed positive associations between attachment insecurity and social anxiety, addressing that attachment was a key factor in the development of social anxiety. In a longitudinal study by Brumariu and Kerns (2008), the ambivalent attachment was found the most consistent variable related to social anxiety. Özteke-Kozan and Hamarta (2017) examined the predictive role of attachment insecurity on social appearance anxiety in a group of Turkish college students. They revealed significant associations between these variables similar to our findings. Vertue (2003) stated that people who want to make good impressions on others might have a high need for approval. In the attachment system, Bowlby (1969, 1972) also emphasises the interaction of caregiver and child in developing the internal working model. Thus, children whose attachment figure was insufficient to satisfy their needs may have a higher need for approval in later life, which may be a factor in the development of social anxiety because socially anxiety mostly occurs in situations that require contact with people and display performance (Beidel & Turner, 2007; Mattick & Clarke, 1998).

In the third step, we included emotional schema dimensions to the model, and schemas had a predictive role in college students' social anxiety levels. Of all the schemas, "Acceptance of feelings" and "Guilt" were significantly predicted all the social anxiety dimensions. College students who had higher scores on "Acceptance of feelings" had lower social anxiety dimensions. Participants who had higher scores on "Guilt" also had higher scores on social anxiety. Moreover, participants who had higher scores on "Avoidance of feelings", "Discrepancy", "Consensus", and "Seeing emotions as dangerous" also had higher scores on social anxiety. Some studies corroborate our study findings. Negative emotional schemas were significantly correlated with depression and anxiety in Leahy (2002)'s study. When we think about emotion regulation as a part of emotional schemas (Leahy, 2002), studies are reporting the association between social anxiety and maladaptive emotion regulation processes (e.g. Farmer & Kashdan, 2012; Mennin, McLaughlin, & Flanagan, 2009; Werner, Goldin, Ball, Heimberg, & Gross, 2011). For example, Farmer and Kashdan (2012) found that people with high social anxiety revealed more positive emotion suppression in reverse to people with low social anxiety levels. Similarly, Werner et al. (2011) found that people with social anxiety disorders use more avoidance strategies in their social life. Individuals with social anxiety disorders have a limited emotion regulation repertoire (Rusch Westermann Lincoln, 2012). They avoid social and performance situations, predict future events, and use negative emotional responses to these events. Furthermore, safety behaviours maintain anxiety and negative schemas (Jazaieri, Morrison, Goldin, & Gross, 2015).

Eventually, in the current study, we found that attachment insecurity and emotional schemas were significant predictors of college students' social anxiety levels. Participants who had higher scores in insecure attachment also had higher scores on social anxiety. Insecurity attachment styles may be a risk factor in developing social anxiety. Our internal working models (Bowlby, 1969, 1972) may contribute to developing cognitions related to social anxiety in childhood. It may be shaped according to caregivers and

parents' attitudes during the development of children—both the features of the child and primary caregiver affect the attachment orientations.

Moreover, positive and negative emotional schemas had different effects on social anxiety. Positive emotional schemas negatively correlated with social anxiety, whereas negative emotional schemas positively correlated with social anxiety. Additionally, emotional schemas developed from childhood to adult life may contribute to social anxiety disorder. Especially our negative emotional schemas may be effective to maintain safety and avoidant behaviours in social and performance situations. In sum, insecure attachment styles and negative emotional schemas may be risk factors in social anxiety. On the other hand, developing security attachment and positive emotional schemas may be a protective factor for social anxiety. Thus, it is important to help children in developing secure attachment and positive schemas for families.

## 5. Limitations and Suggestions

The current study has a few limitations. Firstly, this study is limited to specific variables, and future studies should be conducted with different variables in investigating social anxiety. Secondly, it is limited to college students with a correlational model. Different samples with different methods –longitudinal or experimental- could be used for future studies. The correlational model only shows associations; thus, no causality would be interpreted from the results. Thirdly, only self-report measures were used; thus, common method bias would have occurred. Moreover, qualitative studies could be employed for future research.

Our study findings demonstrated that attachment insecurity and emotional schemas were significant predictors of social anxiety disorder. Thus, psychologists, counsellors, and psychiatrists may include attachment-based and cognitive therapy methods in dealing with social anxiety disorders. Also, experimental studies would be helpful to reveal the effectiveness of these therapies.

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# Grammar-learning Beliefs of Students Who Learn Turkish as a Foreign Language

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## ABSTRACT

The aim of the study is to determine the beliefs of those who learn Turkish as a foreign language about learning grammar and to determine whether their beliefs are in line with their perceptions of grammar. In this study, which was created using the mixed method, the data about the beliefs of the learners in accordance with the survey method was collected, which is one of the basic quantitative research methods. In addition, the data for the determination of learners' perceptions were collected in accordance with one of the qualitative research methods—the phenomenology method. The study group of this research consists of B1, B2, and C1 level students who learn Turkish at Aydın TÖMER (Turkish Teaching Application and Research Center), İstanbul Aydın University. Based on the findings obtained in the research, 45% of the learners believe that they can learn Turkish without knowing the grammar while 37% believe that they cannot. When the beliefs about grammar-learning method are examined, it is seen that 27% of the learners have the belief that it is important to learn grammar directly, and 63% believe that it is more important to understand the rules based on examples. In the context of all of this data, it was concluded that there is a parallelism between the grammar-learning beliefs of those who learn Turkish as a foreign language and their grammar perceptions. In other words, those who think that they cannot learn Turkish without knowing grammar also perceive grammar as difficult, a necessity, and produce metaphors for it. In addition, it was understood that those who believe that they can learn Turkish without knowing grammar perceive grammar as a tool and produce metaphors and provide reasons.

Keywords:

Teaching Turkish as a foreign language, grammar, belief, perception.

## 1. Introduction

Teaching grammar in a foreign language teaching is a constantly discussed issue. The basis of these discussions is the belief in teaching and learning grammar. This is because individuals' beliefs in grammar affect many issues such as learning styles, teaching programs, textbooks written based on these programs, and methods and techniques used by teachers in language teaching. In the field of teaching Turkish as a foreign language, debates continue on how and to what extent grammar will be taught. In this context, the aim of the study is to determine the beliefs of those who learn Turkish as a foreign language about learning grammar and to determine whether their beliefs are in line with their perceptions of grammar, as the beliefs developed by teachers toward teaching grammar and by learners toward their learning directly affect the success in learning grammar. In this context, as Turnbull (2018) stated, the educational backgrounds of those working in the field of foreign language teaching (namely their undergraduate programs), their

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grammar teaching approaches, educational background of those who learn a language as a target language, their competencies in their native language, whether they know a foreign language or not, the learner's beliefs about the grammar knowledge of the teacher from whom they learn the target language, and similar cases affect the beliefs of the learners. Hence, in order to be successful in grammar teaching and learning, determining the beliefs of those who learn the target language will be the determinant of the method to be followed in many areas from developing curricula to writing textbooks to the method and technique used in the language teaching classroom. The belief that the target language can be used by knowing the grammar of that language manifests itself with the allocation of a separate time for grammar in foreign language teaching from the past to the present. This causes the continuation of the discussions on how to teach grammar (implicit-explicit) in the relevant field. Fontich and Camps (2014) state that these discussions are between those who claim that knowing the grammar of a language is not important or has little effect on learning to read and write that language, and those who consider grammar as an important part of the process. Teaching grammar in teaching a foreign language is a topic that is constantly debated, but this subject's questions have not been answered yet. These controversial issues cause those who teach and learn foreign languages to have different beliefs about grammar, which affects many issues such as the textbooks written based on these programs and the methods and techniques used by teachers in language teaching, as is visible in teaching Turkish as a foreign language, e.g., while grammar lessons at Gazi University TÖMER are taught independently at a different time, grammar lessons at İstanbul University DİLMER are taught in integration with other language skills. Likewise, while there is a separate book on grammar among the Turkish teaching sets of Gazi TÖMER, there is no separate grammar book in sets such as "Yedi İklim," "İstanbul-Turkish for Foreigners," and "Yeni Hitit" used in the field. In addition, while grammar topics are given with explanations in English and Arabic at all levels in the "İstanbul-Turkish for Foreigners" set, even the names of grammar structures are not included in the "Yedi İklim" sets. When an evaluation is made in this context, the beliefs of the teachers and institution administrators who teach with these books and even the beliefs of the learners in Turkish grammar will be different from each other. Moreover, the beliefs of the learners before starting to learn Turkish and the beliefs they developed within the framework of the education they received will be different. This has made it clear that belief, which has been seen as a factor directly affecting success since the 1980s, should also be taken into account in teaching Turkish.

Studies on whether the beliefs of those who learn a foreign language as a target language have an effect on language learning and teaching begin with Horwitz (1988) developing the "Beliefs about Language Learning Inventory-BALLI" and determining the beliefs of the learners. Referring to the effect of belief in language learning on students and teachers, Bandura (1993) states that students' beliefs about organizing their own learning and dominating academic activities determine their willingness, motivation levels, and academic success. He states that the beliefs of teachers in their personal activities in motivating and encouraging learning affect the types of learning environments they create and the academic progress achieved by their students. Burgess & Etherington (2002) state that learners' language learning beliefs have an important effect on teachers' language teaching methods and practices. Likewise, psychologists state that personal and social beliefs have a permanent effect on academic learning, thinking, reasoning and problem solving, and interpretation of knowledge (Bernat & Gvozdenko, 2005). Horwitz (1988) states that the influence of learners' language learning beliefs will even affect the language learning strategies they will use and emphasizes that students who believe that language learning consists of translation, sound memorization, or practicing grammar will not adopt holistic types of strategies for successful language learning (Horwitz, 1988). Likewise, as stated by both Yang (1999) and Mori (1999), the belief developed for language learning is related to the use of strategies, motivation, competence, anxiety, autonomous learning and many other factors that directly affect language learning. In this context, Wenden (1999) defines beliefs as students' metacognitive knowledge about learning and states that these two terms are used interchangeably. Loewen et al. (2009) state that it is important to consider students' beliefs about the subject in grammar teaching. Burgess and Etherington (2002) state that students' language backgrounds and previous learning experiences have a great impact on their current learning preferences, and therefore, students' language learning beliefs have a significant impact on teachers' language teaching methods and practices.

Another factor affecting the success of the foreign language teaching and learning processes is the perception of the target language, because, as Bandura (1993) points out, even individuals having the same knowledge and skills may have differences in their perceptions and practices. Moreover, Özer & Korkmaz (2016) emphasize that students' perceptions such as "The target language is difficult, I cannot learn, I just need to pass the lesson." affect success negatively. Therefore, as Göçen (2019) stated, one of the ways to make the process of teaching as a foreign language more effective is to determine learners' perceptions of the target language. In this context, determining the learners' perceptions of grammar benefits the teachers in terms of controlling the learners' grammar-learning processes. Boylu & Işık (2017) state that learners' perceptions of grammar will directly affect their language learning success positively or negatively. Mete and Bağcı Ayrancı (2016) also state that knowing how a concept is perceived by the target audience will guide every stage from the preparation of the programs to the creation of educational materials and the development of methods and techniques, and will facilitate the education process. Based on these views, the determination of the perceptions of those who learn Turkish as a foreign language toward grammar will also have a guiding effect on Turkish teaching.

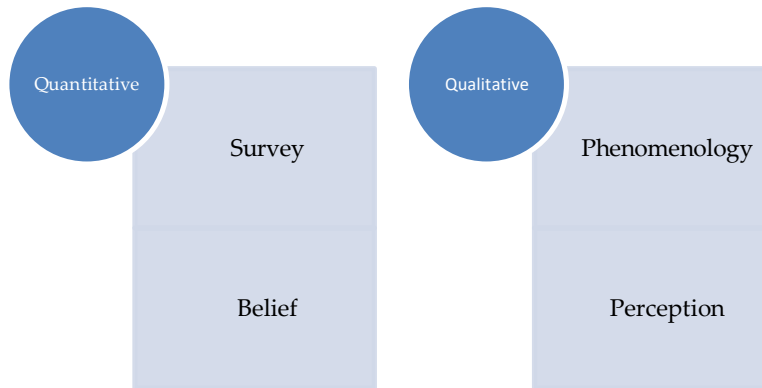
When looking at the studies in the relevant literature (Farjami, 2012; Akkaya, 2013; Baş & Gezeğin, 2017; Boylu & Işık, 2017, Uçak, 2017, Karatay & Kartallıoğlu, 2019; Göçen, 2019; Boylu & Işık, 2020; Erol & Kaya, 2020), it is seen that the perceptions of the learners toward the target language are determined by metaphors. In this context, the metaphor, which is defined as "an analogy in the shortest sense, an event of simile considered as a narrative technique" (Demirci, 2016), will be the predictor of grammar-learning beliefs of learners by determining what they liken to grammar because metaphor has an important effect on language development. The metaphors produced for a language by those who learn it as a foreign language also explain their language development as the beliefs of the learners who explain their grammar with the "sea" and the "key" metaphor will also differ from each other. Additionally, Morgan (1980) states that the use of metaphors enables producing an image to examine a subject and that this image will form the basis for detailed scientific research, based on the attempts to discover to what extent the features of the metaphor exist in research. As evidence for this view, Shuell's (1990) statement "If a picture is worth a thousand words, a metaphor is worth a thousand pictures!" reveals how important metaphors are. In this context, the present study attempted to display the perceptions of those who learn Turkish as a foreign language toward grammar through metaphors. This study, which aims to reveal whether the grammar-learning beliefs of those who learn Turkish as a foreign language and the perception developed in line with these beliefs overlap or not, will light the way for program developers, textbook preparers, and those who teach Turkish as a foreign language and conduct academic studies in this field. In this context, in line with the purpose of the research, answers to the following questions were sought:

- What are the beliefs of those who learn Turkish as a foreign language toward learning grammar?
- With which metaphors do those who learn Turkish as a foreign language explain their beliefs about Turkish grammar?
- Is there a parallelism between the beliefs and metaphorical perceptions of those learning Turkish as a foreign language?

## **2. Methodology**

### **2.1. Research Model**

In this study, which was created using the mixed method among the basic research methods, quantitative and qualitative methods were used to collect data while determining the grammar-learning beliefs and grammar perceptions of those who learn Turkish as a foreign language. In the research, data about the beliefs of the learners were used in accordance with the survey method, which is one of the quantitative research methods; and the data for the determination of their perceptions were used in accordance with the phenomenology method, one of the qualitative research methods. The method of collecting relevant data is as follows:



**Figure 1.** Method of Collecting Data on Belief and Perception

The reason for collecting data using both methods in the study is that, as Creswell & Plano Clark (2007) stated, the use of qualitative and quantitative research methods together or in a blend will provide a better understanding of research problems and questions than using these methods separately.

In this study, since the grammar-learning beliefs of those who learn Turkish as a foreign language were determined in the first stage and then the quantitative data were collected to reveal whether their beliefs and perception of grammar overlap were explained with qualitative data, exploratory mixed design, which is one of the mixed method models, was used in the study. As Creswell and Plano Clark (2011) state that the exploratory mixed method is the most understandable among the mixed method designs, and after collecting and analyzing quantitative data in the first step in research, qualitative data are collected in the second step in order to explain the quantitative data.

## 2.2. Research Sample

In mixed method studies, researchers consider matters such as the participants to whom data will be collected and how they will be selected and how many people will be in order to analyze their research questions or hypotheses (Creswell & Plano Clark, 2011). In this context, quantitative and qualitative data were collected from the same study group in accordance with the design used in this study. After collecting and analyzing quantitative data first, another group was determined by purposeful sampling method from the same group to explain these data, and then qualitative data were collected from this group. Because, according to Creswell & Plano Clark (2011), due to the nature of the exploratory design, the study group in which the qualitative research will be conducted should be selected from the first group—the group participating in the quantitative research—since quantitative results will be predicted with qualitative data. In this context, the qualitative study group of the study was chosen from those who believe that they can learn Turkish without knowing grammar.

The quantitative study group of the research is as follows:

**Table 1.** Demographic Information of the Quantitative Study Group

Information	f	%
Male	65	46,42
B1	28	
B2	32	
C1	5	
Female	75	53,57
B1	23	
B2	42	
C1	10	
Final Total	140	100

Looking at Table 1, it is seen that 65 of the participants in the study are male and 75 of them are female. In addition, 51 of the students are at the B1 level, 74 of them are at the B2 level, and 15 of them are at the C1 level.

**Table 2.** *Distribution of Students' Native Languages*

Findings	f	%
Arabic	94	67,14
Persian	27	37,8
French	1	0,71
English	3	2,14
Russian	4	2,85
Other	11	7,85
Total	140	100

Looking at Table 2, it is seen that 94 of the 140 students participating in the research were native speakers of Arabic, 27 were Persian, 1 was French, 3 were English, 4 were Russian, and 11 were of other languages. In this context, it can be said that the participants of the research have mainly Arabic and Persian native languages.

The qualitative study group of the research selected with the purposeful sampling method is as follows:

**Table 3.** *Demographic Information of the Qualitative Study Group*

Information	f
Male	56
B1	24
B2	27
C1	4
Female	59
B1	20
B2	32
C1	8
Final Total	115

As seen in Table 3, there were 56 males and 59 females in the group from which data was collected for the qualitative part of the study. In addition, 44 of the students are at the B1 level, 59 of them are at the B2 level, and 12 of them are at the C1 level. This group consists of 115 people who believe that they can learn Turkish without knowing grammar (63) and with(52). As a result of the analyses made on the metaphors of the people from the relevant group, the research was conducted on valid metaphors produced by 85 students.

### 2.3. Data Collection Tools and Procedure

In the research, quantitative and qualitative data were collected with two different tools developed by the researchers. Accordingly, the quantitative data of the research were collected with the grammar-learning belief questionnaire developed by the researchers. The questionnaire consists of 2 parts and 15 questions. 5 questions in the first part are for identifying students' personal information; 10 questions are for determining their grammar beliefs.

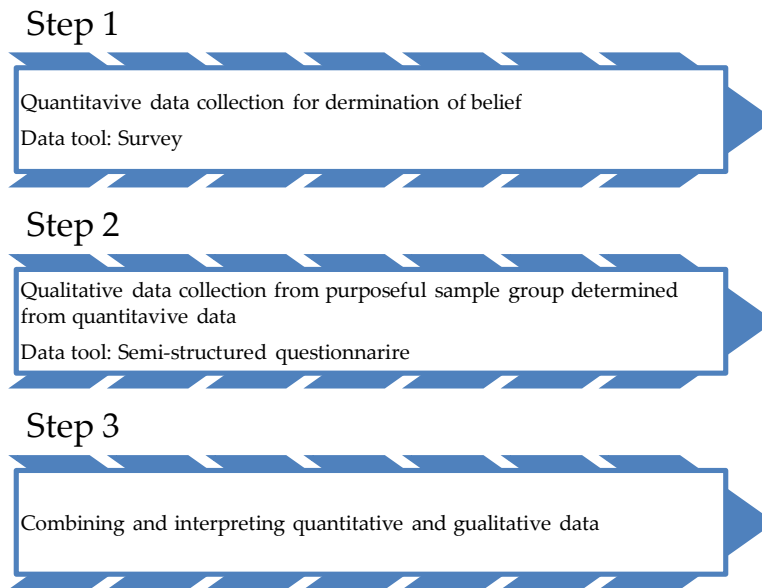
The qualitative data of the study the data were collected with a metaphor form consisting of semi-structured questions prepared by the researchers. Semi-structured questionnaire is one of the most preferred data collection tools in metaphor research. Göçer, 2013; Akkaya, 2013; Saban, 2008; Şenel & Aslan, 2014; Boylu & Işık, 2017; Göçen, 2019; Karatay & Kartallıoğlu, 2019; Boylu & Işık, 2020; Mudra & Aini, 2020; Erol & Kaya, 2020). In this context, the students have completed the sentence "Turkish grammar is like ..... for me. Because .....". In this question pattern, the concept of "like" is often used to more clearly evoke the link between "the subject of the metaphor" and "the source of the metaphor." In this question pattern, the concept of "like" is often used to more clearly evoke the link between "the subject of the metaphor" and "the source of the metaphor." Because it is stated that for any phenomenon to be a metaphor, it should be able to answer the following questions (Forceville, 2002):

What is the subject of the metaphor?

What is the source of the metaphor?

What are the features that are thought to be attributed to the subject of the metaphor from the source?

In this study, the concept of “because” was included and the participants were asked to provide a “justification” for their own metaphors (Ekici & Akdeniz, 2018). Based on all this information, the data collection process applied in the research is as follows:



**Figure 2.** Working Process of Mixed Method

#### 2.4. Data Analysis

In the study, firstly, the data collected through the questionnaire were transferred to the tables in the context of the answers given to each question in the questionnaire with “%” and “frequency” and they were described in a way that readers could easily understand. In the qualitative data of the study, the metaphors produced by students for grammar were analyzed in four stages: the naming stage, elimination and refinement stage, compilation and category development stage, and ensuring validity and reliability stage. In the naming stage, the produced metaphors were listed alphabetically. Those that contain no metaphor and wrong productions, such as “important,” “I need to pay attention,” “useful,” “good,” etc. were excluded from the classification and in the second stage (elimination and refinement), the relationship between the produced metaphors and their source was examined. In other words, those who produced the metaphor and made the wrong analogy (21) were eliminated. During the compilation and category development stage, the remaining 94 metaphors were categorized according to the area they conceptualized. Each metaphor was classified under the relevant categories in the context of the source of these metaphors. In the last stage of ensuring validity and reliability, the list of metaphors and categories created by the researchers, taking into account each metaphor and its source, was given to the expert who taught in this field and previously conducted an academic study with a metaphor context. The expert was asked to reclassify each metaphor and its source according to the specified categories. In the classification made by the relevant expert, eight metaphors on which there was no agreement were identified. In this context, the reliability between coders in the research was calculated using Miles & Huberman’s (1994) formula ( $\text{Reliability} = \frac{\text{agreement}}{\text{agreement} + \text{disagreement}} \times 100$ ) and was determined as 91.48%.

#### 2.5. Ethical

In this study, all rules stated to be followed within the scope of “Higher Education Institutions Scientific Research and Publication Ethics Directive” were followed.

Ethical Review Board Name: Bayburt University Ethics Committee

Date of Ethics Evaluation Decision: 15.01.2021 Ethics Assessment Document Issue Number: 2021/09

### 3. Findings

#### 3.1. Quantitative Findings

Under the quantitative findings, students' beliefs about "learning Turkish without knowing grammar," "difficulty and ease of grammar," "learning Turkish grammar by comparing it with grammar in their native language," "importance of knowing grammar in terms of language skill," "how to learn grammar better," "learning enough grammar" were included.

**Table 4:** *Belief of Learning Turkish without Knowing Grammar*

<i>Belief</i>	<i>f</i>	<i>%</i>
Yes, I can learn.	63	45
No, I cannot learn.	52	37,14
I have no idea.	25	17,85
Final Total	140	100

Looking at Table 4, it is seen that 45% of the learners have the belief that they can learn Turkish without knowing grammar and 37% of the them believe that they cannot learn Turkish without knowing grammar. Those who make up 17% of the study group do not have any idea about this issue. In this context, the beliefs of the learners in learning Turkish without knowing grammar show a distribution according to the levels as follows:

**Table 5.** *Belief of Learning Turkish without Knowing Grammar in terms of Language Levels*

<i>Belief</i>	<i>f</i>	<i>%</i>
B1	51	36.42
Yes, I can learn.	24	17.14
No, I cannot learn.	20	14.28
I have no idea.	7	5
B2	74	52.85
Yes, I can learn.	32	22.85
No, I cannot learn.	27	19.28
I have no idea.	15	10.71
C1	13	9.28
Yes, I can learn.	7	5
No, I cannot learn.	5	3,57
I have no idea.	3	2.14
Final Total	140	100

As can be seen Table 5, 17% of the students, who have the belief that they can learn Turkish without knowing grammar and represent 45% of the table, learn Turkish at the B1 level, 22% at the B2 level, and 5% at the C1 level. Furthermore, it is also a striking finding that at all levels, the number of students who have the belief that they can learn Turkish without knowing grammar is higher than the others.

**Table 6.** *Belief in Difficulty and Ease of Grammar*

<i>Belief</i>	<i>f</i>	<i>%</i>
Difficult	52	37,14
Easy	61	43,57
I have no idea	27	19,28
Final Total	140	100

Looking at Table 6, it is seen that 37% of the students have the belief that Turkish grammar is difficult, 43% of them believe that Turkish grammar is easy, and 19% of them have no idea. Looking at these beliefs in terms of language levels, the table is as follows:



**Table 7.** Beliefs in Difficulty or Ease of Grammar in terms of Language Levels

Belief	f	%
B1	51	36.42
Difficult	19	13.57
Easy	25	17.85
I have no idea	7	5
B2	74	52.85
Difficult	31	22.14
Easy	31	22.14
I have no idea	12	8.57
C1	15	9.28
Difficult	2	1.42
Easy	5	3.57
I have no idea	8	4.28
Final Total	140	100

As it is seen in Table 7, 13% of the learners, who believe that grammar is difficult to learn and represent 37% of the table, are at the B1 level, 22% at the B2 level, and 1% at the C1 level. Likewise, 17% of the learners, who believe that it is easy to learn and represent 43% of the table, are at the B1 level, 22% at the B2 level, and 3% at the C1 level. In this context, it was found that the rate of those at the B1 and C1 levels who believe that the grammar is easy is higher while this rate is equal at the B2 level.

**Table 8.** Belief of Learning Grammar Rules by Comparing the Rules of Their Native Language

Belief	f	%
I compare and learn better.	48	34,28
I do not compare and I learn better.	81	57,85
I compare partially.	11	7,85
Final Total	140	100

Looking at Table 8, it is seen that 34% of learners learn grammar better by comparing the grammar of their native language, while 57% have the belief that they learn better without comparison. In this context, it is possible to state that the research group has the belief that they can achieve success in learning Turkish grammar without making a comparison between the target language and their native language.

**Table 9.** Grammar-Learning Beliefs of Native Arabic and Persian Speakers by Comparing the Grammar of their Native Language

Native Language and Belief	f%
Arabic	67,14
I compare and learn better.	3537,23
I do not compare and I learn better.	4750
I compare partially.	1212,76
Total	94100
Persian	37,8
I compare and learn better.	1140,74
I do not compare and I learn better.	1140,74
I compare partially.	518,51
Total	27100
Final Total	121

Looking at Table 9, it was determined that 37% of the group whose native language is Arabic and who constitutes 67% of the group learn better by making comparisons with Arabic grammar in grammar learning, and 50% of them believe that they learn better without comparison. When the table is interpreted in the context of Persian native speakers, it was found that the rate of those who constitutes 37% of the group and believe that they learn better by making comparisons with Persian grammar or without making comparisons in grammar learning is the same (40%).

**Table 10.** *Belief about the Importance of Knowing Grammar in terms of Language Skills*

<i>Belief in Skill</i>	<i>Number</i>	<i>%</i>
Reading	15	10,71
Listening	9	6,42
Speaking	45	32,14
Writing	71	50,71
Final Total	140	100

Looking at Table 10, regarding the importance of knowing grammar in terms of language skills, it is seen that 10% of the learners have the belief that knowing grammar is more important in terms of reading, 6% listening, 32% speaking, and 50.71% writing skills.

**Table 11.** *Belief in the Grammar-Learning Method*

<i>Belief in Method</i>	<i>Number</i>	<i>%</i>
It is better to learn the grammar by learning the rule directly.	39	27,85
It is better to understand the rule based on examples.	89	63,57
I have no idea.	12	8,57
Final Total	140	100

Looking at Table 11, it is seen that 27% of the students have the belief that it is more important to understand the grammar by learning the rules directly and 63% of them believe that it is more important to understand the rule based on examples.

**Table 12.** *Belief in the Usefulness of Explaining Grammar Rules in the Native Language in Lessons*

<i>Belief</i>	<i>Number</i>	<i>%</i>
Yes, I find it useful.	24	17,14
No, it is not useful.	88	62,85
Partially useful	28	20
Final Total	140	100

Considering the students' beliefs about whether it is beneficial to explain grammar rules in the native language in lessons, as seen in Table 12, the rate of those who find it useful is 17%, while the rate of those who do not is 62%.

### 3.2. Qualitative Findings

Under the qualitative findings, information about the metaphors produced by those who learn Turkish as a foreign language in the context of their metaphorical perception toward grammar and themes under which these metaphors are gathered are given. In this context, the metaphors produced by those who learn Turkish as a foreign language toward grammar are as follows:

**Table 13.** *The Metaphors Produced by Those Learn Turkish as a Foreign Language toward Grammar*

Number	Participant Code	Metaphor	Number of Repetitions	Theme
1.	P4,P9,P23, P37, P83, P108	Car	6	Tool
2.	P115	Mouth	1	Tool
3.	P26, P44	Gold	2	Need
4.	P3, P17, P41, P48, P96, P102	Key	6	Tool
5.	P10	Arabic	1	Tool
6.	P83	Lawyer	1	Need
7.	P7	Mirror	1	Need
8.	P21	Walking Stick	1	Tool
9.	P33	Computer	1	Tool
10.	P29	Riddle	1	Finding Difficult
11.	P45, P63	Crossword	2	Finding Difficult
12.	P1, P74	Child	2	Positive Feeling
13.	P9, P79	Mountain	2	Finding Difficult
14.	P57	Wall	1	Finding Difficult
15.	P5, P12, P20, P44, P56, P59, P96, P114	Sea	8	Inclusive
16.	P81	Lighthouse	1	Need
17.	P11, P19	Bread	2	Need
18.	P52	Rosebud	1	Positive Feeling
19.	P104, P46, P88	Sky	3	Inclusive
20.	P39	Sun	1	Need
21.	P53	Air	1	Need
22.	P19	Human	1	Finding Difficult
23.	P31	Gate	1	Tool
24.	P99, P38	Cocktail	2	Inclusive
25.	P59	Lego	1	Finding Difficult
26.	P112	Logic	1	Finding Difficult
27.	P91, P107	Maths	2	Finding Difficult
28.	P30	Fruit Garden	1	Inclusive
29.	P6, P71	Juice	2	Inclusive
30.	P100	Banana	1	Positive Feeling
31.	P73	Music	1	Positive Feeling
32.	P48	Breath	1	Need
33.	P2	Joy	1	Positive Feeling
34.	P18, P27, P53, P55, P69, P72, P78	Ocean	7	Inclusive
35.	P4	Backbone	1	Need
36.	P103	Game	1	Finding Difficult
37.	P10	Puzzle	1	Finding Difficult
38.	P81	Fund	1	Finding Difficult
39.	P66, P94, P102, P106	Water	4	Need
40.	P33	Poem	1	Finding Difficult
41.	P89	History	1	Inclusive
42.	P50	Keystone	1	Need
43.	P36	Butter	1	Positive Feeling
44.	P25, P51	Trade	2	Finding Difficult
45.	P73, P90, P97	Salt	3	Need
46.	P8	Chain	1	Inclusive
	Total		85	

Looking at Table 13, it is seen that 85 of the 115 students participating in the study produced valid metaphors for grammar. In this context, it is seen that students produce metaphors for grammar such as the sea (8), ocean (7), car (6), key (6), sky (3), salt (3), crossword (2), child (2), mountain (2), bread (2), and cocktail (2). Accordingly, the distribution rates of the metaphors in terms of themes as a result of the themes made by considering the metaphors produced for grammar and their reasons are as follows:

**Table 14.** Distribution of the Metaphors Produced for Grammar in terms of Themes

Theme	Tool	Need	Finding Difficult	Positive Feeling	Inclusive	Total
Total	17	19	17	7	25	85
Frequency	20%	22.35%	20%	8.23%	29.41%	100%

Looking at Table 14, it is seen that the metaphorical perceptions developed by those who learn Turkish as a foreign language for grammar are combined under five themes: “tool,” “need,” “finding difficult,” “positive feeling,” “inclusive.” Looking at the rate of metaphors in terms of themes, it is observed that 29.41% of the metaphors produced are in the theme of “inclusive,” 22.35% in the theme of “need,” 20% in the theme of “tool,” 20% in the theme of “finding difficult” and 8.23% in the theme of “positive feeling.”

When the reasons of the metaphors are taken into consideration and a categorization is made, the distribution of the metaphors produced by those who have the idea of learning Turkish without knowing grammar and those who think not to learn Turkish without knowing grammar is as follows:

**Table 15.** Grammar Belief and Metaphors

Belief	N	Participant Code	Metaphors	T	N	%
Yes, I can learn.	34	P9,P23,P83, P108, P115, P3, P41, P48, P96, P10, P21, P33, P31	Car (4), Mouth (1), Key (4), Arabic (1), Walking Stick (1), Computer (1), Gate (1)	Tool	13	38.23
		P50, P73, P66, P102	Keystone (1), Salt (1), Water (2)	Need	4	11.76
		P18, P78, P6, P71, P46, P88, P96, P114	Ocean (2), Juice (2), Sky (2), Sea (2)	Inclusive	8	23.52
		P33, P103, P112	Poem (1), Game (1), Logic (1)	Finding Difficult	3	8.82
		P1, P2, P74, P36, P52, P73	Child (2), Joy (1), Butter (1), Rosebud (1), Music (1)	Positive Feeling	6	17.64
Total34					34	100
No, I cannot learn.	51	P26, P44, P83, P7, P11, P19, P81, P39, P53, P48, P4, P94, P106, P90, P97	Gold (2), Lawyer (1), Mirror (1), Bread (2), Lighthouse (1), Sun (1), Breath (1), Backbone (1), Air (1), Water (2), Salt (2)	Need	15	28.84
		P100	Banana (1)	Positive Feeling	1	1.92
		P27, P53, P55, P69, P72, P38, P99, P8, P89, P30, P104, P5, P12, P20, P44, P56, P59	Ocean (5), Cocktail (2), Chain (1), History (1), Fruit Garden (1), Sky (1), Sea (6)	Inclusive	17	32.69
		P4, P37, P17, P102	Car (2), Key (2)	Tool	4	7.69
		P25, P51, P45, P63, P91, P107, P9, P79, P29, P10, P59, P81, P19, P57	Trade (2), Crossword (2), Maths (2), Mountain (2), Riddle (1), Puzzle (1), Lego (1), Fund (1), Human (1), Wall (1)	Finding Difficult	14	26.92
Total	51				51	100
Final Total	85				85	100

Looking at Table 15, when an evaluation is made on valid metaphors produced by 34 of 63 learners who believe that they can learn Turkish without knowing grammar, it is observed that 38.23% of the students produced metaphors with the theme of “tool,” 11.76% of them with the theme of “need,” 23.52% of them with the theme of “inclusive,” 8.82% of them with the theme of “finding difficult” and 17.64% of them with the theme of “positive feeling.” Accordingly, those who believe that they can learn Turkish without knowing grammar have produced metaphors such as car (4), key (4), mouth (1), Arabic (1), walking stick (1), computer (1), and gate (1) in the context of the theme of “tool.” For example, P41, one of the learners who see grammar as a “tool” and produce the “key” metaphor, explained his/her reason as “The better I use Turkish, the quicker I will be able to make my dreams come true. Therefore, Turkish is like a key that unlocks my future.” Likewise, P108, one of those who produced the metaphor of “tool,” explained his/her reason as “If I learn the

*grammar well, I will reach whatever I want very quickly.*" P21, who produced the "walking stick" metaphor for grammar, stated his/her reason as *"It will help me speak Turkish properly."*

11.76 of 34 students who believe that they can learn Turkish without knowing grammar see grammar as "need." Looking at the metaphors and reasons of those whose metaphors come together under the theme of "need," P66, who produced the metaphor of "water," stated its reason as *"There is no life without water. Turkish language cannot be imagined without the grammar of Turkish."*

17.64 of 34 students who believe that they can learn Turkish without knowing grammar have produced metaphors such as child (2), joy (1), butter (1), rosebud (1), and music (1) under the theme of "positive feeling" for grammar. 23.52 of 34 students who believe that they can learn Turkish without knowing grammar used metaphors for grammar such as "sea" and "ocean," which were evaluated under the theme of "inclusive." P96 explained the metaphor of "sea" with the expression *"Turkish language cannot be imagined without the grammar of Turkish, so no matter what we do, we go back to Turkish grammar."*

8.82% of 34 students who believe that they can learn Turkish without knowing grammar, produced metaphors for grammar such as poem (1), game (1), and logic (1) under the theme of "finding difficult." Accordingly, the student coded P33 explains his/her reason for the metaphor of "poem" as *"Writing and reading a poem is not easy, so is grammar."* P112 coded student who produced the metaphor of "logic" explains his/her reason as *"There is a different tense for each expression. Only one word in Turkish can have many meanings. Because there is so much meaning; it's a logical process."*

When an evaluation is made on metaphors produced by 51 students who believe that they cannot learn Turkish without knowing grammar, it is observed that 28.84% of the metaphors were gathered under the theme of "need," 32.69% under the theme of "inclusive," 26.92% under the theme of "finding difficult," 7.69% under the theme of "tool," and 1.92% under the theme of "positive feeling." In this context, it can be said that students especially consider grammar as a "need" in Turkish learning and that they believe it is difficult.

28.84% of the students who believe that they cannot learn Turkish without knowing grammar have produced metaphors for grammar such as gold (2), lawyer (1), mirror (1), bread (2), lighthouse (1), sun (1), air (1), breath (1), backbone (1), water (2), and salt (2). In this context, the student coded P81, who produced the "lighthouse" metaphor, explained his/her reason as *"It is just like the sea at night and we cannot see our way through this blackness without language."* Producing the "backbone" metaphor, P4 explained his/her reason as *"Because I cannot speak without grammar."* The student coded P39, who produced the "sun" metaphor, explained his/her reason as *"Because I live in Turkey, everything becomes dark if I do not learn Turkish. I cannot talk to people, and I cannot finish my work well."* P83, who explained grammar with the metaphor of "lawyer," stated his/her reason as *"Grammar does the same thing as a lawyer helps us to explain ourselves better."* As can be understood from these explanations, students see grammar as a "need" to learn Turkish.

26.92% of the students who believe that they cannot learn Turkish without knowing grammar have produced metaphors for grammar such as trade (2), crossword (2), maths (2), mountain (2), riddle (1), puzzle (1), Lego (1), fund (1), human (1), and wall (1) under the theme of "finding difficult." The student coded P9, who produced the "mountain" metaphor, explained his/her reason as *"Because it is big and we strive to rise."* P107, who produced the "maths" metaphor, explained his/her reason as *"We have to remember hundreds of rules and exceptions to speak and write flawlessly."* The student coded P55, who produced the "riddle" metaphor for grammar, explained his/her reason as *"I always have to think to say something."*

32.69% of the students who believe that they cannot learn Turkish without knowing grammar have produced metaphors for grammar such as ocean (5), cocktail (2), chain (1), history (1), fruit garden (1), sky (1), and sea (6) under the "inclusive" theme. In this context, the student coded P69, who produced the "ocean" metaphor, explained his/her reason as *"It is wide, deep, neat, and most importantly beautiful."* P56, who produced the "sea" metaphor, explained his/her reason as *"Because there are too many grammar topics."* The student coded P8, who produced the "chain" metaphor for grammar, explained his/her reason as *"Because everything is interdependent."*

7.69% of the students who believe that they cannot learn Turkish without knowing grammar have produced metaphors such as car (2), key (2) for grammar. Accordingly, the student coded P37, who produced the “car” metaphor, explained his/her reason as “*I will move forward into the future with this car.*” P48, who produced the “key” metaphor, explained his/her reason as “*Because it opened the door to other worlds for me.*”

#### 4. Conclusion and Discussion

Mori (1999) stated that the effects of learner beliefs on learning exist independently of a person’s learning ability. For this reason, he states that the students’ beliefs in learning and learning abilities in general have an effect on their learning. Graham (2006) also states that students’ beliefs have an important effect on motivation, as well as affecting their approach toward language skills. In this context, when the literature is examined (Horwitz, 1985, 1988, 1999; Sakui & Gaies, 1999; Mori, 1999; Yang, 1999; Rifkin, 2000; Kalaja&Barcelos, 2003; Bernat & Gvozdenko, 2005; Graham, 2006; Arıoğul, Ünal&Onursal, 2009; Rieger, 2009; Büyükyazı, 2010; Aragao, 2011; Peng, 2011; Li & Ruan, 2015; Kaypak & Ortaçtepe, 2014), it is clearly seen that the language learning beliefs of students in foreign language learning have a significant effect on their learning process. Based on the findings obtained from this study, it was concluded that the rate of those who believe that they can learn Turkish without knowing grammar is higher than the rate of those who believe that they cannot learn Turkish without knowing grammar. In addition, it is a striking result that the rate of students who believe that Turkish grammar is easy is higher than those who believe that it is difficult. This result is similar to other studies (Akkaya, 2013; Bülbül & Güven, 2017; Boylu & Işık, 2017; Şengül, 2017; Karatay & Kartalioğlu, 2019; Erol & Kaya, 2020) in the relevant field.

Considering the beliefs of learners in learning grammar by comparing it with grammar in their native language, the rate of those who believe that they cannot learn grammar better by comparing it with grammar in their native language is higher than those who believe that they learn better by comparison. The fact that there are students who have the belief that they both can and cannot learn is similar to other studies (Prodromou, 2000; Biçer, 2017) in the field. However, this study reveals that the majority of learners believe that they can learn more easily without making comparisons with the grammar of their native language while learning Turkish grammar. This is an indirect indication that the majority of students are aware that they cannot learn a foreign language using methods that support the use of their native language in learning the target language, such as the grammar translation method. This is in parallel with the view of Shintani & Ellis (2014) that students should be exposed to the target language at the maximum level. However, the fact that some of the students in the study believed that the use of their native language would be beneficial, even if it was a small amount, does not coincide with the results of some studies (Zhang, 2007; Köylü, 2018; Campa & Nassaji, 2009; Sarıçoban, 2010; Moore, 2013) and it is seen that the answer to the question “Should native language be used in target language teaching?” is not clear in terms of students. Considering this, in his study investigating when and how much the native language is used in foreign language classes and what teachers and students think about native language use, Şimşek (2010) stated that the existence of native language use in foreign language teaching is undeniable. In addition, both teachers and students are aware of the severe need for native language use especially in situations that present learning-teaching difficulties such as providing understanding, learning words quickly, and developing difficult concepts. Özçelik (2013) conducted a study by taking the opinions of teachers and students about the use of the native language in the foreign language (French) class and listed the reasons for using the native language in terms of students as the students’ language skills are not sufficiently developed, regardless of whether the activities are suitable for the targeted acquisitions and the learners’ levels, the instructor’s positive or negative view of the use of the native language in the classroom, the level of the language used, cooperation, artificiality of the classroom environment, and the effect of English as the first foreign language. Biçer (2017), in his study to determine the effect of the native language of Syrian students on the learning process of Turkish as a foreign language, concluded that the native language of the students should be used as a teaching tool when necessary, rather than preventing it completely with prohibitions and barriers. Kayaoğlu (2012) and Taşçı & Aksu Ataç (2020) also found that teachers have a positive view of the use of native language in target language teaching in their studies.

In the results regarding the importance of knowing grammar in terms of language skills, it is seen that learners have the belief that knowing grammar is more important in terms of writing, speaking, listening,

and reading skills. This is proof that students see grammar as a tool, not a goal. At this point, as stated by Güneş (2013), in the context of the idea that “new grammar understanding is not a goal in grammar teaching but a tool for the improvement of written and oral expression,” the fact that Turkish learners believe that their knowledge of grammar is more important in terms of writing and speaking skills shows that their grammar-learning beliefs coincide with the new grammar understanding.

In the context of the grammar-learning method, most of the learners believe that it is more important to understand the grammar based on examples rather than learning rules directly. This is an indication that students have an understanding of induction in learning grammar. In this context, according to Göçer (2008), one of the most used methods in grammar teaching, perhaps the most important one, is the inductive method. The fact that the students believe that it is more important to understand the rule based on examples, rather than gaining grammar by learning rules, is a sign that they want to learn grammar according to the implication method. This result is similar to the results of other studies in the relevant field (Güler & Eyüp, 2016; Göçen, 2019; Yılmaz & Dilidüzgün, 2019).

In addition to the above information, it is one of the results that the students have the belief that it is useless to explain grammar rules in the native language in lessons. This result confirms Shu’s (2018) view “Teachers should not be content to just teach students too much grammar; instead, they should devise some things to give students the opportunity to use the grammar.” However, in the research, the fact that a certain group finds it useful to explain grammar rules in their native language in lessons is an issue that needs to be emphasized. Because Demir (2012) also stated that the students he taught grammar in the foreign language preparation department frequently asked him to explain some grammar rules in their native language. In this study, the belief that some students cannot learn Turkish without knowing grammar highlights the need for grammar knowledge in foreign language learning. Şavlı & Kalafat (2014) also emphasized that the use of native language in foreign language teaching has a great effect on foreign language teaching and learning, and emphasized the importance of establishing a balance between the two languages in this process. Likewise, Brown (2009) investigated the perceptions of approximately 1600 students and 49 teachers on effective foreign language teaching through a 24-item questionnaire at the University of Arizona. The results of this study showed that students favor a grammar-based approach, while their teachers prefer a more communicative class. When the studies conducted with this result are evaluated, it is possible to say that students’ grammar-learning beliefs differ.

Based on the qualitative findings obtained from this study, it was concluded that the metaphors developed by those who learn Turkish as a foreign language for grammar knowledge are explained by generating different reasons with various metaphors such as car, key, crossword, child, mountain, sea, ocean, bread, cocktail, sky, and salt. Students producing the correct metaphors for Turkish and explaining their metaphors with a rational reason shows that they are aware of both their experiences in the language learning process and how they learn the language. In other words, this shows their beliefs. In this context, in the theming made by considering the relevant metaphors and their reasons, the metaphors developed by the learners for Turkish grammar were combined under five themes: “tool,” “need,” “finding difficult,” “positive feeling,” and “inclusive.” In this context, it was concluded that there was a parallel relationship between the quantitative and qualitative findings of the research because, when an evaluation is made on valid metaphors produced by 34 of 63 learners who believe that they can learn Turkish without knowing grammar, it is observed that 38.23% of the students produced metaphors for grammar with the theme of “tool,” 11.76% of them with the theme of “need,” 23.52% of them with the theme of “inclusive,” 8.82% of them with the theme of “finding difficult,” and 17.64% of them with the theme of “positive feeling.” In this context, it can be said that students especially consider grammar as a “tool” in Turkish learning. Likewise, 28.84% of the metaphors produced by 51 students who believe that they cannot learn Turkish without knowing grammar were gathered under the theme of “need,” 32.69% under the theme of “inclusive,” 26.92% under the theme of “finding difficult,” 7.69% under the theme of “tool,” and 1.92% under the theme of “positive feeling.” In this context, it can be said that students especially consider grammar as a “need” in Turkish learning and believe that grammar is difficult.

In the context of all these data, it was concluded that there is a parallelism between the grammar-learning beliefs of those who learn Turkish as a foreign language and their grammar perceptions. In other words, those who think that they cannot learn Turkish without knowing grammar also perceive grammar as a difficult and a need and produce metaphors for it. In addition, it was understood that those who believe that they can learn Turkish without knowing grammar perceive grammar as a tool and they produce metaphors and provide reasons. In this context, Arslan (2014) states that the structure of a learned language and the structure of a learner's native language affect foreign language learning. Knowing this issue and interpreting language teaching within the framework of the students' native languages helps in determining the grammar learning competencies and understandings of students with which languages in grammar learning and teaching. Göçen (2019) in his metaphor-based research on the perceptions of those who learn Turkish as a foreign language toward Turkish grammar stated that students experienced about learning the structure of the language instead of experiencing language communicatively in the classroom during the education and training process. In addition, he stated that in the metaphors produced in this context, "grammar" is mostly handled as a form, but "meaning" and "usage" features are not revealed. Arıkan, Taşer, and Saraç Süzer (2008), in their study, found that one of the perceptions of prep school students about an adequate English teacher is having the ability to teach effective grammar using real life situations. This clearly reveals the student's view on how he/she wants to learn grammar. For this reason, the determination of student beliefs in grammar teaching will both give information about the teachers' grammar teaching approaches and provide the determination of students' grammar learning methods. This will contribute to receiving feedback on many subjects such as the teaching programs used in the relevant field, the textbooks prepared on the basis of these programs, teachers' grammar teaching approaches, and will contribute to the review of the teaching process and materials.

## **5. Recommendations**

Based on the above information and findings;

- The number of researches on "language learning beliefs" in teaching Turkish as a foreign language should be increased and a general opinion about the beliefs of Turkish learners should be created. In the context of this opinion, curriculum, textbooks, and other materials must be reshaped.
- In this study, the rate of those who want to learn grammar with the implication method is higher than the ones who want to learn a grammar-focused language directly. For this reason, studies should be conducted to determine the relationship between students' grammar-learning beliefs and language achievement.
- Studies should be carried out to determine the methods of expressing grammar by teachers in the classrooms of students whose grammar-learning beliefs are determined. Through these studies, it should be determined whether teachers' grammar teaching methods affect learners' grammar-learning beliefs.
- It should be determined whether the students who compare their native language make comparisons based on similarities or differences in their native language while learning grammar. With this determination, the effect of similarities and differences between the target language and the native language on grammar learning should be determined.
- Experimental studies should be conducted on the language skills of students who find Turkish grammar easy or difficult, especially in writing and speaking skills.
- Studies should be conducted to determine whether there is a parallelism between the grammar-learning beliefs and perceptions of those who learn Turkish as a foreign language. As a result of the increase in the number of such researches, the findings obtained as a result of comprehensive studies on students' grammar beliefs and perceptions provide an opportunity for teachers in terms of restructuring the Turkish teaching process.
- Studies should be conducted to determine whether students' grammar-learning beliefs have an effect on teachers' teaching methods.



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# Metaphorical Perceptions of High School Students in Rural Area Related to Career, Profession, and Job Concepts

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## ABSTRACT

This study aims to reveal the metaphorical perceptions of Turkish high school students in rural area about the concepts of career, profession, and job. The participants consisted of 160 (82 females and 78 males) high school students in the rural area. Participants are 10th (n=65), 11th (n=40), and 12th-grade (n=55) students. In order to reveal the metaphorical perceptions of the students about the concepts of career, profession, and job, each student was asked to complete the sentences of "career is like ....." and "because it is ..."; "profession is like ....." and "because it is ... " and "job is like ....." and "because it is ... ". In this study, the phenomenology design was used and the data were analyzed by content analysis. Participants created total of 121 metaphors related to the career concept, 73 metaphors related to the profession concept, and 108 metaphors related to the job concept. The results are discussed basing on the career psychological counseling literature and presented suggestions for future studies.

Keywords:

Career, profession, job, metaphor

## 1. Introduction

A metaphor is defined as a form of speech in which two unrelated ideas are used together to give the meaning of one a definition to the other (Angus & Rennie, 1988, 1989). In addition, metaphor is a visual image that uses imagination to capture new connections and possibilities (Amundson, 2010). Therefore, metaphors make it easier to think about complex issues (Thibodeau & Boroditsky, 2011).

Metaphors enable an individual's mind to move from a certain way of understanding to another way of understanding, allowing that individual to see a certain phenomenon as another phenomenon (Saban, 2008). Metaphors may have various functions. They have the function of providing a mental framework for thinking about a phenomenon (Shuell, 1990), bridging from one idea to another (Hoskins & Lesheo, 1996). They also bring together cognitive, emotional, perceptual, and experiential parts that are seemingly separate (Robert & Kelly, 2010), and help to understand and explain the abstract and complex pattern (James, 2002).. Therefore, metaphor studies are widely used in social (Parsons, 2010; Steen & Gibbs, 2004) and science (Duit, 1991; Pirasa et al., 2018) fields.

Metaphors are widely used in the career psychological counselling (Amundson, 2010, 2015; Savickas, 1993), as well as in the education (Botha, 2009; Büyükalan Filiz & Türkmenli, 2019; Saban, 2008; Shuell, 1990) and psychological counselling (Karairmak, 2015; Karairmak & Güloğlu, 2012; Nas, 2019; Van Parys & Rober,

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2013). Several researchers point out that metaphors are used in career counselling interventions and theoretical studies (Amundson, 2015; Patton & MacMahon, 2006; Savickas, 2005; Young et al., 2002) as well as in various disciplines. For example, Savickas (2005) used metaphors to understand clients in career counseling sessions. Amundson (2015), Inkson and Amudson (2002), and Inkson, (2004) has conducted empirical metaphor studies on the concept of career in the vocational behavior. The results of previous studies have revealed different metaphors about the concept of career. Consistent with previous study results, there are many definitions of the career concept in vocational psychology literature. For example, Niles and Harris-Bowlsbey (2017) stated that the concept of the career cannot be limited to only work or job, but the career expresses a lifestyle. In another definition, the career is described as the sum of lifelong roles (Herr et al., 2004). On the other hand, Zunker (2006) defines the career as a process that includes progress, plateau, and decline in the pattern and development line formed by the interaction and order of the professional and other life roles. It is noteworthy that definition of career concept includes the concepts of job and profession. Job is the systematic activity that is objectively valued by the individual and desired by others, successive and directed, and requires effort (Super, 1976). On the other hand, profession is the activities that the individual performs to earn their life, to provide a useful service or product to others, based on the knowledge and skills acquired through education, and with rules set by the society (Herr et al., 2004). It is stated that the career, profession, and job concepts are frequently used interchangeably and there is no universal consensus on these concepts even in the USA (see, Isaacson & Brown, 1997).

Although the job is the social mechanism that ensures an individual's participation in and existence in society (Savickas, 2005), it is not only a profit-making activity, but also an activity that determines an individual's social status and determines lifestyle and leisure activities (Niles & Harris-Bowlsbey, 2013). Career is all roles of the individual in their life, such as child, parent, student, citizen, etc, as well as job and profession (Savickas, 2005). The career that directs people's search for meaning and their lives does not end with having an profession or starting a job (Savickas, 2002). However, the career, which has economic returns, also has psychological benefits such as social status, respectability, lifestyle, job satisfaction, life satisfaction (Savickas, 2008).

Metaphors are used to explain these concepts, which are versatile phenomena, especially the concept of career (see Baruch, 2004; El-Sawad, 2005; Fox, 2015; Smith-Ruig, 2008). Inkson (2004) stated that many metaphors related to the concept of career in career psychological counselling are created. However, it is noteworthy that metaphor studies related to the concepts of profession and job are less. Each of these concepts emphasizes a different aspect of the concept of career, but none of which fully reflects the concept of career (Inkson & Amudson, 2002; Inkson, 2004). This study aims to reveal the metaphorical perceptions of Turkish high school students in rural area about the concepts of career, profession, and job. Metaphors make understanding and explaining abstract and hard-to-understand concepts easier through concrete and more well-known concepts (Boroditsky, 2000; Gibson, 2001). In addition, metaphors are a useful way for researchers in vocational psychology to discuss and explain complex concepts related to the career (Fox, 2015). It is critical to determine the metaphorical perceptions of high school students in rural area regarding career, profession, and job concepts because the research results are expected to guide for career counseling services. Furthermore, the results of this study will have significant ramifications for future research.

## **2. Methodology**

### **2.1. Research Model**

This study was conducted with a qualitative research method, and a phenomenology pattern was used. Phenomenological research describes the common meaning of several individuals' experiences of a concept or phenomenon (Creswell, 1998). Phenomenology study is founded on the belief that our knowledge of the universe is derived from our experience, and the researcher's task is to identify, understand, interpret, and explain these experiences (Denscombe, 2014; Hammersley, 2013).

### **2.2. Participants**

One hundred and sixty Turkish rural high school students have recruited the current study. The participants consisted of 160 (82 female and 78 male) high school students in the Afşin district. Afşin is described as a rural area of Kahramanmaraş city. Participants are 10th (n=65), 11th (n=40), and 12th-grade (n=55) students.

The ages of the participants ranged from 15 to 19 years ( $M = 16.77$ ,  $sd = 0.92$ ). Participants were volunteers. 78.12% of the participants are Anatolian High School ( $n = 125$ ) and 21.87% Anatolian Imam Hatip High School ( $n = 35$ ) students. The education level of the mothers of participants is mostly primary school graduates ( $n = 60$ , 37.5 %), and the education level of the fathers of participants is mostly high school graduates ( $n = 54$ , 33.75 %). The demographic characteristics of the participants are presented in Table 1.

**Table 1.** Participants' Demographic Characteristics

		Frekans	Yüzde (%)
Gender	Female	82	51.25
	Male	78	49.75
High school type	Anatolian High School	125	78.125
	Anatolian Imam Hatip High School	35	21.875
Grade level	10	65	40.625
	11	40	25
	12	55	34.375
Soci-economic level	High	12	7.5
	Middle	137	85.625
	Low	11	6.875
Mother's educational status	Not literate	14	8.75
	Primary school	60	37.5
	Middle School	53	33.125
	High school	28	17.5
	University	5	3.125
Father's educational status	Not literate	2	1.25
	Primary school	49	30.625
	Middle School	44	27.5
	High school	54	33.75
	University	11	6.875

### 2.3. Data Collection Tool

To reveal the metaphorical perceptions of the participants about the concepts of career, profession, and job, they were asked to complete sentences related to these three concepts. For this, a survey form was used. The survey form consists of two parts. In the first part of the form, questions are describing the participants' gender, age, grade level, high school type, perceived socioeconomic level, and education status of the parents. In the second part of the survey, each participant was asked to complete the sentences of " Career is like ..... " and " because it is .... ", " Profession is like ..... " and " because it is .... ", " job is like ..... " and " because it is .... ". The surveys were distributed to the participants, and they were asked to complete the sentences by creating a metaphor in line with their thoughts on the concepts of career, profession, and job, and no orientation was made in this regard. In metaphor studies, the expression "like" is used in the sentence to make an analogy, and the expression "because" is used to base that analogy on a logical ground (Saban, 2009). In this study, the same approach was taken for similar reasons.

### 2.4. Data Analysis

Since 40 of the data collected from 200 high school students were answered incompletely, they were excluded from the data set. Data collected from 160 high school students were analyzed. The data collected from high school students were analyzed using the content analysis method. Content analysis is a data analysis technique that aims to reach deeper themes and concepts by analyzing the data in-depth (Krippendorff, 2004). In the analysis process, categories were created by bringing together similar metaphors. Visualizations and quantifications were used to increase the clarity, comprehensibility and reliability of the research findings (Yıldırım & Şimşek, 2013). The validity and reliability measures proposed by Lincoln and Guba (1985) were followed. To assure transferability, the convenient sampling method, one of the purposeful sampling methods, was applied. In addition, examples of direct quotations are given to the views of high school students. Participants from various school types and class levels were reached to ensure credibility. Moreover, the data collection tool was created in the most preferred form in the literature and was confirmed by expert opinions. Data collection forms and codes were stored to ensure confirmation.

### 2.5. Ethical

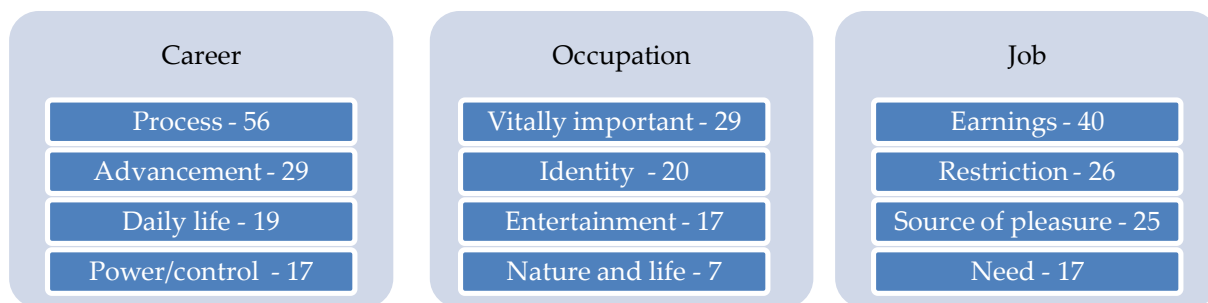
In this study, all rules stated to be followed within the scope of “Higher Education Institutions Scientific Research and Publication Ethics Directive” were followed.

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### 3. Findings

In this section, the metaphors created by high school students regarding career, profession, and job concepts and the categories created from these metaphors are given in tables and figures. The reasons and example quotations for the metaphors created by the participants within the given categories are then given.



**Figure 1.** Categories created for career, profession, and job concepts

It is seen that there are categories of process, advancement, daily life and power/control related to career concept in Figure 1. It is seen that there are categories of vitally important, identity, entertainment, nature and life related to profession concept. It is seen that there are categories of earnings, restriction, source of pleasure and need related to the concept of job.

Four categories were determined as a result of the classification of 121 metaphors created by high school students regarding career concept according to their similarities. These categories, the total number of metaphors repeated in the categories, the metaphors in the categories, and their repetition numbers are presented in Table 2.

**Table 2.** Metaphors created by high school students regarding the concept of career

Category	Metaphors	f
Process	Life (9), Stair (8), Piggy Bank (3), Step (2), Target (2), Stage (2), Flower (1), Plant (1), Child (1), Lamb (1), The accumulation of the steps taken (1), Sapling (1), The last step of the stair (1), Game level (1), Climbing the peak of Everesin (1), Endless adventure (1), Seed (1), Walking (1), Marathon (1), Reading (1), Climbing (1), Fire (1), My child (1), Summit path (1), Literary work (1), Last page of a thick novel (1), Guide that summarizes life (1), Path (1), Development (1), Race (1), Signature (1), Book (1), Tree branch (1), Hope (1), Personality (1), Music (1)	56
Advancement	Summit (5), Game level (3), Perfectionism (2), Skyscraper (1), Success (2), Tower (1), Stand high (1), Highest place (1), Sun (1), Lantern (1), Pole star (1), Freedom (1), A small step (1), Step taken for the future (1), Being the best (1), Place in life (1), Earth (1), Key (1), Bridge (1), Level up (1)	29
Daily life	Imagination (3), Passion (2), Air (1), Need (1), Heart (1), Earning (1), Compulsory job (1), Compulsory profession (1), Profession with pleasure (1), Family (1), Puzzle (1), Lifestyle (1), Eye (1), Something invaluable (1), House (1), Ice cream (1)	19
Power/control	Respectability (4), Token of superiority (3), Power (2), Position (2), Pride (2), Title (1), Recognition (1), State (1), Giftedness (1), Superiority (1)	17

As seen in Table 2, the frequency order of the metaphor categories created by the students is process, advancement, daily life, and power/control.

In the 'Process' category, students created 58 metaphors. Some of them and their reasons are as follows:



- K31-It is like fire because it grows more and more.  
 K32-It is like a step because it is the sum of experiences accumulated by man.  
 K55-It is like the road because you have the chance to progress without stopping.  
 K63-It is like a seed because if you water it, feed it, grow it, if you work, you rise.  
 K66-It is like a ladder because we encounter something new at every step.  
 K80-It is like my child because I raise him beautifully by my own means.  
 K92-It's like an endless adventure because you constantly rise.  
 K119-It is like a marathon because there can be ups and downs, which is reflected in my performance.

In the advancement category, students created 31 metaphors. Some of them and their reasons are as follows:

- K146- It is like a tower. Because someone with a good career is high.  
 K136- It is like a summit. Because the better I go, the better.  
 K134- Is the summit. Because it is to be high.  
 K104-It is like a pole star. Because it makes people shine like a pole star.  
 K100-It is like status. Because it is an opportunity for self-improvement.  
 K90-It is like game level. Because as I succeed, I rise.

In the power/control category, students created 16 metaphors. Some of them and their reasons are as follows:

- K142-It's like power. Because it is necessary to have authority.  
 K107-It is like pride. Because everyone who has a career has dignity.  
 K99-It is like superiority. Because career loads more on people.  
 K98-It is like a summit. Because, thanks to his career, he becomes respected.

In the category of daily life, students created 16 metaphors. Some of them and their reasons are as follows:

- K127- It is like a heart. Because it makes me live.  
 K156-It's like love. Because without a career there is no human.  
 K52-It is like a compulsory job. Because career is something that gives meaning to one's life.  
 K70-It's like family. Because I would be happy thanks to the career.

Four categories were determined as a result of the classification of 73 metaphors created by high school students related to the concept of profession according to their similarities. These categories, the total number of metaphors repeated in the categories, the metaphors in the categories, and their repetition numbers are presented in Table 3.

**Table 3.** Metaphors created by high school students regarding the concept of profession

Category	Metaphors	f
Vitally important	Life (11), Water (5), Gold bracelet (3), Food (2), Lifestyle (2), Breathing (1), Meat (1), Human heart (1), Medicine (1), Brain (1) Make money (1)	29
Identity	Uniform (4), Profile (2), Identity (2), Pride (2), House (2), How to identify a person (1), Mirror (1), Reputation (1), Status (1), Respect (1), The person to get married (1), Car (1), Name (1)	20
Entertainment	Passion (2), Love (2), The meaning of life (2), Comfort (1), Unconcern (1), A comfortable seat (1), Happily eaten breakfast (1), Chocolate (1), Chocolate cake (1), sunflower seeds (1), Amusement Park (1), Waiting for plums all winter (1), A pleasant game (1), Happiness (1)	17
Nature and life	Sky (2), Ocean (1), Walnut tree (1), Tree branch (1), Tree (1), One day (1)	7

As seen in Table 3, the frequency order of the metaphor categories created by the students is vitally important, identity, entertainment, and nature and life.

In the 'vitally important' category, students created 29 metaphors. Some of them and their reasons are as follows:

- K3- It's like a lifestyle. Because people live their chosen profession.

K6- It's like making money. Because I can achieve this with the effort given.

K14- It is like medicine. Because I need it to heal.

K23- It is like water. Because it covers ¾ of our lives.

K28- It's like a lifestyle. Because the profession determines how we direct our lives.

K29- It is like water. Because we need it to survive.

K97- It is like a gold bracelet. Because it does not lose its value for life.

In the entertainment category, students created 17 metaphors. Some of them and their reasons are as follows:

K1- It is like happiness. Because the profession I am going to do makes me very happy.

K2- It is like passion. Because the profession is love.

K22- It is the meaning of life. Because the profession makes me happy.

K35- It's like a name. Because people are known for their profession.

K74- It is like a chocolate cake. Because if I do the job I want, I enjoy what I do.

K115- It is like an enjoyable game. Because if I love my job, I will do it with fun.

K123- It is like core. Because it both entertains and satisfies.

In the identity category, students created 20 metaphors. Some of them and their reasons are as follows:

K18- It is like a profile. Because the profession is the profile that reflects you, allows you to be remembered with that profession, and tells you like you.

K76- It is similar to the way you define people. Because your profession reflects you.

K84- It is like a uniform. Because what I have to take is what I want to do.

K108- It is like a uniform. Because without it, man is nothing.

K113- It is like identity. Because you choose a profession according to your personality.

K121- It is like a mirror. Because every person's profession reflects himself.

In the category of 'within life', students created seven metaphors. Some of them and their reasons are as follows:

K7- It's like a day. Because my day takes place within the framework of the profession.

K10- It is like the sky. Because I am looking for myself in this world, it shows my route while reaching what I am looking for.

K15- It is like the sky. Because it continues until the end of its life and is endless.

K64- It is like the ocean. Because reaching a profession is as difficult as crossing an ocean.

K88- It is like a tree branch. Because whichever branch sees the sun more, it develops more.

Four categories were determined as a result of the classification of 108 metaphors created by high school students regarding job concept. These categories, the total number of metaphors repeated in the categories, the metaphors in the categories, and their repetition numbers are presented in Table 4.

**Table 4.** Metaphors created by high school students regarding job concept

Category	Metaphors	f
Earnings	Money (18), Moneymaking tool (7), Source of livelihood (2), Source of income (1), Bank (1), Atm visit (1), Withdrawing money from the bank (1), Provision of labor (1), Earnings (1), Bread money (1), Quality life (1), Privilege (1), Standard of living (1), Authority (1), Comfortable life (1), Life-sustaining tool (1)	40
Restriction	Obligation (13), Slavery (3), Between four walls (1), Being the slave of the system (1), Phobia (1), Difficulty (1), Hot pepper (1), Tiring activity (1), Difficult war (1), Time loss (1), Exam (1), Uniformity (1)	26
Source of pleasure	Happiness (3), Pleasure (2), Nucleus (2), Fun (2), Peace (2), Spending time (1), Brewed tea after eating (1), Wafer (1), Leisure activity (1), Hobby (1), Computer game (1), Source of happiness (1), Drawing (1), Comfort (1), Buffet (1), Football (1), Busy (1), Hourglass (1), Social media (1)	25
Need	Need (3), Home (2), Necessity (2), Love (2), Drinking water (1), Nutrition (1), Friendly (1), Water (1), Breathe (1), Eat (1), Basic needs (1), Love (1)	17

As seen in Table 4, the frequency order of the metaphor categories created by the students is earnings, restriction, source of pleasure, and need.

In the earnings category, students created 40 metaphors. Some of them and their reasons are as follows:

- K1- *It is a source of livelihood. Because there is no income for the job.*  
 K3- *It's like money. Because the bigger your job, the more money you have.*  
 K9- *It's like money. Because the job is something done financially.*  
 K66- *It is like a bank. Because it makes me make money.*  
 K135- *It is like withdrawing money from the bank. Because if you do, you have money.*  
 K139- *It is like bread money. Because without a job there is no money.*

In the restriction category, students created 26 metaphors. Some of them and their reasons are as follows:

- K15-*It is like a necessity. Because it is an application made regardless of what you want, what you feel.*  
 K24-*It is like a necessity. Because, you must have a job to survive.*  
 K72- *It is like being a system slave. Because since the age of seven, the desire for the sun is trapped between the four walls and eventually becomes a slave to others.*  
 K73-*It is like between four walls. Because it is a limited place, it is stifling and boring.*  
 K83-*It's like slavery. Because it is what people must do.*  
 K120-*It's like an exam. Because the harder I work, the harder it gets.*

In the source of the pleasure category, students created 25 metaphors. Some of them and their reasons are as follows:

- K56-*It's like being happy. Because most of our life goes through doing a long-term job, this job determines whether we are happy or unhappy in life.*  
 K76-*It's like water and food. Because, you have to find him to survive.*  
 K80-*It's like spending time. Because what do we do at home until evening? We spend time going to work.*  
 K84-*It is like a source of pleasure. Because the fact that man always has work to do makes sense of his life.*  
 K104-*It is like an hourglass. Because, it allows us to make the best use of time.*  
 K129-*It's like a hobby. Because, I enjoy doing so much.*

In the needs category, students created 17 metaphors. Some of them and their reasons are as follows:

- K29-*It is as needed. Because it is always necessary.*  
 K46-*It is like water. Because it is necessary to live, even if it is unpleasant.*  
 K75-*It's like breathing. Because without work, there is no money, family, home, child and happiness.*  
 K76-*It's like drinking and eating water. Because if you want to live your life, you have to find it.*  
 K123-*It is like a friend. Because it is hard to find.*  
 K153-*It's like love. Because one half of the job is empty.*

#### 4. Discussion, Conclusion, and Recommendations

This study was aimed to reveal the metaphorical perceptions of high school students about career, profession, and job concepts. High school students created metaphors about career, profession, and job concepts and wrote the reasons for them. Metaphors created by high school students regarding the concept of career are gathered in the categories of process, advancement, daily life, and power/control. The metaphors created by high school students regarding the concept of profession are gathered in the categories of vital importance, identity, entertainment, and from nature and life. The metaphors created by high school students related to the job concept were collected in the categories of earning, restriction, source of pleasure, and need.

High school students created a total of 121 metaphors in four categories regarding the concept of career. There are 56 metaphors in the process category, 29 in the advancement category, 19 in the daily life category, and 17 in the power/control category. Among the most repetitive in the process, category are metaphors such as stairs, life, piggy bank, stage, and climbing. According to these findings, the process category reflects theoretical states and views in career development theories (Ginzberg et al., 1951; Gottfredson, 2002; Super, 1953). According to these theories, career development is an ongoing process throughout the life of the individual. Career development consists of several stages and each stage has career development tasks that the individual must complete (see Super, 1963a, b). Among the most repeated in the advancement category are metaphors such as summit, game level, skyscraper, and tower. In the traditional sense, this category can

reflect intra-organizational rises (Adamson et al., 1998). According to these data, high school students believe that getting promoted will help them advance in their careers. In the power/control category, reputation, superiority, power, and state metaphors are among the most repeated. According to these metaphors, it is seen that students emphasize hierarchy and status. The concept of career in high school students reflects hierarchy and status may be due to the high power distance (Hofstede et al., 2010) in Turkey. In the category of daily life, there are metaphors such as puzzles, imagination, air, and eye. This category suggests that high school students see the career as a natural part of human life. Emphasis is also placed on the complexity of daily life. This category is similar to Lent's (2005) definition of his career development process as a large complex puzzle involving many factors such as genetic inheritance, environmental support and resources, goals, choices, satisfaction, transitions, learning experiences, interests, skills, values, and changes over time. To support the research findings, previous research has used metaphors that relate to the concept of career: Structure, Relationship, Role, Resource (Inkson, 2004), Path and Journey (Baruch, 2004; Inkson, 2004; Inkson & Amudson, 2002; Smith-Ruig, 2008), History (Christensen & Johnston, 2003; Inkson, 2004), Climbing (Baruch, 2004), Stairs and Steps (Inkson, 2004; Inkson & Amudson, 2002; Oezdemir et al, 2016), Capital (Inkson & Amudson, 2002; Inkson & Arthur, 2001), glass ceiling (Inkson, 2004), legacy (Inkson, 2004; Larson & Wilson, 1998), career anchor (Inkson & Amudson, 2002), harmony (Inkson, 2004), cycle and season (Inkson, 2004; Inkson & Amudson, 2002), boundary (Arthur & Rousseau, 1996; Inkson, 2006), and portfolio (Inkson & Amudson, 2002) metaphors found. Also process, cycle, accumulation, resource, difficulty, role, and situationally (Çetin et al., 2015); productivity, development and maturation, path, and target (Korkut & Keskin, 2016) metaphors are also metaphors found in previous research on the concept of career.

High school students created 73 metaphors in four categories related to the concept of profession. There are 29 metaphors in the vital category, 20 in the identity category, 17 in the entertainment category, and 7 in the category of nature and life. The most repeated in its vital category are metaphors such as water, gold bracelet, life, breathing, and eating. The definition of the concept of profession reflects the vital importance category. Profession is knowledge and skill-based activity that is done by an individual to provide a useful service and product to others, gained through education and determined by society, to sustain the individual's life (Herr et al., 2004). As can be understood from the definition, the importance of profession in human life is an undeniable fact and people need profession in order to survive and to earn money. In addition, the profession is not just a whole set of activities for making money. Her/his profession influences many aspects of an individual's life. The most frequently repeated metaphors in the entertainment category are metaphors such as passion, love, the meaning of life, comfort, and happiness. To give an example to reflect these findings, 80-85 % yes answer was given to the question of "Would you like to work again if you have much money to provide your life" (Yeşilyaprak, 2016). As Freud states that the indicators of healthy people are love and work, realizing the essence that Rogers expressed as fully functioning is also related to the profession and work (Kuzgun, 2014). There are metaphors such as uniform, profile, identity, and human identification tools among the most repeated ones in the identity category. Participants generally state that people's profession reflects their identity and is the way they define them. According to Savickas (2002), vocational identity is a combination of features observed and possessed by the individual and others. Research findings support this view. The most repeated in nature and life category are metaphors such as sky, ocean, tree, and tree branch. Similarly, in previous studies, it has been found to be a useful metaphor for the concept of profession, since water is reflective, conductive, naturally occurring, endless, and fluid (Fox, 2015). On the other hand, Wilcock (2001) and Molke (2009) emphasized the vocational development effort and chaos in adolescence by metaphorizing the concept of profession as a ship without an anchor in an unlimited sea. The research findings support the views of Kuzgun (2000) whose profession is the most important source of a person's identity, which is defined as a sphere of activity that enables the individual to be respected, build social relationships, have a place in society and feel that it works. High school students created a total of 108 metaphors in four categories related to the concept of job. There are 40 metaphors in the earnings category, 26 in the restriction category, 25 in the source of pleasure category, and 17 in the need category. In the earnings category, metaphors such as money, livelihood, bank, and cash machine are among the most repeated. The job can be either paid (salary, wage) or unpaid (voluntary, hobby) (Super, 1976). The earnings category related to the job concept reflects the Dictionary by Merriam-Webster' job description. According to the Dictionary by Merriam-Webster's the job is defined as a regular remunerative position. According to this category, the job is perceived by high school students as activities with a material return.

Among the most repeated in the restriction category are metaphors such as necessity, slavery, inter-wall, and phobia. This category suggests that high school students have a negative attitude towards work and have false generalizations and beliefs about work. Understanding work, defined as the meaning evoked by the individual about the attitude towards work (Blustein, 2006), can be negative in high school students. Working understanding is an important indicator of adolescents' career maturity (Öztemel, 2012; Öztemel & Yüksel, 2011). Turkish rural high school students' view of work and job as a restriction suggests that their vocational maturity level maybe low. Thus, studies to improve high school students' work understanding and career maturity levels are recommended. According to another finding, high school students see the job as a source of pleasure. Among the most repetitive in the category of the source of pleasure, there are metaphors such as happiness, pleasure, entertainment, and peace. This category supports conceptual explanations about work and study. Job is a source of livelihood of the individual and an important activity that meets the need for living, working, physical and mental activity. In addition, the job is integrated with life and is an important source of satisfaction. Satisfaction and pleasure of the individual increases her/his self-confidence, self-esteem, and happiness (Yıldız, 2010). Metaphors such as home, necessity, love, water, and friends are among the most repeated in the needs category. According to this category, high school students regard work as a means to meet their needs. These findings support Roe's views, emphasizing that there is a relationship between career choice and needs. According to Roe (1957), people choose an profession or workplace for Maslow's physiological needs, security needs, love, and belonging needs, prestige and the need to succeed, and the need for self-realization, which he stated in the hierarchy of needs.

The study results revealed that Turkish rural high school students perceive the concept of career as a process, promotion, daily life, and power/control. The results revealed that Turkish rural high school students perceived the profession as vitally important, identity, entertainment, from nature and life. The results revealed that Turkish rural high school students perceive the job concept as earnings, restriction, source of pleasure, and need.

Because this study used a convenient sampling approach, the participants are only 10th, 11th, and 12th-grade students. Future studies can be studied on a broader population that includes all grade levels in rural and urban high school and middle school students. Besides, this study was carried out in the Afşin district of Kahramanmaraş province. Conducting researches involving participants with different regions and characteristics may bring different metaphors into the literature. In addition, psychological counselors can get ideas about their students' career maturity levels and their understanding of work by conducting similar practices on their students and can direct their work accordingly. School counselors can carry out group guidance activities to increase high school students' career maturity and working understanding.

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# Analysis of Relationships between High School Students' Career Maturity, Career Decision-Making Self-Efficacy, and Career Decision-Making Difficulties

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## ABSTRACT

The study analyzed the relationships between high school students' career maturity, career decision-making difficulties, and career decision-making self-efficacy and aimed to investigate whether career maturity, career decision-making difficulties and career decision-making self-efficacy altered according to gender, type of school, and grade level. The study sample was composed of 665 high school students attending five different high schools in Bursa. The data collection tools included the Career Decision-making Difficulties Questionnaire, the Career Maturity Scale, and the Career Decision-Making Self-Efficacy Scale. Among quantitative research methods, a correlation model was applied. The analysis results revealed a weak but significant negative relationship between career maturity and career decision-making difficulties scale in terms of total scores and subscale scores. Additionally, there was a medium- and low-level significant negative relationship between the career decision-making difficulties scale total and subscale scores, and the career decision-making self-efficacy total and subscale scores. The subsequent analysis to describe the mediating role of career decision-making self-efficacy demonstrated that career decision-making self-efficacy had a partial mediating role. Furthermore, male students were found to have a more disadvantaged status than did female students in terms of career maturity. Based on the fact that students' career decision-making difficulties stemmed from the aspect of a lack of readiness, psycho education programs can be organized to determine the reasons for the lack of lack of readiness, find solutions, and provide the necessary information and skills. Future studies may focus on examining the reasons for the career maturity level differences.

### Keywords:

Career, career maturity, career decision-making difficulties, career decision-making self-efficacy

## 1. Introduction

The developments in today's world of work, changes in career-related paradigms, the global problems that require constant innovation and creativity might be important indicators for initial career choices and subsequent career development. Upon considering the number of students eligible to attend universities and the extant low employment ratios in Turkey, it becomes necessary to identify and address the problems associated with the career decision-making process. When Turkey's unemployment and employment rates are examined, it is then possible to understand why the right career choice and the correct career decision-making process are vital. Recent statistics reveal that Turkey's unemployment rate reached 13.2% (Turkish Statistical Institute [TUIK], 2020), which might indicate faulty decision-making or career development problems in choosing the right higher education department and profession.

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A career is a comprehensive concept, covering and affecting the entire life of an individual from childhood. A career choice is a critical task for adolescents in their stages of development (Super, 1990). Although career choice and career development start with pre-school, secondary education is central to career choice and career-shaping experiences, especially in Turkey, because students in Turkey take the Higher Education Exam (YKS) after secondary school education and can potentially opt to enroll in higher education institutions based on their scores. Considering career development periods and tasks, this secondary education period is critical for future career choice (Havighurst, 1956; Niles & Harris-Bowlsbey, 2013). Hence the need to identify the challenging factors (Gati et al., 1996) and required competencies (Sari & Sahin, 2012) in career decision-making and to determine whether students possess sufficient maturity to complete the required developmental tasks (Cakar & Kulaksizoglu, 1997) and make the right choices.

Career decision-making involves a process of interrelated continuity such as collecting certain information and making a career choice, having an education, and subsequently attaining employment after completing an education program. However, inadequate information as to the proper career choice might lead to career indecision (Sampson et al., 2004). Patton et al. (2003) found that a high indecision level had an entirely negative impact on adolescent career development. Adolescents who interact continuously with their surroundings are exposed to various career-related stimulators such as friends, family, teachers, school counselors, role models, and various informative programs and activities. However, those adolescents may suffer indecision as well due to the high number of options available in secondary education (Sampson et al., 2004), which might refer to talking about career decision-making difficulties.

Career decision-making difficulties can be expressed as challenges and distractions in the generalized decision-making process (Gati et al., 1996). Gati et al. (1996) created a model explaining career decision-making difficulties in terms of three dimensions. In the original model, career decision-making was considered a process involving different components and difficulties (Brown, 1990; Gati et al., 1995; Katz, 1966; Pitz & Harren, 1980). The model has three categories made up of a *lack of readiness*, a *lack of information*, and *inconsistent information*. A *lack of readiness* refers to difficulties related to a lack of motivation, a lack of information about the required steps, indecisiveness, and dysfunctional myths. A *lack of information* includes a paucity of information about oneself, a lack of information about extant occupations, and a lack of information about ways of obtaining additional information. The category of *inconsistent information* embodies unreliable information and internal and external conflicts.

Career decision-making difficulties are also related to other concepts concerning career development. In a study on university students, Osipow and Gati (1998) found that as career decision-making self-efficacy increased, students' career decision-making difficulties decreased. Hijazi et al. (2004), Bacanlı (2012), and Gati and Saka (2001) conducted a study on highschool students and established that high school students' difficulties in decision-making mainly stemmed from interactions with parents, friends, and teachers.

Adolescents who suffer from career indecision should have access to specific skills, competencies, and social support systems to aid in making an accurate decision. Career maturity is one of the essential concepts in career choice and career decision-making. Career maturity can be defined as completing career development tasks and developing problem-solving and coping strategies for addressing the difficulties experienced in making a career choice (Yesilyaprak, 2007). Super (1963) described career maturity as a multidimensional process and progress speed in the career choice path. Based on these definitions, it is suggested that career maturity can influence a series of decisions at a specific time. Thus, it should be considered a concept that can affect career choices during the highly critical career choice period. While career maturity is a significant factor in career development and career choice, various factors are also influenced. Career maturity includes several properties and variables such as gender (Bozgeyikli et al., 2010; Sekmenli, 2000; Uzer, 1987), type of school (Akbiyik, 1996), self-respect, self, personality development (Urun, 2010), parental attitudes, socio-economic status (Yazar, 1997), supervision (Harman, 2017; Sahranc, 2000), and perceived social support (Surucu, 2005). Additionally, career maturity involves and influences other concepts related to a career. Career decision-making, career choice, and problem-solving skills are seen to be causally associated with career maturity (Crites, 1971).

Self-efficacy plays an essential role in career decision-making. Especially central to Social Cognitive Career Theory, it is crucial for career counseling (Lent et al., 1994). According to Bandura and Adams (1977), self-

efficacy refers to the ideas related to essential attitudes and behaviors required for an individual to subsequently make a good career choice. This concept contributes to a deliberate career choice. Self-efficacy reflects choosing a career, receiving an education, getting employed, and information collection, perception, and interpretation steps (Betz & Hackett, 1981; Taylor & Betz, 1983). Betz (2000) stated that purposeful behaviors, plans for targets, a decision-making tendency, willingness, and self-efficacy are useful in career choice and subsequent excellent performance.

Additionally, career decision-making self-efficacy is regarded as a prerequisite for successful career decision-making (Creed et al., 2006). Studies found a negative relationship between self-efficacy career decision-making and subsequent career indecision (Betz et al., 1996; Creed et al., 2004; Guay et al., 2006; Nota et al., 2007). In career counseling, the concept of self-efficacy embodies the requisite behaviors in career choice and decision-making (information gathering, interpreting, and perceptions about the occupation) (Hackett & Betz, 1981; Taylor & Betz, 1983). Therefore, self-efficacy is a compelling factor in individuals' career choices and career development. It is required, therefore, to determine individuals' career decision-making self-efficacy and its impact on career decision-making difficulties.

Today, the growing rate of employment problems; and career choices based on employment needs rather than personal skills, interests, and values; the high number of options and information sources; excessive guidance emanating from the social environment make career choice and career decision-making a challenging task. It is crucial to identify high school students' career decision-making steps, determine factors related to decision-making, and offer efficacious and appropriate career guidance and counseling services. In the Ministry of National Education (MONO)'s recent regulations and plans, effective and productive career counseling services for students have been among the primary targets, which is a good indicator of the topic's importance. Because self-efficacy and career maturity are interrelated concepts and essential for career development, it is believed that career decision-making difficulties can be overcome based on changes in said two variables. Therefore, it is necessary to determine the factors affecting career difficulties. It is vital to describe the current status of career development among high school students in Turkey, as they play a role in contributing to national development, the building of a qualified labor force, employment, and innovations in the country. There are no studies in the existing body of literature discussing the relationships between career maturity, career decision-making difficulties, and career decision-making self-efficacy. Thus, this study contributes to the literature on the relationships between the cited concepts. Moreover, it is believed that the study results provide critical and necessary information about high school students' career development, all of which facilitates the transition to a career. In this sense, the practices and regulations based on the study results might contribute to students' career development, making it a functional item of research.

The study analyzes the relationships between high school students' career maturity, career decision-making difficulties, and career decision-making self-efficacy. Accordingly, the study aims to test the hypothesis model as shown in Figure 1. It searches for answers to the following questions:

1. Do high school students' career maturity, career decision-making difficulties, and career decision-making self-efficacy vary according to gender, school type, and grade level?
2. Is there a relationship between high school students' career maturity, career decision-making difficulties, and career decision-making self-efficacy?
3. Does career decision-making self-efficacy play a mediating role in the relationship between high school students' career maturity and career decision-making difficulties?

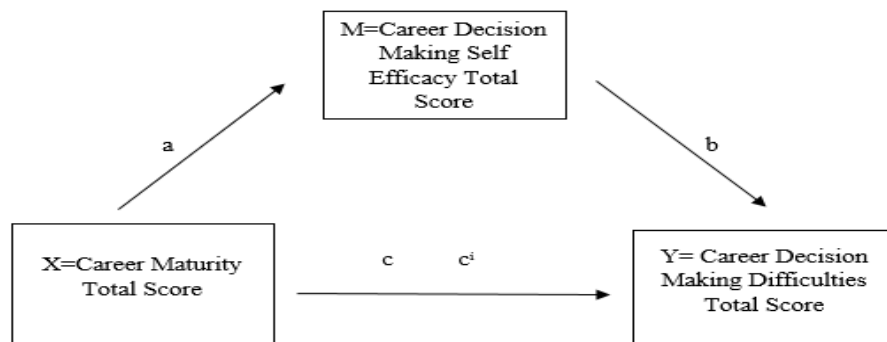


Figure 1. Model of the Mediating Role

The Direct effect of X on Y: c  
 The Indirect effect of X on Y: c'

2. Methodology

2.1. Research Model

In this study, among the available quantitative research methods, the correlation model was used to evaluate the relationships between high school students ‘difficulties in career decision-making, career maturity, and career decision-making self-efficacy. Correlation research is research wherein the relationship between two or more variables is examined without intervening in any way. Correlational studies are important in that they are effective in revealing the relationships between variables, determining the levels of these relationships, and providing the necessary clues for higher-level research on these relationships (Buyukozturk et al., 2016).

2.2. Research Sample

The group consisted of 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> graders in secondary education institutions in Nilüfer, Osmangazi, and the Yildırım districts of Bursa city. There were two Anatolian high schools, one science high school, and two vocational and technical Anatolian high schools. Table 1 presents the distribution of gender, grade level, and type of school of the participants.

Table 1. Distribution of the Study Group by Gender, Grade Level, and School Type

Variables	Gender	N	%
Gender	Male	436	65.6
	Female	229	34.4
	Total	665	100
Grade Level	9th grade	185	27.8
	10th grade	178	26.8
	11th grade	229	34.4
	12th grade	73	11.0
	Total	665	100
School Type	Vocational and Technical Anatolian High School	247	37.1
	Anatolian High School	280	42.1
	Science High School	138	20.8
	Total	665	100

2.3. Data Collection Tools and Procedure

**Personal information form.** The researcher designed the personal information form, including information about students' gender, grade level, and school type.

**The Career Decision-Making Difficulties Questionnaire (CDDQ).** The instrument was developed by Gati and Saka (2001) for high school students and adapted by Bacanlı (2008). The scale consists of three subscales, and each subscale is divided into other subscales. The scale was deployed as it was originally prepared. Total scores can be calculated for subscales and the total scale. The three subscales are a *lack of readiness, a lack*

of information, and inconsistent information. The scale reliability was calculated with Cronbach alpha internal consistency coefficient. It was .45 for lack of readiness, .90 for lack of information, and .84 for inconsistent information (Bacanli, 2008). The current study was found to sum as .74 for lack of readiness, .60 for lack of information, and .95 for inconsistent information.

**The Career Maturity Scale (CMS).** The tool was developed by Kuzgun and Bacanlı (2005) for use with highschool students and consists of 40 items. Nineteen of the scale items present positive attitudes and behaviors for career maturity, whereas 21 reflect negative attitudes and behaviors. The items regarding negative attitudes and behaviors are reverse-coded. It can be noted that as the score obtained from the scale increases, career maturity increases similarly. The Cronbach alpha coefficient of the instrument was .89 (Kuzgun and Bacanlı, 2005). In this study, it was found to be .74.

**The Career Decision-Making Self-Efficacy Scale (CDMSE).** The scale was developed by Bozgeyikli (2004). It consists of three dimensions and 27 items, which involve a correct evaluation of personal and occupational characteristics (11 items), gathering occupational information (eight items), and realistic planning (eight items). (Bozgeyikli, 2004). The scale was initially developed for 8<sup>th</sup> graders, but a reliability study for the high school sample was subsequently conducted by Oztemel (2012) and Seker (2013). Because the validity studies of the scale for the high school sample were carried out in previous studies, they were not repeated in this study. The internal consistency coefficients of the scale were .89 for "a correct evaluation of personal and occupational characteristics," .87 for "gathering occupational information," .81 for "realistic planning," and .92 for the total scale (Bozgeyikli, 2004). The internal consistency coefficients of the scale by Seker (2013) were .85 for "a correct evaluation of personal and occupational characteristics," .76 for "gathering occupational information," .72 for "realistic planning," and .90 for the total scale. The internal consistency coefficients of the scale in this study were .78 for "a correct evaluation of personal and occupational characteristics," .82 for "gathering occupational information," .74 for "realistic planning," and .91 for the total scale.

#### 2.4. Data Analysis

To determine whether the students' career decision-making difficulties total and subscale mean scores, career maturity score averages, and career decision-making self-efficacy mean scores differ according to gender, a t-test was performed, and a one-way analysis of variance was conducted to determine whether they also differ by grade level and high school type. The Pearson product-moment correlation coefficient was used to analyze the relationship between students' career maturity scores, career decision-making difficulties, and career decision-making self-efficacy. In addition, a mediating role analysis was conducted to determine the mediating role of career decision-making self-efficacy between career maturity and career decision-making difficulties. The SPSS Hayes Process Macro program was used to determine the mediating role. The Bootstrap sample number was one thousand in the analysis.

#### 2.5. Ethical

After determining the institutions where the research was to be conducted, the necessary permissions were obtained from the Bursa Provincial Directorate of National Education (date: 01.03.2019 and number: 02/08). Before data collection, sample scales were taken to the institutions, and the necessary explanations were made to the relevant staff members for the study. After consultation with the institutions, the application was made by visiting the institution on the days and hours convenient to the institutions. Before the applications were made, detailed explanations about the purpose of the study were given to the students. A total of 948 students were reached, but 283 students' data were not included in the analysis due to incomplete or incorrect data. Consequently, analyses were made with 665 valid forms.

### 3. Findings

The descriptive analysis for high school students' career maturity, career decision-making self-efficacy, and career decision-making difficulties scale total scores and subscale scores are presented in Table 2.

**Table 2.** Descriptive Statistics for Variables

Variables	N	X	SD	Skewness	Kurtosis
CMS Total	665	122.10	5.86	-.05	.09
CDDQ Total	665	87.94	24.51	.40	.09
Lack of Readiness	665	29.26	5.68	-.05	.09
Lack of Information	665	28.92	12.05	.32	.09
Inconsistent Information	665	23.38	9.56	.36	.09
CDMSE Total	665	102.83	13.97	-.55	.09
Correct Evaluation of Personal and Occupational Characteristics	665	42.15	5.79	-.72	.09
Gathering Occupational Information	665	29.66	5.23	-.46	.09
Realistic Planning	665	31.01	4.43	-.46	.09
Total	665				

The skewness and kurtosis values in Table 2 were between +1.5 and -1.5, which indicates that the scale scores had a normal distribution. George and Mallery (2010) argued that skewness and kurtosis values between +2 and -2 indicate a normal distribution. Thus, the scale scores showed a normal distribution, and the resultant data are suitable for parametric analysis.

An independent samples t-test was applied to determine whether high school students' career maturity, career decision-making self-efficacy, and career decision-making difficulties total scores and subscale scores differed by gender, and the results are given in Table 3.

**Table 3.** t-Test Result by Gender

Variables	Gender	N	X	SD	t	p
CMS Total	Female	436	122.62	5.87	3.16	.00*
	Male	229	121.12	5.74		
CDDQ Total	Female	436	88.34	24.16	.57	.56
	Male	229	87.18	25.19		
Lack of Readiness	Female	436	29.61	5.36	2.10	.03*
	Male	229	28.59	6.20		
Lack of Information	Female	436	29.08	12.11	.45	.65
	Male	229	28.63	11.95		
Inconsistent Information	Female	436	23.28	9.54	-.37	.70
	Male	229	23.58	9.63		
CDMSE Total	Female	436	102.63	14.36	-.51	.61
	Male	229	103.20	13.22		
Correct Evaluation of Personal and Occupational Characteristics	Female	436	41.98	5.96	-1.03	.29
	Male	229	42.46	5.47		
Gathering Occupational Information	Female	436	29.62	5.35	-.25	.80
	Male	229	29.73	5.00		
Realistic Planning	Female	436	31.02	4.47	.04	.96
	Male	229	31.00	4.38		

According to the independent samples t-test results in Table 3, the career maturity scale total score ( $t=3.16$ ,  $p<.05$ ) and the CDDQ lack of readiness subscale ( $t=2.10$ ,  $p<.05$ ) showed a significant difference by gender. The difference in the career maturity scale total score and the lack of readiness subscale score favored female students. There was no difference for gender in the CDDQ total score, the lack of information and inconsistent information subscale scores, the CDMSES total score, the correct evaluation of personal and occupational characteristics, gathering occupational information, and the realistic planning subscale scores.

One-way variance analysis was applied to describe whether high school students' career maturity, career decision-making self-efficacy, and career decision-making difficulties total scores and subscale scores changed for school type, and the results are presented in Table 4.

**Table 4.** One-Way Analysis of Variance Results by School Type

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	p
CMS Total	Between Groups	74.86	2	37.43	1.08	.33
	In-group	22792.55	662	34.43		
	Total	22867.42	664			
CDDQ Total	Between Groups	9655.00	2	4827.50	8.20	.00*
	In-group	389327.94	662	588.10		
	Total	398982.94	664			
Lack of Readiness	Between Groups	25.38	2	12.69	.39	.67
	In-group	21409.08	662	32.34		
	Total	21434.47	664			
Lack of Information	Between Groups	2689.72	2	1344.86	9.49	.00*
	In-group	93772.80	662	141.65		
	Total	96462.53	664			
Inconsistent Information	Between Groups	1627.08	2	813.54	9.10	.00*
	In-group	59130.59	662	89.32		
	Total	60757.67	664			
CDMSE Total	Between Groups	856.18	2	428.09	2.20	.11
	In-group	128792.28	662	194.55		
	Total	129648.47	664			
Correct Evaluation of Personal and Occupational Characteristics	Between Groups	101.43	2	50.71	1.51	.22
	In-group	22218.91	662	33.56		
	Total	22320.35	664			
Gathering Occupational Information	Between Groups	31.98	2	15.99	.58	.55
	In-group	18158.23	662	27.42		
	Total	18190.22	664			
Realistic Planning	Between Groups	199.55	2	99.77	5.12	.00*
	In-group	12882.30	662	19.46		
	Total	13081.85	664			

\* $p < .05$

As seen in Table 4, the CDDQ total score ( $F=8.20$ ,  $p < .05$ ), the lack of information ( $F=9.49$ ,  $p < .05$ ), and the inconsistent information ( $F=9.10$ ,  $p < .05$ ) subscale scores showed a difference for school type. Moreover, there was a difference in the CDMSES, realistic planning subscale ( $F=5.12$ ,  $p < .05$ ). The Tukey test among Post Hoc tests was performed to specify the school type with a significant difference, and the CDDQ total score demonstrated a significant difference between Anatolian high schools, science high schools, and technical high schools. Additionally, it is possible to mention that a lack of information and inconsistent information subscales of the CDDQ were significantly in favor of Anatolian high schools. In terms of the realistic planning subscale score of the CDMSES, science high school students had more problems realistic planning than other high school students.

One-way variance analysis was applied to determine whether high school students' career maturity, career decision-making self-efficacy, and career decision-making difficulties total scores and subscale scores changed for grade level, and Table 5 shows the results below.

According to Table 5, the CDDQ total score ( $F=4.42$ ,  $p < .05$ ), the lack of information ( $F=3.97$ ,  $p < .05$ ) and inconsistent information ( $F=4.32$ ,  $p < .05$ ) subscale scores, and the CDMSES total score ( $F=3.17$ ,  $p < .05$ ), correct evaluation of personal and occupational characteristics ( $F=2.78$ ,  $p < .05$ ), and gathering occupational information ( $F=3.58$ ,  $p < .05$ ) subscales demonstrated a significant difference for the grade level. Then, a Tukey test was applied to determine the group with a significant difference. The CDDQ total score showed a significant difference between the 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> grades. Based on this result, it was determined that 10<sup>th</sup>- and 11<sup>th</sup>-grade students had problems in the sub-dimension of lack of information compared to 9<sup>th</sup> graders. Tenth graders scored higher in the inconsistent information subscales than did other students. For

career decision-making self-efficacy, 11<sup>th</sup> graders had higher scores than did other grade levels. For the subscale of gathering occupational information of the CDMSES, there was a significant difference in favor of 11<sup>th</sup> graders.

**Table 5.** One-Way Analysis of Variance Results by Grade Level

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	p
CMS Total	Between Groups	204.13	3	68.04	1.98	.11
	In-group	22663.28	661	34.28		
	Total	22867.42	664			
CDDQ Total	Between Groups	7845.53	3	2615.17	4.42	.00*
	In-group	391137.41	661	591.73		
	Total	398982.94	664			
Lack of Readiness	Between Groups	134.91	3	44.97	1.39	.24
	In-group	21299.55	661	32.22		
	Total	21434.47	664			
Lack of Information	Between Groups	1708.96	3	569.65	3.97	.00*
	In-group	94753.56	661	143.34		
	Total	96462.53	664			
Inconsistent Information	Between Groups	1169.07	3	389.69	4.32	.00*
	In-group	59588.60	661	90.14		
	Total	60757.67	664			
CDMSE Total	Between Groups	1840.10	3	613.36	3.17	.02*
	In-group	127808.36	661	193.35		
	Total	129648.47	664			
Correct Evaluation of Personal and Occupational Characteristics	Between Groups	279.00	3	93.00	2.78	.04*
	In-group	22041.34	661	33.34		
	Total	22320.35	664			
Gathering Occupational Information	Between Groups	291.51	3	97.17	3.58	.01*
	In-group	17898.70	661	27.07		
	Total	18190.22	664			
Realistic Planning	Between Groups	140.24	3	46.74	2.38	.06
	In-group	12941.60	661	19.57		
	Total	13081.85	664			

\* $p < .05$

A Pearson correlation test was performed to determine the relationships between high school students' career decision-making difficulties and career maturity. Table 6 demonstrates the results.

**Table 6.** Correlation Results Between Career Decision-Making Difficulties and Career Maturity Scale

Variables		CMS Total
CDDQ Total	r	-.27**
	p	.00
	N	665
Lack of Readiness	r	-.16**
	p	.00
	N	665
Lack of Information	r	-.25**
	p	.00
	N	665
Inconsistent Information	r	-.26**
	p	.00
	N	665

\* $p < .05$

Table 6 shows a negative and low-level significant relationship between the CDDQ total score and CMS ( $r = -.27, p < .05$ ). In other words, as career maturity scores increased, career difficulties in decision-making decreased, or vice versa. A significant relationship was found between all CDDQ subscales and the CMS total scores. A significant low-level relationship was revealed between the lack of readiness ( $r = -.16$ ), a lack



of information ( $r=-.25$ ), and inconsistent information ( $r=-.26$ ) subscale scores and the CMS total score ( $p<.05$ ).

A Pearson correlation test was applied to describe the relationships between high school students' career decision-making difficulties and career decision-making self-efficacy, and the results are given in Table 7.

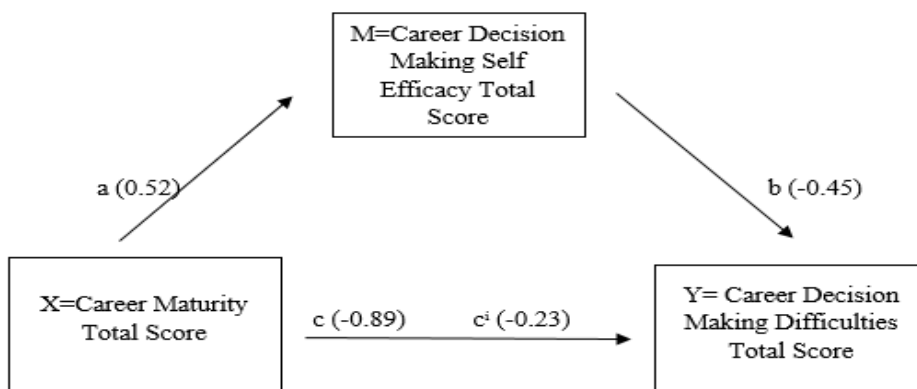
**Table 7. Correlation Results Between Career Decision-Making Difficulties and Career Decision-Making Self-Efficacy**

		Correct Evaluation of Personal and Occupational Characteristics	Gathering Occupational Information	Realistic Planning	CDMSE Total
CDDQ Total	<i>r</i>	-.31**	-.28**	-.22**	-.30**
	<i>p</i>	.00	.00	.00	.00
	<i>N</i>	665	665	665	665
Lack of Readiness	<i>r</i>	-.09*	-.04	-.03	-.06
	<i>p</i>	.01	.27	.40	.08
	<i>N</i>	665	665	665	665
Lack of Information	<i>r</i>	-.35**	-.35**	-.26**	-.36**
	<i>p</i>	.00	.00	.00	.00
	<i>N</i>	665	665	665	665
Inconsistent Information	<i>r</i>	-.30**	-.26**	-.22**	-.29**
	<i>p</i>	.00	.00	.00	.00
	<i>N</i>	665	665	665	665

\* $p<.05$

The analysis results suggested a medium and significant negative relationship between the CDDQ total score and the CDMSES total score ( $r=-.30$ ) and the correct evaluation of personal and occupational characteristics( $r=-.31$ ) subscale scores ( $p<.05$ ). However, there was a significant low-level relationship between the CDDQ total score, the CDMSES gathering occupational information( $r=-.28$ ), and the realistic planning( $r=-.22$ ) subscale scores. There was significant relationship between the CDDQ subscale scores and the CDMSES subscale scores ( $p<.05$ ), and a low-level significant negative relationship between the lack of readiness subscale scores and the correct evaluation of personal and occupational characteristics subscale scores. Besides, a medium-level negative relationship was found between the lack of information subscale scores and the correct evaluation of personal and occupational characteristics( $r=-.35$ ), gathering occupational information( $r=-.35$ ), and CDMSES total scores ( $r=-.36$ ), and a low-level relationship was observed in realistic planning. There was a medium-level relationship between the inconsistent information subscale and the correct evaluation of personal and occupational characteristics, and a significant low-level relationship between gathering occupational information, realistic planning, and the CDMSES total scores.

The analysis was conducted on Process Macro (Model 4) to test the mediating role of high school students' career decision-making self-efficacy between career maturity and career decision-making difficulties, and the results are shown in Figure 2 and Table 8.



**Figure 2. The Mediating Role Analysis Results**

Paths a, b, c, and c' are presented in Figure 2 for the mediating role of career decision-making self-efficacy between career maturity and career decision-making difficulties. According to Figure 2, the standardized regression coefficient for path a was 0.52 ( $p=.00$ ),  $-0.45$  ( $p=.00$ ) for path b,  $-0.89$  ( $p=.00$ ) for path c, and  $-0.23$  for c'.

**Table 8.** Analysis Results Regarding the Mediating Role of Each Transaction Path

The mediating of career decision-making self-efficacy	Total Effect	Direct Effect	Indirect Effect	Bootstrap Confidence Interval	Mediating Effect Type
Career Maturity–Career Decision-Making Difficulties	-1.13	-0.89	-0.23	(-0.35) (-0.13)	Partial

The total effect of CMS on CDDQ total score was ( $\beta=-1.13$ ,  $t=-7.29$ ,  $F=53.16$ )  $-1.13$ , and the direct effect was ( $\beta=-.89$ ,  $t=-7.07$ ,  $F=53.61$ )  $-.89$  as shown in Table 8. The indirect effect of the CMS total score on the CDDQ total score was  $-.23$ , which indicates that the impact of career maturity on career decision-making difficulties decreased when the career decision-making self-efficacy variable was included in the analysis. Based on these results, it is possible to express a partial mediating role of career decision-making self-efficacy. The Bootstrap sample number was one thousand in the analysis. However, it was seen that the standardized bootstrap intervals do not contain zero. Thus, it can be suggested that the mediating role of career decision-making self-efficacy between career decision-making difficulties and career maturity was significant.

#### 4. Conclusion and Discussion

The study revealed that female students had higher scores in the lack of readiness sub-dimension. Thus, it is suggested that female students felt less prepared for career decision-making. Similarly, Harman (2017) found that female students had higher scores in the lack of information and lack of readiness subscale scores. Oztemel (2013) indicated that a lack of information subscale of the CDDQ significantly predicted gender variables for high school students. There was no difference in the CDDQ total scores in terms of gender, which can be explained by the fact that high school students sometimes experience career decision-making difficulties regardless of gender. Because secondary education is the most critical step for students to proceed to future careers, it might lead to students' hesitation regarding career decision-making. In Turkey, where a collectivist culture is dominant, ascribed gender roles can be an obstacle for female students. Beliefs and discourses about women's ability to enter certain professions may cause female students to turn to certain professions by limiting their thinking in detail about their career choices. It might also lead students to have irrational ideas, experience high levels of indecision between choosing a given or desired career and display less motivation for occupation choice and career decision-making.

The study revealed that female students' career maturity scale scores were higher than those of male students. Therefore, it is possible to note that female students' career maturity or, in other words, competence in completing career development tasks is better than that of male students. Many similar studies (Bozgeyikli et al., 2010; Cakar & Kulaksizoglu, 1997; Ulas & Yildirim, 2015; Urun, 2010; Yon et al., 2012) demonstrated that female students' career maturity is greater than that of male students. Because females mature earlier than males in developmental terms, this leads to a higher cognitive maturity among females. In this sense, female students' higher-level occupational thoughts and structures might provide them with advantages. Besides, limited career options for female students due to Turkey's culture and social gender roles might have led students to decide in specific patterns and choose certain occupations, resulting in greater career maturity. Social gender roles might have developed female students' sense of responsibility. Those female students encouraged to help with family tasks from an early age possess a higher sense of responsibility and behave accordingly. Female students raised with a continuing sense of responsibility and self-efficacy to cope with life challenges might feel more responsible in career decision-making than male students.

In the study, there was no difference in the career decision-making self-efficacy total scores and the subscale scores for gender, which is supported by some other studies (Chung, 2002; Nauta & Kahn, 2007; Ulas, 2016). It is suggested that there was no difference in collecting information for a career, assessing, and identifying individual and career properties, and comparing them to make realistic career plans. Because high school

students are in a transitional period and are aware of the necessity to make a career choice, there may have been no difference between genders. In this sense, students of both genders experience the same career steps.

Another result of this study was that science high school and vocational and technical Anatolian school students had more difficulties than Anatolian high school students in career decision-making. Additionally, it is possible to indicate that Anatolian high school students had fewer difficulties in the lack of information and inconsistent information subscales of CDDQ. In terms of career decision-making self-efficacy, Anatolian and vocational-technical Anatolian high school students had higher scores in making a realistic planning subscale of the CDMSES. Atılgan (2017) and Öztemel (2012) found that vocational and technical Anatolian high school students experienced more career indecision than students in general high schools. Sen (2017) found that Anatolian high school students experienced more career indecision than science high school students and had a higher score in the CDDQ inconsistent information and lack of information subscales. Considering the current findings and the literature, there are specific differences. More severe difficulties experienced by science high school students in decision-making can be discussed from different perspectives. Science high schools help graduates to continue their education, mainly in science departments. Therefore, students in such schools might feel they are target-focused on a specific field, which might lead students to choose a career they do not desire or prefer unsuitable career options. Besides, both teachers' and parents' expectations from those students are high, leading students to meet these expectations.

Another point is the science high school students' low scores in the realistic planning subscale. Science high schools are for students with superior mathematics and science skills and performance, aiming to develop scientists. Upon analyzing the studies, it can be observed that high school students are considered specially gifted (Bozgeyikli et al., 2010; Kocak and Icmenoglu, 2016). The high levels of generalized and individual intelligence of those students might encourage them to think of opportunities they will not typically achieve or be given, leading them to possess unrealistic expectations. In other words, students might not make realistic career plans because they want to achieve the ideal. Meanwhile, vocational, and technical high schools aim to provide students with a certain general culture level, help them gain specific competence in certain occupations, and prepare for higher education institutions. As vocational and technical high school students are occupied with an occupation since the high school period, they might have a more realistic perspective for their future careers and maintain the current job.

Anatolian high school students can be viewed as a more disadvantaged group than other high school students because of their graduation with average grades. Hence, they consider academic success a criterion for career choice and career decision-making rather than personal desires and interests. Therefore, we can infer that Anatolian high school students strive not to experience a lack of information, to make correct decisions, and have less inconsistent information.

The study results indicated that 10<sup>th</sup> and 11<sup>th</sup> graders had more difficulties than 9<sup>th</sup> graders in career decision-making, which stemmed from the lack of information. It can be said that 10<sup>th</sup> graders experienced more problems in inconsistent information dimensions than other students. For career decision-making self-efficacy, it is possible to note that 11<sup>th</sup> graders had higher scores than did other grade levels. There was no difference in the grade level for career maturity. Sen (2017) stated that 12<sup>th</sup> graders had more inconsistent information than did 10<sup>th</sup> graders. Tansu (2011) suggested that vocational guidance service and grade level were significant predictors of high school students' career indecision. Seker (2013) concluded that 10<sup>th</sup> graders had higher subscale scores for correct evaluation of personal and occupational characteristics than did 11<sup>th</sup> graders.

Similarly, Urun (2010) found that students' career maturity showed no difference in the grade level. Tenth and 11<sup>th</sup> graders are expected to choose a specific field in secondary education. Those students might realize their lack of information. Because information is essential for a career choice, insufficient or missing information might make it more difficult for students. However, 11<sup>th</sup> graders might be stimulated to research the options and reduce their information deficit, which, in turn, might have increased those students' career decision-making self-efficacy.

Another result of the study was the negative relationship found between students' career maturity level and career decision-making difficulties. In addition, increased career decision-making self-efficacy similarly

contributed to a reduction in students' career decision-making difficulties. Some studies found similar findings (Bullock-Yowell et al., 2014; Harman, 2017; Mutlu, 2011). The lack of information for career decision-making, resolving the career-related ambiguities, motivations, and the refinement of wrong ideas about career choice is associated with students' career maturity and can change with career decision-making self-efficacy. These two variables can be acknowledged as advantageous for career choice. Both career decision-making self-efficacy and career maturity seem important for students to complete career development and career choice tasks and take the necessary responsibilities. Hence, it can be inferred that these two competencies play a role in career decision-making difficulties.

The study's last finding was the partial mediating role of career decision-making self-efficacy between career decision-making difficulties and career maturity. Lee et al. (2012) determined that commitment to parents, friends, and teachers affected career maturity, and career decision-making self-efficacy had a mediating role. Jin et al. (2009) carried out a study on graduate students and found the mediating role of career decision-making self-efficacy in the relationship between the five-factor personality model and career commitment. Both career maturity and self-efficacy in career decision-making are influential in difficulties in career decision-making. With the analysis of the mediating role, the shared effect between two different variables was examined. Career maturity refers to the ability to complete development tasks; therefore, individuals who complete the development tasks can carry out the necessary research for careers and go on to choose career paths. In other words, they might experience fewer career decision-making difficulties. Similarly, since career decision-making self-efficacy involves various career development competencies and career choice, it seems to offset career decision-making difficulties.

## **5. Recommendations**

This study was carried out to determine the variables explaining high school students' career decision-making difficulties. Based on the study results and findings, several recommendations are offered for researchers. Future studies can discuss variables such as the socioeconomic status and the issue of family support in a career choice that might influence career decision-making difficulties. When the students' feedback was reviewed in this study, it was understood that students wanted to express themselves verbally, especially about career decision-making difficulties. Accordingly, qualitative studies can be performed to deal with high school students' career decision-making difficulties from a different perspective. The study found that science high school and vocational and technical Anatolian high school students had more career decision-making difficulties than Anatolian high school students. Different studies can be carried out to describe the high school student's career decision-making difficulties in different types of high school, and a new classification of attendant difficulties can be made in detail.

As a result of this study, a negative relationship was found between career decision-making difficulties and career decision-making self-efficacy and career maturity. In this sense, some suggestions were made for practitioners. Psycho education programs might include information and skills to improve career decision-making self-efficacy and maturity. Because students' career decision-making difficulties stem from a lack of readiness dimension, psycho education programs can be developed considering the lack of readiness dimension, determining the reasons, and identifying solutions. It was observed that 9<sup>th</sup> graders had fewer career decision-making difficulties than other grade levels. School counselors can organize occupation guidance and career counseling seminars for both students and teachers. Practitioners should plan group counseling activities about career self-efficacy decision-making and career maturity. As a result of the study, the male students were found to be in a more disadvantaged position than female students in terms of career maturity. Studies can be conducted to analyze the reason for the difference. Besides, students experienced difficulties in the lack of readiness dimension. Future studies can investigate the reasons for experiencing difficulties in this subscale of the career decision-making scale.

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## Successful Aging Scale: Validity and Reliability Study

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### ABSTRACT

The purpose of this research is to develop a successful aging scale specific to Turkey. This research was carried out on two different study groups for exploratory and confirmatory factor analysis studies. The study group formed for exploratory factor analysis consists of 521, and the group for confirmatory factor analysis consists of 243 elderly individuals. By the analyzes carried out, the KMO value of the Successful Aging Scale was found to be .97; validity and reliability analyzes were continued. It was observed that the 19-item SAS with item loads varying between .74 and .84 explained 61.42% of the total variance. After the exploratory factor analysis studies of the SAS, the confirmatory factor analysis studies were started and after the two modifications, the model fit indices were found at an acceptable level ( $\chi^2 / df = 2.24$ , RMSEA = .069, CFI = .922, TLI = .911, SRMR = .067). In order to determine the criterion-based validity of the SAS, Successful Aging Scale and the Aging In-Situ Scale were used. As a result of the analysis, it was seen that the SAS showed a moderate meaningful relationship with both scales. The Cronbach alpha internal consistency coefficient of the total score of the SAS was calculated as .96 in the first study group and .90 in the second study group.

Keywords:

Successful aging, scale, elder.

### 1. Introduction

As people age, they lose some of their abilities and continue to develop others. Successful aging refers to the process of establishing the balance between these lost and developed skills, using the potential to the fullest, and dealing with limitations as much as possible (Hewstone et al., 2005). Successful aging is defined as the individual's acceptance of old age as a natural process like other developmental periods, being able to use his physical functions appropriately, continuing his active participation in social life and adapting to changes.

When the history of the concept of successful aging is examined, it is seen that the first discourses on this subject were put forward by R. J. Havighurst. According to Havighurst, who suggests that each individual is active in life and will be happy if they replace the changing roles with Activity Theory, the main purpose of gerontology is summarized as supporting individuals to pass the advanced adulthood period easily (Özmete, 2012; Yapıcıoğlu, 2009). However, it is seen that Rowe and Kahn (1987) started to widespread after the 1980s, which personally refers to the concept of successful aging and has been carried out on this subject.

The successful aging model, which was put forward by Rowe and Kahn about almost 30 years ago, is the basis for many studies today. After the publication of the article titled "Human aging: usual and successful" written by Rowe and Kahn in 1987, the literature expanded with concepts such as "active aging", "positive aging", "healthy aging" and "ideal aging". This article is not just cited from the geriatric, gerontology, or

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aging literature, but also from nursing, dental science, psychology, sociology, political sciences and all medical, social, cultural and political fields related to aging (Bülow & Söderqvist, 2014). According to Rowe and Kahn (1997), successful aging consisting of three basic hierarchical building blocks (low probability of disability due to disease high cognitive and physical functioning capacity and active lifestyle) is defined as “the individual's physical, mental and social harmony”.

In the general review of the definition of successful aging by Bowling and Dieppe (2005), the basic theoretical components of successful aging are listed as follows:

- Life expectancy at birth,
- Life satisfaction and well-being,
- Mental and psychological health and cognitive functions,
- Personal development, learning new things
- Physical health and functions, independent living
- Psychological characteristics and resources such as perceived autonomy, control, independence, adaptation, coping, self-esteem, positive perspective, goals, self-perception
- Social participation, leisure activities
- Social connections, support, participation, activity

In addition to these basic theoretical components, sub-definitions such as achievements, enjoyment of nutrition, economic security, neighborhood, physical appearance, productivity and contribution to life, sense of humor, sense of purpose and spirituality are also added to the concept.

Depp and Jeste (2006) examined 28 studies on predictors of successful aging. It was seen that physical activity was considered as a predictor in 26 of these studies. Cognitive functions in 15 of the studies, life satisfaction and well-being in 9, social participation and productivity in 8, not suffering from any disease in 6, long life in 4, self-evaluation of health in 3, personality traits, 2 of them environment and income, 2 of them evaluating their own successful aging status were considered as predictors of successful aging. Turkey's first Successful Aging Scale, originally developed by Reker (2009), was adapted into Turkish by Hazer and Özsungur (2017). Considering the theoretical background of the scale, Rowe and Kahn (1997) stated that preventing illness and weakness, having high cognitive and physical function, commitment to life; Baltes and Baltes' (1990) selection, optimism, positive side; Schulz and Heckhausen's (1996) primary and secondary control; It is seen that Ryff (1989) is based on the concepts of psychological well-being.

Despite successful aging work covers a wide place in world literature (Eustice-Corwin et al., 2020; Lee et al., 2017; Tarmazdi et al., 2020), it appears to be a limited number of studies in Turkey Although it is seen that there are some studies on successful aging (Aydın, 2006; Aydın & Aydın- Considered, 2014, Çifçil, 2012; Görgün-Baran, 2008), it is observed that the existence of specific vehicle Turkey a successful aging. Although the validity and reliability studies of the scale, which was adapted into Turkish by Hazer and Özsungur (2017) are suitable, it is found important that the scale to be developed on a concept sensitive to the culture. In a study conducted on the successful aging perceptions of 418 people in Antalya in 2018 (Yazıcı, 2018), it is seen that the researchers applied a 37-item questionnaire. Considering that the first adaptation of the Successful Aging Scale was published in 2017 in Turkey, it is thought that the data collection stages of this study may have been done at similar times. Because there is no Successful Aging Scale at that time, the researchers may prefer to collect data with the questionnaire, which is a less reliable method .When the literature is examined, it is noteworthy that there is a limited number of studies on successful aging, and the existing ones are mostly review articles (Özdemirkan et al., 2020; Sinan & Bilgili, 2019). Within the framework of all this information, it is believed that the Successful Aging Scale, which will be developed specifically for the Turkish population, will increase, and strengthen original studies. For this purpose, Successful Aging Scale specific to older people in Turkey is aimed at developing in this research.

## **2. Material and Methods**

### **2.1. Research Model**

Culture-specific Successful Aging Scale was developed in the study. After the field scanning of the scale development study, the format of the scale was determined and the item pool was created accordingly (De

Vellis, 2003). It is a 5-point Likert-type scale, which consists of 19 items. Information on validity and reliability analysis of SAS is presented below.

## 2.2. Item Writing for SAS and Creating an Item Pool

Before creating an item pool for SAS, a detailed literature research was conducted on the concepts of successful aging, active aging, and healthy aging. Following the review of the literature, 198 items were prepared by considering all variables related to the concept of successful aging. These items were reduced to 133 items by being submitted to the opinions of 3 experts. The 133-item form was submitted to the opinions of 11 different experts, the feedback given to the items was evaluated with the Lawsche technique, and 29 items were removed from the item pool measurement tool, and the 84-item implementation form was finalized. Repeating the items is structured in a 5-point rating type considering the structure of the scale.

## 2.3. Universe and Sample

During the exploratory factor analysis phase of the research, data from 600 individuals were collected, and after the data extraction process, the analyzes were made over 521 data. The sample size was created according to the sample calculation table given by The Research Advisors (2006) for a population of more than 2,500,000 individuals (Turkey Statistical Institute, 2020) with 5% margin of error. Within the scope of the research, data were collected from the provinces of Istanbul, Antalya, Aydın cities where data can be easily collected. The demographic information of the individuals participating in the study which is conducted for EFA is given below:

**Table 1.** Frequency and Percentage Values of Demographic Information of the Exploratory Factor Analysis Group

Variable	f	%	Variable	f	%
Gender			Number of children		
Female	356	68.3	No children	30	5.8
Male	165	31.7	one	87	16.7
Age			2	232	44.5
60-64	158	30.3	3 +	97	18.6
65-69	176	33.8	Unknown	75	14.4
70-74	105	20.2	Education level		
75 +	54	10.4	Literate and under	32	6.1
Unknown	28	5.4	Primary school	91	17.5
City			Middle School	30	5.8
Istanbul	56	10.7	High school	155	29.8
Antalya	360	69.1	Undergraduate and above	188	36.1
Aydın	105	20.2	Unknown	25	4.8
Living place			Marital status		
In his own home / with his wife	243	46.6	The married	262	50.3
In your own home / alone	176	33.8	Single	35	6.7
With children	77	14.8	Divorced / lost spouse	197	37.8
Unknown	25	4.8	Unknown	27	5.2
Total	521	100	Total	521	100

In Table 1, the frequency and percentage values according to the demographic information of the elderly individuals participating in the study are indicated. 356 of the elderly individuals (68.3%) are female and 165 (32.7%) are male. 158 of the individuals (30.3%) were between 60 and 64 years old, 176 (33.8%) were between 65 and 69 years old, 105 (20.2%) were between 70 and 74 years old, and 54 (10.4%) were 75 years old and is above. 28 (5.4%) individuals in the group did not state their age. When the city where elderly people live was examined, it was seen that 56 (10.7%) lived in Istanbul, 360 (69.1%) were living in Antalya, and 105 (20.2%) were living in Aydın. When the places and people where the individuals live were examined, it was found that 243 (46.6%) of the elderly who participated in the study were living with their spouses in their own homes, 176 (33.8%) were living alone in their own houses and 77 (14.8%) were living with their children. 25 of the elderly individuals (4.8%) did not give information about the place they lived. It was concluded that 30 (5.8%) of the individuals in the study group did not have children. It was seen that 87 of the elderly (16.7%) had 1 child, 232 (44.5%) had 2, 97 (18.6%) had 3 or more children. It was observed that 75

elderly individuals (14.4%) did not answer this question. It is thought that much of these unresponsive elderly people are individuals who do not have children. According to the level of education, 32 (6.1%) of the individuals were literate or not, 91 (17.5%) were primary school graduates, 30 (5.8%) were secondary school graduates, 155 (29.8%) were high school graduates. It was noted that 188 (36.1%) had a bachelor's degree and above. It was observed that 25 (4.8%) of the participants left this question blank. When the marital status of the individuals participating in the study was examined, it was observed that 262 (50.3%) were married, 35 (6.7%) were single, and 197 (37.8%) were divorced or lost their spouses. The percentage of 27 people who did not answer this question is 5.2.

During the confirmatory factor analysis phase, data were collected for the second time and 243 elderly individuals were reached. Demographic information about the second stage of scale development is presented below:

**Table 2.** Frequency and Percentage Values of Demographic Information of the Confirmatory Factor Analysis Group

Variable	f	%	Variable	f	%
<b>Gender</b>			<b>Number of children</b>		
Female	171	70.4	No children	22	9.1
Male	61	27.6	one	47	19.3
Unknown	2	.8	2	98	40.3
<b>Age</b>			3	25	14.8
60-64	127	52.3	4 +	32	13.2
65-69	45	18.5	Unknown	8	3.3
70-74	26	10.7	<b>Education level</b>		
75 +	11	4.5	Literate and under	19	7.9
Unknown	34	14	Primary school	39	16.0
<b>City</b>			Middle School	15	6.2
İstanbul	201	82.7	High school	60	24.7
The others	39	16.1	Undergraduate and above	107	44.0
Unknown	3	1.2	Unknown	3	1.2
<b>Living place</b>			<b>Marital status</b>		
In his own home / with his wife	141	58.0	The married	156	64.2
In your own home / alone	43	17.7	Single	16	6.6
With children	37	22.7	Divorced / lost spouse	67	27.6
Unknown	4	1.6	Unknown	4	1.6
<b>Total</b>	<b>243</b>	<b>100</b>	<b>Total</b>	<b>243</b>	<b>100</b>

In Table 2, the frequency and percentage values according to the demographic information of the elderly individuals participating in the study are indicated. 171 of the elderly individuals (70.4%) are female and 61 (27.6%) are male. 2 (.8%) individuals in the group did not state their gender. 127 of the individuals (52.3 %) were between 60 and 64 years old, 45 (18.5%) were between 65 and 69 years old, 26 (10.7%) were between 70 and 74 years old, and 11 (4.5%) were 75 years old and is above. 34 (14%) individuals in the group did not state their age. When the city where elderly people live was examined, it was seen that 201 (82.7%) lived in Istanbul, 39 (16.1%) were living in other cities such as Bursa, Aydın, Ankara. 3 (1.2%) individuals in the group did not state their city where they live. When the places and people where the individuals live were examined, it was found that 141 (58%) of the elderly who participated in the study were living with their spouses in their own homes, 43 (17.7%) were living alone in their own houses and 37 (22.7%) were living with their children. 4 of the elderly individuals (1.6%) did not give information about the place they lived. It was concluded that 22 (9.1%) of the individuals in the study group did not have children. It was seen that 47 of the elderly (19.3%) had 1 child, 98 (40.3%) had 2, 25 (14.8%) had 3, 32 (13.2%) 4 or more children. It was observed that 8 elderly individuals (3.3%) did not answer this question. According to the level of education, 19 (7.9%) of the individuals were literate or not, 39 (16.0%) were primary school graduates, 15 (6.2%) were middle school graduates, 60 (24.7%) were high school graduates. It was noted that 107 (44%) had a bachelor's degree and above. It was observed that 3 (1.2%) of the participants left this question blank. When the marital status of the individuals participating in the study was examined, it was observed that 156 (64.2%) were

married, 16 (6.6%) were single, and 67 (27.6%) were divorced or lost their spouses. The percentage of 4 people who did not answer this question is 1.6.

#### 2.4. Data Collection Tools for the Criterion Validity of SAS

**Successful Aging Scale:** The original of Successful Aging Scale, which was adapted into Turkish by Hazer and Özsungur (2017), was developed by Reker (2009). The SAS-Successful Aging Scale, which consists of two sub-dimensions as 10 items and coping with problems with a healthy lifestyle, was prepared in 7-point likert type. The combined reliability coefficients of the Healthy Lifestyle and Dealing with Problems factors were measured as .833 and .928, respectively. The factors were found to have a high level of reliability. Generally, the Cronbach alpha internal consistency coefficient of the scale. It was reported as 85.

**Aging in Place Scale:** Developed by Kalınkara and Kapıkıran (2017) and aiming to reveal the satisfaction levels of the elderly with the environment they live in, the LES consists of 15 items and three sub-dimensions. As a result of the validity and reliability analyzes performed with the data collected from 189 elderly individuals, the variance of the items in the whole scale reached a total of 62.50% explanatory, with 23.66% for the first factor, 20.65% for the second factor and 18.19% for the third factor. The factor loads of the items of the three-factor structure are above .50. Then, confirmatory factor analysis was conducted with the LISREL package program to determine whether the scale was a suitable structure.  $\chi^2 = (87, N = 189) 138.37$ ,  $\chi^2 / df = 1.59$  with  $RMSEA = .056$ ,  $SRMR = .052$ ,  $CFI = .98$ ,  $NNFI = .98$ , and  $GFI = .91$   $CI = .038-.073$  and It has reached good levels of compliance. The Cronbach's alpha coefficient calculated for the reliability of the 15-item scale was .85 for factor one, .84 for factor two, .85 for factor three, and .90 for the whole scale.

#### 2.5. Data Collection for Validity and Reliability Analysis of SAS

In the process of developing SAS, data were collected in two stages. Validity and reliability analyzes were conducted with two different research groups. Some of the data was collected via the internet using Google form, and the rest was collected manually. The link created to collect data via the Internet was shared only with the people involved in the data collection process. Data collection from illiterate elderly people was carried out by the researchers by reading them personally and receiving their answers.

#### 2.6. Data Analysis and Interpretation

In the development validity and reliability studies of the Successful Aging Scale, exploratory and confirmatory factor analysis and criterion validity were used for construct validity, and the Cronbach alpha coefficient was used for reliability. SPSS 21 package program was used for data analysis in the research. The KMO value of the Successful Aging Scale was found to be .97 and validity analyzes were continued.

### 3. Findings

Before starting the analysis, the appropriateness of the number of EFA data to the factor analysis was tested with the Kaiser-Meyer-Olkin (KMO) sampling adequacy criterion. KMO is an analysis that compares the observed correlation coefficient size with the partial correlation coefficient size. For the data set to be suitable for factor analysis, the KMO ratio should be above .5 (Leech, Barret, & Morgan, 2005; Şencan, 2005). The KMO coefficient because of the analysis was found to be .97 (Table 3).

**Table 3.** KMO and Bartlett's Values

<i>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</i>		.971
	Approx. chi-square	12408,877
Bartlett's Test of Sphericity	df	561
	p	,000

The ratio of 521 data to the number of items (84) in the item pool is 6.20. For EFA, the value per item is recommended to be greater than 5 (Büyüköztürk, 2011). It seems that this recommendation is also met. In addition, Bartlett's test of sphericity was performed for 521 data and the result was  $p < .001$ . With this result, it is understood that the data comes from multivariate normal distribution, it is different from the unit matrix in the correlation or covariance matrix, and a factor can be extracted from the correlation matrix (Çokluk et al., 2016; Şencan, 2005). As a result of all analyzes, it was seen that the data set was suitable for EFA. In the exploratory factor analysis, principal component analysis as a factoring technique and

confirmatory factor analysis was performed to test the accuracy of the structure. The ratio of 243 data obtained for CFA to the number of items (19) in the scale is 12.79. This rate is sufficient according to the suggestion of Büyüköztürk (2011). The KMO coefficient was found to be .97, and Bartlett's test of sphericity was found to be  $p < .001$ . Within these results, it was thought that the data set was ready for analysis.

### 3.1. Findings Regarding Validity Analysis Results of SAS

**3.1.1. Construct validity:** The construct validity and factor load values of the items were determined because of the exploratory factor analysis. The factor load values of the SAS are presented in Table 4.

**Table 4.** Factor Load Values of the SAS

Item no	Factor load
Item 1	.747
Item 2	.819
Item 3	.786
Item 4	.755
Item 5	.839
Item 6	.790
Item 7	.738
Item 8	.775
Item 9	.748
Item 10	.785
Item 11	.746
Item 12	.803
Item 13	.829
Item 14	.771
Item 15	.763
Item 16	.838
Item 17	.786
Item 18	.760
Item 19	.799

In Table 4, it is seen that SAS has factor loads varying between .738 and .839 and consists of one dimension. According to Çakır (2014), factor load values are expected to be .40 or higher. However, in practice, it is acceptable to reduce this limit value to .30 for a small number of items. According to the factor load values, it is seen that the scale consists of a single dimension and 19 items. Below are the total variance amounts of the SAS explained. It is seen that Successful Aging Scale explains 61.42% of the total variance. Considering these data, it was decided to keep 19 of the 84 items in the scale.

CFA results regarding the structure of the scale consisting of 19 items and a single factor in Figure 1 show that the single factor solution fits well. In the first analysis performed, it was seen that the fit index values (first model  $\chi^2 / df = 2.63$ , RMSEA = .080, CFI = .896 TLI = .883, SRMR = .075) were RMSEA. The next index, RMSEA, indicates how well the unknown but optimally selected coefficient estimates will fit into the data covariance matrix of the model (Byrne, 1998). The closer the CFI value is to 1, the better the model fit. In the new adjusted model that emerged with the modification between items 10 and 18, it was seen that the fit indices were as follows:  $\chi^2 / df = 2.41$ , RMSEA = .074, CFI = .911 TLI = .899, SRMR = .072. When the fit indices were examined, the second modification was performed between item 1 and item 10, since the TLI value was not acceptable, and all fit indices were found to be acceptable in the final model. Fit indices for the model are presented in the table below.

**Table 5.** Model Fit Values (MacCallum et al., 1996; Tabachnick, & Fidel, 2007)

Model fit indices	First model value	Second model value	Corrected model value	Good fit indices	Acceptable fit indices
$\chi^2$	2.63	2.41	2.24	$0 \leq \chi^2/df \leq 2$	$2 \leq \chi^2/df \leq 5$
CFI	.896	.911	.922	$0,95 \leq CFI \leq 1,00$	$0,90 \leq CFI \leq 0,95$
RMSEA	.080	.074	.069	$0 \leq RMSEA \leq 0,05$	$0,05 \leq RMSEA \leq 0,08$
TLI	.883	.899	.911	$0,95 \leq TLI \leq 1,00$	$0,90 \leq TLI \leq 0,95$

SRMR	.075	.072	.067	$0 \leq SRMR \leq 0,05$	$0,05 < SRMR \leq 0,10$
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The model of SAS, which is formed according to the analysis results, is shown in Figure 1. The fit indices of the model show that the single factor structure of the model is acceptable.

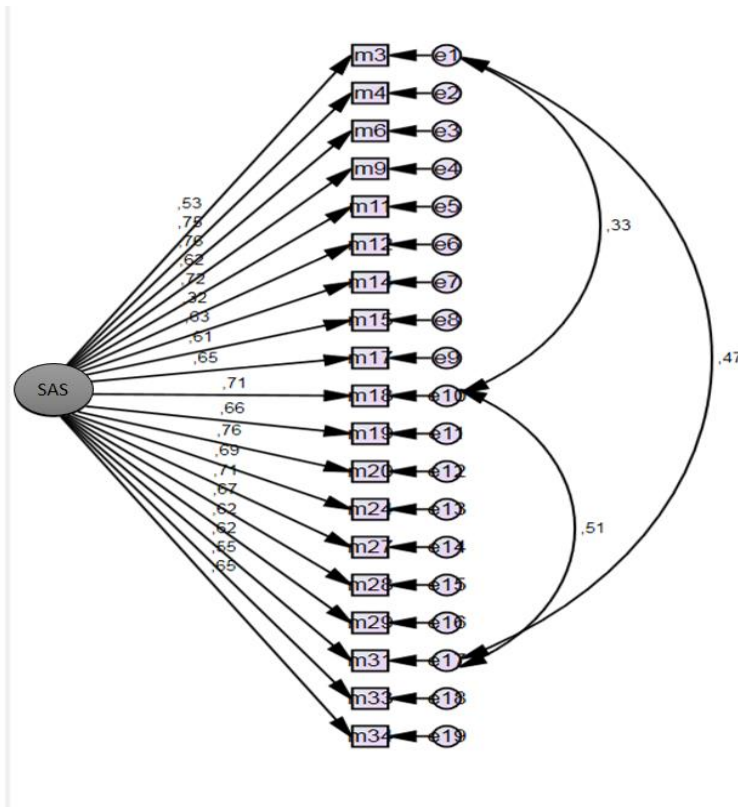


Figure 1. CFA Result of SAS

**3.1.2. Criterion validity of SAS:** In order to determine the criterion validity of the Successful Aging Scale, the scales applied to the elderly and thought to be similar to the Successful Aging Scale were examined; In order to determine the criterion validity, the Successful Aging Scale adapted into Turkish by Hazer and Özsungur (2017) and the Aging in Place Scale developed by Kalinkara and Kapıkıran (2017) were used.

**Table 6.** Correlative Relationships Between Successful Aging Scale and Successful Aging Scale (Hazer, & Özsungur, 2017) and the Aging in Place Scale

Factors	Successful Aging Scale (Hazer, & Özsungur, 2017) Total	Aging in Place Scale
SASTotal	.657**	.300**

p\*\*<.001

As seen in Table 6, the total score of the Successful Aging Scale has a positive significant relationship with the total score of the Successful Aging Scale adapted by Hazer and Özsungur (2017) ( $r = .657$ ;  $p < .001$ ). It has been determined that SAS has a significant positive relationship with the Aging in Place Scale ( $r = .300$ ,  $p < .001$ ).

**3.2. Findings Regarding the Reliability Analysis Results of SAS**

The Cronbach alpha internal consistency coefficient of the total score of the SAS was calculated as .96 in the first study group and .90 (Table 7) in the second study group.

**Table 7.** Reliability Values

	Cronbach's Alpha	N of Items
First study group	.964	19
Second study group	.897	19

The item-total score correlation coefficients of the scale are presented to determine to what extent each item in the scale distinguishes individuals.

**Table 8.** Item-Total Correlation Results of SAS

	Item-total correlation coefficients
Item 1	.668**
Item 2	.646**
Item 3	.758**
Item 4	.819**
Item 5	.774**
Item 6	.737**
Item 7	.759**
Item 8	.741**
Item 9	.806**
Item 10	.800**
Item 11	.695**
Item12	.733**
Item 13	.780**
Item 14	.762**
Item 15	.828**
Item 16	.748**
Item 17	.802**
Item 18	.731**
Item 19	.761**

p \*\* &lt; .001

In Table 8, it is seen that the item-total score correlation coefficients of the SAS vary between .65 and .83. If the item-total score correlation coefficients are positive .30 or above, it indicates that the items in the scale distinguish individuals well, exemplify similar behaviors, and the internal consistency of the scale is high (Büyüköztürk, 2011). When looking at this criterion, it can be said that the item distinctiveness of SAS is quite high.

#### 4. Conclusion and Discussion

In this study, the 84-item scale, which was developed to measure the successful aging status of the elderly aged 60 and over, was applied to 600 elderly people, and the data obtained from 521 people were analyzed after the data extraction method. It is thought that the scale forms are obtained by people with high education level and some of them are obtained by online forms, so it enables less data to be extracted from the data set in the data extraction process.

When we look at the descriptive information of the elderly people reached within the scope of the research, it is seen that the proportion of women is higher, but the number of men is sufficient to represent the sample. It is noted that the age distribution of the participants is also quite homogeneous. The fact that 360 of the elderly people who were reached in the scale development study consisted of the elderly living in the province of Antalya and attending the Refreshment University and 188 of them were undergraduate and above graduates may constitute limitations in the implementation of the scale. However, it is seen that the rate of individuals participating from Aydın and Istanbul is 30.9%, which creates an advantage in terms of sample representation. When other measurement tools performed in the literature are examined, it is seen that there are differences in terms of descriptive values in studies conducted with the elderly (Reker, 2009; Robson et al., 2006; Strawbridge et al., 2002).

Because it's the basis of qualitative interviews conducted prior to Successful Aging Scale is thought to be an appropriate content to the culture of Turkey. The item pool of 198 items was reduced to 133 items in the first expert opinion, and an implementation form of 84 items was prepared at the second expert opinion stage. As a result of the validity and reliability analysis, Successful Aging Scale consisting of 19 items was created. Both the exploratory factor analysis and the confirmatory factor analysis reveal that the scale has a one-dimensional structure. Considering the eigenvalues of the components and the explained variance and the eigenvalues graph, the first factor's explanation of 61.42% of the total variance reveals that the scale can be interpreted as one-dimensional. The confirmatory factor analysis result shows that the data and the model



are compatible. This finding confirms the idea that the scale has a one-dimensional structure. These values obtained prove that the SAS is a valid measurement tool for measuring the successful aging of the elderly.

As a result of the exploratory and confirmatory factor analysis, the remaining 19 items were found to contain items from the themes of lifestyle, personal development, social participation, and coping mechanisms. In a study conducted by Han et al. (2015) in Korea, it was determined that the health of adults aged 45 and over is based on cognitive, physical and social support in order to determine the healthy living conditions; your depression levels; their self-esteem; perceived health conditions; ego integrations; their own achievements; It is seen that participation in leisure activities and levels of loneliness are measured. In the scale study developed in this study, it is seen that a pool of items was created at a point covering the topics of lifestyle, health, future, coping mechanisms, personal development and social participation of the elderly by making use of the data previously obtained through qualitative interviews. When the 19 items obtained as a result of the analysis are examined, it is seen that these items include self-efficacy perception, participation in leisure activities, productivity, enjoyment of life, hope, flexibility, well-being, and social connections.

In a study conducted by Zhang, Liu, and Wu (2018) with Chinese seniors, it was aimed to reveal the meaning of successful aging; It was found that psychosocial and economic well-being of the elderly, physical well-being and social support from adult children reveal three dimensions of successful aging. It is seen that these three headings cover the items such as being independent, having friends, living with children, good economic situation, range of motion, not suffering from illness, being able to work, being cared for by children, participating in social activities, living with a partner, caring for family members and being happy. In another scale developed by Lee, Kahana, and Kahana (2017) in the United States of America, a 4-factor structure was introduced; These factors took shape under the headings of active life, sources of well-being, positive spirituality and valuable relationships. In another Successful Aging Scale developed by Reker (2009) in Canada, Rowe and Kahn's triple definition of successful aging, Baltes and Baltes' Selection, Optimization and Compromise Approach, Schulz and Heckhausen's Primary and Secondary Control Approach, A 14-item scale was created based on Ryff's Psychological Well-Being Approach. On the basis of all these theories and approaches, it has drawn attention that there are topics such as not suffering from illness, high cognitive and physical function, social participation, adaptation, control of life, positive relationships, autonomy and self-acceptance. The Chinese version of the Successful Aging Scale was developed by Hsing-Ming, Mei-Ju, and Ho-Tang (2016), and it was observed in the study that Successful Aging Scale consisted of items representing physical, mental, social and spiritual well-being. However, it is seen that the Successful Aging Scale developed in this study is generally quite comprehensive but does not contain items that indicate addiction such as taking care or being away from illness. It is thought that this difference may have occurred since most of the elderly participating in the study are elderly people who attend the Refreshing University and currently lead an active life.

Successful Aging Scale and Aging in Place Scale were used in testing the criterion validity of the Successful Aging Scale. As a result of the correlation analysis obtained, the total score of the Successful Aging Scale is positively significant with the total score of the Successful Aging Scale adapted by Hazer and Özsungur (2017); It was also found that it has a significant positive relationship with the Aging-in-Place Scale. Considering the values taken by the correlations, it is seen that the relationship established with the Successful Aging Scale is close to high, and the In-Situ Aging Scale is at a moderate level close to low. When looking at the items of the Successful Aging Scale adapted by Hazer and Özsungur (2017), it is noteworthy that there are more common items than the Aging in Place Scale. However, the scale of the high level of relations between the two scales also reveals that Turkey has its own culture as the basis for the development of this scale.

The Cronbach alpha internal consistency coefficient of the total score of the SAS was calculated as .96 in the first study group and .90 in the second study group. An alpha coefficient of .80 and above indicates that the scale is highly reliable (Büyüköztürk, 2011; Kayış, 2010). These values obtained prove that the SAS is a reliable measurement tool in measuring the successful aging of the elderly.

## 5. Recommendations

Since this scale is carried out with a large sample of the elderly, it can be easily applied to individuals aged 60 and over. However, considering that most of the elderly who constitute the sample live in the city center,

it is recommended to consider the characteristics of the people when applying to the elderly living in rural areas.

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# The Relationship Between 21st-century Teacher Skills and Critical Thinking Skills of Classroom Teacher\*

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## ABSTRACT

This study aims to investigate the relationship between 21st-century teacher skills and critical thinking skills in the classroom teachers. The sample of the study consisted of classroom teachers working in a southeastern city in Turkey. A correlational survey model was used in the study. The 21st-century Teacher Skills Use Scale and the Critical Thinking Scale were used for data collection. The results showed that classroom teachers generally agreed with the statements of the 21st-century Teacher Skills Use Scale and the subscales of technopedagogical skills, flexible teaching skills and confirmative skills, while they always agreed with the subscales of administrative skills and confirmative skills. There was no significant difference between participants' use of 21st-century teacher skills in terms of gender and professional experience. Teachers indicated that they agreed with the statements on the Critical Thinking scale and the Assessment, Self-Control, Self-Regulation, and Self-Confidence subscales and fully agreed with the Decision Making subscale. Although there was no significant difference between critical thinking ability and gender, a significant difference was found between teachers' critical thinking ability and their professional experience. In addition, a positive and moderately significant relationship was found between the use of 21st-century teacher competencies and critical thinking skills in all dimensions. The results indicated that the level of 21st-century skills increased as teachers' critical thinking skills increased. 21st-century 21st-century 21st-century 21st-century that the levels of 21st-century skills increased as teachers' critical thinking skill levels increased.

### Keywords:

21 st- century teacher skills, critical thinking skills, primary school teaching

## 1. Introduction

In today's world, the countries willing to be more democratic, successful and developed than others need to educate generations having the required skills of the 21st century. In this sense, a learning and teaching environment appropriate for the 21st-century and teachers need these skills. With the changing conditions, a change in the education system and the roles of the teachers within this system also takes place. The development of a country can be enhanced by having qualified human resources. For the new generation to be qualified, the existing education system should be reorganized in the light of the needs of today and the future (Gökçe, 2000). According to Kıyasoğlu (2019), the teacher-centred education system has been replaced by a student-centred education system in the past. In terms of 21st-century skills, teachers are expected to guide and support their students' production readiness, curiosity, problem-solving skills, and critical thinking. 21st-century skills are divided into three main themes: learning and innovation, knowledge, technology and media skills, and life and career skills (Partnership for 21st Century, 2015). Today, everyone

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need to have all of these 21st-century skills (Hamarat, 2019). This can only be possible with a learning and teaching environment based on 21st-century knowledge and skills (Korkmaz, 2019). According to Louis (2012), the development of 21st-century skills will also contribute positively to the future of students. 21st-century 21st-century Therefore, learning methods and strategies addressing the 21st-century should be encouraged. In addition, students should be provided with skills such as communication, collaboration, problem solving, critical thinking and productivity.

In the modern world, rote learning and monotony are out of the educational agenda now, and instead education aims at productivity, productivity and critical thinking. To educate individuals having critical thinking skills, teachers who will train these individuals should also possess these skills. Features such as establishing relationships with people, not being prejudiced about an issue, exploring original ideas, questioning and doubting events and facts are indicators of critical thinking (Alkın & Gözütok, 2013). According to Akdemir (2019), as we live in an age in which knowledge develops and changes rapidly, individuals, who are required to adjust to this dramatic change, should be able to come up with different solutions and use high-level cognitive activities. In other words, they should have critical thinking skills. In this sense, teachers who deliver educational services have to possess critical thinking skills to develop these skills among their students. Therefore, teachers play a significant role in developing critical thinking (Paul & Elder, 2005; Şahinel, 2002; Zincirli, 2014). A teacher with critical thinking skills should primarily be unbiased, patient, receptive to all kinds of innovations, and able to think in varied ways. The teachers willing to increase their productivity should organize all the tools and materials within their reach in accordance with critical thinking skills (Güzel, 2005). In the process of teaching critical thinking, teachers should always encourage students to discuss and question the information they suspect (Şahinel, 2002). The teachers should make sure that the communication in the classroom is clear and simple without imposing their own opinions on the students. They should help students be able to think critically, create appropriate environments for critical thinking, actively participate in the activity, and develop a more advanced level of critical thinking ability (Bingöl, 2019).

Teachers have the most important responsibility at every stage of the education process, from primary school to higher education, in developing 21st-century skills, which play an important role in the development of students' future life and career (Anagün, Atalay, Kılıç & Yaşar, 2016). The person who teaches 21st-century skills should be a leader, ensure permanent learning, organize the environment and materials, and cooperate with every individual who has an impact on education (Melvin, 2011). Besides, the competencies of the 21st-century skills that teachers and students have will surely have an impact on each other (Sanders & Rivers, 1996). According to Belet- Boyacı & Özer (2019), the classifications of 21st-century skills consist of critical thinking, problem-solving and productivity. Especially primary school plays a significant role in developing the foundation of critical thinking skills, which can be called a vital skill (Silva, 2009). Literatürde 21. There are studies on 21st-century skills in the literature (Ainley & Luntley, 2007; Bunker, 2012; Eğmir & Çengelci, 2020; Noise, Aslan & Alcı, 2018; Noise, Aslan & Alcı, 2018; İncik-Yalçın, 2020; Korkmaz, 2019; Kozikoğlu & Özcanlı, 2020; Miller & Pedro, 2006, Orhan-Göksün, 2016). Considering that critical thinking skills are important for the teaching profession (Ağdacı, 2018; Akdemir, 2019; Aliakbaria & Sadeghdaghighib, 2012; Arslan, 2016; Aslan, 2019; Palavan, Gemalmaz & Kurtoğlu, 2015; Recalde, 2008; Şengül & Üstündağ, 2009), studies have been conducted with teachers from different disciplines in which critical thinking is investigated together. Today, teachers are required to have both 21st-century skills and critical thinking skills. Teaching 21st-century and critical thinking skills from the beginning facilitates monitoring students' development. Thus, it is of crucial importance for classroom teachers to have these two skills. Therefore, classroom teachers' use of 21st-century teacher skills and critical thinking skill levels and the effect of critical thinking skills on 21st-century teacher skills should be examined. To bridge this gap, this study aims at investigating the relationship between 21st-century teacher skills and critical thinking skills of classroom teachers. Research Questions:

- What are the levels of classroom teachers' 21st-century teacher skills use and critical thinking skills?
- Is there a significant difference between classroom teachers' 21st-century teacher skills use and critical thinking skills and demographic characteristics (gender and work experience)?
- What level of relationship is there between classroom teachers' 21st-century teacher skills use and critical thinking skills?

## 2. Method

### 2.1. Research Model

The quantitative research method was employed in the present study which was carried out to investigate classroom teachers' 21st-century teacher skills level and critical thinking skills. To do so, correlational survey design, one of the quantitative research methods, was used in the present study. According to Fraenkel and Wallen (2009), correlational survey design is a research model that aims to determine the presence and/or degree of change between two or more variables.

### 2.2. Population and Sample

The research population consisted of all classroom teachers working in a southeastern city in Turkey in the 2019-2020 academic year. The research sample was made up of 359 classroom teachers working in public schools. During the data collection stage, a convenience sampling method was adopted. Convenience sampling provides easy access to more participants in quantity and saves time during data collection (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2018). The classroom teachers were included in the study for the two reasons. First, they teach 21st-century skills and critical thinking skills to young learners, which makes monitoring the development of these skills easier. Second, they have an adequate amount of classroom time and free activities to teach these skills. Therefore, the level of 21st-century teacher skills of classroom teachers and whether critical thinking skills have an influence on 21st-century teacher skills were investigated in this study.

**Table 1.** The distribution of the participants concerning demographic variables

Demographic Variables	Groups	Frequency	Percentage
Gender	Male	209	58.2
	Female	150	41.8
	Total	359	100
Work Experience (year)	1-5	88	24.6
	6-10	106	29.5
	11-15	86	24.0
	16-20	43	12.0
	21+	36	10.0
	Total	359	100

As shown in Table 1, 58.2% of the participants were men and 41.8% were women. 24.6% of them had 1-5 years of work experience, 29.5% had 6-10 years of work experience, 12.0% had 16-20 years of work experience, and the remaining 10% had 21 years or more experience. These data show that the majority of the participants in the study were male, and most of them had 6-10 years of work experience.

### 2.3. Data Collection Tools

In selecting the data collection instruments, a literature review was first conducted to identify the scales suitable for the aim of the present study. Then, these scales were compared in terms of the constructs they measured, sub-dimensions, response time, timeliness and suitability for the research method. As a result, two scales were determined and used in the research: 21st-century Teacher Skills Use Scale and Critical Thinking Scale.

#### 2.3.1. Personal Information Questionnaire

The variables of this study that are gender and work experience were determined with the Personal Information Questionnaire prepared by the researchers.

#### 2.3.2. 21st-century Teacher Skills Use Scale

21st-century Teacher Skills Use Scale was developed by Orhan-Göksün (2016) and consists of 27 items scored on a five-point Likert type scale. There are 5 responses in the scale as "never", "rarely", "sometimes", "usually" and "always" and they are scored from 1 to 5. The Cronbach's alpha value of the total scale was calculated as 0.979. The highest score that can be obtained from the scale is 135 whereas the lowest score is 27. The 21st-century Teacher Skills Use Scale contains five sub-dimensions: administrative skills (Items 5, 8,

9,10, 11, 12, 15, 16, 17, 20, 21, and 25), technopedagogical skills (Items 6, 7, 19, 22, 23, 24, 26, and 27), confirmative skills (Items 4, 1, and 18), flexible teaching skills (Items 2 and 3), and productive skills (Items 13 and 14).Cronbach's alpha values were calculated for these sub-dimensions. The values were calculated as 0.856 for administrative skills, 0.716 for technopedagogical skills, 0.763 for confirmative skills, 0.821 for flexible teaching skills, and 0.581 for productive skills.

### 2.3.3. Critical Thinking Scale

To investigate the critical thinking skills of the participants, the Critical Thinking Scale, which was revised from Semerci's (2000) The Scale of Critical Thinking by Ağdacı (2018), was employed in the present study. The scale consists of 43 items scored on a five-point Likert type scale. Cronbach's Alpha value of the scale was calculated as 0.915. The highest score that can be obtained from the scale is 215, whereas the lowest score is 43. The scale consists of five sub-dimensions: decision-making (Items 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, and 37), self-regulation (Items 6, 7, 8, 9, 10, 11, 12, 13, and 14), self-confidence (Items 19, 38, 39, 40, 41, 42, and 43), assessment (Items 15, 16, 17, 18, 20, and 21), and self-control (Items 1, 2, 3, 4, and 5).

### 2.4. Data Collection and Analysis

Data were collected from classroom teachers through the Personal Information Questionnaire;the 21st-century Teacher Skills Use Scale and the Critical Thinking Scale in the 2019-2020 academic year. The data collection tools were distributed and collected electronically via online tools andin-person by visiting the schools.

Before investigating the relationship between the use of 21st-century teacher skills and critical thinking skills, the kurtosis and skewness values were examined to determine whether the data were normally distributed. The kurtosis and skewness values showed that the expected values of the scales were below the observed values. This meant that the significance value was less than 0.05. A normality test was performed to determine whether the data were normally distributed. It was found that both scales and their subscales had a significance value of less than 0.05. This finding showed that the data were not normally distributed. Therefore, non-parametric statistical tests were employed in the present study. According to Büyüköztürk (2018) the Mann-Whitney U test should be used for two independent samples and the Kruskal-Wallis H test for more than two independent samples when the normality assumption is not met. In this sense, the Mann-Whitney U test and Kruskal-Wallis H test, which are non-parametric statistical techniques, were used to examine 21st-century teacher skills and critical thinking skills concerning gender and work experience due to the unbalanced number of independent samples. In addition, a correlation analysis was performed to reveal whether there was a relationship between the levels of critical thinking and 21st-century teacher skills use

### 2.5. Ethical

In this study, all rules stated to be followed within the scope of “Higher Education Institutions Scientific Research and Publication Ethics Directive” were followed.

Ethical Review Board Name: Firat University Ethics Committee

Date of Ethics Evaluation Decision: 10.04.2020 Ethics Assessment Document Issue Number: 8/4

### 3. Findings

This section presents the findings of 21st-century teaching skill use and critical thinking skills of classroom teachers.

**Table 2.** Scores of the 21st-century Teacher Skills Use Scale and Critical Thinking Scale

	N	$\bar{X}$	sd
Administrative skills	359	4.02	.46
Technopedagogical skills	359	3.76	.45
Confirmative skills	359	4.56	.46
Flexible teaching skills	359	3.53	.80
Productive skills	359	3.90	.65
21st-century Teacher Skills	359	3.96	.41



Decision-making	359	4.02	.60
Self-regulation	359	4.14	.63
Assessment	359	4.10	.61
Self-confidence	359	4.23	.63
Self-control	359	4.20	.61
Critical Thinking Skills	359	4.19	.57

Table 2 shows that the mean 21st-century teacher skills score of the participants was 3.76. This finding revealed that the participants generally agreed with the statements on 21st-century teacher skills and had a moderate level of these skills. It was also found that participants had a mean score of 4.56 in the endorsing skills subscale, indicating that participants always agreed with the endorsing skills statements. This finding showed that the participants had a high level of confirmative skills in 21st-century teacher skill. The mean scores of the participants concerning other sub-scales of 21st-century teacher skills were as follows: Administrative Skills= 4.02, Productive Skills= 3.90, Technopedagogical Skills= 3.76 and Flexible Teaching Skills= 3.53. These findings indicated that participants' flexible teaching skills were at a lower level than the other skills.

The participants were found to have a mean score of 4.19 in the Critical Thinking Scale. This finding suggested that the participants agreed with the statements on Critical Thinking Skills scale and their critical thinking skills were almost at a high level. In addition, they had a mean score of 4.23 in the Self-Confidence sub-scale. This finding revealed that the participants completely agreed with the statements on Self-Confidence sub-scale and had a high level of self-confidence skills. The mean scores of the participants concerning other sub-scales of Critical Thinking Scales were as follows: Self-control= 4.20, Self-regulation= 4.14, Evaluation= 4.10, and Decision making= 4.02. These findings indicated that participants' decision making skills were at a lower level than the other critical thinking skills.

To examine whether there was a difference between the participants' 21st-century teacher skills use and critical thinking skills concerning gender, the Mann Whitney U test, one of the non-parametric tests, was used since data were not normally distributed. The findings of the Mann Whitney U test are presented in Table 3.

**Table 3.** Mann Whitney U Test Results concerning the Effect of Gender on 21st-century Teacher Skills Use and Critical Thinking Skills

Scale	Gender	n	X	Sd	U	p
21st-century Teacher Skills Use	Male	209	172.58	.392	14123.5	.109
	Female	150	190.34	.367		
Critical Thinking Skills	Male	209	177.09	.486	15066.5	.530
	Female	150	184.06	.492		

\*p<0.05

Table 3 shows no statistically significant difference between male and female participants in terms of 21st-century teacher skills use and critical thinking skills. The effects of work experience on 21st-century teacher skills use and critical thinking skills are presented in Table 4.

**Table 4.** The Effects of Work Experience on 21st-century Teacher Skills Use and Critical Thinking Skills

Scale	Work Experience	n	$\bar{X}$	sd	Kruskal-Wallis H	P	MWU
21st-century Teacher Skills Use	A. 1-5	88	180.36	.380	5.955	.203	---
	B. 6-10	106	173.53	.359			
	C. 11-15	86	187.84	.367			
	D. 16-20	43	203.74	.434			
	E. 21+	36	151.08	.416			
Critical Thinking Skills	A.1-5	88	183.72	.553	10.653	.031*	B-C B-D
	B. 6-10	106	154.31	.437			
	C. 11-15	86	198.53	.491			
	D.16-20	43	198.01	.400			
	E. 21+	36	180.75	.512			

\*p<0.05

As seen in Table 4, there was no statistically significant relationship between work experience and participants' 21st-century teacher skills use. However, it was found that the Critical Thinking Skills scores of the participants significantly differed by work experience ( $KWH= 10.653, p < .05$ ). The difference was found between participants with 6-10 years and 11-15 years of work experience, statistically in favor of the latter, and between participants with 6-10 years and 16-20 years of work experience, in favor of those with 16-20 years of work experience.

Table 5 presents the relationship between participants' 21st-century teacher skills use and critical thinking skills.

**Table 5.** *The Relationship Between 21st-century Teacher Skills Use and Critical Thinking Skills of the Participants*

	1. Administrative skills	2. Technopedagogical skills	3. Confirmative skills	4. Flexible teaching skills	5. Productive skills	6. 21st-century teacher Skills	7. Decision-making	8. Self-regulation	9. Assessment	10. Self-confidence	11. Self-control	12. Critical Thinking Skills
1.	1											
2.	.648*	1										
3.	.654*	.401*	1									
4.	.469*	.319*	.288*	1								
5.	.613*	.472*	.401*	.416*	1							
6.	.944*	.797*	.672*	.572*	.671*	1						
7.	.499*	.336*	.291*	.295*	.275*	.468*	1					
8.	.451*	.297*	.295*	.270*	.269*	.435*	.796*	1				
9.	.375*	.246*	.206*	.206*	.219*	.349*	.753*	.804*	1			
10.	.463*	.352*	.261*	.292*	.323*	.452*	.814*	.727*	.720*	1		
11.	.451*	.293*	.338*	.239*	.282*	.413*	.691*	.754*	.668*	.624*	1	
12.	.509*	.342*	.312*	.309*	.303*	.446*	.941*	.916*	.864*	.876*	.798*	1

\* $p < .01$

Table 5 shows a moderate and significant positive correlation in all dimensions between the participants' 21st-century teacher skills use and critical thinking skills ( $r = 0.446, p < .01$ ). This finding revealed that as the 21st-century skills use increased, their critical thinking skills also increased.

There was a moderate and significant positive relationship between the participants' 21st-century teacher skills use and decision making ( $r = 0.468, p < .01$ ), self-regulation. ( $r = 0.435, p < .01$ ), self-confidence ( $r = 0.452, p < .01$ ) and self-control ( $r = 0.413, p < .01$ ). In addition, a weak and significant positive relationship was found between the participants' 21st-century teacher skills use and assessment ( $r = 0.349, p < .01$ ). Besides, it was also found that there was a moderate and significant positive relationship between the participants' critical thinking skills and administrative skills ( $r = 0.509, p < .01$ ). Furthermore, there was a weak and significantly positive relationship between critical thinking skills of the participants and technopedagogical skills ( $r = 0.342, p < .01$ ), confirmatory skills ( $r = 0.312, p < .01$ ), flexible teaching skills ( $r = 0.303$ ) and productive skills ( $r = 0.312, p < .01$ ). Finally, as shown in Table 5, the strongest relationship among sub-scales was between Administrative Skills and Decision Making ( $r = 0.446, p < .01$ ). On the other hand, the weakest correlation was between Confirmatory Skills and Assessment sub-scales ( $r = 0.206, p < .01$ ) and between Flexible Teaching Skills and Assessment sub-scales ( $r = 0.206, p < .01$ ).

#### 4. Conclusion and Discussion

This study aimed to examine teachers' use of 21st century skills and critical thinking skills of 359 teachers working in a southeastern city of Turkey in relation to their gender and work experience, and to examine whether there is a relationship between the use of 21st century skills and critical thinking skills. It was found in the present study that the participants' 21st-century teacher skills use was moderate. As a result, it can be concluded that classroom teachers' 21st-century teacher skills use at a level that will meet the needs of today's students and facilitate them to acquire 21st-century skills. In line with the findings of the present study, Gürültü, Aslan and Alcı (2018), Miller and Pedro (2006) and Orhan-Göksün (2016) reported that

teachers' 21st-century teacher skills were at a medium level. Similarly, pre-service teachers in Alkoç's study (2020) was found to have a moderate level of 21st-century skills. In addition, Gürültü, Etc. (2019), Eđmir and Çengelci (2020), Ainley and Luntley (2007), Korkmaz (2019), Kıyasođlu (2019), Sanders and Rivers (1996), Bunker (2012), Kozikođlu and Özcanlı (2020) and İncik-Yalçın (2020) found in their studies that teachers' 21st-century teacher skills use were at high or medium level. These findings in the literature support the results of the present study. The participants using 21st-century teaching skills had higher confirmative skills, and as a result, they had endorsement for positive behaviors and respect for individual differences. On the other hand, they had lower levels of flexible teaching skills, and thus they were less likely to apply extracurricular social and educational activities.

No significant difference was found between 21st-century teacher skills use and the gender of the participants in the present study. There are conflicting findings as to the effect of gender in the literature. Although a considerable number of studies found that 21st century teachers' skills do not differ by gender (Gürültü, Aslan & Alcı, 2019; Eđmir & Çengelci, 2020; Korkmaz, 2019; Kozikođlu & Özcanlı, 2020; Peker, 2019; Yalçın-İncik, 2020), some studies reported significant differences. For example, Orhan-Göksün (2016) stated that the female teachers in her study used 21st-century teacher skills more significantly than male teachers. In contrast, Çınar (2019) reported a significant difference in favor of men. The fact that there was no difference in the use of 21st-century teacher skills in terms of gender may be due to the principle of equal opportunity in education, which prevents gender discrimination in the Turkish education system. In this respect, it can be expected that the 21st-century teacher skills of individuals who are trained and become teachers on the principle of equal opportunity in education are at the same level.

There was no significant difference between 21st-century teacher skills use of the participants concerning their work experience. In other words, it can be said that the participants' 21st-century teacher skills use were at the same level in terms of work experience. This finding is supported by several studies in the literature. For example, Gürültü, Etc. (2018) found that classroom teachers' use of 21st-century teacher skills did not differ in work experience. Similarly, Yalçın-İncik (2020) reported that work experience did not affect 21st-century teacher skills use of high school teachers. However, there are also studies in the literature stating that the use of 21st-century teaching skills differs concerning work experience. For example, Eymir and Çengelci (2020) found that teachers with 6-10 years and 11-15 years of work experience had higher 21st-century skills than teachers with 1-5 years of work experience. Similarly, Korkmaz (2019) reported that teachers with 1-5 years and 11-15 years of work experience had higher 21st-century skills than teachers with 6-10 years and 16 years more of work experience. Finally, Kozikođlu and Özcanlı (2020) stated that teachers with 1-5 years of work experience were higher 21st-century skills than teachers with 16 years or more of work experience. These studies reveal that work experience influences the use 21st-century teacher skills of teachers. It can be said that the reason for this situation is the differences of the participants in these studies.

As a result of this study, it was found that the participants had a moderate level of critical thinking skills. In this context, Ađdacı (2018) reported that classroom teachers had higher critical thinking skills than teachers of other branches. Furthermore, studies in the literature have revealed that the critical thinking skill levels of teachers were at medium (Ađdacı, 2018; Akdemir, 2019; Arslan, 2016; Aslan, 2019; Hazer, 2011; Özden, 2019)) and high levels (Alkın-Şahin & Gözütok, 2013; Facione, Giancarlo & Facione, 1995). In this sense, the present study's findings are in consistent with those in the literature. According to Polat and Kontaş (2018), the training received by classroom teachers may be based on critical thinking skills, and their reading habits may positively influence their critical thinking skills.

The present study revealed no significant difference between the critical thinking skills of classroom teachers in terms of gender. This finding is supported by several studies in which no relationship was found as well (Akdemir, 2019; Alkoç, 2020; Alkın-Şahin & Gözütok, 2013; Aslan, 2019; Caldwell, 2012; Friedel, Irani, Rudd, Gallo & Eckhardt, 2006; Zincirli, 2014). On the other hand, Hazer (2011), Holley and Boyle (2012) and Yıldırım (2005) found that that female teacher had significantly higher critical thinking skill levels than male teachers. In sum, the studies inconsistent with present study result revealed that female participants have higher critical thinking skills. Dođanay, Akbulut-Taş and Erden (2007) stated in their study that it is challenging to generalize in a case in which critical thinking significantly differed by gender or not.

It was also found that work experience influenced the critical thinking skills of classroom teachers in this study. A difference was observed between the participants with 6-10 years of work experience and those with 11-15 years and 16-20 years of experience, identical mean scores. In this sense, it was found that participants with 6-10 years of work experience have higher critical thinking skills than those with 11-20 years of work experience. There are conflicting results concerning the effect of work experience in the literature. For example, Aslan (2019), Caldwell (2012), Özden (2019) and Yıldırım (2005) did not find a significant difference between work experience and critical thinking skills of teachers. However, Arslan (2016), Akdemir (2019) and Moore (2010) reported a significant difference between teachers' work experience and critical thinking skills. Arslan (2016) and Akdemir (2019) concluded that as the work experience of teachers increase, their critical thinking skills are likely to increase as well. Studies in which a significant difference was reported between critical thinking and work experience do not completely support the result of the present study since critical thinking skills differed by different levels of work experience in these studies. In Turkey, with the change in the education system in 2005, the behaviorist approach was replaced by the constructivist approach. The role of critical thinking differs between the behaviorist approach and the constructivist approach. This could be the reason why there are differences in critical thinking skills between teachers trained in the behaviorist approach in the past and those trained in the constructivist approach today.

It was reported in the present study that a statistically significant positive correlation existed between 21st-century teacher skills use and critical thinking skills. This relationship was at a medium level. In this context, it can be argued that a classroom teacher possessing critical thinking skills also uses 21st-century teacher skills. In other words, classroom teachers, whose use of 21st-century teacher skills increases, tend to develop critical thinking skills. In this regard, in her study with prospective teachers, Alkoç (2020) found a statistically significant positive relationship between 21st-century learner skills use and critical thinking tendency.

Furthermore, the studies conducted with pre-service teachers (Orhan-Göksün, 2016) and classroom teachers (Kıyasoğlu, 2019) reported a moderate and significant positive relationship between the 21st-century learner skills use and of 21st-century teacher skills use. The studies in the literature supports the findings of the present study. In the light of these two studies, if there is a positive relationship between 21st-century learner skills and 21st-century teaching skills, and between 21st-century learner skills and critical thinking skills, a positive relationship can be expected between 21st-century teaching skills and critical thinking skills. At the same time, 21st-century skills, which cover 21st-century learner skills and 21st-century teacher skills, include critical thinking within the scope of learning and renewal sub-dimension (Partnership for 21st Century, 2015). The present study may suggest a positive relationship between critical thinking and 21st-century teacher skills. The results of the present study supported this idea.

Finally, examining the relationship between classroom teachers' 21st-century teacher skills use and critical thinking skills in terms sub-scales indicated significant positive relationships between the sub-scales. The strongest relationship between the 21st-century teacher skills use, and the sub-scales of critical thinking skills was found between Administrative Skills and Decision-making. On the other hand, the weakest relationship was found between Confirmatory Skills and Assessment sub-scales and Flexible Teaching Skills and Assessment subscales. It can be concluded that this relationship may indirectly affect some of the situations that consist of the 21st-century teacher skills.

## **5. Recommendations**

- It is concluded that critical thinking has a positive effect on 21st-century teacher skills. Thus, critical thinking courses and instruction should be offered to prospective teachers.
- It was found that flexible teaching skills, a sub-scale of 21st-century teaching skills, was lower than other skills. Therefore, classroom teachers should be presented with courses or in-service training on using extracurricular and social activities.
- There is significant difference in the levels of confirmative skills, a sub-scale of the 21st-century teacher skills. Therefore, a qualitative study may be conducted to investigate confirmative skills in detail.

- Similar studies can be conducted with teachers at different levels of education or in other regions to investigate the relationship between 21st-century teacher skills use and critical thinking skills.

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# The Effect of Prospective Teachers' Beliefs About the Necessity of Multicultural Education and Self-Efficacy Perceptions of Multicultural Education: A Path Model

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Article

## ABSTRACT

This study aims to determine whether there is a relationship between prospective teachers' beliefs about the need for multicultural education and their self-efficacy perceptions about multicultural education. Descriptive and correlational survey models were used in the research. The research sample composed of 251 prospective classroom and social sciences teachers at a state university in Turkey participated in the study. The research sample was obtained using the convenience sampling method. Data collection tools consisting of the Personal Information Form, Self-Efficacy Perceptions for Multicultural Education and Beliefs about the Necessity of Multicultural Education scales were used. Descriptive statistics, correlation analysis, multivariate variance analysis and path model were used to analyse the research data. The findings show that prospective teachers have a high level of participation in their beliefs about the self-efficacy and necessity of multicultural education. In addition, there was no significant difference between prospective teachers' beliefs about the need for multicultural education and their self-efficacy perceptions of multicultural education in terms of gender and department. A moderate positive relationship was found between prospective teachers' beliefs regarding the necessity of multicultural education and their self-efficacy perceptions toward multicultural education. The prospective teachers' beliefs about the need for multicultural education significantly predicted multicultural education self-efficacy perceptions.

Keywords:  
Multicultural education, self-efficacy, necessity of multicultural education, path model.

## 1. Introduction

Through developments in technology, individuals with the different cultural backgrounds can communicate more easily and influence each other. Due to wars and natural disasters in recent years, millions of people have left their home countries and migrated to different regions, cities and countries. As a result, individuals with different cultural characteristics began to live together. This situation brought the concept of multiculturalism to the agenda. The concept of multiculturalism is a phenomenon classified according to different perspectives. While for some researchers, multiculturalism refers to race, ethnicity, class, sexual orientation, religion, age and similar criteria (Güvenç, 1994), others only deal with the context of race. For example, in the United States, multiculturalism is limited to four races: African Americans, Indian Americans, Asian Americans, and Latin Americans (Sue, Arredondo & McDavis, 1992). However, multiculturalism generally refers to societies living under a state roof; speaking various languages; and belonging to different religions, cultures, customs and traditions (Gay, 2018).

In societies where displaced individuals live together because of migration, wars, and natural disasters, problems arising from multiculturalism have started to occur. The thought that these problems can only be solved through education and multicultural education has emerged. Banks et al. (2001) defined multicultural

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education as 'an idea, an educational reform and a process that tries to create equal educational opportunities for all students from different races, ethnicities and social groups, and therefore tries to change and restructure the whole school environment.' According to Gay (1994), multicultural education is a thought and education reform movement and process aimed at changing the structure of educational institutions so that all students have equal chances in academic success.'

The importance of multicultural education is increasing daily. Multicultural education is a system that can produce solutions to various problems in today's societies (Kaya & Aydın, 2014). Banks (2010) states that this education system tries to eliminate many inequalities among different ethnic identities and social classes fairly with educational practices. The reason multicultural education is needed can be stated in three points (Kaya & Aydın, 2014, p. 39):

- Multicultural education contributes to the development of a bond of friendship among individuals with different cultural characteristics. It also ensures that human rights and democratic values are embedded in society.
- In pluralist societies, it contributes to the elimination of social disputes and the socialisation of individuals.
- It is also ensured that multinational societies combine and form a healthier and more comprehensive cultural combination.

When examining studies on multicultural education, this education is thought to increase cooperation among students, develop critical thinking skills and tolerance value, and reduce discipline problems (Aslan, 2017; Banks, 1993). These benefits, such as multicultural education, have a multicultural structure that will contribute to Turkey's implementation. Turkey, with different ethnic identity (Turks, Kurds, Arabs etc), different religions (Alevi, Sunni, Christians, pressured etc etc), with different sexual orientations and live individuals with different socio-economic levels. From this point of Turkey it consists of a multicultural society. It is therefore increasingly important in the multicultural education in Turkey. In addition, multicultural education aims to eliminate inequalities in education and to realize social justice in education (Aslan & Aybek, 2019). In Turkey, it is known that problems are arising from ethnic, linguistic and religious differences, disability status, socio-economic level differences among individuals with different cultural characteristics. Introducing a multicultural education based on education can be remedied to resolve the problems stemming from cultural differences in education in Turkey. The leading factor in the effective organisation of the teaching environment is the teacher. Therefore, teachers who support the effective implementation of multicultural education in Turkey believe in the necessity of this education (Kervan, 2017).

Teachers who believe in the necessity of multicultural education can organize the teaching environment for such applications. Beliefs affect teachers' perspectives on the learning-teaching process, how they perceive the learning environment, their choice of methods and techniques, and their equipment and applications (Yıldırım, 2016, p. 52). Dooley (1997) provides that teachers' beliefs about teaching students from various cultures and ethnic groups reflect their theoretical knowledge in practice and affect their teaching practices (Yıldırım, 2016). Teachers' beliefs about multicultural education and their self-efficacy toward multicultural education can be said to have an impact. It can be said that it affects.

Pajares (2002) expresses self-efficacy as subjective judgments and perceptions of individuals in carrying out a certain action. Korkmaz (2009) expresses self-efficacy as a belief in how one can do what he has to do and act accordingly, cope with the difficulties he faces, and succeed. Based on multicultural education, teachers need to adjust the classroom environment by accepting that students can differ in ethnicity, class, gender, language, belief system and sexual orientation (Sinagatullin, 2003). This situation closely relates to teachers' self-efficacy perceptions of multicultural education. That teachers consider themselves sufficient to organize the teaching environment according to different cultural characteristics will contribute to the effective implementation of multicultural education. Teachers, therefore, should be informed about multicultural education and its necessity in their pre-service training. If this happens, prospective teachers will be able to organize the teaching-learning environment for multicultural education when they start working, which will improve their self-efficacy toward multicultural education.

There are few studies in Turkish multicultural literature on training requirements (Yıldırım, 2016) and self-efficacy for multicultural education (Basarır, 2012; Dolapci, 2019; Roh, 2015; Strickland, 2018). Thus, there is a gap in Turkish literature. Furthermore, no study has been found about prospective teachers' beliefs regarding the necessity of multicultural education and their self-efficacy perceptions of multicultural education. Again, such absence presents a deficiency in the literature.

Turkey Republic of ethnicity, language, religion, and multicultural contains many differences in terms of social class and other cultural aspects of society's structure (Basar, 2019). As a result of wars in neighbouring countries, such as Iraq and Syria, millions of refugees have come to Turkey in recent years. Individuals with different cultural characteristics are receiving education in Turkish schools. Multicultural education has become an important topic in Turkey because all students are required to have equal access to education and training (Ciftci-Acar & Aydin, 2014).

As stated above, the teaching-learning process should be planned according to the multicultural education in schools where individuals with different cultural characteristics study. In this way, a positive relationship can be established among individuals with different cultural characteristics, and the problems experienced among these individuals will be minimized. Teachers should believe in the necessity of multicultural education, and their self-efficacy perception should be high. In this regard, teachers should know about multicultural education during the period of service and believe in the necessity of this education. Such a perspective will positively affect their self-efficacy perceptions of multicultural education.

To increase teachers' beliefs about the necessity of multicultural education and their self-efficacy towards multicultural education, it is necessary to provide information about multicultural education during undergraduate periods. For this reason, it is necessary to determine the beliefs of prospective teachers in the necessity of multicultural education and their self-efficacy towards multicultural education. Because if the prospective teachers' beliefs in the necessity of multicultural education and their self-efficacy towards multicultural education are high, they will be able to organize the teaching environment according to cultural differences when they start working. In this case, social injustice stemming from multiculturalism in education can be eliminated. Therefore, the results of this research are very valuable.

Therefore, this study examined prospective teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education. The results of the study made a move to the feedback nature of teacher training in Turkey. It is hoped that practices regarding multicultural education will be carried out in teacher training institutions, thereby improving the beliefs and self-efficacy perceptions of prospective teachers' toward the necessity of multicultural education. The research here will contribute to the literature as well in this respect.

This study aims to examine prospective teachers' self-efficacy perceptions toward multicultural education and their beliefs about the necessity of multicultural education and to determine whether there is a relationship between them. In this context, answers to the following research questions are sought:

- What are prospective teachers' perceptions of self-efficacy toward multicultural education and their belief levels regarding the necessity of multicultural education?
- Is there a significant difference between prospective teachers' self-efficacy perceptions toward multicultural education and their beliefs about the necessity of multicultural education in terms of gender?
- Is there a significant difference between the prospective teachers' self-efficacy perceptions toward multicultural education and their beliefs about the need for multicultural education in relation to the department in which they are being trained? Is there a significant relationship between prospective teachers' self-efficacy perceptions toward multicultural education and their beliefs regarding the necessity of multicultural education?
- Do prospective teachers' beliefs about the necessity of multicultural education significantly predict self-efficacy perceptions of multicultural education?

## 2. Methodology

### 2.1. Research Model

Descriptive and correlational survey models were used. The primary purpose of a descriptive survey is to accurately describe or illustrate the characteristics of a situation or phenomenon. A descriptive survey model is used to learn people's attitudes, opinions, beliefs and demographic features in education (Johnson & Christensen, 2014). A correlational survey model examines the relationship between two or more variables (Özmantar, 2019).

In the research, a descriptive survey model was used to analyse whether the prospective teachers' self-efficacy perceptions toward multicultural education and their beliefs regarding the necessity of multicultural education differ in terms of gender, education area and region. A correlational survey model was used to determine the direction between the self-efficacy perceptions of prospective teachers' toward multicultural education and their beliefs regarding the necessity of multicultural education and the level of predicting this variable.

### 2.2. Participants

The research participants were prospective elementary and social sciences teachers studying at a Turkish public university. A convenience sampling method, one of the non-probability sampling methods, was used. In this sampling method, the researcher reaches the participants quickly and easily and applies data collection tools within the framework of volunteering (Karagöz, 2017). The most important limitation of this sampling method is its low power to represent the universe.

Prospective teachers' who were easily accessible to the researcher participated. These candidates did so voluntarily. A total of 251 prospective teachers' (170 female and 81 male) participated in the study. Of the participants, 151 were studying to become classroom teachers, and 100 were studying to become social sciences teachers. Within the scope of the research, the main reason for selecting the prospective teachers studying in social sciences and elementary school teaching programs is that both programs have social sciences courses. Since the social sciences course also covers cultural differences, prospective teachers' studying in these programs have knowledge about multicultural education. For this reason, prospective teachers' in these two programs were selected as participants.

### 2.3. Data Collection Tools

Three types of data collection tools were used, as described below.

#### 2.3.1. Personal Information Form

A personal information form was created, taking into account experts' opinions and the literature studies. In the personal information form, there were questions to determine the gender of the participants and what they were studying.

#### 2.3.2. Belief Scale on the Necessity of Multicultural Education

The Belief Scale on the Necessity of Multicultural Education, developed by Yıldırım (2016), was used. While Yıldırım (2016) developed the scale, exploratory and confirmatory factor analyses were used. The scale was developed by applying it to 490 teachers.

As a result of the exploratory factor analysis, the scale consisted of two factors and nine items. The scale factors were named 'Belief in Being Individual Rights and General Belief in People'. The factor loadings of the scale ranged from .46 to .74. The dimensions of the scale explained 45.57% of the total variance. The reliability coefficient of the scale was .75.

In the confirmatory factor analysis performed while developing the scale, it was obtained that the fit indices were appropriate (Yıldırım, 2016). In this study, Cronbach's alpha coefficient was examined for the reliability coefficient of the scale and found to be .70. Based on this result, the scale was determined to be reliable.

### **2.3.3. Multicultural Education Self-Efficacy Perceptions Scale**

The Multicultural Education Self-Efficacy Perception Scale, developed by Yıldırım (2016), was used. Exploratory and confirmatory factor analyses were used while developing the scale. The scale was developed by applying it to 490 teachers.

As a result of the exploratory factor analysis, the scale was found to consist of 13 items. The scale factors were named 'Self-Efficacy to Design Activities, Self-Efficacy in the Management of Cultural Differences and Self-Efficacy to Understand Differences'. The factor loads of the scale ranged from .47 to .81. The dimensions of the scale explain 53.38% of the total variance.

Cronbach's alpha coefficient of the scale was determined .88. In the confirmatory factor analysis performed while developing the scale, it was obtained that the fit indices were appropriate (Yıldırım, 2016). In this study, the Cronbach's alpha coefficient of the scale was examined, and .86 was found. Fraenkel, Wallen and Hyun (2014) stated that the scale is exceptionally reliable if the Cronbach's alpha coefficient is higher than .70. According to this result, the scale was determined to be reliable. Both scales can be analyzed over the total score.

The scales used in the research were developed on teachers. The candidates of this study are prospective teachers. Therefore, the opinions of two faculty members working in educational sciences were asked about educational sciences and whether the scales used in the research could apply to prospective teachers. Faculty members stated that the scales could be used on prospective teachers. In this study, exploratory factor analyses of both scales were made. Results close to those of exploratory factor analyses performed by teachers, by Yıldırım (2016), were obtained. Therefore, it was observed that these scales could apply to prospective teachers.

### **2.4. Data Collection and Analysis**

The data were collected between 17 and 28 February 2020 in the spring semester of the 2019/20 academic year. While collecting the research data, the purpose of the research was explained to prospective teachers. Attention was given to the voluntary participation of prospective teachers' in the study. All ethical rules were followed while collecting the data. Data were collected at time intervals that would not affect the teacher life of the participants. While conducting the research, the necessary legal permissions were taken, and the ethical committee decision (Number: 874329561/050.99) was issued. It took 10–15 minutes for prospective teachers to fill in the data collection tools.

Before analysing the data, the univariate normality assumption was examined to determine whether it had been met. The results of the Kolmogorov Smirnov test were first reviewed. The analysis determined that the data were not normally distributed, and skewness and kurtosis coefficients were examined. The skewness coefficient of the belief scale for the necessity of multicultural education was .566, and the kurtosis coefficient of .117, the skewness coefficient of the self-efficacy perception scale for multicultural education was .293, and the kurtosis coefficient was  $-.456$ . Based on these results, it can be said that the distribution meets the univariate normality assumption (Can, 2019).

To determine whether the multivariate normality assumption was met in the study, Mahalanobis distances were examined, and extreme values were encountered. These extreme values were excluded from the research, and analyses were carried out. Since 32 scales have extreme values in the study, they were excluded from the data analysis. Data were analysed using descriptive statistics, multivariate variance analysis (MANOVA), correlation analysis and path model. Path analysis is an advanced statistical technique (Schumacker & Lomax, 2004). Path analysis is used to test the probability of a causal link between three or more variables, and path analysis is a much more powerful method than other methods to discover causality between variables (Fraenkel, Wallen & Hyun, 2014). Participation levels in the scales were evaluated as low between 0.00 and 1.66, the medium between 1.67 and 3.32, and high between 3.33 and 5.00.

### **2.5. Ethical**

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed.

Ethical Review Board Name: Süleyman Demirel University Ethics Committee

Date of Ethics Evaluation Decision: 1.4.2020 Ethics Assessment Document Issue Number: 89/1

### 3. Findings

In this section, first, prospective teachers' beliefs regarding the necessity of multicultural education and the levels of participation in self-efficacy perceptions toward multicultural education are determined. Then, the prospective teachers' beliefs about the necessity of multicultural education and the self-efficacy perceptions of multicultural education – and whether there is a significant difference between gender and education and their beliefs about multicultural education – are predicted. The findings regarding the absence of predictions are presented.

Based on the first sub-question of the study, prospective teachers' beliefs about the necessity of multicultural education and their levels of participation in the self-efficacy perceptions of multicultural education are given in Table 1.

**Table 1.** Descriptive Statistics Results

Variable		<i>n</i>	<i>M</i>	<i>SD</i>	<i>Max</i>	<i>Min</i>	<i>Level</i>
Multicultural Education Necessity	Individual Right	219	4.60	.40	5.00	3.25	High
	General Right	219	4.35	.44	5.00	3.20	High
Multicultural Education Self-Efficacy	Designing an Event	219	4.09	.49	5.00	2.60	High
	Cultural Differences Management	219	4.32	.45	5.00	3.00	High
	Understanding Differences	219	4.20	.46	5.00	3.20	High

When Table 1 is analysed, it is seen that prospective teachers participated at the 'high level' in the belief sub-dimension ( $M= 4.60$ ) and in the belief that there is the general right for people ( $M= 4.35$ ) on the belief scale regarding the necessity of multicultural education. Likewise, the self-efficacy perceptions scale for multicultural education has a high level of participation in the sub-dimensions of self-efficacy ( $M= 4.09$ ), self-efficacy ( $M= 4.32$ ), and self-efficacy ( $M= 4.20$ ) to understand differences.

In the study, the results of MANOVA on whether there is a significant difference in terms of gender variable between prospective teachers' beliefs about the necessity of multicultural education and self-efficacy perceptions of multicultural education are presented in Table 2.

**Table 2.** MANOVA Results For The Gender Variable

Variable	Gender	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>F</i>	<i>p</i>	$\eta^2$
Multicultural Education Necessity	Women	154	4.50	.36	1-217	4.28	.04*	.01
	Men	65	4.38	.38				
Multicultural Education Self-Efficacy	Women	154	4.19	.42	1-217	.05	.81	.00
	Men	65	4.17	.38				

\* $p < .05$

In Table 2, MANOVA was conducted to examine the difference between the gender variable on prospective teachers' belief in the necessity of multicultural education and self-efficacy perceptions of multicultural education. The belief in the necessity of multicultural education and the self-efficacy perceptions of multicultural education are dependent variables, while the gender variable is an independent variable. Before MANOVA was performed, the assumptions of normality, univariate and multivariate extremes, linearity, multiple correlation problem, and homogeneity of variance-covariance matrices were checked. No serious violations were detected. There was no statistically significant difference in terms of the gender variable in the context of the combined dependent variables ( $F_{(1-217)} = 2.428$ ,  $p = .09$ ; Wilks' lambda = .978;  $\eta^2 = .02$ ). Considering the MANOVA results in Table 3, there was a significant difference between the prospective teachers' beliefs about the necessity of multicultural education in favour of female prospective teachers' ( $F_{(1-217)} = 4.28$ ,  $p < .05$ ). There was no significant difference between prospective teachers' self-efficacy perceptions toward multicultural education in terms of the gender variable ( $F_{(1-217)} = .05$ ,  $p > .05$ ).

In the study, the MANOVA results regarding whether there is a significant difference between prospective teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education are presented in Table 3.

**Table 3.** MANOVA Results For The Department Variable in Which Education is Studied

Variable	Department	n	M	SD	df	F	p	$\eta^2$
Multicultural Education Necessity	Elementary Teaching	137	4.45	.37	1-217	.55	.45	.00
	Social sciences Teaching	82	4.49	.37				
Multicultural Education Self-Efficacy	Elementary Teaching	137	4.15	.41	1-217	2.58	.10	.01
	Social sciences Teaching	82	4.24	.40				

\* $p < .05$

In Table 3, MANOVA was conducted to examine the difference between the prospective teachers' belief in the necessity of multicultural education and the self-efficacy perceptions of multicultural education. The belief in the necessity of multicultural education and the self-efficacy perceptions of multicultural education are dependent variables, while the department variable in education is independent. Before MANOVA was performed, the assumptions of normality, univariate and multivariate extremes, linearity, multiple correlation problem, and homogeneity of variance-covariance matrices were checked. No serious violations were detected. There was no statistically significant difference in terms of the departmental variable studied in the context of the compound dependent variables ( $F_{(1-217)} = 1.287, p = .27$ ; Wilks' lambda = .988;  $\eta^2 = .01$ ).

The data regarding the correlation analysis between prospective teachers' beliefs regarding the necessity of multicultural education and the self-efficacy perceptions of multicultural education are presented in Table 4.

**Table 4.** Correlation Analysis Results

Variable	M	SD	1	2	3	4	5
Multicultural Education Necessity							
Individual Right (1)	4.60	.02	1.00	.525*	.297*	.315*	.301*
General Right (2)	4.35	.03	.525*	1.00	.389*	.384*	.327*
Multicultural Education Self-Efficacy							
Designing an Event (3)	4.09	.03	.297*	.389*	1.00	.595*	.646*
Cultural Differences Management (4)	4.32	.03	.315*	.384*	.595*	1.00	.583*
Understanding Differences (5)	4.20	.03	.301*	.327*	.646*	.583*	1.00

\* $p < .05$

When Table 4 is examined, there is the sub-dimension of belief that there is an individual right and belief that there is a general right for people ( $r = .525, p < .05$ ), self-efficacy of cultural differences ( $r = .315, p < .05$ ) and to understand the differences. While there is a 'medium' positive correlation among the self-efficacy ( $r = .301, p < .05$ ) dimensions, there is a 'low level' positive significant significance between the self-efficacy dimension ( $r = .297, p < .05$ ) – and a relationship has been found (Gürbüz & Şahin, 2018). For the dimension of belief that there is a general right for people and the self-efficacy of management of cultural differences ( $r = .384, p < .05$ ), self-efficacy to design activities ( $r = .389, p < .05$ ) and self-efficacy to understand differences ( $r = .301, p < .05$ ) dimensions, a 'medium' positive significant relationship was found. A moderately positive correlation was found between the dimensions of self-efficacy to design events and self-efficacy to understand the differences ( $r = .595, p < .05$ ) and management of cultural differences ( $r = .646, p < .05$ ). A moderately positive correlation was found between self-efficacy toward understanding differences and dimensions of self-efficacy of management of cultural differences ( $r = .583, p < .05$ ).

Latent variables were analysed to determine whether prospective teachers' beliefs regarding the necessity of multicultural education are predictors of self-efficacy perceptions of multicultural education. Path analysis with observed variables is a more straightforward but less advantageous model compared with path analysis with Latent variables. In such analyses, the amount of error can neither be predicted nor eliminated from the model. Therefore, the exclusion of measurement errors from the model is very limited. This makes

the reliability of the analysis results questionable. However, because Latent variables and path analysis allow linear calculations between variables to be calculated free from errors, it allows for more reliable results (Meydan & Şeşen, 2011). Latent variables and findings on path analysis are given in Figure 1. Positive correlations were found at the level of importance.

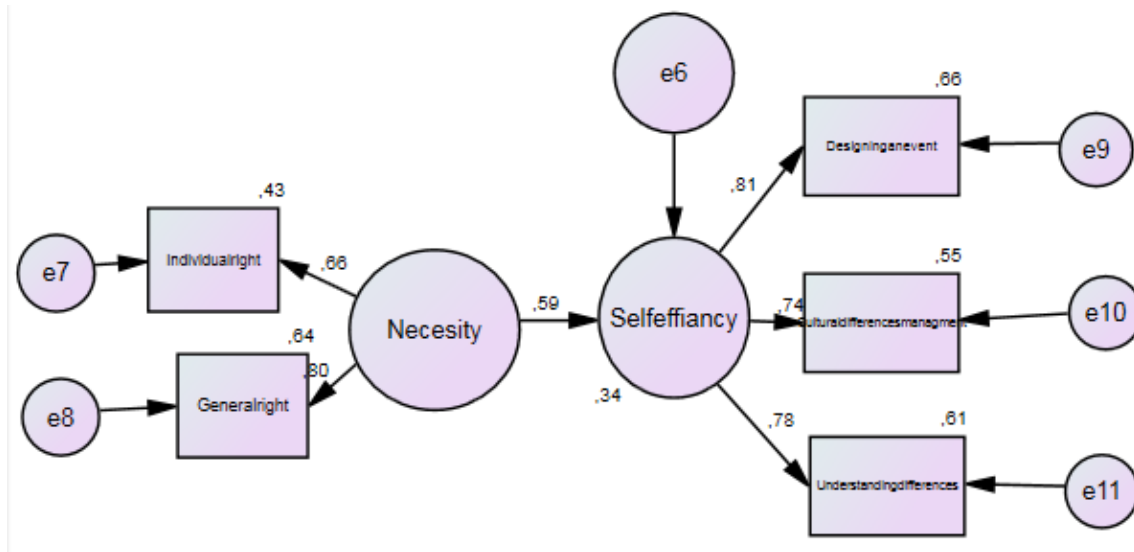


Figure 1. The Path Model

Do prospective teachers' beliefs about the necessity of multicultural education significantly predict self-efficacy perceptions of multicultural education? This subproblem was analysed using IBM AMOS 22. It is suggested that the sample should be more than 150 to make a path model (Gürbüz, 2019). As the participants of this research are 219, this assumption was met. To build a path model, the critical value of multiple kurtosis must be less than 10 (Kline, 2016). In this study, the critical value for multiple simplicity was .054. It was found that this assumption was met. Due to the normal distribution of the data, a covariance matrix was created using the maximum likelihood calculation method. First, the measurement model consisting of the beliefs about the necessity of multicultural education and the self-efficacy perceptions of multicultural education was tested. The fit index values obtained as a result of the analysis indicated that the measurement model was confirmed ( $X^2 [4, N = 219] = 3.061$ ;  $X^2 / df = .765$ ;  $CFI = 1.00$ ;  $SRMR = .0168$ ;  $GFI = .994$ ;  $RMSEA = .000$ ).

In the path model, beliefs related to the need for multicultural education were found to be the belief subdimension ( $R^2 = .43$ ) of the latent variable and the belief subdimension ( $R^2 = .63$ ) of the general right to people. The self-efficacy perceptions of the multicultural education Latent variable, on the other hand, the self-efficacy subdimension ( $R^2 = .61$ ) for understanding differences, the self-efficacy sub-dimension ( $R^2 = .55$ ) to manage cultural differences, and the self-efficacy dimension ( $R^2 = .66$ ) for designing events.

As a result of the research, it was found that the prospective teachers' beliefs about the necessity of multicultural education significantly predicted their self-efficacy perceptions toward multicultural education ( $\beta = .66$ ;  $p < .05$ ). In the interpretation of the effect sizes of the standardized road coefficients shown in Figure 1, Kline (2011) states that values less than .10 indicate small effects, values around .30 indicate medium effects, and values of .50 and above indicate high effects. In this sense, it can be said that the standardized coefficient sizes regarding the necessity of multicultural education have an overall high impact on the belief that it is an individual right and the belief that it is a general right for people.

#### 4. Discussion

Based on the first subproblem of the study, prospective teachers' beliefs about the necessity of multicultural education and their levels of participation in self-efficacy perception scales for multicultural education were examined. From the analysis, prospective teachers participated at the 'high level' of belief that there is an individual right belonging to the belief scale regarding the necessity of multicultural education and general belief for people. Likewise, it is seen that the self-efficacy perceptions scale for multicultural education has a high level of participation in the self-efficacy sub-dimensions of designing effectiveness, self-efficacy regarding the management of cultural differences and self-efficacy sub-dimensions. This result is viewed

positively by researchers. The fact that prospective teachers' beliefs about the need for multicultural education and their self-efficacy perceptions about multicultural education are high indicates that prospective teachers will shape the classroom environment in line with multicultural education when they enter service. Similarly, these findings may help to reduce the problems caused by multiculturalism, both in the school educational process and in the social context. As a result of the research conducted by Yıldırım (2016), teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education were high. Kervan (2017) concluded that teachers' attitudes toward multicultural education are high. As a result of the research carried out by Başarır (2012), the perceptions of prospective teachers' toward multicultural education are at a high level. This result coincides with the outcome of this research. Perkins (2012) concluded that prospective teachers have a high level of knowledge and attitude towards multiculturalism. Strickland (2018) found that teachers working in diverse American schools with different ethnic backgrounds have approximately a high mean level of multicultural experience. Roh (2015) found that prospective teachers believe they have moderate multicultural competence. The result of this research coincides with the results of multicultural education in national and international literature. Especially with the wars in recent years and the resulting migrations, individuals with different cultural characteristics have begun to live together. In this case, it has revealed the necessity of multicultural education in different countries.

Based on the second sub-problem of the study, we examined whether there was a significant difference in relation to the gender variable between prospective teachers' beliefs about the need for multicultural education and self-efficacy perceptions of multicultural education. The analyses revealed a significant difference between prospective teachers' beliefs about the need for multicultural education in favour of female prospective teachers. There was no significant difference between prospective teachers' self-efficacy perceptions toward multicultural education in terms of gender.

Based on this result, the gender variable significantly affects prospective teachers' beliefs about the necessity of multicultural education. Still, it does not have a significant effect on self-efficacy perceptions toward multicultural education. It is an important result that both female and male prospective teachers' have a high level of participation in both scales. This result shows that prospective and male prospective teachers' believe in the necessity of multicultural education. Also, the high self-efficacy ratings of male and female prospective teachers regarding multicultural education suggests that students will take cultural differences into account when designing lessons when they start their jobs. As a result of the research conducted by Yıldırım (2016), there was no significant difference in terms of the gender variable between teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education. Roh (2015) determined that female prospective teachers' have more multicultural experiences.

The research also examined whether there is a significant difference between prospective teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education in terms of the department variable. From the analyses carried out within the scope of the research, no significant difference was found between the beliefs of prospective teachers regarding the necessity of multicultural education and the self-efficacy perceptions of multicultural education in terms of the department variable. Based on this result, the variable of the department, which is studied, does not have a significant effect between the prospective teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education. As a result, the average of prospective teachers' studying at the departments of primary education and social sciences teaching is high. Within the scope of the research, it was thought that there would be a significant difference in favor of social studies prospective teachers. Because when the course contents in the social sciences teachers training program are examined, it is seen that there are mostly courses related to cultural characteristics (YOK, 2018). Therefore, there was expected to be a significant difference between the social sciences prospective teachers' belief in the necessity of multicultural education and their self-efficacy perceptions of multicultural education. Aybek (2018) found there was no significant difference between the attitudes of prospective teachers' toward multicultural education in terms of the department variable in which education was found.

Within the scope of the research, it is also examined whether there is a significant relationship between prospective teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education. The research determined that there are low- and medium-level significant



relationships between prospective teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education. This result shows that prospective teachers' perception of self-efficacy will increase if their beliefs about the necessity of multicultural education increase. In this regard, it is important to inform prospective teachers' about multicultural education in teacher training programmes and to explain the necessity of this education. In this way, prospective teachers' self-efficacy perceptions of multicultural education will develop positively. As a result, prospective teachers will be able to organize their teaching environments according to multicultural education when they start working. Yıldırım (2016) determined that there was a moderately significant relationship between teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education. Sezer-Onur and Kahraman-Bahçeli (2017) found a relationship between prospective teachers' attitudes toward multicultural education and their intercultural sensitivity.

Finally, it was investigated whether the prospective teachers' beliefs about the necessity of multicultural education can predict self-efficacy perceptions of multicultural education. As a result of the research, it was concluded that the sub-dimensions of the prospective teachers' beliefs regarding the necessity of multicultural education significantly predicted their self-efficacy perceptions toward multicultural education. Based on this result, prospective teachers' view of multicultural education as an individual and human right increases their perception of multicultural education. Wade (1995) emphasizes the effect of beliefs on instructional practices, pointing out that experiences also influence perceptions of self-efficacy, and perceptions of self-efficacy guide instructional practices. Yıldırım's (2016) research also came to a similar conclusion. As a result of the research undertaken by Türkan, Aydın and Üner (2016), a predictive relationship was found between the attitudes of prospective teachers toward multicultural education and their epistemological beliefs.

## 5. Conclusion

As a result of the research, it has been concluded that the prospective teachers' beliefs about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education are high. This result is one of the important results of the research. A significant difference was found between the beliefs of prospective teachers' regarding the necessity of multicultural education in favour of female prospective teachers'. However, there was no significant difference between prospective teachers' self-efficacy perceptions of multicultural education on the gender variable. There was also no significant difference between the beliefs about the need for multicultural education and the self-efficacy perceptions of multicultural education in relation to the department variable in relation to education. Another important result of the research is to obtain a significant predictive relationship between prospective teachers' self-efficacy perceptions toward multicultural education. This result will make an important contribution to the literature. It shows that prospective teachers will increase their self-efficacy perceptions toward multicultural education if they see and believe in multicultural education as an individual and human right.

## 6. Recommendations

The following recommendations were developed from the research:

- Based on the belief that the necessity of multicultural education predicts the self-efficacy perception of multicultural education, prospective teachers should be given information about multicultural education in their undergraduate education. For this, a lesson on multicultural education can be included in teacher training programmes.
- Studies examining the beliefs about the necessity of multicultural education and the relationship between different scales and self-efficacy perception scales for multicultural education can be conducted.
- Comparative studies can be conducted examining the beliefs of teachers and prospective teachers about the necessity of multicultural education and their self-efficacy perceptions toward multicultural education.
- Among the qualitative research patterns that examine prospective teachers' beliefs about the necessity of multicultural education and the self-efficacy perceptions of multicultural education, research (e.g. phenomenological, case study and action research) can be conducted.

- Research can be conducted to examine the beliefs of prospective teachers' beliefs in different teacher training programs on the necessity of multicultural education and their self-efficacy perceptions of multicultural education.

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# The Relationship between Nomophobia and Depression, Anxiety and Stress Levels of University Students

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## ABSTRACT

In today's world, smartphones are an indispensable part of people's daily lives because smartphones facilitate daily routines. However, problematic or excessive use of smartphones can cause some psychological problems. Nomophobia is considered as one of the psychological problems caused by excessive use of smartphones. Nomophobia is referred to as modern age phobia and refers to irrational fears and anxieties of a person who cannot access or communicate with their mobile phone. Therefore, this study examines the prevalence of nomophobia among college students, behavioral patterns associated with nomophobia, and reveals the relationship between nomophobia and depression-anxiety-stress. A personal questionnaire, the Depression Anxiety Stress (DASS-42) and Nomophobia (NMP-Q) scales were used to investigate the research questions. Descriptive statistics, one-way analysis of variance (ANOVA), independent samples t-test, Pearson correlation coefficient and simple linear regression methods were used to analyze the data. The results show that the level of nomophobia among college students is higher than average. There were significant differences between the level of nomophobia and the college students' behaviors such as carrying a charger, checking the smartphone after waking up, checking the phone frequently during the day, the duration of daily smartphone use, and the time of internet use through the smartphone. A positive correlation was found between nomophobia and depression-anxiety-stress level. Finally, in the regression analysis, the model was found to be statistically significant. This result shows that the level of nomophobia is a significant predictor of the level of depression and anxiety stress. The results obtained show that nomophobia has negative impact on mental health.

Keywords:

Smartphone, nomophobia, depression, anxiety, stress.

## 1. Introduction

In today's world, advances in technology and information and communication technologies have brought many revolutionary innovations that will make human life more manageable. With the emergence of smartphones, computer use and internet access, used to access information in the past, have transferred these tasks to smartphones. Smartphones not only provide communication capabilities such as making phone calls, sending messages, and keeping track of emails, but can also be used for various purposes such as browsing the Internet, using social media accounts, playing games, making appointments, reading books, doing homework, having fun, and shopping (Lee et al., 2017).

Having all these features in a single device and offering possibilities that make life easier make smartphones indispensable for daily life and human life. So much so that smartphones are getting more widespread in the world and Turkey, and the age of using mobile phones is gradually decreasing. According to the research data on mobile phone subscriptions in the world in 2014, this rate was determined as 96.1% worldwide

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(International Telecommunication Union [ITU], 2015). According to the Turkish Statistical Institute (2019), the percentage of households with a mobile phone is 98.7% in Turkey. Everyday activities can be done with the same device have paved the way for smartphones to become so popular in people's lives (Erdem et al., 2016). With the increase in smartphone ownership and the expansion of the areas of usage, it is observed that the time spent on these devices is increasing day by day (Buyukcolpan, 2019). Besides its opportunities, problematic and excessive use of the smartphone can lead to some problems (Kang & Jung, 2014). One of the negative effects caused by mobile technologies is thought to be nomophobia (Ozturk, 2015).

Nomophobia is believed to be caused by excessive and problematic use of smartphones and it has been newly introduced to psychology terminology (Gezgin et al., 2017). In this context, nomophobia is accepted as the phobia of the modern age (King et al., 2010; King et al., 2013). Nomophobia is obtained by shortening the words "no mobile phone" and can be defined as the fear of being deprived of the smartphone (Lin et al., 2018). Although nomophobia is considered a problem close to addiction problems, it is thought to be among phobias (Guzel, 2019). Individuals affected by nomophobia may experience an irrational fear and anxiety when deprived of their smartphones (Adnan & Gezgin, 2016). This fear and anxiety can affect the person's daily life and it can negatively affect the individual's concentration (Dixit et al., 2010). Therefore, when a person forgets his mobile phone or is out of the near area, this situation negatively affects his life (Jena, 2015). Considering all these, some studies have been conducted to include this disorder in DSM-V. (Bragazzi & Puente, 2014). The study prepared for this purpose; the symptoms of nomophobia are listed as follows:

Using a smartphone regularly, spending a great deal of time on the smartphone, owning one or more devices, carrying the charger with you all the time.

- Situations and thoughts such as the loss of the smartphone, not being around, its lack of proximity, being out of coverage, running out of credit or battery, avoiding or wanting to stay away from places where mobile phone use is prohibited (airport, theatre, public transport, etc.) cause great anxiety in the person. Continuously checking whether the notification is received on the smartphone
- The device is kept on all day, never turned off or sleeping with the device
- Restricting face-to-face communication with the thought that it will cause stress or anxiety and preferring more communication with mobile devices.
- Including significant expenses and entering debt to use a smartphone.

It has been suggested that people with these symptoms exhibit nomophobic behaviors and may be affected by nomophobia. Besides, considering the rates of mobile phone usage, it is thought that nomophobia is a widespread disorder worldwide. Although nomophobia can be seen in every age range, it is suggested that it primarily affects individuals between the ages of 18-25 (Kanmani et al., 2017). In this context, it is stated that university students are a risk group, as it is a group where smartphone use is common (Bianchi & Philips, 2005). Studies in the related literature show that nomophobia may be associated with individuals' depression, stress, and anxiety levels rather than being a problem alone. In a study examining the sources of anxiety, it was found that 53% of the participants were affected by nomophobia and were worried when they could not use their mobile phones (DailyMail, 2008). According to the data of another study, it was determined that 66% of the participants were affected by nomophobia (Secure Envoy, 2012). In addition, it has been determined that individuals between the ages of 18-24 exhibit more nomophobic symptoms than 77%. In a study conducted by Yildirim et al. (2015), the prevalence of nomophobia among university students was examined, it was determined that 42.6% of the participants had nomophobic behaviors. In another study, it was found that the nomophobia level of university students was above average (Adnan & Gezgin, 2016). Nomophobia is thought to cause some changes in individuals' daily behavioral patterns. For this purpose, in a study conducted by Akilli and Gezgin (2016), it was found that university students' nomophobia levels were above average. They also observed that students who tend to develop nomophobia exhibit behaviors such as checking their phones frequently during the day, carrying the charger with them at all times, not turning off their smartphones during the night, spending time on their phones in bed before going to sleep, and checking their phones as soon as they wake up in the morning. When the relationship of nomophobia with depression, anxiety, and stress levels is examined, it is seen that the relationship between nomophobia and the mentioned variables has been revealed in different studies. Pavithra et al. found that 39.5% of the students had nomophobia, and 27% were at risk of developing nomophobia. In the same study, it was determined that 23% of the students lose their concentration and experience intense stress and anxiety

when their smartphones are not near or when their devices are about to run out of battery. In addition, Tams et al. found that (2018) nomophobia increases individuals' stress levels. At the same time, in a study by Katharine (2008), it is highlighted that 53% of the participants experience intense anxiety when their smartphones are not near or unable to use their devices, and they are under stress when their mobile phones are turned off. A similar result was found in the study by Sharma and Wavere (2015). Accordingly, 21% of university students were worried when their smartphones were not with them. In addition, it is thought that nomophobia affects the psychological well-being of individuals, and therefore nomophobia may cause depression in individuals (Randler et al., 2016). Buyukcolpan (2019) found in his study with university students that depression levels of individuals significantly predicted the level of nomophobia. Lin et al. concluded that (2018) the level of nomophobia in individuals is associated with depression, anxiety, and stress levels. According to another study, it is emphasized that anxiety caused by nomophobia can lead to psychological problems such as depression and stress in individuals (Lin & Pakpour, 2018). In addition, Katep that (2017) points out that factors such as the duration of smartphone use of university students and loss of connection can cause nomophobia, while nomophobia can lead to psychological symptoms such as depression, anxiety, and stress. Different studies emphasize that depression, stress, anxiety, and anxiety disorders can accompany nomophobia (Clayton et al., 2015).

Smartphones have many features that make human life more manageable when used accordingly and for their intended purpose. However, problematic, and excessive use of smartphones can cause some psychological and physical problems. Nomophobia, which is described as the phobia of the modern age, comes first among these problems. When the relevant literature is examined, it can be seen that nomophobia is more common among university students and may also lead to problems such as depression, anxiety and stress. In this context, it is seen that studies on nomophobia and depression, anxiety, and stress variables are limited, and there is no such study in the country. It is seen that previous studies, especially in the country, are related to the level of nomophobia and behavioral patterns. In the present study, the relationship between depression, anxiety, and stress was examined in addition to the level of nomophobia and behavioural patterns. Therefore, this study of nomophobia, newly introduced into psychology terminology, is considered necessary to expand the diversity of data in the literature. In order to investigate the relationships between anxiety and stress, four main hypotheses were made in the present study.

The first hypothesis of the study is that the nomophobia levels of university students are expected to be above average., the second hypothesis justifies the relationship between university students' levels of nomophobia, gender, and some behavioral patterns. The second hypothesis has four subheadings. According to this, female students are expected to have higher nomophobia levels than male students. Another one is that university students with a higher level of nomophobia are expected to check their smartphones as soon as they wake up in the morning compared to university students with lower level of nomophobia. On the other hand, university students with high levels of nomophobia are expected to check their smartphones daily more often than university students with low levels of nomophobia. In addition, university students with high levels of nomophobia are expected to access the Internet more frequently (in hours) through their smartphones than university students with low levels of nomophobia. Finally, university students with high levels of nomophobia are expected to use smartphones more daily (in hours) than university students with low levels of nomophobia. Third hypothesis is that there is a significant relationship between the nomophobia levels of university students and their depression-anxiety-stress levels. Fourth hypothesis is claims that Depression-Anxiety-Stress level predicts nomophobia level.

## **2. Methodology**

### **2.1. Research Model**

The current research was a quantitative study based on a relational model. This model aims to describe and interpret the potential relationships among two or more variables and infer from cause-effect and predictability between variables (Buyukozturk et al., 2018).

### **2.2. Participants**

The present study has been patterned by adopting the appropriate sampling method. Before the study was carried out, the participants' necessary permission from Dicle University Social and Human Sciences Ethics

Committee and informed consent from the participants were obtained. A total of 356 university students from different age groups and studying at varying faculties of Dicle University participated in the study. The sample consists of 206 (57.9%) female students and 150 (42.1%) male students. The average age of the group is 21.48 (SD = 2.36). Of the students who participated in the study, 108 (30.3%) were first-year students, 146 were second-year students (41%), 53 were third-year students (14.9%), and 49 (13.8%) were fourth-year students. The average smartphone usage duration of students was found to be 5.31 years (SD = 2.69). The results on demographic characteristics are shown in Table 1.

**Table 1.** Demographic Features

	<i>N</i>	<i>%</i>	<i>Mean</i>	<i>SD</i>
Gender				
Female	206	57.9		.494
Male	150	42.1		
Age	356		21.48	2.36
Academic year				
1. year	108	30.3		
2. year	146	41.0		
3. year	53	14.9	2.12	.995
4. year	49	13.8		
Smartphone usage duration	356		5.31	2.69
Checking smartphone as waking up				
Yes	279	78.4	1.22	.412
No	77	21.6		
Frequency of Checking the Smartphone Daily				
1-16 times	84	23.6		
17-35 times	111	31.2		
36-50 times	73	20.5	2.46	1.10
50 and above	88	24.7		
Smartphone daily usage duration				
Less than 1 hour	6	1.7		
1-2 hours	34	9.6		
3-4 hours	95	26.7		
4-5 hours	84	23.6	4.09	1.35
5-6 hours	60	16.9		
6 hours and above	77	21.6		
Daily Internet Usage Duration on Smartphone				
Less than 1 hour	18	5.1		
1-2 hours	65	18.3		
3-4 hours	118	33.1		
4-5 hours	66	18.5	3.53	1.10
5-6 hours	42	11.8		
6 hours and above	47	13.2		
Total	356	100		

### 2.3. Data Collection Tool

Personal Information Form: To be able to obtain information from the participants such as age, gender, department, smartphone ownership status, duration, frequency of checking the smartphone, reasons for using the smartphone, the times of daily accessing the internet from the phone, and the situation of turning off their phones before going to sleep at night the information form created by the researcher was used for this purpose.

Nomophobia Scale (NMP-Q): Scale; has four sub-dimensions: Not being able to access information, giving up convenience, not being able to communicate, and loss of connection. The reliability coefficient of the original scale (Cronbach's Alpha) was reported as .95, and the reliability coefficient of the version adapted to Turkish was 0.92. The reliability coefficients of the Turkish version of the sub-dimensions of the scale were determined respectively as 0.90, 0.74, 0.94 and 0.9. In this study, the 5-point Likert type version of the scale was used by Erdem et al. (2017). When the literature was examined, previous studies determined that such a



change in the scale did not cause a statistical problem (Dawes, 2008). In the present study, the Cronbach's-alpha value was used to measure the internal consistency of the scale. This value was found to be 0.92 for the whole score and 0.81, 0.76, 0.89 and 0.87 for the sub-dimensions, respectively.

Depression-Anxiety-Stress-42 Scale (DASS-42): It was prepared as a 4-point Likert type and consisted of 42 items in total (Akın & Çetin, 2007). The scale has three sub-dimensions, and these sub-dimensions are determined as Depression, Anxiety and Stress. Cronbach alpha internal consistency coefficient of the scale was found to be 0.89. This coefficient was .90 for depression sub-dimension, 0.92 for anxiety and 0.92 for stress. In the present study, the whole score Cronbach-alpha value of the scale was found to be 0.96. Cronbach-alpha values for sub-dimensions were determined as 0.91, 0.88 and 0.90, respectively.

#### 2.4. Data Collection and Analysis

The data collection process in the study was carried out voluntarily. In this way, the forms were given to 177 students studying at Dicle University in a classroom environment. Face-to-face education was suspended in the 2020-2021 academic year due to the coronavirus pandemic. Therefore, scales were prepared for online application in the following period. Online forms were reached to 195 university students via internet access.

Statistical techniques such as standard deviation, mean, percentage, bivariate Pearson's correlation coefficient, simple regression, t-test, one-way analysis of variance (ANOVA) was used to find answers to the sub-problems of the study. T-test analysis was conducted for paired comparison. One-way analysis of variance (ANOVA) was applied to compare more than two groups. A post-Hoc test was applied to determine the groups that differed significantly. Levene's test was used to ensure the assumption of variance homogeneity of the groups ( $p > .05$ ). To determine the linear relationship between the level of nomophobia and scores for depression, anxiety, and stress, the bivariate Pearson correlation coefficient was used. A simple linear regression analysis was conducted to determine the strength of the relationship between nomophobia and depression-anxiety-stress using the correlation coefficient obtained.

#### 2.5. Ethical

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed.

Ethical Review Board Name: Dicle University Ethics Committee

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### 3. Results

In the study, the average score obtained from the Nomophobia (NMP-Q) scale was Mean = 3.01, SD = 0.78, which indicates that the nomophobia level of university students is above the average. The mean scores of the sub-dimensions of the nomophobia scale were found to be Not Being to Access Information Mean = 3.39, SD = 0.97, for Giving up Convenience Mean = 2.96, SD = 0.93, and Not Being Able to Communicate Mean = 3.23, SD = 0.98. Therefore, it was determined that the scores for these three sub-dimensions were above the average. It was determined that only the Loss of Connection Avg. = 2.48, SD = 1.02 sub-dimension was below the average. These data confirm Hypothesis 1. Descriptive statistics related to scales are presented in Table 2.

**Table 2.** Descriptive Statistics of Scales and Their Sub-dimensions

Scales	N	Avg.	Sd	Skewness	Kurtosis
Nomophobia	356	3.39	0.97	-.360	-.436
Not being able to access information	356	2.96	0.93	.001	-.605
Giving up convenience	356	3.23	0.98	-.297	-.351
Not being able to communicate	356	2.48	1.02	.483	-.418
Loss of connection	356	3.01	0.78	0.65	-.188
Total	356	3.01	0.78	0.65	-.188
Depression-Anxiety-Stress					
Depression	356	1.06	0.73	.501	-.549
Anxiety	356	0.99	0.64	.629	-.144
Stress	356	1.32	0.68	.260	-.478
Total	356	1.13	0.68	.435	-.349

According to independent samples t-test results, a statistically significant difference was found between female students (Mean = 3.08, SD = 0.80) and male students (Mean = 2.90, SD = 0.74) nomophobia levels  $t(354) = 2.14, p < .05$ . Accordingly, it was determined that female students have higher levels of nomophobia than men. These data obtained from the study confirm the first subheading Hypothesis 2. Table 3 demonstrates independent sample t-test analysis results related to nomophobia scores in terms of gender.

**Table 3.** Independent Sample t-Test Analysis Results Related to Nomophobia Scores in Terms of Gender

Gender	N	Avg.	Sd	df	t	p
Female	206	3.08	0.80	354	2,147	0.32
Male	150	2.90	0.74			

According to the analysis, 78.4% of students said they check their smartphone as soon as they wake up in the morning. It was determined that there is a statistically significant difference between the nomophobia levels of those who control their smartphones as soon as they wake up in the morning and those who do not,  $t(354) = 3.11, p < .05$ . According to the results, it can be said that the level of nomophobia depends on whether you look at your smartphone right after waking up in the morning. These data show that the second item of Hypothesis 2 is confirmed. Results about independent sample t-test analysis results for nomophobia scores in terms of controlling the smartphone as soon as waking up are presented in Table 4.

**Table 4.** Independent Sample t-Test Analysis Results for Nomophobia Scores in Terms of Controlling the Smartphone as soon as Waking up

Gender	N	Avg.	Sd	df	t	p
Yes	279	3.07	0.79	354	3.110	0.02
No	77	2.76	0.70			

According to the results obtained from the analysis, a statistically significant difference was found between the nomophobia levels of university students and the frequency of daily smartphone control  $F(3, 352) = 8.40, p < .001$ . Results about daily Phone checking are presented in Table 5 and Post-Hoc test results are presented in Table 6.

**Table 5.** One-Way Analysis of Variance Results Regarding Nomophobia Scores in Terms of the Frequency of Daily Checking the Smartphone

Source of Variance	Sum of Squares	Sd	Avg. of Squares	F	p
Between Groups	14.573	3	4.858	8.407	.000
Within Groups	203.394	352	0.578		
Total	217.967	355			

Since a significant difference was found from the obtained findings, Post-Hoc analysis was performed to identify the groups that made a significant difference. The findings showed that the nomophobia levels of those who checked their phones "50 or more times" (Mean = 3.31, SD = 0.78 is higher than those who checked "1-16 times" (Average = 2.74, SD = 0.08) and those who checked their phones "17-35 times" (Average = 2.94, SD = 0.65). The findings obtained confirm the third item of Hypothesis 2.

**Table 6.** Post-Hoc-Tukey HSD Test Results Regarding the Analysis of the Difference in Nomophobia Level According to the Daily Smartphone Checking Frequency

Frequency of Cheking (i)	Frequency of Cheking (j)	Mean Difference(i-j)	SD	p
1-16 times	17-35 times	-.20303	.10993	.253
	36-50 times	-.30345	.12163	.062
	50 times and above	-.56914	.11595	.000
17-35 times	1-16 times	.20303	.10993	.253
	36-50 times	-.10042	.11455	.817
	50 times and above	-.36611	.10850	.005
36-50 times	1-16 times	.30345	.12163	.062
	17-35 times	.10042	.11455	.817
	50 times and above	-.26569	.12034	.123
50 times and above	1-16 times	.11595	.11595	.000
	17-35 times	.10850	.10850	.005
	36-50 times	.12034	.12034	.123

According to the results obtained from the analysis, a statistically significant difference was found between the nomophobia levels of university students and the duration of internet use on their daily smartphones  $F = (5, 350) = 6.05, p < .001$ . Results regarding the duration of daily Internet usage on smartphones are presented in Table 7 and Post-Hoc test results presented in Table 8.

**Table 7.** One-Way Analysis of Variance Results Regarding Nomophobia Scores in Terms of Daily Internet Usage on Smartphones

Source of Variance	Sum. of Squares	Sd	Mean of squares	F	p
Between groups	17.346	5	3.469	6.052	.000
Within groups	200.621	350	0.573		
Total	217.967	355			

Post-Hoc analysis was conducted to identify the groups that made a significant difference. The findings showed that the levels of nomophobia (Avg. = 3.46, SD = 0.11) of those who use the internet on their smartphones for "more than 6 hours" were more than those who use 1 hour" (Avg. = 2.52, SD = 0.13), "1-2 hours" (Mean = 2.81, SD = 0.09), "3-4 hours" (Avg. = 2.96, SD = 0.06) and those who use "4-5 hours" (Avg. = 3.00, SD = 0.09). Besides, it was found that the nomophobia levels of those who used their smartphones for "5-6 hours" (Mean = 3.14, SD = 0.12) were higher than those who used "less than 1 hour" (Avg. = 2.52, SD = 0.13). According to the findings, the fourth item of Hypothesis 2 is confirmed.

**Table 8.** Post Hoc-Tukey HSD Test Results on the Analysis of the Difference in Nomophobia Level According to the Duration of Daily Internet Usage on Smartphone

Daily Usage of Internet (i)	Daily Usage of Internet (j)	Mean Difference (i-j)	SD	p
Less than 1 hour	1-2 hours	-.28520	.20165	.718
	3-4 hours	-.44217	.19158	.194
	4-5 hours	-.47597	.20132	.172
	5-6 hours	-.6312	.21329	.049
	6 hours and above	-.93712	.20986	.000
1-2 hours	Less than 1 hour	.28520	.20165	.718
	3-4 hours	-.15697	.11695	.761
	4-5 hours	-.19077	.13230	.701
	5-6 hours	-.32792	.14989	.246
	6 hours and above	-.65192	.14496	.000
3-4 hours	Less than 1 hour	.44217	.19158	.194
	1-2 hours	.15697	.11695	.761
	4-5 hours	-.03380	.11637	1.000
	5-6 hours	-.170095	.13603	.808
	6 hours and above	-.49494	.13059	.002
4-5 hours	Less than 1 hour	.47597	.20132	.172
	1-2 hours	.19077	.13230	.701
	3-4 hours	.03380	.11637	1.000
	5-6 hours	-.13715	.14944	.942
	6 hours and above	-.46115	.14450	.019
5-6 hours	Less than 1 hour	.61312	.21329	.049
	1-2 hours	.32792	.14989	.246
	3-4 hours	.17095	.13603	.808
	4-5 hours	.13715	.14944	.942
	6 hours and above	-.32400	.16076	.336
6 hours and above	Less than 1 hour	.93712	.20986	.000
	1-2 hours	.65192	.14496	.000
	3-4 hours	.49494	.13059	.002
	4-5 hours	.46115	.14450	.019
	5-6 hours	.32400	.16076	.336

According to the results of one-way analysis of variance (ANOVA), a statistically significant difference was found between the level of nomophobia of university students and the duration of daily use of their smartphones  $F = (5, 350) = 4.86, p < .001$ . The results on the duration of daily smartphone use are presented in Table 9 and the results of the post hoc test are presented in Table 10.

**Table 9.** One-Way Analysis of Variance Results Regarding Nomophobia Scores in Terms of Duration of Daily Smartphone Usage

Source of variance	Sum. of squares	Sd	Mean of squares	F	p
Between groups	14.171	5	2.824	4.867	.000
Within groups	203.796	350	0.582		
Total	217.967	355			

Post-Hoc analysis was conducted to identify the groups that made a significant difference. According to this, the nomophobia levels of those who use their smartphones for "more than 6 hours" daily (Avg. = 3.22, SD = .102) was found to be higher than those who use their phones for "1-2 hours" (Avg. = 2.66, SD = 0.12) and for "3-4 hours" (Mean = 2.80, SD = 0.07). The other groups that were found to be significant were those who use their smartphones for "5-6 hours" daily (Avg. = 3.20, SD = 0.08) and those who use "1-2 hours" (Avg. = 2.66, SD = 0.12) and "3-4 hours" (Avg. = 2.80, SD = 0.07). Accordingly, the nomophobia levels of those who use their smartphones for "5-6 hours" daily were determined to be higher than the other two groups. In the light of the findings obtained, the last item of Hypothesis 2 is confirmed.

**Table 10.** Post Hoc-Games-Howell Test Results on the Analysis of the Difference in Nomophobia Level According to Duration of Daily Smartphone Use

Daily Smartphone Usage (i)	Daily Smartphone Usage (j)	Mean Difference (i-j)	SD	p
Less than 1 hour	1-2 hours	-.28520	.20165	.718
	3-4 hours	-.44217	.19158	.194
	4-5 hours	-.47597	.20132	.172
	5-6 hours	-.61312	.21329	.049
	6 hours and above	-.93712	.20986	.000
1-2 hours	Less than 1 hour	.28520	.201165	.718
	3-4 hours	-.15697	.11695	.761
	4-5 hours	-.19077	.13230	.701
	5-6 hours	-.32792	.14989	.246
	6 hours and above	-.65192	.14496	.000
3-4 hours	Less than 1 hour	.44217	.19158	.194
	1-2 hours	.15697	.11695	.761
	4-5 hours	-.03380	.11637	1.00
	5-6 hours	-.17095	.13603	.808
	6 hours and above	-.49494	.13059	.002
4-5 hours	Less than 1 hour	.47597	.20129	.172
	1-2 hours	.19077	.14989	.701
	3-4 hours	.03380	.13603	1.00
	5-6 hours	-.13715	.14944	.942
	6 hours and above	-.46115	.16076	.019
5-6 hours	Less than 1 hour	.61312	.21329	.049
	1-2 hours	.32792	.14989	.246
	3-4 hours	.17095	.13603	.808
	4-5 hours	.13715	.14944	.942
	6 hours and above	-.32400	.16076	.336
6 hours and above	Less than 1 hour	.93712	.20986	.000
	1-2 hours	.65192	.14496	.000
	3-4 hours	.49494	.13059	.002
	4-5 hours	.46115	.14450	.019
	5-6 hours	.32400	.16076	.336

According to the results obtained from the analysis, a positive linear relationship was found between the nomophobia levels of university students and their depression-anxiety-stress levels  $r(356) = .324, p < .01$ . Based on this finding Hypothesis 3 is confirmed. When the sub-dimensions are examined, "Not being able to access information" sub-dimension has positive linear relationship with depression ( $r(356) = .183, p < .01$ ), with Stress  $r(356) = .305, p < .01$  and with anxiety ( $r(356) = .210, p < .01$ ). It has been determined that there is a positive relationship between the sub-dimension of "Giving up convenience" with Depression  $r(356) = .251, p < .01$ , with Anxiety  $r(356) = .302, p < .01$  and with Stress  $r(356) = .354, p < .01$ . "Not being able to

communicate” sub-dimension was found to have a positive linear relationship with Depression  $r(356) = .189, p < .01$ , with Anxiety  $r(356) = .226, p < .01$  and with Stress  $r(356) = .252, p < .01$ . Finally, Loss of connection was found to have a positive linear relationship with Depression  $r(356) = .211, p < .01$ , Anxiety  $r(356) = .241, p < .01$  and Stress  $r(356) = .197, p < .01$ . Results about correlation between Nomophobia and Depression-Anxiety-Stress are presented in Table 11.

**Table 11.** Correlation Analysis Results Between Scales and Their Sub-Dimensions

Scales and sub-dimensions	Avg.	SS	1	2	3	4	5	6	7	8	9
1. Nomophobia	3.01	.78	1								
2. Depression-Anxiety-Stress	1.13	.64	.324**	1							
3. Not being able to access information	3.39	.97	.694**	.249**	1						
4. Giving up convenience	2.96	.93	.849**	.323**	.529**	1					
5. Not being able to communicate	3.23	.98	.840**	.238**	.435**	.619**	1				
6. Lose of connection	2.48	1.02	.786**	.231**	.376**	.565**	.521**	1			
7. Depression	1.06	.73	.261**	.940**	.183**	.251**	.189**	.211**	1		
8. Anxiety	0.99	.64	.307**	.924**	.210**	.302**	.226**	.241**	.805**	1	
9. Stress	1.32	.68	.341**	.930**	.305**	.354**	.252**	.197**	.809**	.791**	1

\*\* $p < .01$

Simple Linear Regression analysis was conducted to reveal the direction of the relationship thought to exist between nomophobia and Depression-Anxiety-Stress. The model was found to be significant  $F(1, 354) = 41.46, p < .001$ . According to the findings, 10.5% of the variance in the Depression-Anxiety-Stress variable can be explained by the Nomophobia variable ( $R^2 = .105, \text{Adjusted } R^2 = .102$ ). Nomophobia level was a statistically significant predictor for Depression-Anxiety-Stress level ( $B = 0.25, SD = 0.04, p < .001$ ). Given this result, it was concluded that the level of nomophobia is a predictor of depression-anxiety-stress score, and Hypothesis 4 was confirmed. The results of the regression analysis are presented in Table 12.

**Table 12.** Simple Linear Regression Analysis Results Related to the Predictor of Nomophobia

	B	SH	$\beta$
Model 1			
Stable	.333	.128	
Nomophobia	.265	.041	.324

Note:  $R^2 = .105$  for Model 1;  $p = .000$ , Independent Variable = Depression Anxiety Stress

#### 4. Conclusion and Discussion

The present study discussed the relationships between the nomophobia levels and various behavioral patterns of university students and their depression-anxiety-stress levels. The findings obtained reveal that the nomophobia levels of university students are above average. It is seen that the sub-dimensions of not being able to access information, not being able to communicate and giving up convenience are of great importance for university students. It is seen that the findings obtained from the study are compatible with other results in the relevant literature (Tavolacci et al., 2015). Sharma et al. (2015) to determine the prevalence of nomophobia among university students, it was concluded that 73% of university students were nomophobic. Adnan and Gezgin (2016) examined the prevalence of nomophobia among university students; in this study, nomophobia levels of university students were found above the average. In addition, this study revealed that the sub-dimensions of not accessing information and communicating among university students are more important than other sub-branches. A similar result regarding the sub-dimensions of lack of access to information and communication was found in a study by Yildirim et al. (2015). According to the results, they concluded that 42.6% of university students suffer from nomophobia and the factors of not being able to access information and not being able to communicate are more important. Tavolacci et al (2015) found that 35% of university students exhibit nomophobic behaviours. In light of all this information,

it is seen that nomophobia is common among university students, especially not being able to access information and communication is essential for students. It is thought that the young generation meeting with smartphones at an early age, the increase in the rate of having smartphones, the social needs that are tried to be met with smartphones and the prolongation of the time spent on smartphones can be effective in this situation.

When the results of the study were examined in relation to gender, it was found that there was a significant difference between the nomophobia of female and male students and that female students had higher nomophobia. When the related literature is examined, it is seen that there are similar results to the findings obtained from the study (Prasad et al., 2017). Studies show that female students studying at university are more affected by nomophobia (Guler & Veysikarani, 2019; Prasad et al., 2017). On the other hand, some studies found that, nomophobia is more prevalent among male students (Al-Shaikh et al., 2019; Yildirim et al., 2015), and in some studies, there is no significant difference between male and female students' nomophobia (Dixit et al., 2009). However, in the literature, studies are showing that women spend more time with their smartphones (Andone et al., 2016) and they use their smartphones for communication and social media accounts, and men use them for games (Andone et al., 2016; Chen et al., 2017; Hakoama & Hakoyama, 2011). In this context, it is thought that among the reasons women have higher nomophobia scores, factors such as spending more time with their smartphones during the day, reaching their social media accounts and using their smartphones more for communication, chatting, sharing news may be effective. Thus, further research can be conducted to clarify whether those reasons affect these gender differences or not.

When analyzing various behavioral patterns of university students, it was found that there were significant differences between the levels of nomophobia and these behavioral patterns. The first of these behavior patterns is checking the smartphone as soon as you wake up. According to the findings, it was concluded that the behavior of controlling their smartphones as soon as waking up and the level of nomophobia differ significantly. The students who check their smartphones as soon as waking up have higher levels of nomophobia. When relevant literature is examined, it is understood that the result obtained from this study is in parallel with the literature. Studies conducted by Akilli and Gezgin (2016) and Gulluce et al. (2019) with university students revealed that people who control their smartphones as soon as they wake up are more nomophobic. Hosgor (2020) found that checking the phone as soon as waking up behavior creates a significant difference in the nomophobia level of university students in favor of those who check as soon as they wake up. Based on the findings mentioned above, it can be said that nomophobia and the behavior of controlling the phone as soon as you wake up go hand in hand. It is thought that this situation can be explained by the student's desire to be aware of what is going on, that is, to access information and to communicate, as they cannot use their phones until the morning. Kalaskar reported that (2015) approximately 83% of the participants spend time on social media as soon as they wake up in the morning. He stated that among the underlying reasons for these behaviors are communication (good morning message etc.) and effort to access information. One of the characteristics of nomophobia is that individuals cannot stay away from their smartphones for a long time. Thus, assuming that the person does not access his smartphone for hours during sleep, one assumes that the urge to control the smartphone is activated immediately after waking up in the morning. Another behavioral pattern examined in the study is the frequency with which the smartphone is checked during the day. The results show that there is a significant difference between the frequency with which the smartphone is checked during the day and the level of nomophobia. In this context, it has been determined that students who control their smartphones "50 or more times a day have a higher nomophobia level. Other studies in the literature are in parallel with this finding (Hosgor, 2020; Newport, 2015). Prasad et al. (2017) revealed that approximately 25% of the students determined to be nomophobic frequently check their smartphones during their internships and clinical lessons. Pavithra et al. (2015) determined that 49% of the participants checked 2-3 times an hour whether they received a notification (call, text message, e-mail) on their mobile phones. In addition, in Kalaskar's (2015) study, the time that more than 80% of the participants looked at their mobile phones to check whether they were connected or not was determined as approximately 6 hours. Considering the definition of nomophobia, it is seen that the individual wants to make sure that they are not absent from online connection, have access to information and communication by checking the notifications received by the mobile phone, or whether there is a signal and the state of charge. Otherwise, when people think that they

are deprived of their mobile devices, they experience irrational fear and anxiety and feel stressed. Therefore, it is suggested that checking the smartphone frequently is a characteristic feature of nomophobia (Pavithra et al., 2015).

Another behavioral pattern examined in the study is the daily use of smartphone. According to the results, it was determined that students who use their smartphones for "5-6 hours" and "more than 6 hours" daily have higher nomophobia levels. When the relevant literature is examined, it is seen that similar results have been found in the studies (Al-Shaikh et al., 2019; Buyukcolpan, 2019). Some studies have revealed a positive and significant relationship between the daily smartphone use of university students and their nomophobia levels (Veerapu et al., 2019). Accordingly, as daily use of smartphones increases (on an hourly basis), level of being nomophobia also increases. Yildirim and Correia (2015) argue that individuals' levels of nomophobia may increase in parallel with their daily smartphone usage. Some of the symptoms of nomophobia: the person never turns off their smartphone, sleeps with their phone, and spends most of the day with their smartphone. All these symptoms provide evidence that the individual spends more time with their smartphone. Among the reasons for this situation, it is thought that there are reasons such as staying online, staying in contact, and having access to information.

The last behavioral pattern obtained in the study is the daily internet usage time on the smartphone. When the results obtained were examined, it was determined that there was a significant difference between the daily internet use of university students on their smartphones and their nomophobia levels. Accordingly, those who use the internet for "5-6 hours" daily and those who use "more than 6 hours" on their smartphones are more nomophobic; some studies in the literature support this finding (Gezgin, 2017; Hosgor, 2020). Al-Shaikh et al. (2019) determined that university students who have internet access from their smartphones have higher levels of nomophobia. In addition, another study conducted on university students, it was another study conducted on university students found that daily internet use on smartphones and monthly internet quota from GSM operators was effective on nomophobia levels (Gezgin, 2017). Accordingly, it has been determined that university students with high daily mobile internet usage levels have higher nomophobia levels. Al-Shaikh et al. (2019) determined that university students who have internet access from their smartphones have higher levels of nomophobia. In addition, in another study conducted with university students, it was found that daily internet use on smartphones and monthly internet quota from GSM operators were effective on nomophobia levels (Gezgin, 2017). Accordingly, it has been determined that university students with high daily mobile internet users have higher levels of nomophobia. In light of these findings, it is understood that excessive internet use over mobile phones may affect the nomophobia level of university students. It is believed that the fact that almost all the functions of smartphones can be used with Internet access and that the Internet is the most widespread means of communication to communicate and keep up to date with the news has an impact on the result obtained.

It is known that nomophobia may accompany various psychopathologies. This study aims to examine the relationships between nomophobia and depression-anxiety-stress. According to the results, it was determined that there is a positive relationship between the nomophobia levels of university students and their depression-anxiety-stress levels. The regression analysis determined that the level of depression-anxiety-stress is a significant predictor for the level of nomophobia. The research concluded that nomophobia had a significant relationship with the most stress and the least depression sub-dimensions. When the relevant literature was examined, in a study conducted by Augner and Hacker (2012), it was revealed that there was a positive and significant relationship between problematic phone usage and depression-anxiety-stress levels of university students. In another study by Büyükcolpan (2019), it was concluded that the depression levels of university students are a significant predictor of nomophobia. In the same study, it was suggested that students could connect to their smartphones more and spend more time with their smartphones to alleviate or avoid negative emotions that may arise from depression. In this context, individuals with depression are expected to withdraw and limit their communication with people. Factors such as people isolating themselves and limiting face-to-face communication, using the phone as a method of coping with stressful situations, and avoiding the negative emotions they experience in the virtual world are thought to contribute. Examining the studies on anxiety, symptomatic factors of nomophobia were identified as anxiety, compulsive smartphone use, and panic, in a study conducted on university students by Rosales-Huamani et al. (2019). Therefore, individuals with nomophobia are expected to have a high level of

anxiety. Veerapu et al. (2019) concluded that there is a positive relationship between the nomophobia levels of university students and anxiety. Some studies concluded that university students experience anxiety, especially when their phones are running out of charge or cannot access their phones (Darvishi et al., 2019). Studies on stress have determined that university students experience intense stress when they cannot reach their smartphones, and when they are not near their devices, and when their battery is about to run out (Mallya et al., 2018). Based on these results, it can be concluded that there is a relationship between university students' nomophobia and their sense of stress and anxiety. Nomophobia is an irrational fear, anxiety, and stress that individuals experience when they cannot access or cannot access their mobile device. In this context, it is expected that individuals with nomophobia have high levels of anxiety and stress.

When the findings obtained from the studies are considered as a whole, it is seen that nomophobia is associated with psychological factors such as depression, anxiety, and stress. It is expected that there will be an increase in negative effects and depression. Studies show that individuals with depression use their smartphones more to cope with their negative feelings (Kim et al., 2017). Therefore, individuals with high levels of depression are expected to exhibit more nomophobia behaviors. However, it is thought that individuals with high levels of nomophobia experience intense anxiety and stress due to factors such as losing connection, inability to communicate or access information. In addition, feelings of stress and anxiety may accompany negative emotions and helplessness caused by depression.

## 5. Recommendations and Limitations

In recent years, advances in mobile technologies have caused smartphones to enter human life and these devices to become an indispensable part of human life. Smartphones have many benefits when used for their intended purpose, when used in a problematic way and excessively, they can cause various problems. One of these problems is nomophobia, which is called the phobia of the age. Studies have shown that nomophobia affects all age groups and is very common, especially among the younger generation. In addition, nomophobia can pose a threat to both the psychological and physical health of individuals. Therefore, it is important to raise awareness about nomophobia by informing people about nomophobia, holding seminars about nomophobia in schools and universities, and airing public service announcements about nomophobia on television or radio.

The present study is considered to have a unique value because it is one of the rare studies that examine the relationship between the nomophobia levels of university students and their depression-anxiety-stress levels. Although the relevant literature clearly emphasizes that nomophobia is related to mental health, it is noticeable that studies conducted in this area mostly focus on the extent of nomophobia and its associated behaviors. Therefore, this study on nomophobia and mental health variables provides clear evidence of the relationship between nomophobia and mental health and makes an important contribution to the literature by providing various data in this area. In addition, it is believed that conducting studies with a larger sample group and examining the relationships with various psychological variables such as loneliness, perceived social support, and irrational beliefs may help to identify the unknown aspects of nomophobia.

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## Developing the Critical Thinking Skill Test for High School Students: A Validity and Reliability Study

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### ABSTRACT

This research aimed to develop "Critical Thinking Skill Test for High School Students" to measure critical thinking (CT) skills of high school students. For the CT test prepared based on the sub-skills of inference, evaluating arguments, deduction, recognizing assumptions and interpretation which are deemed to represent CT (Watson and Glaser, 1994), content validity and face validity were achieved with expert opinions and the table of specifications. Following the item difficulty and item discrimination analyses performed to test the construct validity, 34 items were omitted from the test which was finalized with 51 items. While mean item difficulty values of the sub-tests vary between 0.51 and 0.63, mean item discrimination values range from 0.35 to 0.49. The total test has a mean item difficulty value of 0.52 and a mean item discrimination value of 0.42. Decision-making skill was used to test the criterion-related validity of the test. KR20 reliability coefficients calculated for the sub-tests ranged from 0.62 to 0.75. A KR20 reliability coefficient of the total test was 0.87. Moreover, a correlation coefficient of 0.84 was calculated with the split-half method. To test time invariance of the test, the correlation values calculated between the results of the two applications which were performed three months apart ranged from 0.57 to 0.70. The correlation coefficient for the total test is 0.70. Based on the results of validity and reliability studies, it can be said that the CT test will yield valid and reliable results in measuring CT skills of high school students.

#### Keywords:

Critical thinking skills, critical thinking test, measuring critical thinking skills, high school students

### 1. Introduction

Nowadays, access to information is quite easy. However, the absence of filter techniques for accuracy and precision of information shared is very apparent, and everyone can freely share information. Distinguishing the validity, accuracy, and reliability of this pile of data remains a challenge. Also, this makes it even harder for individuals to make right decisions. Particularly with the increasing use of media, the resistance to fake news is mitigated as well. According to the media literacy index data by Open Society Institute (2021), Turkey is the third country that is the least resistant to false news. Reportedly, such news is spread most easily in this country. Given that 75.3% of the Turkish population uses the internet and spend an average of 7 hours and 29 minutes daily on the internet (We Are Social, 2020), the magnitude of problems against the information explosion surely arises. Media is considered to be a centerpiece of the people's lives (Pérez Tornero & Varis, 2010) and a great part of their lives (Masterman, 1985). Hence, media inevitably manipulates them through either direct or indirect messages. An individual will either accept the given information without questioning or decide to accept or deny the information after examining its accuracy. Critical thinking (CT) skill is the greatest helper of accuracy examination. Indeed, in an era in which the

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influence of easily accessible information or several people toward one's thoughts is manifested, CT is individual's defense mechanism against the world (Epstein & Kernberger, 2012). On the other hand, the 21st-century skills introduced with the need for transformation that has been brought by the Fourth Industrial Revolution (Industry 4.0) have changed learner's roles and required individuals to possess high-order thinking skills, think effectively, and consequently be able to adapt to developments and innovations of the era. CT skill may be one of the most important skill among all high-order thinking skills (Presseisen, 1985). In fact, it is a functional way of thinking that involves reflective, reasonable, discreet, and logical decisions and is resorted to by individuals for making decisions and resolving future problems (Ennis, 1985; Norris & Ennis, 1989). Thus, through CT, individuals obtain sound and accurate information on what is going on around them. Moreover, they question, examine, and evaluate the collected information from their surroundings. This effective task of evaluation is about examining the underlying reasons and searching for solid evidence to attain the accuracy of information (Mason, 2008). In like manner, individuals assess the sensibility, truth, and accuracy of given information, claims, evidence, and judgments and draw a conclusion through CT (Lewis & Smith, 1993). Undoubtedly, CT is the act of challenging a piece of information received from others (Judge, Jones, & McCreery, 2009) and distinguishing between right and wrong by reasoning (Wood, 1998).

One should not only think of one skill when it comes to CT because it is a collective skill composed of several sub-skills or sub-dimensions (Fisher, 2001). Many classifications can be observed in the literature for the sub-skills of CT (Ennis & Weir, 1985; Chance, 1986; Paul, Binker, Jensen & Kreklau, 1990; Facione, 1990, 2000; Kennedy, Fisher & Ennis, 1991; Pascarella & Terenzini, 1991; Watson & Glaser, 1994; Swartz & Parks, 1994; Jones et al., 1995; Jonassen, 2000; Halpern, 2003; Ennis, Millman & Tomko, 2005). Although they may be given different names, interpretation, analysis, evaluation, inference and explanation seem to be included in all of those classifications. Differently, some of the classifications include skills such as self-regulation (Facione, 1990, 2000), reflection (Jones et al., 1995), and deduction (Watson & Glaser, 1994). As one thing that can be considered a shortcoming, some of these classifications include certain skills in a narrower fashion (e.g. Swartz and Parks (1994) limits the aspect of evaluation to the evaluation of sources only). Taken together, it can be said that Facione (1990, 2000), Ennis, Millman and Tomko (2005), and Watson and Glaser (1994) made the most inclusive classifications. While Facione (1990, 2000) address CT skills in six aspects of interpretation, analysis, evaluation, inference, explanation, and self-regulation, Ennis, Millman and Tomko (2005) divides CT skills into six aspects of induction, deduction, observation, semantics, assumption, and questioning the credibility of sources. According to Watson and Glaser (1994), CT includes the skills of inference, recognizing assumptions, deduction, interpretation, and evaluating arguments.

There are several instruments developed to measure CT skills or dispositions of different age groups in the literature. Some of them measure CT skills while others measure CT dispositions. One of the most common measures used for CT skills is Watson-Glaser Critical Thinking Appraisal (WGCTA). Developed by Watson and Glaser in 1964, number of test questions had been gradually reduced and its different forms had been published until 1994. Whereas its original form included 100 questions in 1964, the number of questions was downed to 80 in its 1980 forms and 40 in its 1994 forms (Watson & Glaser, 1964; Watson & Glaser, 1994). Turkish adaptation studies of the test forms were conducted by different researchers with high school students (Çıkrıkçı, 1993, 1996; Evcen, 2002) and undergraduates (Aybek & Çelik, 2007). After the adaptation study by Çıkrıkçı (1996), KR20 internal consistency coefficient for the total test was found to be 0.63 and ranged from 0.20 to 0.47 for sub-tests. In an another adaptation study by Evcen (2002), KR20 internal consistency coefficient for total WGCTA was found to be 0.46 and KR20 internal consistency coefficients for sub-tests ranged from 0.29 to 0.53. Developed by Ennis, Millman and Tomko (2005) in 1985, Cornell Critical Thinking Test has two forms which are Level X and Level Z. Level X was developed for younger students while Level Z was developed for students studying at high schools and universities. Turkish adaptation for level Z of Cornell Critical Thinking Test was conducted by Şenturan (2006), and its level X was adapted to Turkish language by Kurnaz (2007). While Şenturan (2006) calculated the KR20 internal consistency coefficient as 0.45, Kurnaz (2007) calculated as 0.58 for the total test after their adaptation studies. Ennis-Weir Critical Thinking Essay Test that was developed for the undergraduate students was adapted to Turkish language by Koç (2007). Adapted to Turkish language by Mecit (2006), Cornell Conditional Reasoning Test was developed by Ennis and Millman to determine CT skills of elementary and high school students. Mecit (2006) calculated the internal consistency of the test as 0.75. Tests developed by Facione (1990) and Shipman

(1983) are also used to measure CT skills of high school students and undergraduates. As well as international tests for measuring CT skills, there are CT tests developed by Turkish researchers in the literature. For example, Eğmir and Ocak (2016) developed a CT test to measure CT skills of the fifth-graders. Similarly, Demir (2006) developed an instrument titled Critical Thinking Scales to measure CT skills of the fourth- and fifth-graders. Demir’s (2006) scales aim to measure analysis, evaluation, inference, interpretation, explanation, and self-regulation sub-skills.

Considering the CT studies performed in Turkey overall, almost all of the studies seem to have benefited from international instruments that measure CT skills. Although those international instruments have been adapted to Turkish language by different people at different times, none of the Turkish studies utilized a Turkish culture-specific CT test. Indeed, while Turkish adaptation studies of these instruments developed on the basis of foreign cultures have been carried out, they are observed to have a construct that is incompatible with the Turkish culture. Understandably, their reliabilities are at the lowest possible acceptable levels particularly in some of the dimensions, and our culture is unfamiliar with the examples, names, and cases used in the tests. Consequently, this has an impact of a valid and reliable measurement of students’ CT skills. Several studies in the literature suggest that a Turkish culture-specific CT instrument should be developed (Aybek, 2006; Gülveren, 2007; Kurnaz, 2007; Ay & Akgöl, 2008; Tufan, 2008; Yıldırım, 2010). Although there are instruments that measure CT skills of elementary school students (Demir, 2006; Eğmir and Ocak, 2016), there is no comprehensive instrument for the high school level. Therefore, this study aimed to develop a Turkish culture-specific CT test to measure CT skills of high school students.

**2. Methodology**

**2.1. Research Model**

This is a test-development study for a measurement tool to determine the high school students’ CT skills.

**2.2. Study Group**

Tabachnick and Fidell (2012) argued that a pilot study needs to be carried out with at least 150 participants to conduct validity and reliability studies of a measure. Özçelik (2013) suggests that a draft test should be given to approximately 400 individuals, whereas Kline (2010) articulates that about 200 individuals suffice. In the literature, some of the researchers also argue that a draft measure should be applied to a sample group of a size five times (Stevens, 2009; Floyd & Widaman, 1995) or 10 times the number of items (Gorsuch, 2014). Thus, approximately 800 individuals were deemed sufficient to conduct validity and reliability studies for the 87-item draft CT test. Because some of the test forms might not be answered intently or answered incompletely as anticipated, the pilot study was conducted with about 1000 individuals as planned.

The pilot application of the draft test was conducted at the high schools in the city center of a province located in the West Black Sea Region. Pilot application of a measure requires a sample that can appropriately represent test’s target population (Crocker & Algina, 1986). Multilevel cluster sampling method was utilized to select the sample group for the pilot application of the CT test to be used with high school students. Accordingly, different types of high schools constitute the first-level clusters, and the grade levels at those high schools constitute the second-level clusters. The sampling process is provided in Table 1.

**Table 1. Sampling for the Pilot Application**

	FIRST-LEVEL CLUSTERS			SECOND-LEVEL CLUSTERS			
	N	%					
First-level clusters (choosing the high schools that have the highest representation rate relative to the number of students)	Anatolian High School	603	%6.46	Second-level clusters (choosing one 9 <sup>th</sup> -, 10 <sup>th</sup> -, 11 <sup>th</sup> -, and 12 <sup>th</sup> -grade classes randomly in each high school)	9-grade:	232	
	Anatolian High School	629	%6.74		10-grade:	245	
	Vocational High School	510	%5.47		11-grade:	239	
	Vocational High School	997	%10.69		12-grade:	229	
	Science High School	261	%2.80				
	Religious Vocational High School	826	%8.85				
	Anatolian High School	529	%5.67				
	Religious Vocational High School	571	%6.12				
	TOTAL	4926	%52.80				TOTAL: 945

The first-level clusters of the study are composed of two Vocational High Schools, two Anatolian High Schools, two Religious Vocational High Schools, and one Science High School, and one Anatolian High School, which admit students by examination, in the city center of a province in the West Black Sea Region. These schools have the highest representation rate relative to the number of students. The total number of students in these selected high schools corresponds to 52.80% of the number of students in all high schools in the city center of the province. Thus, the first-level clusters represent all high school types. For the second-level clusters, each of 9<sup>th</sup>-, 10<sup>th</sup>-, 11<sup>th</sup>-, and 12<sup>th</sup>-grade classes in these high schools was assigned as sub-clusters, which was participated by 945 students. Of these students, 232 are 9<sup>th</sup> graders, 245 are 10<sup>th</sup> graders, 239 are 11<sup>th</sup> graders, and 229 are 12<sup>th</sup> graders. Test forms found to be completed carelessly and to involve a great number of incomplete data were not included in the validity and reliability studies. Of the students who completed 705 test forms that were included in the validity and reliability studies, 52.5% are female, and 47.5% are male. Moreover, 24.4% are 9<sup>th</sup> graders, 26.2% are 10<sup>th</sup> graders, 25.4% are 11<sup>th</sup> graders, and 24% are 12<sup>th</sup> graders. In addition, most of the students are mostly 16 (27%), 17 (25.1%), 15 (24.1%), and 14 years old (19.6%), respectively. Their distribution by high school types is as follows: Anatolian High School (56.2%), Science High School (15.6%), Religious Vocational High School (14.5%), and Vocational High School (13.8%).

### 2.3. Procudere

The following steps were followed to develop the CT test in compliance with the literature (Crocker & Algina, 1986; Cronbach, 1984):

1. determining the purpose of the test, psychological attribute which the test aims to measure, and the behaviors which represent that attribute
2. creating a table of specifications that shows the item ratios for the behaviors determined
3. creating an item pool
4. preparing the test form
5. receiving expert opinion, and performing the preliminary application of the test
6. performing the pilot application of the test
7. conducting the validity and reliability analyses
8. preparing the guidelines for application, assessment, scoring of the test, and interpretation of the scores

#### 2.3.1. Determining the purpose of the test, psychological attribute which the test aims to measure, and the behaviors which represent that attribute

The CT test to be developed aims to measure CT skills of high school students. Scores to be obtained in the test will be used to determine students' CT skill levels. Thus, a thorough literature review was performed to determine the CT sub-skills and the behaviors that represent those sub-skills. There are several sub-skill classifications which are deemed to represent CT skills (Watson & Glaser, 1994; Facione, 1990, 2000; Jones et al., 1995; Kennedy, Fisher, & Ennis, 1991; Paul, Binker, Jensen, & Kreklau, 1990; Swartz & Parks, 1994; Pascarella & Terenzini, 1991; Ennis & Weir, 1985; Ennis, Millman, & Tomko, 2005; Chance, 1986; Halpern, 2003; Jonassen, 2000). Considering these classifications made by different researchers, the most inclusive classifications seem to have been made by Facione (1990, 2000), Ennis, Millman, and Tomko (2005), and Watson and Glaser (1994). Therefore, the classification by Watson and Glaser (1994) that is thought to be very inclusive and has been commonly recognized was utilized in this study. Accordingly, the sub-skills of inference, evaluating the arguments, deduction, recognizing the assumptions, and interpretation (Watson & Glaser, 1994), which are deemed to represent the CT skill, were bases in developing the CT test. Watson and Glaser (1994) define the inference sub-skill as inferring new information based on a certain piece of knowledge or a situation or drawing conclusions from a proposition that is accepted to be true. This task of inference occurs through deduction, induction, and reasoning. The sub-skill of recognizing assumptions refers to identifying the assumptions, familiarizing with them, and deciding whether it is possible to make that assumption based on the current situation. The deduction sub-skill is about new propositions logically and obligatorily drawn from propositions that are known or assumed to be true. The interpretation sub-skill refers to evaluating the evidence for a situation or the solution of a problem, drawing conclusions based on this evidence, and assessing the accuracy of these conclusions. The sub-skill of evaluating the arguments is about determining strengths or weaknesses of inferences, statements, judgments, and evidence.

### **2.3.2. Creating a table of specifications that shows the item ratios for the behaviors determined**

Achieving the content validity of a test requires explicitly determining all the behaviors that represent the attribute to be measured and then writing down the items that can measure those behaviors (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2014). The most reasonable way of providing the content validity of achievement tests is to create a table of specifications and receive expert opinion (Terzi, 2019; Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2014). Therefore, a table of specifications was prepared in regard to the number of items with which each sub-skill would be measured in the CT test.

### **2.3.3. Creating an Item Pool**

Prior to creating an item pool for the CT test, CT instruments published both abroad and in Turkey were reviewed in detail (Watson & Glaser, 1964; Eğmir & Ocak, 2017; Demir, 2006; Ennis & Weir, 1985; Ennis, Millman, & Tomko, 2005). An item pool of 169 multiple-choice questions covering the five sub-skills was created. Of the questions in the item pool, 45 aim to measure the inference sub-skill, 26 aim to measure the sub-skill of evaluating the arguments, 17 aim to measure the deduction sub-skill, 55 aim to measure the sub-skill of recognizing the assumptions, and 26 aim to measure the interpretation sub-skill.

### **2.3.4. Preparing the test form**

The questions in the item pool were adapted to the test format, and a draft CT test was prepared. Özçelik (2013) suggested that the test form should include an instruction at the top about what is expected from the students, how to answer the questions, and what to consider when answering them. In case students have no idea how to answer the test questions, a few example questions and answers should be included at the beginning of the test. Accordingly, in the draft CT test composed of five parts, explanations were added to the beginning of each part about what is expected from students and how to answer the questions in that part. One example question and its solution were also added for each part. With a brief explanation and narration, it was explained at the beginning of the test that the questions were to be answered based on the anecdotes noted down by a high school student in her imaginary diary. Because the test was developed for high school students, by this means, it was ensured that the test would attract their attention.

### **2.3.5. Receiving expert opinion, and performing the preliminary application of the test**

The researcher consulted experts for opinion to achieve the content and face validity of the draft CT test. Kline (2010) suggested that content validity is best tested by receiving expert opinion rather than performing statistical analyses. Therefore, the draft CT test was submitted to six faculty members and two Turkish teachers. The faculty members work in the fields of Curriculum and Instruction (4), Mathematics (1), and Assessment and Evaluation (1). Two of the faculty members working in the field of Curriculum and Instruction have carried out many studies on CT before. Upon receiving the experts' feedbacks, eight questions were difficult to understand and had two corrected answers, and five questions that were considered unsuitable for high school students' levels and inadequate were omitted from the test. Moreover, the number of questions with the same purposes was reduced based on the mutual feedbacks from the experts in regard to the redundancy of items. Consequently, the draft CT test was finalized with 87 questions that were considered more successful and inclusive. Consisting of 10 items in the inference sub-test, 12 items in the deduction sub-test, 16 items in the sub-test of evaluating arguments, 23 items in the sub-test of recognizing assumptions, and 10 items in the interpretation sub-test (87 items in total), the draft CT test was tested on a small group prior to the pilot application.

In the preliminary application performed with 30 ninth graders, the students were encouraged to ask anything about any part of the test that was ambiguous. Moreover, the duration they needed to complete the test was observed, and the students were asked for their views on the difficulty level of the test questions. Following the preliminary application, two statements in the explanation of inference and deduction sub-tests were clarified upon the feedbacks from the students. The students reported that the difficulty level of the test questions was suitable, and it was found that 70 min were sufficient to complete the test.

### **2.3.6. Performing the pilot application of the test**

The pilot application process performed with a total of 945 students from the selected eight high schools with multilevel clustering method took 2 weeks to complete. An optical form was designed for the test, and



the students were asked to mark their answers on the optical form. This made sure the prevention of possible problems in the digitization of the data following the pilot application. Upon the ethical approval by Düzce University Ethical Committee of Human Research No. 2019/86 dated November 5, 2019 and the research approval by Directorate of National Education No. E23489630 dated November 27, 2019, the test was applied at the high schools and the classrooms on site. The students were informed of the research and told that the research would be conducted on a voluntary basis. They were given 70 minutes to complete the test. During the pilot application process, the students were supervised, and optical forms of the students who were observed to answer the test carelessly were marked.

### 2.3.7. Conducting the validity and reliability analyses

Regarding the extent to which a test can measure a target attribute without involving other attributes (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2014), validity is addressed in four groups, namely content validity, face validity, criterion-related validity, and construct validity (Crocker & Algina, 1986; Terzi, 2019). Content validity and face validity of the CT test were achieved through expert opinions and the table of specifications prepared beforehand. In addition, Büyüköztürk, Çakmak, Akgün, Karadeniz, and Demirel (2014) argue that another way of testing the content validity is to examine the correlation between the results of the test to be developed and another test known to measure the same attribute and content. Therefore, WGCTA, a commonly used test, and the draft CT test were applied to 100 students 2 weeks apart. Of these tests, 16 forms were not included in the analysis because of incomplete or neglectful answers, and results of the remaining 84 tests were compared with Spearman's rank correlation coefficient because of non-normal distribution of the data ( $p < 0.05$ ).

In criterion-related validity, the correlation between the scores obtained from the draft test and the results of a valid and reliable instrument that measures another attribute that is thought to be related to the measured attribute is calculated (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2014). Thus, the decision-making skill that is associated with CT skill in the literature (Halpern, 2003; Moore, 2010; Norris & Ennis, 1989; Bailin, 1998) was used to test the criterion-related validity of the CT test. Accordingly, the Adolescent Decision-Making Questionnaire developed by Çolakkadioğlu (2012) and the draft CT test were given to 137 students 2 weeks apart. The reliability coefficients calculated by Çolakkadioğlu (2012) for the sub-scales of Adolescent Decision-Making Questionnaire ranged from 0.76 to 0.85. For this study, the reliability coefficients of sub-scales ranged from 0.68 to 0.83. It was assumed that students with high scores of vigilance as a decision-making style in the Adolescent Decision-Making Questionnaire would have high CT skills. Moreover, it was assumed that students with higher scores of complacency, panic, and cop-out dimensions as decision-making styles would have lower CT skills.

Construct validity of the CT test was tested with item analysis. The two most common statistics in the item analysis of a test are item difficulty and item discrimination (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2014). Tekin (2019) argued that a test should involve items at different difficulty levels and mean difficulty of a test should be at a level of 0.50. In other words, the test should have an average difficulty level and include questions at varying difficulties from easier to harder levels (Kan, 2011). Similarly, Özçelik (2013) stated that mean difficulty of tests should be at a level of 0.55. Although the behavior and attribute to be measured by the item is a continuous variable by nature, once it is made into a discrete variable artificially as 1-0, it is more appropriate to use the point biserial correlation coefficient for the item discrimination value (Çokluk, Şekercioğlu, & Büyüköztürk, 2012; Kan, 2011). Therefore, the point biserial correlation coefficient was utilized to calculate item discrimination values of the test items. An item difficulty value between 0 and 0.39 refers to a difficult item, a value between 0.40 and 0.59 refers to a moderate item, and a value of 0.60 and above refers to an easy item (Özçelik, 2013). The possible lowest item discrimination value for the items of the draft CT test was determined to be 0.30, and items below that value were not included in the test. Other than item analysis, the correlation between the draft test and another instrument known to measure a similar attribute can be used to test the construct validity (Terzi, 2019). Hence, results of the WGCTA were also utilized for the construct validity.

Defined as test scores' level of being free from random errors, reliability (Turgut, 1995) can be calculated with methods such as KR20, KR21, parallel forms, test-retest, and split-half methods (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2014; Terzi, 2019). Reliability coefficients for the sub-tests and the

total test were calculated with KR20 equation. Furthermore, the CT test was administered to a group of 59 individuals 3 months apart to check its time invariance. Both applications were performed in the second class hour of the day, and all students were given the same duration to complete the test. Because the data obtained from both applications were not normally distributed ( $p < 0.05$ ), the results were compared with Spearman's rank correlation coefficient.

**2.4. Ethical**

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed.

Ethical Review Board Name: Düzce University Ethics Committee

Date of Ethics Evaluation Decision: 05.11.2019 Ethics Assessment Document Issue Number: 2019/86

**3. Findings**

**3.1. Findings on the Validity Study**

After the CT test's content and face validity had been achieved through expert opinions and the table of specifications, its construct validity was tested with the item analysis. Following the item analysis, 34 items whose item discrimination values were below 0.30 (Item 2, Item 3, Item 5, Item 6, Item 8, Item 10, Item 12, Item 13, Item 14, Item 17, Item 19, Item 21, Item 23, Item 27, Item 28, Item 34, Item 35, Item 38, Item 39, Item 41, Item 57, Item 61, Item 62, Item 63, Item 64, Item 65, Item 66, Item 69, Item 70, Item 72, Item 74, Item 77, Item 79, Item 82) were omitted from the test. Although two items (Item 36, Item 37) had acceptable levels of item difficulty and item discrimination, these questions were omitted from the test along with the texts because there remained no other questions about the relevant text. Table 2 presents the item difficulty and item discrimination values of the items that were kept in the test following the item analysis.

**Table 2.** Item Difficulty and Item Discrimination Values of Items Kept in the Test Following the Item Analysis

Item No	Item Difficulty	Item Discrimination	Item No	Item Difficulty	Item Discrimination
1	0.69	0.33	49	0.57	0.61
4	0.69	0.33	50	0.53	0.56
7	0.43	0.44	51	0.36	0.43
9	0.52	0.36	52	0.57	0.34
11	0.46	0.41	53	0.55	0.43
15	0.59	0.35	54	0.53	0.40
16	0.30	0.32	55	0.45	0.30
18	0.35	0.37	56	0.48	0.42
20	0.62	0.30	58	0.51	0.51
22	0.45	0.30	59	0.45	0.48
24	0.65	0.55	60	0.44	0.50
25	0.68	0.52	67	0.33	0.43
26	0.74	0.30	68	0.37	0.35
29	0.65	0.31	71	0.43	0.49
30	0.57	0.61	73	0.30	0.30
31	0.65	0.30	75	0.75	0.33
32	0.46	0.43	76	0.52	0.32
33	0.71	0.30	78	0.39	0.38
40	0.34	0.33	80	0.52	0.41
42	0.55	0.55	81	0.60	0.46
43	0.55	0.55	83	0.43	0.40
44	0.58	0.52	84	0.65	0.56
45	0.60	0.50	85	0.51	0.47
46	0.33	0.35	86	0.54	0.46
47	0.44	0.50	87	0.59	0.52
48	0.58	0.50	TOTAL	0.52	0.42

Table 2 shows the 51 items kept in the test with item difficulty values between 0.75 and 0.30. Arguably, the test involves items at three different difficulty levels, that is, easy, moderate, and difficult. Overall, the test

has a mean difficulty value of 0.52, which indicates that the test is moderately difficult. Item discrimination values of the test items vary between 0.61 and 0.30. The total test has an item discrimination value of 0.42. Apparently, the test can distinguish students at a high level. Table 3 highlights the number of items, mean item difficulty, and item discrimination values for CT sub-tests.

**Table 3.** Number of Items, Mean Item Difficulty and Item Discrimination Values for CT Test

Sub-tests	Item Number	Mean Item Difficulty	Mean Item Discrimination
Inference	10	0.51	0.35
Evaluatingarguments	8	0.63	0.41
Deduction	11	0.49	0.49
Recognizingassumptions	12	0.45	0.41
Interpretation	10	0.55	0.43
Total	51	0.52	0.42

Table 3 shows the 51-item CT test with 10 items in the inference sub-test, 8 items in the sub-test of evaluating arguments, 11 items in the deduction sub-test, 12 items in the sub-test of recognizing assumptions, and 10 items in the interpretation sub-test. Arguably, the number of items is almost equally distributed across the sub-tests. Among all sub-tests, evaluating arguments has the highest mean difficulty level of 0.63, which means that this is the easiest sub-test in the test. This sub-test is followed by interpretation at a difficulty level of 0.55, inference at 0.51, deduction at 0.49, and recognizing assumptions at 0.45. With a mean item discrimination value of 0.49, deduction sub-test distinguishes the students the most in the test. This sub-test is followed by interpretation at 0.43, evaluating arguments at 0.41, recognizing assumptions at 0.41, and inference at 0.35.

For the criterion-related validity of the 51-item CT test of which content, face, and construct validities were achieved, the results of Adolescent Decision-Making Questionnaire and the CT test performed 2 weeks apart were compared with Kruskal-Wallis  $H$ -test due to non-normal distribution of data ( $p < 0.05$ ), which are provided in Table 4.

**Table 4.** Results of Kruskal-Wallis  $H$  Test Performed to See Whether Students' CT Scores Differed by Decision-Making Styles

	Groups	N	Mean Rank	$X^2$	sd	p	Difference
Critical Thinking	Vigilance	100	78.60	23.288	3	.000	A-B A-C A-D
	Complacency	8	37.06				
	Panic	21	49.57				
	Cop out	8	32				

A: Vigilance B: Complacency C: Panic D: Cop out

According to Table 4, students' CT scores differed significantly by their decision-making styles ( $X^2_{(sd=3, n=137)}=23.288; p < 0.05$ ). To see whether this difference was between vigilance and other decision-making styles, Mann-Whitney-U test was performed, and results are shown in Table 5.

**Table 5.** Results of Mann-Whitney U Test Performed to See between Which Groups the Difference was by Decision-Making Styles

	Groups	N	Mean Rank	Sum of Ranks	U	Z	p
Critical Thinking	Vigilance	100	56.88	5688.00	162.000	-2.816	0.005
	Complacency	8	24.75	198.00			
Critical Thinking	Vigilance	100	56.88	5688.00	590.000	-3.171	0.002
	Panic	21	39.10	821.00			
Critical Thinking	Vigilance	100	56.88	5688.00	138.500	-3.091	0.002
	Cop out	8	21.81	174.50			

As shown by the results of Mann-Whitney  $U$ -test performed between vigilance and other decision-making styles, there was a statistically significant difference between CT test scores of the students with vigilance decision-making style and the students with complacency ( $U = 162.000; p < 0.05$ ), panic ( $U = 590.000; p < 0.05$ ), and cop-out ( $U = 138.500; p < 0.05$ ) decision-making styles. Thus, the students who were cautious and picky when making a decision had significantly higher CT test scores than the students who acted complacently,

panicked, and tended to avoid taking responsibility when making a decision. Hence, the CT test provided consistent results compared with decision-making styles. Consequently, criterion-related validity of the CT test was achieved.

Table 6 presents the results of Spearman–Brown correlation calculated for the sub-tests and total test scores of the draft CT test and WGCTA performed 2 weeks apart to provide additional evidence both for content (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2014) and for construct (Terzi, 2019) validities.

**Table 6.** Spearman-Brown Correlation Values for Two Critical Thinking Instruments

Sub-tests	WG Inference	WG Evaluating arguments	WG Deduction	WG Recognizing assumptions	WG Interpretation	WG Total
Inference	0.338**					
Evaluating arguments		0.317**				
Deduction			0.323**			
Recognizing assumptions				0.476**		
Interpretation					0.412**	
Total						0.486**

WG= Watson-Glaser Critical Thinking Appraisal; \*\*p<0.01

Table 6 shows a moderate significant correlation found between the sub-tests and total test scores of CT test and WGCTA. Thus, such correlation with WGCTA that is commonly used in the literature can be offered as additional evidence for the content and construct validities of the CT test developed in the research.

### 3.2. Findings on the Reliability Study

Table 7 presents the results for KR20 reliability coefficient and test–retest correlation coefficient calculated for the CT test sub-tests and the total test.

**Table 7.** Results for KR20 Reliability Coefficient and Test-Retest Correlation Coefficient Calculated for the CT Test Sub-Tests and Total Test

Sub-tests	KR20	Test-Retest
Inference	0.62	r=0.57 (n=59, p<0.01)
Evaluating arguments	0.62	r=0.60 (n=59, p<0.01)
Deduction	0.76	r=0.58 (n=59, p<0.01)
Recognizing assumptions	0.64	r=0.70 (n=59, p<0.01)
Interpretation	0.75	r=0.70 (n=59, p<0.01)
Total	0.87	r=0.70 (n=59, p<0.01)

KR20 internal consistency coefficients were found to be 0.87 for the total test and varied between 0.62 and 0.76 for the sub-tests. Moreover, the test was split into two equal halves, and the correlation between the two halves was calculated to be 0.84. The correlation calculated between the results of the two applications, which were performed 3 months apart, ranged from 0.57 to 0.70. The correlation coefficient for the total test was found to be 0.70. Based on the results for KR20 internal consistency coefficient, split-half method, and test–retest method, the CT test provides reliable measurements. The correlation between the sub-tests and total test scores of CT test was checked, and the results are presented in Table 8.

**Table 8.** Correlation Values between Sub-Tests and Total Test Scores of CT Test

Sub-tests	Inference	Evaluating arguments	Deduction	Recognizing assumptions	Interpretation	Total
Inference	1	0.25**	0.45**	0.31**	0.36**	0.71**
Evaluating arguments			0.24**	0.23**	0.25**	0.45**
Deduction				0.45**	0.41**	0.72**
Recognizing assumptions					0.43**	0.67**
Interpretation						0.75**
Total						1

\*\*p<0,01

Table 8 shows the significant correlations found among all sub-tests of the CT test ( $p < 0.01$ ). While there was a low correlation between the sub-test of evaluating arguments and other sub-tests, moderate correlations were observed among other sub-tests. Also, a significant correlation was found between the total test score and the scores of each sub-test ( $p < 0.01$ ). The correlation between the total test score and the scores of all sub-tests but the sub-test of evaluating arguments was observed to be high. A moderate correlation was found between the score of evaluating arguments and the total test score.

In summary, after the content and face validities had been achieved with expert opinions and the table of specifications and the criterion-related validity had been achieved with the Adolescent Decision-Making Questionnaire, the item and reliability analyses performed for the 51-item CT test show that it can measure CT skills of high school students in a valid and reliable manner.

#### 4. Conclusion, Discussion and Recommendations

This study aimed to develop “Critical Thinking Skill Test for High School Students” to measure CT skills of high school students. Content, face, criterion-related, and construct validities of the “Critical Thinking Skill Test for High School Students” were examined. For the reliability studies, its KR20 coefficient was calculated, and test–retest and split-half methods were utilized. For the CT test prepared based on the sub-skills of inference, evaluating arguments, deduction, recognizing assumptions, and interpretation, which are deemed to represent the CT skill (Watson & Glaser, 1994), content and face validities were achieved with expert opinions and the table of specifications.

Following the item difficulty and item discrimination analyses performed to test the construct validity, 34 items were omitted from the test, which was finalized with 51 items. The 51-item CT test has 10 items in the inference sub-test, 8 items in the sub-test of evaluating arguments, 11 items in the deduction sub-test, 12 items in the sub-test of recognizing assumptions, and 10 items in the interpretation sub-test. While mean item difficulty values of the sub-tests vary between 0.51 and 0.63, mean item discrimination values range from 0.35 to 0.49. The total test has a mean item difficulty value of 0.52 and a mean item discrimination value of 0.42. Arguably, the test is moderately difficult and can highly distinguish students. To provide additional evidence for content and construct validities, the correlation between the CT test and WGCTA commonly used in the literature was checked, and a moderate significant correlation was found between the sub-tests and total test scores of the two tests.

Associated with CT skill in the literature (Halpern, 2003; Moore, 2010; Norris & Ennis, 1989; Bailin, 1998), decision-making skill was used to test the criterion-related validity of the “Critical Thinking Skill Test for High School Students”. It was assumed that students with higher scores of vigilance as a decision-making style in the Adolescent Decision-Making Questionnaire, which was used for the criterion-related validity, would have higher CT skills and students with higher scores of complacency, panic, and cop-out as decision-making styles in the said questionnaire would have lower CT skills. These assumptions were confirmed in the relevant analyses. The students who were cautious and picky when making a decision had significantly higher CT test scores than the students who acted complacently, panicked, and tended to avoid taking responsibility when making a decision. Notably, the CT test provided consistent results compared with decision-making styles.

KR20 reliability coefficients calculated for the sub-tests ranged from 0.62 to 0.75. A KR20 reliability coefficient of 0.87 was calculated for the total test. Moreover, a correlation coefficient of 0.84 was calculated with the split-half method. To test time invariance of the test, the correlation values calculated between the results of the two applications, which were performed 3 months apart, ranged from 0.57 to 0.70. The correlation coefficient for the total test is 0.70. Based on the results for KR20 internal consistency coefficient, split-half method, and test–retest method, one can argue that the CT test will yield reliable results.

In light of the content and face validity achieved with expert opinions and the table of specifications and the criterion-related validity achieved with the Adolescent Decision-Making Questionnaire, the item analyses and reliability analyses performed for the “Critical Thinking Skill Test for High School Students” indicate that the 51-item test will provide valid and reliable results in measuring CT skills of high school students. In the test, the 10-item inference sub-test is composed of three-choice questions, the 8-item sub-test of evaluating arguments includes two-choice questions, the 11-item deduction sub-test is composed of four-

choice questions, the 12-item sub-test of recognizing assumptions consists of two-choice questions, and the 10-item interpretation includes three- and four-choice questions. The duration for applying the 51-question "Critical Thinking Skill Test for High School Students" is about 40 minutes. The highest possible score in the test is 51, and the lowest possible score is 0. A score between 0-17 refers to low CT skill, a score between 18-35 refers to moderate CT skill, and a score between 36-51 refers to high CT skill.

The validity and reliability studies of the "Critical Thinking Skill Test for High School Students" were carried out with students in different types of high schools located in a province in the West Black Sea Region. Applying the test to high school students in the provinces of other geographical regions to replicate the validity and reliability studies will assumably provide supportive evidence for test's validity and reliability. Validity and reliability studies can also be performed for using the "Critical Thinking Skill Test for High School Students" at different educational levels.

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# The Relationship Between Participation in Administrative Decisions and School Effectiveness: An Empirical Study on Teachers

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## ABSTRACT

The aim of this research is to reveal the effect of teachers' participation in administrative decisions and their willingness to participate in decisions on school effectiveness. Predictive survey model was used in the study. In the 2021-2022 academic year, 283 teachers working in İstanbul's Sultanbeyli, Pendik, Maltepe and Kartal districts formed the research sample. Simple random sampling was used when selecting the research sample. According to the results of the research, teachers' willingness to participate in administrative decisions is significantly higher than their level of participation in decisions. In addition, there is a positive correlation between the level of participation in decisions, willingness to participate and school effectiveness. In addition, the level of participation in decisions and willingness to participate partially predicts school effectiveness. As teachers' level of participation and willingness to participate in decisions increases, school effectiveness increases.

### Keywords:

School effectiveness, decision participation, decision making, participatory management.

## 1. Introduction

The realization of an action depends on decision making in organizations. Decision-making is the heart of management (Mintzberg, 2014). Individuals take responsibility for participating in the decision-making process by considering their situation in the organization. It is assumed that participation in the decision-making process is important to make the decisions meaningful to the individual. It is believed that individuals take more responsibility for their actions by participating in the decision-making process (Yavuz, 2004). Therefore, decision-making participation can be defined as "the mental and emotional willingness of individuals in an environment that encourages them to contribute to group goals and share responsibility" (Davis, 1982). According to Başaran (2000), decision involvement is when the employee takes an active role in management decision-making and solving problems that affect them and acts as a problem solver in organizational teams as required by total quality management.

Participation in decision making creates important opportunities for the development of an individual's self-esteem. Thus, it promotes the achievement of organizational goals and contributes to the increase of intra-organizational communication and interaction (Kuruoğlu & Hacıhafızoğlu, 2011). Organizational communication is the most important means of participation in decision making in organizations. According to Bursalioğlu (1998), the more important the decision is to the management, the more important communication is to the organization. Creating communication and interaction environments in organizations can make teachers feel valued by ensuring their participation in management processes. The job satisfaction of teachers who feel valued in the institution also increases. Thus, the participation of teachers in the decision-making process will affect their job satisfaction and make them more productive. This situation may be effective in not transforming schools into effective schools.

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Moreover, since teachers are at the center of education, they can correctly identify the problems, expectations and negative developments in the educational processes. By increasing the performance of teachers who feel valuable and identify with the institution, the quality of education can also increase (Takmaz & Yavuz, 2010). For this reason, it is considered that in an organization that has adopted a participative management approach, educational administrators should effectively create both decision-making and communication networks. Employee participation in the decision-making process clearly and decisively increases productivity. Therefore, the following generalizations can be made regarding teacher participation in the decision-making process in educational organizations (Hoy & Miskel, 2010): The opportunity to contribute to policy making is an important factor in teacher morale and enthusiasm for school.

- Participation in the decision-making process greatly increases teachers' individual job satisfaction.
- Teachers are more likely to prefer principals who involve them in the decision-making process.
- The outcome fails when the quality of decisions is low and not accepted by subordinates.
- Teachers do not want to participate in every decision making and do not have such expectations. Too much involvement with little participation in the decision making process can be detrimental.

The functions and roles of teachers and administrators in the decision-making process should change depending on the problem. Looking at the studies conducted in recent years on leadership, it is better understood that leadership should be viewed from the perspective of equity and inclusion (Riehl, 2000; Szeto, 2020). To build a democratic culture in schools, a culture based on social justice and equal participation should be adopted (Szeto, 2020). reduce cultural and material inequalities. However, it should be understood that the purpose in the decision-making process is not well understood and explained, lack of information, limited time, unexpected results, unprofessional behavior and insufficient recognition of the environmental organization, and failure to establish the right relationships with the environment affect the quality of the decision (Koylu & Gunduz, 2019). For this, managers should try to maintain an education that encourages diversity, equality, active participation and critical thinking (Winton, 2010). Because critical thinking is the ability of managers to identify, analyze and evaluate the necessary information for an action and decision (Özgenel, 2018). Managers can ensure that the decisions they make are effective and efficient by respecting the views of all stakeholders, accepting them as interlocutors and enabling them to be in discussion environments. Education is an investment that is very expensive and where the cost of abandonment is very high. For this reason, efforts to make schools effective are at the forefront of educational plans and programs in all nations of the world (Çelikten, 2001). For schools to be effective, the participation of teachers and other stakeholders in the decisions and practices to be made in the school is also important. If a participatory and democratic culture of sharing is not established in schools, teachers will not be able to participate in decision-making. It should not be forgotten that the participation of the concerned circles in decision making in open systems like school increases efficiency.

Therefore, this research will try to determine how effective the participation of teachers in administrative decisions is in increasing the effectiveness of educational organizations and possible problems that can be experienced in organizations where there is no participatory management approach. In this direction, the aim of the research is to reveal to what extent the participation levels and willingness of teachers working in educational organizations affect school effectiveness. In addition to this main purpose, the research sought answers to the following questions:

- 1) What is the level of participation and willingness of teachers working in schools in administrative decisions?
- 2) Is there a significant difference between teachers' participation in administrative decisions and their willingness to participate?
- 3) Is there a gender difference in the level of participation and willingness of teachers in administrative decisions?
- 4) Do teachers' participation levels and willingness in administrative decisions significantly predict the effectiveness of the school?

## 2. Methodology

### 2.1. Research Model

In the study, the predictive survey model was used to reveal whether teachers' participation in administrative decisions and their willingness to predict the effectiveness of the school. The predictive model is used to determine the variables that are effective in the emergence of this result by predicting the possible consequences that may arise in the future (Creswell, 2012).

### 2.2. Research Sample

The research sample composed of of 283 teachers working in 28 primary and secondary schools in the Sultanbeyli, Pendik, Maltepe and Kartal district of Istanbul in the 2021-2022 academic year. The research sample composed of of 283 teachers working in 28 primary and secondary schools in the Sultanbeyli, Pendik, Maltepe and Kartal district of Istanbul in the 2021-2022 academic year. Of the participants, 175 were women and 108 were man. When we look at the distribution of the participants according to their percentages, it is seen that 61.8% are women and 38.2% are men. Of the 283 teachers who participated in the research, 172 were from primary school teaching, 28 were from physical science, 59 were from social sciences and 24 were from applied fields. When we look at the percentages, 61% are primary school teachers, 10% are from physical science, 21% are from the field of social sciences, and 8% are teachers from applied fields. Of the 283 teachers participating in the research, 113 has 1-5 years, 76 6-10 years, 50 11-15 years, 22 16-20 years and 22 have 21 years or more seniority years. When we look at their percentage ratios, 40% consist of teachers with seniority of 1-5 years, 27% of 6-10 years, 18% of 11-15 years, 8% of 16-20 years, 7% of 21 years and older.

### 2.3. Data Collection Tools and Analysis Procedures

Three data collection tools were used in this study. The first of the data collection tools is the Personal Information Form. In this form, information about the gender, professional seniority, and branches was collected. The second data collection tool was obtained with the "Decision participation scale" developed by Köklü (1994) to measure teachers' level of participation ve importance of participation in decision making. In the third, the 8-item School Effectiveness Index, developed by Wayne K. Hoy (2009). The eight-item index evaluates the effectiveness of a school in terms of product quantity and quality, efficiency, adaptability and flexibility. Many different studies and applications have been made regarding the validity and reliability of the scale (Mott, 1972; Miskel, et al., 1979; Hoy & Feguson, 1985; Hoy & Miskel, 1991, Hoy, Tarter & Kottkamp, 1991). The scale was adapted to Turkish by Şenel (2015).

The decision participation scale consists of 17 administrative decision items. In order to determine the level of participation of the teachers in the decisions and how important they find the decisions taken, "How much do you agree with the decisions of the principals on this issue and how important do you find?" was asked. The rating of the average scores (between 1 and 4), obtained following the four-point rating scale used in the survey , was divided into four equal parts and the scores obtained were classified as follows:

**Table 1.** Scale Options and Score Ranges

<i>Level of Participation</i>	<i>Willigness to Participate</i>	<i>Points</i>	<i>Score Range</i>
None	Not at all important	1	1.00-1.75
A little	Slightly important	2	1.76-2.50
Usually	Quite important	3	2.51-3.25
Completely	Very important	4	3.26-4.00

The rating of the average scores (between 1 and 5), obtained following the five-point rating scale used in the School Effectiveness Index, was divided into five equal parts and the scores obtained were classified as follows:

**Table 2.** *Scale Options and Score Ranges*

<i>Level of Participation</i>	<i>Points</i>	<i>Score Range</i>
Never Agree	1	1.00-1.80
I do not agree	2	1.81-2.60
I partially agree	3	2.61-3.40
Mostly Agree	4	3.41-4.20
I totally agree	5	4.21-5.00

In the scales, the interval width between 1 and 5 was determined as 0.8. For the school effectiveness index scale, the propositions of "I Strongly Disagree," "Disagree", "Partly Agree", "Mostly Agree" and "Completely Agree" were used.

Before moving on to statistical analysis in the research, demographic variables were grouped and then the measurement tool applied to teacher candidates was scored with the methods described above. For the normality assumption of the data obtained, the skewness, kurtosis and reliability values of the scales were examined and shown in Table 3.

**Table3.** *Kurtosis and Skewness and Cronbach Alpha Values of the Scales*

	<i>Skewness</i>	<i>Kurtosis</i>	<i>Cronbach Alpha a</i>
Level of Participation	-.053	-.794	.933
Willigness to Participate	-.525	.154	.886
School Effectiveness	-.400	.180	.860

As seen in Table 3, the skewness (-.053, -.525, -.400) and kurtosis (-.797, .154, .180) values of the scales are within the limits of  $\pm 1$ . Therefore, it can be said that the data show a normal distribution. Since the reliability coefficients of the scales were found to be .70 and above, it was understood that they were reliable and useful.

In the analysis of the data obtained from the variables, independent groups t-test, correlation and regression analyzes were performed. As a result of the multiple regression analysis, Cohen's (2013)  $f^2$  criterion was used to calculate the effect size (" $.02 \leq f^2 < .13$  low effect;  $.13 \leq f^2 < .26$  medium effect;  $.26 \leq f^2$  large effect" (Cohen, 2013)).

### 3. Findings

In comparing teachers' views on the level of participation in administrative decisions in their schools and their views on the importance of participating in administrative decisions, the results of the t-test for the corresponding measures of difference between them are presented in Table 4.

**Table 4.** *The Results of the Related Group t-Test Performed to Determine Whether There is a Difference Between the Level of Participation Scale and the Importance of Participation scale*

<i>Groups</i>	<i>M</i>	<i>N</i>	<i>sd</i>	<i>Sh</i>	<i>t</i>	<i>sd</i>	<i>p</i>
Level of Participation	2,59	283	,73	,043	-14,25	282	,000
Willigness to Participate	3,15	283	,51	,030			

As shown in Table 4, the difference between the arithmetic means was found to be significant by the t-test for the compared groups. This test was conducted to determine if there was a significant difference between the means of the level of involvement and the importance of involvement of the experimental groups ( $t = -14.25$ ,  $p < .001$ ). According to teachers' opinions, the importance of participating in administrative decisions ( $X = 3.15$ ) is higher than participation in administrative decisions ( $x = 2.59$ ). Based on these findings, teachers think that it is very important to participate in administrative decisions. This is important to justify the participatory management approach. It can be said that citizens want to have a say in the institution in which they work. The following table shows the difference between the level of participation of teachers in the administrative decisions in their schools when compared by gender variable.

**Table 5.** *The Results of the Independent Group T-Test to Determine Whether the Level of Participation Scale Scores Differ According to the Gender Variable*

Scores	Groups	N	M	sd	Sh	t	sd	p
Level of Participation	Female	175	2,58	,713	,054	-,455	281	,65
	Male	108	2,62	,758	,073			

According to table 5, the difference between the arithmetic means of the groups was not found to be significant due to the independent group t-test to determine whether the scores of the participation level differ according to the gender variable ( $t = -,455$ ;  $p > .05$ ). The fact that the average scores of men and women are close to each other can be taken as an indicator of their equality in education.

The table of the difference between them is given below by comparing the teachers' opinions on how important they consider participating in the administrative decisions taken in their schools according to the gender variable.

**Table6.** *The Results of the Independent Group T-Test to Determine Whether Participation Significance Scale Scores Differ According to Gender Variable*

Scores	Groups	N	M	sd	Sh	t	sd	p
Willingness to participate	Female	175	3,19	,482	,036	1,581	281	,11
	Male	108	3,09	,555	,053			

According to Table 6, the difference between the arithmetic means of the groups was not found to be significant as a result of the independent group t-test to determine whether the scores of willingness to participate differ according to the gender variable ( $t = 1,58$ ;  $p > .05$ ). Based on these findings, it can be said that women are slightly more willing to participate in managerial decisions than men. The fact that women have a say in the administration may mean that they wish to create a more democratic environment in the institution.

The Pearson Product Moment Correlation values, which were made to determine the relationships between the level of participation in decisions, willingness to participate and school effectiveness, are given in Table 7.

**Table7.** *Relationship Between Variables*

	Mean	sd	1	2	3
1-Level of Participation	2,59	,729	1		
2-Willingness to Participate	3,15	,513	.475**	1	
3-School Effectiveness	3,91	,583	.241**	.166**	1

N=392; \*\*p<.01

According to Table 7, between teachers' level of participation and willingness ( $R = .475$ ;  $p < .01$ ), level of participation and school effectiveness ( $R = .241$ ;  $p < .01$ ), and willingness to participate and school effectiveness ( $R = .166$ ;  $p < .01$ ) a positive relationship was determined. The results of the simple regression analysis regarding the prediction of school effectiveness by the level of participation of teachers in administrative decisions are given in Table 8.

**Table 8.** *Level of Teachers' Participation Levels to Predict School Effectiveness*

Independent Variable	Dependent Variable	B	Std. Error	( $\beta$ )	t	p
Constant	School Effectiveness	3,417	,125		27,407	,000
Level of Participation		,193	,046	,241	4,158	,000

N=283; R=.241; R<sup>2</sup>=.058; F=17.289; p<.000

According to Table 8, it is seen that teachers' level of participation in decisions significantly predicts school effectiveness ( $p < .01$ ). Teachers' participation levels explain 5.8% of the total variance in school effectiveness ( $R = .241$ ;  $R^2 = .058$ ;  $F = 17.289$ ;  $p < .000$ ). According to the B coefficient, a one-unit increase in teachers' level of participation in decisions provides an increase of .193 units in school effectiveness. In other words, the level of participation of teachers in administrative decisions positively affects school effectiveness. As teachers participate in administrative decisions, the effectiveness of schools increases.

The simple regression analysis results regarding the teachers' willingness to participate in administrative decisions and the predictors of school effectiveness are given in Table 9.

**Table 9.** *Teachers' Willingness to Participate in Decisions that Predict School Effectiveness*

<i>Independent Variable</i>	<i>Dependent Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>(β)</i>	<i>t</i>	<i>p</i>
Constant	School Effectiveness	3,319	,214		15,524	,000
Willingness to Participate		,189	,067	,166	2,830	,005

N=283; R=.166; R<sup>2</sup>=.028; F=8.008; p<.005

According to Table 9, it is seen that teachers' willingness to participate in decisions significantly predicts school effectiveness ( $p < .01$ ). Teachers' willingness to participate explain 2.8% of the total variance in school effectiveness ( $R = .166$ ;  $R^2 = .028$ ;  $F = 8.008$ ;  $p < .01$ ). According to the B coefficient, a one-unit increase in teachers' willingness to participate in decisions provides an increase of .166 units in school effectiveness. In other words, the willingness to participate of teachers in administrative decisions positively affects school effectiveness. As teachers' willingness to participate in administrative decisions increases, the effectiveness of schools increases.

The results of the multiple regression analysis regarding the predictability of the teachers' level of participation in the decisions and their willingness to participate, together with the school effectiveness, are given in Table 10.

**Table 10.** *Level of Participation in Decisions and Willingness to Participate Variables to Predict School Effectiveness*

<i>Independent Variable</i>	<i>Dependent Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>(β)</i>	<i>t</i>	<i>p</i>
Constant	School Effectiveness	3,242	,212		15,306	,000
Level of Participation		,167	,053	,209	3,173	,002
Willingness to Participate		,077	,075	,067	1,022	,308

N=283; R=.248; R<sup>2</sup>=.061; F=9.168; p<.000

According to Table 10, it is seen that teachers' level of participation in decisions and their willingness to participate significantly predict school effectiveness ( $p < .01$ ). Teachers' participation levels and their willingness to participate together explain 6.1% of the total variance in school effectiveness ( $R = .248$ ;  $R^2 = .061$ ;  $F = 9.168$ ;  $p < .000$ ). According to the B coefficient, a one-unit increase in teachers' participation in decisions causes an increase of .167 units in school effectiveness; A one-unit increase in their willingness to participate provides a .077-unit increase in school effectiveness. In other words, teachers' level of participation in decisions and their willingness to participate positively affect school effectiveness. As teachers' participation levels and willingness to participate increase, school effectiveness also increases.

#### 4. Conclusion and Discussion

The effectiveness of decision-making processes in organizations depends on rational decision-making. People try to make rational decisions to achieve a specific goal (Hoy & Miskel, 2010). The success of schools is also largely linked to effective decisions (Lunenburg, 2010). Choosing the most appropriate way to solve a problem is decision-making (Can, 2005). To make the right decision, taking the opinions of the stakeholders corresponds to a very critical place. Because there is little doubt that decisions made in groups are effective (Hoy & Miskel, 2010). Teachers are the key stakeholders in the school and should be included in decision-making groups. Involving teachers in the decision-making process will increase the quality, creativity, acceptance, clarity, reasoning, and accuracy of the decisions made (Schoenfeld, 2011). Teachers' participation in administration will enable them to participate actively in all administrative processes and express their views and influence decision-makers (Chen & Tjosvold, 2006, Somach, 2010, Üzümlü & Kurt, 2019). Today, modern administration approaches have begun to adopt a participatory administration approach to make the manager-centred perspective and the right decisions more applicable (Turan, 2020). However, in this study, teachers' level of participation in the administrative decisions taken at their schools was found to be 2.59 and at the level of "Some". Nevertheless, teachers also rated participation in administrative decisions as "quite important" with 3.15. According to these results, teachers think that they do not participate enough in administrative decisions, but that participation in administration is very important. Thus, it may be possible for organizations to transform into democratic institutions. In democratic environments, it is ensured that people act in an organized manner and participate in administrative decisions. People participate in decisions on issues that affect their future due to participation (Çöl, 2004). Thus, it is possible to adopt the decisions made and make them more applicable (Drucker, 1992). In this way, effective implementation and

adoption of the decisions taken will increase efficiency in education and turn into more effective organizations.

A significant difference was found between teachers' level of participation in administrative decisions and their views on the importance of participation in administrative decisions. There are several factors for teachers' low level of participation in decision making. Some negative attitudes and behaviors of principals may be effective here. Leaders should avoid conflict in the decision-making process and see conflict as a means of generating knowledge. The school manager who manages the conflict should deal with the people not according to their seniority but their areas of expertise (Özdemir & Cemaloğlu, 2000). In this way, there is an increase in the level of organizational learning. Thanks to the participation in the decision, organizational learning in organizations are facilitated by the increase in communication and interaction (Chiva & Alegre, 2009; Karabağ-Köse & Güçlü, 2015). In learning-based organizations, since a climate based on trust and cooperation is created, employees express themselves more easily, increasing the culture of sharing (Baydar & Çetin, 2021). Thus, employees can improve their experience by communicating with internal and external stakeholders and ensuring an innovation-oriented system.

It was determined that the level of participation of teachers in decision processes and their willingness to participate significantly predicted school effectiveness. In other words, as the level of participation and willingness of teachers increases, school effectiveness also increases. For this reason, it is necessary to increase the level of participation and willingness of teachers in decisions. With the participation of teachers in administrative decisions, the adoption and applicability of the decisions will increase. In this way, teachers will be able to make their personal development processes continuous and increase their performance in order to contribute to the education process. Also, since teachers are affected by the administrative decisions taken, participation in decision-making processes should be seen as a right. It is critical for the development and democratic organization of democracy and the building of society. For this reason, it should be seen as a requirement of democracy that those affected have a say (right of voice) in the decisions made (Özdemir & Cemaloğlu). Democratic environment not only increases organizational effectiveness and productivity but also helps employees to gain motivation (Çetin, 2009; Gümüş, 2011). Organizational commitment of employees who fulfill their high-sensitivity responsibilities will also increase (Balay, 2000). The commitment of employees who adopt the organisation's ideas and internalize the organization is also high (Allen & Meyer, 1990). Employees with high commitment do not give up to continue their tasks with determination, even if conditions are difficult, and they try to meet the goals of the school (Turan, 2015). Individuals are able to use their potential best and most effectively because of their psychological well-being (Ryff & Singer, 2006). In this way, the quality of education will increase and educational organizations will be able to become effective schools. By enabling teachers to participate in the decision-making process, school management can increase the quality of the decisions made, strengthen the school and environment relations, increase teachers' occupational satisfaction and increase their motivation levels (Grape & Wolf, 2019; Hoy & Miskel, 2010; Schully, Kirkpatrick & Locke, 1995; Somech, 2002; Wadesango, 2012). School managers who adopt a democratic and participatory management approach can create exceptional opportunities in disadvantaged schools and discover innovations for the continuous development of the school (Szeto, 2020). With a participative management approach, managers can involve teachers in the process and ensure their professional satisfaction. For this, the existing decision-making mechanisms of the Ministries of National Education can be reviewed, and the decision-making authority can be mostly freed from centralization and the provincial organizations can take more initiative in decision-making. In this way, provincial and district national education directorates can stretch their education activities according to regional differences and shape their budget and human resources planning according to their regional characteristics. However, it may be possible to configure a system that adopts the culture of democracy and strengthens a participatory management approach. In an environment where a participatory and developmental democratic perspective is adopted in education, the participation of teachers in decisions can be ensured at a higher level and a more fair and egalitarian education environment can be created consistently by applying this system.

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## Problems Encountered in The Education of Refugees in Turkey

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### ABSTRACT

This study aims to investigate the educational problems of refugee students of Syrian origin. It is a qualitative research designed as a phenomenological study. Phenomenology, a qualitative research method, was the design of choice. The sample group consisted of two administrators, two school counselors, and 11 classroom teachers from a temporary education center in Altındağ/Ankara, Turkey. The data of the study were collected using the interview method. The data were analyzed using content analysis. According to the research findings, Syrian refugee children face socio-emotional, family, language, and school problems and hate speech, discrimination, isolation, and exclusion. Syrian refugee children should undergo an orientation and preparation program before enrolling in Turkey's public schools. Seminars should be offered to the Turkish population to help them develop empathy for refugees and understand what they are going through. Teachers should be trained in multicultural education.

Keywords:

Education, early childhood, syrian, refugee, teacher

### 1. Introduction

Migration is a stress-inducing life experience (Şahin, 2014). They are losing loved ones, living amid an armed conflict or war, and witnessing victim of sexual exploitation and abuse cause mental problems (Candappa, 2000; Güçer, Karaca & Dinçer, 2013). Such traumatic events make children feel worthless and unaccepted, resulting in isolation and alienation (Rothbart & Jones, 1998). Migration can cause post-traumatic stress disorder, depression, anxiety, anger, guilt, nightmares, aggression, memory loss, loneliness, low self-esteem, and poor social cohesion and academic performance in children (Yayan, Düken, Özdemir & Çelebioğlu, 2020; Samara, El Asam, Khadaroo & Hammuda, 2020; Khamis, 2019; Karoly & Gonzalez, 2011). Immigrants need skills and coping strategies to deal with stressors. Refugee children who face numerous challenges in the host culture become more vulnerable to peer bullying or external interventions (Chuang & Monero, 2011; Fandrem, Strohmeier & Jonsdottir, 2012). Therefore, schools have to provide a safe environment for refugee children, whose life opportunities have become more difficult due to social prejudices. Schools should increase access to education for refugee children and provide opportunities for self-development, regardless of their status and background (Arnot & Pirson, 2005).

The Syrian civil war has taken its toll on women and children, causing deep wounds and mental, social, and behavioral problems that are yet to heal (Measham et al., 2014). Uprooted and displaced, Syrian families have difficulty supporting their children and providing a suitable environment for their development (Lunneblad, 2017). The ongoing stress and dire conditions are still negatively affecting refugee children's well-being and development in all aspects of life (Samara, El Asam, Khadaroo & Hammuda, 2020). For example, six in ten children witnessed violence, and two in ten were subject to physical or psychological violence during the Syrian civil war (Sirin & Rogers-Sirin, 2015). Along with all this, the education problems

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of refugees have also come to the fore. Education is a critical tool for refugee children to adapt to society. For a healthy integration, the education rights of refugees should be recognized and improved. Therefore, the importance given to education should be increased.

### **1.1. Refugee's Right to Education**

Article 22 of the 1951 Refugee Convention stipulates that the Contracting States shall accord to refugees the same treatment as is accorded to nationals regarding free and compulsory primary education and introduce a set of regulations that allow them to enjoy their right to education. According to the United Nations High Commissioner for Refugees (UNHCR, 2000), education is a fundamental right, and a useful way to treat traumatized refugee children. However, Zygmunt Bauman argues that globalization, mobility, diaspora, and forced migration make it difficult for people to enjoy their modern rights (Pinson & Arnot, 2007). Turkey hosts about two million refugee children, about 450,000 of whom are deprived of their education rights (UNHCR, 2017). The circular titled "Measures Regarding Persons of Syrian Origin outside the Camps in Turkey" (issued on April 26, 2013) was the first step taken by the Turkish Ministry of National Education (MNE) towards the education of refugees. With the circular, the MoNE aimed to identify the education centers providing education to Syrian refugee children (Seydi, 2014). The Circular "Educational Services for Persons of Syrian Origin under Temporary Protection" of 26 September 2013 provides for the MNE to coordinate the education of Syrian children, select teachers from volunteers, develop a curriculum that is based on but independent of the Syrian education system, and ensure that Turkish education and vocational training are offered to those who so desire. The circular introduces significant decisions and improvements for Syrians to enjoy their education rights. According to another circular titled "Educational Services for Foreigners" issued on September 26, 2013, foreigners can pursue a degree after they have provided a certificate of equivalence qualifying them for admission to universities in Turkey, and those who have not yet registered can, if they apply, pursue a degree starting from the grade they were in back in the country of origin (Seydi, 2014). In pursuance of the circular, temporary education centers (TECs) were established, where the MNE implemented the EU-funded project "Support for the Integration of Syrian Children into the Turkish Education System" (SISCTES) to increase Syrian children's access to high-quality education (UNHCR, 2019). The TECs provided Syrian children with an education based on the Syrian curriculum. The circular also prescribed that refugee children be provided with Turkish education, vocational courses, and counselling service to help them adapt to school. Lastly, the government decided to gradually shut down the TECs and integrate Syrian children into the Turkish education system (Demirci, 2017). Syrian children still continue their education in the Turkish education system, with the same rights as other children.

### **1.2. Theoretical Framework**

Given the importance of acculturation in the education of refugees, the theoretical framework of this study was based on John Berry's taxonomy (1974) consisting of four types of acculturation strategies: assimilation (melting pot), separation, marginalization, and integration (democratic pluralism). Assimilation is a process by which a person loses her ties with her culture, language, values, beliefs, and traditions completely when absorbed into the dominant culture. In assimilation, the person adopts the dominant culture to attain shared goals and enjoy opportunities. Separation is a process by which a person clings tightly to her own culture, language, values, beliefs, and traditions while rejecting the dominant culture and avoiding communication with its members. An example of separation is newcomers moving into ghettos and separating themselves from the rest of the society. Marginalization is a process in which a person rejects both his own and the dominant culture because the former caused his displacement in the first place, while the latter discriminates against him. Therefore, neither of the two cultures means something to her. Lastly, integration is a process by which a person receives an education that integrates her own culture, beliefs, and traditions.

Cultural diversity promotes academic performance and socioemotional development. Schachner (2017) argues that equality, inclusion, and cultural pluralism are vital in educating people of different ethnic and cultural backgrounds. Refugees should be provided with education, employment opportunities, healthcare service, and accommodation to help them adapt to the dominant culture. Other factors that make the adaptation successful are communicating and creating social relationships with the local community, participating in social activities, removing language and cultural barriers, and having a sense of security (Soylu, Kaysılı & Sever, 2020; Çelik & İçduygu, 2019). Lastly, refugees enjoying their fundamental and

special rights are more likely to adapt to the host society (Ager & Strang, 2008). Adaptation's success depends primarily on whether the host society is open to cultural diversity. Refugees can easily integrate into a society that respects cultural diversity (Berry, 2011). It should also be stated that respect for cultural pluralism and diversity means that the host society may sometimes change its norms and expectations that define what it deems to be proper and legitimate (Castles, De Haas & Miller, 2013).

There is little published research addressing the educational problems faced by refugee children. Turkey hosts two million refugee children who need effective education and support for well-being and adaptation (Kağnıcı, 2017). This study aimed to identify the educational problems faced by refugee children. We believe that results will pave the way for further research and guide policymakers in designing educational programs and reforms.

This study aimed to determine what kind of educational problems refugee students of Syrian origin face and what kind of attitude teachers and managers have towards them. To this end, the study sought answers to the following question:

- What kind of educational problems do Syrian refugee students face?
- What is the interaction like between Turkish and Syrian students?
- What should be done to ensure that refugee children adapt to life in Turkey?

## **2. Methodology**

### **2.1. Research Model**

This study adopted a descriptive phenomenology design, a qualitative research method, to analyze what teachers and administrators think of refugee students. Qualitative research focuses on analyzing, exploring, and interpreting a phenomenon or event as it is (Fraenkel & Wallen, 2009; Creswell, 2009). Descriptive phenomenology design is used to analyze phenomena or events we are aware of but lack a deep understanding (Reiners, 2012). In qualitative research, the researcher takes an inductive approach to develop a research design and collecting data and is flexible enough to modify the former based on the latter. The most important feature of qualitative research is that it focuses on what people with a shared experience of a phenomenon or an event think about it and then evaluates the situation and process that has led them to think that way (Yıldırım, 1999).

### **2.2. Research Sample**

The sample consisted of two administrators, two school counsellors, and 11 classroom teachers (14 Turkish and one Syrian; 13 women and two men) of a TEC in Altındağ/Ankara, Turkey. Participants were recruited using homogeneous sampling, a nonprobability purposive sampling method. Homogeneous sampling focuses on situations or events with minimal within-group variations (Büyüköztürk et al., 2012). Participants had 1-2 years of work experience. A participant with a sound knowledge of Turkish was recruited because TECs had no Syrian educators who could speak Turkish.

### **2.3. Data Collection Tools and Procedure**

Qualitative data were collected in the spring semester of the 2017-2018 academic year using a semi-structured interview based on expert feedback and a literature review and needs analysis conducted by the researchers. The interview form consisted of nine open-ended questions addressing what educational issues and problematic behavior teachers think refugee students have and what they think should be done to improve the education for refugee students (Büyüköztürk et al., 2012). Three experts in preschool and counselling evaluated the form for language, meaning, clarity, and content validity

### **2.4. Data Analysis**

The data were analyzed using content analysis to develop themes and codes (Patton, 2002). Content analysis encodes written or verbal statements and converts them into numerical values for detailed analysis (Creswell, 2009). Content analysis allows the researcher to associate and interpret themes and make predictions based on them (Yıldırım & Şimşek, 2005). The researchers followed the three consecutive stages Miles and Huberman (1994) recommended for qualitative data analysis. First, they read the transcripts (raw

data) over and over again to get a general idea and then sorted them for analysis by removing the irrelevant and redundant information (data reduction) (Guest, Namey & Mitchell, 2012). Second, two researchers coded the data separately, coded the relevant data, and developed themes (patterns and inferences). Third, they produced results and interpreted them inductively (conclusion and confirmation).

The researchers and another independent researcher checked the themes and codes repeatedly to increase reliability. They converted the data into frequencies and used direct quotations from participants to provide an accurate and coherent picture of their views. Data presentation was based on frequency, quotation selection, diversity, and extreme examples (Carley, 1993). They specified the codes on which they agreed and disagreed and then discussed the latter to reach a consensus. An interrater agreement greater than 90% indicates acceptable reliability in qualitative research. The researchers used the formula [Reliability = (number of agreements) / (number of agreements + number of disagreements)\*100] (Miles & Huberman, 1994) and calculated the interrater reliability as .947, indicating high reliability. All participants were assigned codes based on their initials (M.T., Y.T., I.T, etc.).

In qualitative research, validity refers to the degree to which a measure accurately measures what it intends to measure, while reliability is about consistency (Creswell, 2009). To ensure validity, the researchers looked into the school environment and needs before the study and then had the interviewees review the transcripts and interpretations for approval (Creswell & Miller, 2000). To ensure reliability, the researchers consulted with experts (preschool education, assessment and evaluation, and counselling) to develop measures and then code and analyze the data.

## 2.5. Ethical

Prior to data collection, the study was approved by the Ethics Committee of Hacettepe University (date: 09.05.2017 – number: 433/1744). The researchers conducted face-to-face interviews in the teachers' or counsellors' room after informing the teachers about the purpose and procedure of the study and obtaining consent from those who agreed to participate. They recorded all interviews (361 minutes and 27 seconds in total) and remained as neutral as possible during the interview.

## 3. Findings

This section addressed participants' views of educational problems faced by refugee students of Syrian origin.

### 3.1. Challenges of Education for Refugee Students

The problems faced by refugee students were grouped under four categories: socioemotional, family, language, and school. Participants addressed aggression, school adaptation problems, disciplinary problems, lying, and peer-bullying as socioemotional problems. Family problems were cultural differences, malnutrition, poor self-care, and a lack of family engagement and appropriate accommodation. The most prominent language problems were as follows: refugee students cannot express themselves, teachers cannot communicate with parents, schools do not have enough educational material, and there is no prep program for refugee students. School problems were multigrade classes, poor physical conditions, inadequate transportation, and understaffing.

The following are direct quotations about aggression and low school adaptation:

Y.T. *"They [refugee students] beat the Turkish students, and tear their notebooks, or walk around and make too much noise during class. They are too prone to violence, I mean, they're always using violence, even their games are very violent; I mean, they just don't have a culture of playing games in peace. They make toy guns out of paper and play-shoot one another; that's just what they do all the time."*

P.T. *"The war is a recurring theme in their games; I mean, they are sometimes very aggressive, so you can see that in their games, too. For example, they slap each other on the back of the neck and run away. Turkish students just play jump rope, or, I don't know, games that are appropriate to their age, but Syrian students play violent games, so, this shows that they've been affected by the war, even if they didn't witness it in person."*

M.T. *"Yesterday, for example, when I was on duty, I broke up several fights in the corridor. I asked them why they were fighting, and they said, "We were not fighting, we were just playing games." So that's how they play games, even*

*their games are violent, they kick and shove each other, it's very violent. I do not think the war is the only reason. I mean, even those who did not witness the war are like that. I think that's how they communicate. I mean, the culture of violence is too pervasive."*

K. T. *"I especially observe that some children are prone to violence and have trouble adjusting to their classmates and interacting with them."*

The interviews show that aggression/violence and a lack of family engagement and self-expression skills undermine refugee students' education.

### 3.2. Interaction between Syrian and Turkish Students

Participants claim that refugee students face bias, marginalization, and discrimination, which they say is decreasing over time. They do, however, mention that refugee kids are going through an identity crisis. Turkish pupils do not want refugee students as classmates or friends. Here are a few direct quotes about Syrian and Turkish students' interactions: I.T. *"It was more common last year. I mean, parents were more prejudiced against their children studying together with refugee students, but I guess they've kind of come to terms with it. All our students are Syrians, so we don't see it that much in our classrooms, it's more apparent in mixed classrooms, but we've had some incidence in our classrooms, too. For example, there are GEMS (Great Explorations in Math and Science) sessions in the afternoon. Once I walked into the classroom and saw that the curtains were all torn; when I asked who did it, they all said "Syrians!," and I was like, "Aren't you all Syrians?" and they all crack up. Refugee students are going through a phase; they feel like they belong to neither here nor there; I think they are in some sort of limbo."*

Ö.T. *"Once in class, I unfurled a Syrian flag, and they got into a hot debate over whether it was the Syrian flag or not. They don't even know what the Syrian flag looks like. They are having some sort of an identity crisis. I ask them about their national anthem, and one of them starts reciting it, and another snaps at him and tells him not to recite it. They have mixed feelings about their own identity. I don't know how to address that; I don't know what to do to help them integrate into society. They should mingle with the Turkish community and live where they live."*

Y.T. addressed Turkish parents' existing, but slowly diminishing, prejudice against Syrian students:

Y.T. *"At first, that was the case. For example, I had some parents of first graders who were prejudiced against Syrian students. Actually, it was the parents, not the kids, because kids don't discriminate against kids. They just think of them as friends to play together. But some parents didn't want their kids to make friends with Syrian students. They told them to stay away from them, saying that they were dirty and bad, which affected how Turkish students looked at their Syrian peers. But I didn't let that happen, and I talked a lot about it to the parents. They filed tones of complaints with BIMER (Prime Ministry Communication Center) and the school administration, saying that they didn't want their kids studying together with Syrian students, like they didn't want them in their kids' classrooms."*

M.T. *"It's quite different today than it was about three months ago. Now it is impossible to separate Turkish students from their Syrian classmates. So I think that [discrimination] is avoidable. I mean, these kids are influenced by their parents and social media, but when they meet them in person, they change their minds about them."*

Some participants stated that Turkish parents believed that refugee students of Syrian origin were positively discriminated against Turkish students:

H.T. *"Yes, absolutely. For example, neither Turkish students nor their parents like refugee students. I actually had an incident where a Turkish parent came at me and was all like, 'You're taking their [Syrian refugees] side!, you are favoring them!'"*

Ö.T. *"International organizations supply books and materials to Syrian students, and when Turkish parents see that, they're like, 'Why don't you give stuff to our kids? They are the citizens of this country, but they [Syrian students] aren't; why are you giving them stuff but not to us?' Besides, kids who hear their parents say such things are affected by that."*

Some interviewees emphasized that the only way to fight discrimination against Syrian children and their parents is if teachers reach out to Turkish parents and help them develop empathy for refugees and understand what they go through:

A.T. *“Teachers should respond when they suspect even the tiniest bit of discrimination; that’s how they can eliminate it, because kids know no discrimination unless taught by their parents. Teachers should talk to the parents of students who discriminate against their refugee peers, because kids take their parents seriously. In fact, some TV channels are saying terrible things about refugees, like ‘Why are Syrians here?’ and whatnot. Teachers should warn parents about that kind of stuff because kids learn discrimination from television, too; so, parents should be careful what their kids see on television.”*

M.T. *“Some colleagues are too reactive; you’ll see it yourself. A great responsibility falls on us teachers; I mean, we should be uniting, not dividing. We should eliminate any sort of discrimination and approach students in a welcoming way. It’s not only teachers but also neighbours, and local communities that need to come to terms with the fact that we all live together.”*

ME.T. *“Talking to the kids doesn’t make much of a difference because they take their parents as role models. They listen to what you have to say, but it all goes in one ear and out the other. So, what we should do first is change the parents’ minds to change the kids’. For example, this student keeps complaining about the Syrian students and says things like ‘I want Syrians gone, I don’t want them here, I don’t want them in my classroom, Turks should have their own class, and Syrians should have their own.’ I’m not surprised at all, because that’s probably what he hears from his parents. “*

As the quotes above illustrate, some teachers are concerned about Syrian students being discriminated against by their Turkish peers. However, some other teachers have reservations about letting Syrian students study together with Turkish students. They think that the former may be in danger of assimilation and alienation from their own culture. For example:

ME.T. *“Some parents say that their children forget to speak Arabic. For example, I have a Syrian student who speaks Turkish impeccably, and I ask him to translate what he said into Arabic, but he says he can’t. So, they are forgetting their native language. Still, our goal is not to alienate them from their cultural identity, we want to integrate them into our culture, but while doing that, we want them to retain their Syrian/Arabic culture. But that doesn’t seem to be the case; I mean, they end up being alienated from their culture as they adopt the way of living here. That’s what Syrian parents object to; they say they may as well send their kids to a mosque.”*

Ö.T. *“Most refugee parents don’t want to send their kids to Turkish schools. We offer half-day Arabic education, so that’s why they are okay sending their kids here. We have a hard time getting them to enroll their kids in Turkish schools because, obviously, they are afraid of assimilation. I mean, they know that Turkish schools do not teach their language and history and Syrian culture.”*

Children lose their ties with their culture more quickly because they are more open to adopting a new way of living than their parents. First, they lose command of their native language, which is the main component of cultural identity. Language attrition results in a profound cultural chasm between refugee children and their parents (UHNCR, 1994). Therefore, multicultural education is of paramount significance.

### **3.3. Refugee Children's Adaptation to Social Life and School**

Multicultural education is based on the premise that respect for diversity, effective dialogue, and combating prejudice, racism, and xenophobia promote social cohesion. The following are some quotations from participants about multicultural education:

Ö.T. *“We should have been taught about Syrian culture; I mean, we knew nothing about the daily life in Syria, and what is considered wrong or inappropriate there, or what is sacred to them. Yes, we have something in common when it comes to religion, but there are things that make us different. But we don’t know any of that; I mean, for example, I use a word during class, but it turns out to be a slang word in Arabic, but I have no idea!, so the whole class bursts out laughing.”*

A.T. *“We should eliminate exclusion, isolation, or prejudice so that Syrians can adapt to Turkish culture. Besides, people should receive a multilingual and multicultural education, and everyone should respect each other. Turkish people should do more to learn about the culture of Syrian people; that’s how two peoples can learn from each other, and that’s how they know that when someone does something wrong, they do it not because they are bad but because it’s their culture.”*



Ö.T. *“First, the ghettos should be closed down to promote refugee children’s integration. But the most important thing is raising public awareness. Ghettos pop up because Turkish people discriminate against Syrian refugees. Our school is a school for Syrians. There is also a school for Arabic people, where most students are Arabs, who don’t speak Turkish at all. In its corridors, labs, and classrooms, noone speaks Turkish, except for the teachers, so it takes the students forever to learn Turkish and Turkish culture. But if those kids were accepted by society, then they would be all around the city and learn Turkish and Turkish culture from their neighbours and local communities, and friends.”*

H.T. *“If you accept that they [Syrian refugees] have their own country, that we have the same faith, and that we are neighboring countries, and if you draw a Syrian flag next to the Turkish flag on the blackboard, then all negative perceptions are removed; as it turned out, that was all I had to do all this time, and it took me a whole month to figure that out. To help them adapt to our culture, we should respect their culture, language, traditions and customs.. Yes, we are Turkish, and we are here, and they are Syrians, and they are here, too; we all are here. When you get this across to them, they become more open to education. So, we should have a policy of acceptance. Once we do that, they lay down their shields.”*

As the quotes above illustrate, teachers are aware that they should respect the culture and values of refugee students and provide them with multicultural education. They also believe that refugee children who participate more in social life and communicate more with locals are more likely to adapt to Turkish culture.

#### **4. Conclusion and Discussion**

Refugee children of Syrian origin face socio-emotional, family, language and academic problems throughout their school years in Turkey. Turkish parents discriminate against them, and Turkish students neither want to make friends nor study with them. Although attitudes and behaviors toward refugee children are sometimes positive due to feelings of empathy and compassion (Nickerson & Louis, 2008), settled society has a negative outlook that usually takes the form of prejudice, racism, social exclusion, and xenophobia (Louis, Duck, Terry, Schuller & Lalonde, 2007; Mestheneos & Loannidi, 2002). The most prevalent socioemotional problem is refugee children’s tendency to violence. According to Haider (2010), children subject to violence and aggressive behavior are more likely to normalize and tolerate violence. Our results also show that refugee students normalize violence and use it a lot in their games, probably due to their traumatic experiences or social exclusion. However, they have been living in Turkey for a long time, and therefore, their tendency to violence may have more to do with the violence they witness in their homes.

The major family-related problem refugee students face is the lack of family engagement in their education, which is also associated with cultural differences. Szente, Hoot, and Taylor (2006) report that parental engagement in preschool education among refugees is so low that some parents do not even go to school to meet their children’s teachers the whole school year. Not only are refugee parents not engaged in their children’s education, but they mostly ask for help and talk about their economic problems during seminars and home-visits (Göktuna Yaylacı, Serpil & Yaylacı, 2017). Our participants also stated that they could reach their Syrian students’ parents in urgent situations only by phone or Syrian colleagues. According to Rousseau, Drapeau, and Corin (1996), cultural difference is the greatest challenge for teachers. Soylu, Kaysılı, and Sever (2020) argue that teachers with little knowledge of refugee students’ cultural backgrounds are more likely to have difficulty providing education, which effectively integrates refugee children into the host culture. In general, refugee families cannot participate in their children’s education because they know little about the education system back in the country of origin. Some refugee parents may even pressure their children to drop out and get a job to help support the family (Taylor, 2004).

The language barrier is another obstacle to education. Syrian refugees cannot speak Turkish well, and therefore, have difficulty expressing themselves and communicating with teachers. Hurley, Medici, Stewart, and Cohen (2011) state that refugee students feel bad because they cannot communicate with their teachers due to the language barrier. Research, in general, shows that the language barrier prevents children from accessing high-quality education (Başar, Akan & Çiftçi, 2018; Erdem, 2017; Kardeş & Akman, 2018; Tosun, Yorulmaz, Tekin & Yıldız, 2018). Children who receive language support from their parents are more likely to have high academic performance (Yurdakul & Tok, 2018).

Lastly, refugee children face school-related problems, such as multigrade classes, poor physical conditions, inadequate transportation, understaffing, and the lack of educational materials and prep programs. According to Madziva and Thondhlana (2017), schools that want to provide quality education to refugee students should have enough teachers, use inclusive education models, recognise and meet the emotional and mental needs of special groups, promote peer interaction, and build a good relationship with families. Schools should also inform families about their rights and responsibilities and enforce policies against peer-bullying and racism (Rubinstein-Avila, 2017; Small, Kim, Praetorius & Mitschke, 2016).

Berry, defines four types of acculturation strategies: assimilation, separation, marginalization, and integration. An important reason for social segregation is prejudice, exclusion, isolation, and discrimination. Almost all participants stated that Turkish students are prejudiced against Syrian students. Refugees are subject to discrimination, exclusion, and racism (Topaloğlu & Özdemir, 2020; Mohamed & Thomas, 2017). According to our participants, Turkish people should be educated to reduce discrimination and stigma surrounding Syrian refugees because Turkish students learn them from their parents.

For long-term psychological well-being, refugee children should be able to speak their mother tongue and maintain their familial and cultural ties (Moinolnolki & Han, 2017). Our results show that refugee families want to keep in touch with their cultural and historical roots because they fear that, otherwise, their children are in danger of being alienated from them. In connection with this, Syrian parents prefer to send their children to TECs that teach in their native language and curriculum (Emin, 2016). Our participants also pointed out that Syrian students become happier and more confident when they feel that their culture is respected. For example, Ö.T. stated that "Syrian students are happy when they hear me use an Arabic word." "...I learned a couple of Arabic words to win their hearts and show that I empathize with them." H.T. also noted that "You are done away with all negative perceptions when you draw a Syrian flag on the board right next to the Turkish flag." Children who forget their native language will likely suffer from disrupted family relations and poor communication and academic performance (Rubinstein-Avila, 2017).

Moreover, alienation can lead to depression (Martens, 2007). On the other hand, refugee students encouraged by their teachers to keep their cultural values alive and use their native language are more likely to adapt to school and have high academic performance. There is a positive relationship between academic achievement and self-confidence and acculturation (Brown & Lee, 2012; Fruja Amthor & Roxas, 2016), while a closed school culture and a language barrier lead to exclusion (Thomas, 2016). We can state that multicultural education is of paramount importance to allow minority groups or subgroups to enjoy their culture while receiving a high-quality education. Therefore, teachers should be encouraged to implement multicultural education.

Children who identify and take pride in their own culture and that of the host culture are more likely to turn into resilient, tolerant, and competent individuals who feel comfortable in both cultures (Costa, 2016). Teachers working with refugee students should consider their culture and experiences and introduce them to their classmates as individuals with equal rights. Teachers should respect all students, irrespective of their cultural and ethnic backgrounds (Mcbrien, 2017). Poureslami et al. (2013) maintain that early childhood education programs should be multicultural and respect different values, beliefs, and languages. According to Hek (2005), refugee children should be encouraged to be in touch with their culture to overcome the feeling of exclusion and build self-confidence. Our results show that teachers are aware that multicultural education that respects cultural differences can significantly contribute to the education of refugee students. However, they feel incompetent about it. For example, E. T. stated that "I have never been trained in multicultural education. The Turkish education system does little to none about it, so I did my best to learn about it." AR. T. also stated that "I don't think I'm competent enough, because we should have learned about it before starting our professional life." Teachers, in general, are incompetent in implementing multicultural education (Hurley et al., 2011) and teaching refugee students because they have difficulty understanding other cultures. Ferfolja (2009) states that teachers should be supported to provide a rich, egalitarian, and multicultural classroom environment that meets students' needs. The better the teacher-student relationship, the better the school adaptation (Nur et al., 2018). Overall, these studies indicate that teachers should be qualified to ensure that education programs targeting refugee students yield positive learning outcomes. In-class interventions can help teachers prevent prejudice and racism against refugee children (Şeker & Sirkeci, 2015).

## 5. Recommendations

The following are some recommendations based on the results:

- Syrian children should complete an orientation and preparatory program before enrolling in schools in Turkey.
- Seminars should be held for Turkish people to help them develop empathy for refugees and understand what they go through.
- Teachers should be trained in multicultural education.
- Schools should be provided with materials to promote multicultural education.

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# Analysing the Effects of Assessment and Evaluation Applications and Exam Formats in Distance Education

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## ABSTRACT

This study examines the online assessment-evaluation activities in distance education processes. The effects of different online exam application styles considering the online assessment-evaluation in distance education processes, including all programs of a higher education institution, were documented. The population for online assessment-evaluation activities, exam types, and student achievement scores comprised 3830 courses by 805 academics over the Uşak University learning management system and 29511 students. The data were analysed with descriptive statistics and t-tests for comparisons. It was found that academics preferred multiple-choice exam formats more than online assignments or classical (written) ones. Moreover, students' success scores in multiple-choice exams were significantly higher than exams including open-ended questions. It was also found that average exam success was higher when the questions were presented as separate but as a group. The findings were discussed and reported with a literature review.

### Keywords:

Online exam, exam formats, e-assessment, e-exam, online assessment.

## 1. Introduction

It can be argued that distance education applications, starting from the 1800s, reached the most widespread implementation with the pandemic in the 2020s. Institutions from pre-school to higher education have switched from formal to distance education, and distance alternatives have replaced classroom learning activities. In March 2020, a decision was taken to transition to distance education in all higher education institutions in Turkey as teaching activities were conducted through communication and educational technologies. Distance education in higher education institutions resorted to both online and offline assessment-evaluation applications in this process.

Assessment is a process of observation and examination through which quality is intended to be tested and marked with numbers or symbols (Turgut, 1987). Assessment quantifies the attributes of an event or objects to be compared with others (Pedhazur & Schmelkin, 1991). It is also the process of assigning a value to an observed event and quantifying that by specific rules (Büyüköztürk, 2018). Besides, it is also tried to be determined how much/how efficient one has a particular trait. Therefore, assessment can also be defined as a descriptive process (Kargin, 1989; Linn & Gronlund, 1995).

It can be conducted in three ways as direct, indirect, or constructs, depending on the application method and the nature of the characteristic aimed to be assessed. In a direct measurement, the feature to be assessed is examined through other instruments of the same type. For example, measuring a stick with a meter is a direct measurement. However, indirect assessment examines an aspect of measure by observing another

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feature. For example, IQ Test is an indirect measurement to assess the level of intelligence.. A construct assessment is a derived examination if the aspect to be measured is obtained by blending the results of two or more measurements. For instance, the speed of an object is obtained by dividing the distance travelled per unit time (Karagöz & Bardakçı, 2020).

On the other hand, evaluation is a process that makes inferences by interpreting the assessments' data (Tekin, 1996). A decision is made by comparing the assessment results by a criterion in the evaluation. (Turgut, 1987). Evaluation is a broader concept that includes the assessment. This concept comprises assessment results, criteria, and decision components (Bahar, Nartgün, Durmuş, & Bıçak, 2012). Although there are different assessment type classifications within the education system (Baran, 2020), there are three commonly approved approaches (Eviren, 2017). These are the diagnostic assessment, formative assessment, and summative assessment (Torrance & Pryor, 1998). A diagnostic assessment aims to examine an individual's profile of their strengths and weaknesses (Delandshere, 1990), and defines an individual's current situation before starting a program. Moreover, formative assessment is made during the learning process and aims to improve learning by focusing on details (Huhta, 2008), and it determines the learning difficulties and deficiencies of individuals in the learning process. Summative assessment, on the other hand, is conducted at the end of the learning process, including both previous and post-process learning (Yaşar, 1998).

Assessment and evaluation reveal whether the learning objectives set out earlier have been achieved as it is essentially a data collection process (Turgut & Baykul, 2015). The entire process of data collection on whether student learning was achieved, and the transition of this data to the student as feedback, realising the necessary cognitive, affective, and psychomotor behaviour changes in the student are addressed by the measurement and evaluation discipline. With specific standards, assessment-evaluation methods determine and evaluate whether targeted skills, attitudes and behaviours are achieved during the learning process (Özalkan, 2021).realis

Result-oriented assessment and evaluation mechanisms are not used to improve students' learning but rather to determine what level of learning is achieved. Midterm, finals and make-up exams in higher education institutions are parts of this evaluation process. Formative (process-oriented) assessment and evaluation assume a more diagnostic role than the result-oriented approach. It is essential to monitor student learning and provide continuous feedback, especially in lectures where the information is cumulative, and previous learning is fundamental to the subsequent. The feedback will be beneficial for the teaching and learning process, and thus, the mastery learning model requirements will be met at the end of a term. The quizzes, forum discussions, and activities implemented with Web 2.0-based tools in the process can be counted among these types of assessment activities.

### **1.1. Assessment and Evaluation in Distance Education**

Objective and/or subjective evaluation methods can be utilised in distance education. The achievement and multiple-choice tests can be used in objective evaluation, while tools such as projects, online discussions, and portfolios can be used in distance education for subjective evaluation (Simonson, Smaldino, Albright, & Zvacek, 2012). The distance education field also improves with technological advances, especially in assessment and evaluation approaches (Baran, 2020). The assessment-evaluation in distance education has become even more vital with the urgent transition to distance education. This evaluation process also plays a vital role in revealing the functionality of the distance education system and shaping the future of individuals (Özalkan, 2021; Sari, 2020).

A sustainable assessment and evaluation approach should be adopted in distance education (Ann & Christie, 2002). Turkey's most commonly used measurement tools are multiple-choice tests, true-false tests, matching tests, short and long-answer open-ended written exams, oral examinations and homework (Çakan, 2011). Moreover, several different question types are multi multiple-choice (with multiple correct answers), matching, selecting missing words, filling in the blanks, random short-answer matching, dragging and dropping on the picture, cloze test, and the calculated multiple choice. In addition, online puzzles can be used as an alternative assessment tool (Genç & Aydemir, 2015).



A multiple-choice question is defined as a question type in which the student is asked to select the correct answer from the choices listed (Güler, 2017). Tests with multiple-choice questions have advantageous features such as covering a wide cognitive area with the number of questions, responding to cases with a high number of students, objectivity in the evaluation process, and high reliability (Martiarini, 2017). The multiple-choice tests can be applied synchronously or asynchronously through online technologies in distance education. However, the true-false questions are similar to the multiple-choice, but in which the number of options, there are only two options such as true/yes or false/no (Parker et al., 2012). This type of question, also known as a closed-ended question type, has the advantage that the evaluation process can be performed in shorter times (Dossetto, 2021).

On the other hand, open-ended questions are subjective questions in which students can express their views on a broader perspective and generate original answers (Ar, 2019). It can be a one-word short answer or a long answer. It also has some disadvantages compared to closed-ended questions with specific options are presented to students. Collection and analysis of responses take time, may require extensive coding for in-depth analysis, and data may be incomplete (Reja, Manfreda, Hlebec, & Vehovar, 2003; Neuert, Meitinger, Behr, & Schonlau, 2021). Exams with open-ended questions are called classical exams.

Assessment applications with different question types can be performed through the assessment-evaluation modules within the learning management systems. These exams can include only one type of question, or different questions can be combined (e.g., multiple-choice + open-ended). Exams that contain such different types of questions are named mixed exams. Besides the multiple-choice exam applications, assessment-evaluation activities can be conducted in classical, mixed, and assignment formats.

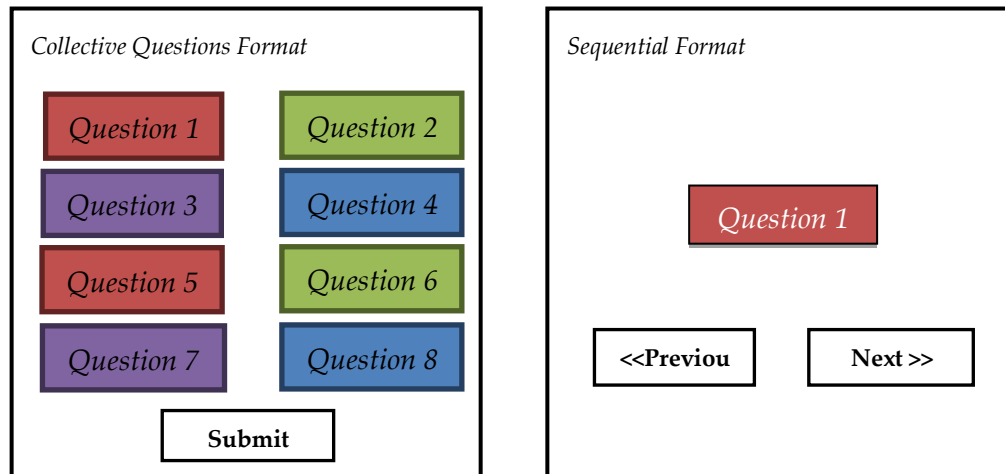
Homework is written, or oral schoolwork usually carried out in a non-classroom environment. Various homework sub-types can be applied in or outside the classroom, such as complementary, preparatory, constructive, and creative (Güneş, 2014). Homework can be helpful in student evaluation activities in distance education. Students can be given homework through web-based modules in learning management systems with a set deadline. When the deadline comes, the assignments are collected as different types of tasks or file(s). According to the homework content, these file types can be text files such as pdf, word (.doc) documents, and an image, picture, design, or program files. Students can upload files up to the file limit (or size) defined by the instructor for the homework.

Baran (2020) examined higher education institutions' assessment and evaluation activities for open or distance education. It was found that the majority of universities prefer objective evaluation methods. Kuikkaa, Kitola, & Laakso (2014) and Shraim (2019) revealed that multiple-choice questions were preferred more in online exams, followed by fill-in-the-blank and matching type questions, respectively, in their study with teachers in Finland. Students' perceptions about online assessment-evaluation activities applied in higher education were analysed in this study. Online exam applications were examined in pedagogical, validity, reliability, efficiency, practicality, and safety dimensions. It was concluded that online exams are more efficient in time and effort than classroom exams, but there are problems with exam security, validity, and proper application. Karadağ (2014) examined the assessment and evaluation activities applied in open and distance education institutions and argued that almost all universities used open-ended questions and multiple-choice tests intensively in distance education assessment and evaluation activities. However, it was also argued that the most preferred assessment tools were multiple-choice tests, exams with open-ended questions, and assignments, respectively.

## **1.2. Online Exam Application Styles**

There are security problems compared to classroom exams due to the nature of online assessment-evaluation applications (Al-Hakeem & Abdulrahman, 2017; Can, 2020; Gunawardena & LaPointe, 2003). Although research or project-based and process-oriented evaluation approaches are more reliable than web-based instant assessment-evaluation applications (Semerci & Bektaş, 2005), online tests with multiple-choice and/or open-ended exams are more common, thanks to their practicality and application friendliness (Karadağ, 2014). Recently, physical security measures such as checking student ID, camera and ambient sound recordings, etc., are applicable in online exams. Online exams also offer a variety of settings such as time limits, session passwords, penalising for wrong answers, randomising pool questions, question orders in consecutive or mixed form, individual or collective tests formats.

The students can be impeded from returning to the previous questions in online exam applications, where questions are directed to the students sequentially. The student has the right to see a question only once in such cases. However, the exam applications where the questions are addressed to the student collectively allow the students to start the online exam and access all the questions simultaneously from a single screen. Only one question is displayed on the student's screen at a time in the exams with the sequential formats, and the student can navigate between the questions through back and forth (previous/next) buttons. The <</previous button might be removed to set only forward (sequentially) and conduct the exam irreversibly. The online exam application screens with collective and sequential questions are shown symbolically in Figure 1.



**Figure 1.** Symbolic Representation of Student Screens with Collective and Sequential Questions in Online Exams

These settings may differ by the web-based learning management system and assessment-evaluation modules used. There are also additional security mechanisms such as preventing several tabs on the web browser, reporting the applications running in the background of the student devices, camera checks at certain intervals, recording the student's image and ambient sound, reporting the student's network traffic (thus viewing the operations on different devices) in the current online examination tools.

### 1.3. Purpose of the Study

It is anticipated that mechanisms boosting exam safety may have different implications for the online exam process and student performance. Therefore, the necessity of examining and reporting exam types and security measures preferred by academics in online exams has become a topic itself. Moreover, analysing the parameter impacts is essential to shape the rationale of the attempt. These parameters include the chosen question types, the number of questions, exam duration and how the questions are directed, impacting the successful scores. analys

The research questions are as follows;

1. What are the assessment-evaluation types preferred by academics?
2. What are the question types and distribution preferred by academics?
3. Is there a significant difference in student achievement averages by exam types?
4. What is the number of questions and exam durations preferred by academics?

**How much does asking questions sequentially and collectively in multiple-choice exams impact exam score averages?**

### 1.4. Importance of the Study

Baran (2020) stated that the studies on assessment and evaluation in distance education are pretty limited in higher education in terms of web-based measurement and evaluation processes. This study aims to generate data for executives and researchers who conduct assessment-evaluation activities in distance education processes and contribute to the relevant literature. YÖK (2020) reported that the rate of courses that can be enrolled and tutored via distance education in higher education raised to 40% during the pandemic, and

afterwards, it is predicted that the number of courses to be conducted through distance education will increase in the future. Therefore the number of online assessment-evaluation activities will follow this trend. Studies in this context shall generate valuable reports and recommendations based on scientific findings on the application forms of assessment-evaluation activities in distance education for decision-makers, academics, and executives.

## 2. Methodology

### 2.1. Research Model

This research was designed with the general survey model. Survey designs describe the current situation related to the subject through a snapshot (Büyüköztürk, 2018).

### 2.2. Data Collection Tools

A total of 3830 online assessment-evaluation activities and system registration data (log) were arranged by 805 academics with 29511 students studying on the Uşak University learning management system during the spring semester of 2020-2021 were used.

Learning management system (LMS) is the open-source Moodle LMS (v3.10+), a widespread tool. Moodle is a learning platform that enables educators to organise e-learning activities, create/publish online activities, content, and where students can access these materials and engage in collaborative activities (Miyazoe & Anderson, 2010). No plugins or themes (visual templates) were installed on the system, and the system was made available to students by default. The exam module is the default provided by Moodle, and the default settings for 3830 online exams were as follows;

- Each student can take the exam/assignment only once.
- The type of exam (test, classical, mixed, assignment) was determined by the academics.
- The academics determined the question types (multiple-choice, open-ended, etc.) in the exams. The academics determined the number of questions in the exams.
- The academics designated exam dates/times.
- The academics specified exam durations (time limit).
- Immediate feedback was turned off (regarding answers, test scores, etc.).
- The academics determined the collective or sequential display of questions in multiple-choice test exams.

### 2.3. Data Analysis

The descriptive data were presented as percentage and frequency tables, and parametric t-test analyses were performed for comparisons. The pilot tests were also made to determine whether the data were suitable for parametric tests. Moreover, the effect sizes have been calculated in eta square  $\eta^2$ . SPSS v19 program was used for statistical analysis.

### 2.4. Ethical

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed.

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## 3. Findings

The descriptive statistics about the analysed academic units were presented.

### 3.1. Findings Regarding the Assessment-Evaluation Types Preferred by Academics

There are four types of exam applications varying by units: multiple choice (test), mixed (open-ended + multiple-choice), written (open-ended), and assignment. The distribution of the academic units and the exam types are detailed in Table-1.

**Table 1.** *Distribution of Academic Units and Preferred Online Exam Types*

Academic Units	N	Multiple Choice		Mixed		Written		Assignment		Total
		f	%	f	%	f	%	f	%	
Faculty	11	740	51.67	481	71.79	344	72.57	1001	79.82	2566
High School	3	204	14.24	31	4.62	5	1.05	71	5.66	311
Vocational School	11	295	20.61	158	23.59	125	26.38	182	14.52	760
Common Courses Unit	2	193	13.48	0	0	0	0	0	0	193
Total	25	1432	100	670	100	474	100	1254	100	3830

Uşak University has 25 academic units, including 11 faculties, 11 vocational schools, and 3 high schools, including standard compulsory and elective courses taught in all academic units.

The 2566 online assessment and evaluation activities performed within the faculties were dispersed as 39.03% (N:1001) assignments, 28.83% (N:740) multiple-choice exam, 18.74% (N:481) mixed questions exam, and 13.40% (N:344) written formats. Moreover, the 311 online exams held within the high schools were grouped as 65.59% (N:204) multiple-choice, 22.85% (N:71) assignment, 9.96% (N:31) mixed, and 1.60% (N:5) in written format. The total of 760 online exams held within vocational schools was divided as 38.81% (N:295) multiple-choice, 23.97% (N:182) assignment, 20.78% (N:158) mixed, and 16.44% (N:125) written format. The faculties' most preferred web-based assessment-evaluation activity was assignments, while the most preferred one in high schools was multiple-choice exams. Moreover, the vocational schools and standard course units frequently utilised multiple-choice exams.

**3.2. The Question Types and Distribution Preferred by Academics**

The number of questions in 1906 written and multiple-choice online exams conducted by academics is detailed. The descriptive findings are presented in Table-2.

**Table 2.** *The Question Types and Distribution Preferred by Academics*

Question Types	Total Number of Exams	f (Question)	%	X <sub>avg</sub>
Multiple-choice Question Faculty	1432	29464	93.35	20.57
Open-ended Question	474	2098	6.64	4.42
Total	1906	31562	100	12.49

A total of 29464 multiple-choice questions were asked in 1432 multiple-choice exams, as detailed in Table-2. The average number of multiple-choice questions per exam was 20.57. Besides, 2098 open-ended questions were asked in 474 written exams. The average number of open-ended questions per exam was 4.42. It was determined that the exam types with multiple-choice questions were more preferred rather than more preferred exams with open-ended questions.

**3.3. Comparison of Student Achievement Scores by Exam Types**

It was necessary to determine whether there was a difference in average exam scores between multiple-choice and open-ended questions. T-test was used for this purpose. In order to determine whether the data was suitable for parametric analysis, the assumptions were tested, and T-test analysis results are documented in Table-3.

**Table 3.** *T-Test Results for Student Achievement Score Comparison by Exam Types*

Exam Types	N	X <sub>avg</sub>	SS	Sd	t	p
Multiple-choice Exam	1432	71.27	15:30	1143.998	10.371	.000
Open-Ended (Written) Exam	474	63.42	10.79			

While the average student achievement score in the exams with multiple-choice questions attended by 29464 students was 71.27, the average student success score in the ones with open-ended questions attended by 2098 students is 63.42. Table-3 demonstrates a significant difference in the student achievement score averages by exam types  $t(1143.998)=10.371, p<.05$ . Moreover, the student achievement average in multiple-choice exams is significantly higher than the average of open-ended exams.

### 3.4. Findings Regarding the Number of Questions and Exam Durations Preferred by Academics

The number of questions, exam duration, and distributions preferred by academics by exam types are available in Table 4.

**Table 4.** Number of Questions, Exam Duration, and Distribution by Exam Types Preferred by Academics

Exam Types	Number of Exams	Number of Questions	Question Avg.	Total Time Avg. (min)	Time Given for each Question
Multiple-choice Exam	1432	29464	20.57	29min 29"	1min 26"
Written Exam	474	2098	4.42	47min 48"	10min 49"
Mixed Exam	670	8605	12.84	39min 13"	3min 3"
Total	2576	40167	12.61	38min 50"	5min 1"

While the average number of questions asked by academics in 1432 multiple-choice exams is 20.57, as shown in Table 4, the students were given an average time of 29 minutes 29". The average time allocated to 1 multiple-choice question was 1 minute and 26". The average number of open-ended questions in the 474 written exams was 4.42, and students were given an average 47 minutes 48". The average time allocated to 1 open-ended question was 10 minutes and 49". While the average number of open-ended + multiple-choice questions in the 670 mixed exams was 12.84, the average exam duration was 39 minutes 13". It can be argued that while the time given to the multiple-choice questions is ~1.5 minutes, the time allocated for open-ended questions is ~11 minutes.

### 3.5. The Effect of Question Screening Type on Student Success in Multiple Choice Exams

The questions can be asked to students in different styles (sequentially or collectively) in multiple-choice exams for web-based assessment-evaluation activities performed through distance education platforms. The effect of multiple-choice exam question styles on students' average achievement scores determined by the t-test is detailed in this section. The t-test analysis results are illustrated in Table 5.

**Table 5.** T-Test Results on the Effect of Question Screening Format in Multiple Choice Exams on Student Success

Multiple-choice Exam Formats	N	$X_{avg}$	SD	Sd	t	p
Sequential	730	69.67	16.14	1418.590	-4,080	.000
Collective	702	72.94	14.19			

It was found that the average score of the students was 69.67/100 regarding the 730 multiple-choice exams with *sequential* questions. However, the 702 multiple-choice exams with *collective* question formats revealed that the average score of the students is higher at 72.94/100.

It was determined that the student success is significantly higher in the multiple-choice exams with collective question formats through the web-based assessment-evaluation system  $t(1418.590)=-4.080$ ,  $p<.05$ . Moreover, the collective display of multiple-choice questions on a single screen *positively* impacts student achievement scores. The independent sample t-test revealed differences between the groups by the multiple-choice exam question screening style with a *trim* level of impact ( $\eta^2=0.012$ ) and significant difference.

## 4. Discussion and Conclusion

This study analysed the data generated by 3830 online assessment-evaluation activities, to which 29511 students participated and were marked by 805 academics within a higher education institution through several variables such as the measurement techniques preferred by academics, question types, the number of questions, the exam duration, the question screening format and the effects of some variables on the exam success scores.

Various web-based tools were used in assessment-evaluation activities conducted in higher education institutions' distance education processes. Certain security vulnerabilities may occur due to the remote nature of the exams. Some primitive measures depending on the course content, such as asking different types of questions, increasing the number of questions, asking random questions, setting a time limit, increasing the number of questions, or applying collective/sequential question screening formats, were

implemented to eliminate such weaknesses. Many factors affect student achievement scores, ranging from the assessment tool type, duration, and the number of questions to the application style.

The study found that the most preferred "exam types" as assessment techniques based on faculty in higher education institutions are assignments, while the multiple-choice was the most common in vocational schools and high schools. Distribution, application, and retrieval of online assignments to students can be performed more quickly than traditional assignments, and also, the marking can be done without wasting time (Ismail, Mokhtar, Nasir, Rashid, & Ariffin, 2014). Today, fully automatic assignment evaluations can be performed through assignment evaluation modules in learning management systems. It is possible to evaluate the student quickly and rapidly, which facilitates personal feedback in the same manner. It was concluded that the most preferred assessment technique was multiple-choice test exams, assignments, mixed and written exams, respectively. The analysis of 31562 questions for the preferred "question types" revealed that multiple-choice questions were preferred 14 times more than open-ended questions. It can be stated that these results are in line with similar research results in the literature, which concluded that multiple-choice question types are mostly preferred (Baran, 2020; Chaudhary & Dey, 2013; Kuikkaa, Kitola, & Laakso, 2014; Montenegro N., 2014; Reja, Manfreda, Hlebec, & Vehovar, 2003). The aspects that multiple-choice questions are easier to prepare, they can be graded quickly, the content can be kept broad, and even the high-level thinking skills of the students can be measured if they are prepared in a qualified way are some of the features that make amplify the magnitude of multiple-choice questions (Weimer, 2021). Moreover, the fact that web-based test exams with multiple-choice questions are easier to apply can have student-oriented (individualized) designs, can be graded by making an instant evaluation on the distance education system, and the availability of quick feedback makes the use of such exams widespread (Simonson, Smaldino, Albright, & Zvacek, 2012). It can be stated that multiple-choice question types are preferred more because of these advantages.

The online assessment application of 1906 (only the test and written exam), 29464 students participated, was examined in this study. It was concluded that students' average scores in the exams with multiple-choice questions were significantly higher than the averages with open-ended questions (Demir, 2010). Özkan & Özaslan (2018) also analysed the questions within the PISA applications and concluded that students were more successful in multiple-choice questions. Temizkan & Sallabaş (2011) stated that the question types affect the students' success scores and emphasised that the students achieved higher success scores in the multiple-choice questions than in the open-ended ones. It can be stated that the results are similar to the previous literature. Open-ended questions are more challenging to answer for students with longer response times than multiple-choice questions, require more effort, and have difficulty expressing their own opinions with potentially very different answers (DeFranzo, 2018). Therefore, it was understood that the students' average success in the exams with open-ended questions is lower than the averages in the multiple-choice exams.

Although open-ended questions require a longer time to answer than multiple-choice questions, students are given an average of 29 minutes and 29" exam durations for an average of 20.57 questions in multiple-choice exams (1 min 26" for one question), while an average of 4.42 questions in open-ended exams with 47min 48" (10 min 49" for 1 question) allowed for the questions. Moreover, DeFranzo (2018) stated that open-ended questions require more time to solve. However, it can be stated that the academics allocated approximately ~10 times more time for open-ended questions. Reja, Manfreda, Hlebec, & Vehovar (2003) stated that answering open-ended questions online over the web and classroom written answers did not make a difference regarding student achievement scores. It was not fully grasped whether the failure of the students in open-ended questions was because of the possible loss of time they experienced while submitting their answers over the web. Although the exam duration was considered enough, the students answering the open-ended questions had lower achievement scores, confirming previous research findings (Demir, 2010; Özkan & Özaslan, 2018; Temizkan & Sallabaş, 2011). One of the research results was obtained by thoroughly examining web-based multiple-choice exams. The student achievement averages in the 1432 exams analysed showed that the scores with collective questions were significantly higher than those in the exams with sequential questions. When they can see all the questions on a single screen simultaneously, they have a higher performance than when the questions are displayed sequentially. The questions are presented to the students sequentially, and the students have to click on the back and forth buttons to see the next or

previous question. Similarly, they must navigate through the questions to instantly return to the questions for reviewing. It was concluded that this situation causes students to waste time, makes it challenging to find the question they seek and affects their success. One of the most significant weaknesses of web-based instant assessment activities in distance education is the security problem (Bilen & Matros, 2021; Dendir & Maxwell, 2020; Sarrayrih & Ilyas, 2013; Turani, Alkhateeb, & Alsewari, 2020). This problem is valid for all remote assessment applications and continues today. Regarding this situation, developers are working on various security tools and settings. The sequential and collective question display (navigation) settings offered in Moodle LMS are a precaution to increase exam security. Bilen & Matros (2021) stated that when online measurement took place in an unattended environment, students tended to cheat over the Google search engine. Similarly, Best & Shelley (2018) students stated that their tendency to cheat by copying or taking screenshots/videos to research the answers has increased in recent years. Social media applications such as Whatsapp, Facebook, and Instagram can be used for cheating purposes. If the questions are presented to the students collectively, it becomes easier for them to share all the questions with their friends by taking screenshots and sharing the answers with a group of friends. However, if the questions are given sequentially, collective copying and sharing of the answers are impeded. This situation has been interpreted as a reflection of the restriction/prevention of potential cheating attempts.

## 5. Recommendations

These research findings are limited to the sample from Uşak University. Samples from other higher education institutions' student achievement scores can be used to compare the results for assessment techniques. A limited number of studies examine the effects of asking questions sequentially or collectively in web-based online exams regarding the relevant literature. The effects of exam settings defined by academics can be examined by different variables (e.g., technology readiness) in online instant assessment applications.

Being able to carry out an effective and efficient assessment and evaluation activity in distance education processes depends on a solid system infrastructure free from problems. However, it is vital to conduct orientation studies of academics and students, the system's stakeholders, before using the system. It can be challenging to get efficient learning outcomes from a web-based measurement system that cannot be utilised efficiently. Therefore, further studies on literacy, student achievements, and academics in distance education are recommended.

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# Examining Mothers' Own Childhood Experiences, Behaviours toward Their Children and Attitudes toward Violence

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## ABSTRACT

This research aims to examine the child-rearing experiences and attitudes toward the violence of mothers who witnessed or experienced violence in their childhood and those who have not. The research is conducted over a study group of 30 mothers whose 5- to 6-year-old children are attending kindergarten. The data have been collected using the semi-structured interview technique and analysed by performing descriptive analysis. As a result of the data analysis, the research findings have been gathered under five main themes: witnessing violence in childhood, unwanted behaviours in children, behaviours toward children when angry, punishments applied to children, and perspective on violence. According to the obtained results, 43.3% of the participant mothers had encountered a violent event that had affected them in their childhood, while 36.7% had not encountered any violent event. Regarding their child-raising experiences and attitudes toward violence, there were differences between mothers who had witnessed or experienced violence in their childhood and those who had not. When assessing the perspective on violence, 70% of the mothers consider using violence to be wrong, are completely against violence towards women and children, and believe that violence does not solve problems but instead leads to more violence.

Keywords:

Mother, child, domestic violence, culture, violence against children.

## 1.Introduction

Raising children healthily in terms of physical, spiritual, and social relations is of utmost importance. They are whom we will entrust with our future, who will ensure the continuance of society, and who will form the future. Parents, being children's first educators, attempt to provide the child's social, cognitive, and emotional development and to have the child learn new information. While children's psychological development and behaviours take shape in the family, internal family relations also form the basis of the shape and attitudes of children's relationships with other individuals and objects. The family's inner social relations, particularly the mother-child relationship, are said to have an important place in children's personality development and maintain its effect throughout their lives (Yavuzer, 2013). However, domestic violence becomes an issue when the family becomes a place where violence is nurtured and practised. Violence can emerge in different ways at any period in one's life. The violence experienced frequently within the family, which forms the basis of society, is applied more to women and children in particular. This is because women and children may be more vulnerable to protect themselves.

The percentage of women who have witnessed physical violence worldwide has been reported at approximately 25%-50%. According to a World Health Organisation (WHO, 2013) report, 35% of women have been exposed to violence. The percentages of women who have been exposed to violence from their

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husbands are 29.8% in America, 25.4% in Europe, 25.4% in Southeast Asia, and 36.3% in Africa. The report additionally shows violence to be accepted by women. A report from the United Nations International Children's Emergency Fund (UNICEF; 2014) shows that nearly half of all girls between the ages of 15-19 (approximately 126 million) think that a husband has the right to beat his wife in certain situations. This percentage rises to 80% in Afghanistan, Guinea, Jordan, Mali, and Timor-Leste. In 28 of the 60 countries that have data on both genders, the percentage of girls who think men have the right to beat their wives in certain situations is higher compared to men. According to the Research on Domestic Violence Against Women in Turkey (Turkey's General Directorate on the Status of Women [KSGM], 2015), of the women throughout Turkey, 36% have been exposed to physical violence, 44% to emotional violence, and 12% to sexual violence. Of the women in the Research on Domestic Violence Against Women in Turkey, 37.5% indicated having experienced physical or sexual violence at least once during their lives (Turkish Statistical Institute [TurkStat], 2014).

Children in Turkey and the world have witnessed domestic violence or been directly exposed to violence. In both cases, violence has a devastating effect, and its effects continue throughout one's life. In many societies, the legal regulations against parents punishing their children by way of physical violence as a disciplinary tool to teach a lesson are seen to be insufficient. Moreover, most parents find occasionally hitting a child to be natural (Schaffer, 2008, pp. 299–300). Children who have witnessed domestic violence are known as "silent," "forgotten," or "invisible" victims (Edleson, 1999).

The report Child Maltreatment, published by WHO (2017), showed that one in four children worldwide had been subjected to physical violence, and 36% are victims of emotional violence such as threats, reprimands, humiliation, and oppression. In UNICEF's (2017) report A Familiar Face: Violence in the Lives of Children and Adolescents, stated that children worldwide and in all age groups have been subjected to violence at home, where they should be safest, as well as at school and in public spaces and that the trauma violence forms may continue throughout the child's life and even be able to impact later generations. According to the same report, 75% of children (300 million) between the ages of 2 and 4 have been exposed to psychological and/or physical violence by caregivers. One out of four of the approximately 177 million children under the age of 5 in the world lives with a mother who has been subjected to violence from their spouse/partner (UNICEF, 2017). Three out of ten adults in the world consider corporal punishment necessary for a child to grow up well (UNICEF, 2014, p. 4). One study on domestic violence in Northeastern Pennsylvania, where the crime rate is below the general average of the United States, determined as a result of evaluating the calls made to police within a year that almost half the incidents had occurred in the presence of children, 81% of whom were directly exposed to violence (Fantuzzo & Fusco, 2007). Three million suspected maltreatment reports are made each year in the USA, of which one million are confirmed after being investigated (Christian & Blum, 2017).

Studies done in Turkey have shown that physical and verbal punishments are found and commonly used as disciplinary and educational tools within the Turkish family structure and that children who witness domestic violence are at the same time also exposed to it. In their study, Bilge et al. (2013) found that most mothers and fathers expose their children to neglect and abuse and think they deserve corporeal punishment. According to Genç Hayat Vakfı's [Young Life Foundation] (2012) research on violence experienced by children within the home, 73.4% of children enrolled in primary school have experienced domestic violence at least once; 20.5% have witnessed domestic violence at least once; and 26% have been exposed to negligent behaviours, 68% to emotional violence, and 26% to physical violence at least once during their lives. Sofuoğlu et al. (2014) determined the frequency of negative childhood-age experiences in their study between 42% and 70%.

The importance of family, particularly the mother, in forming a child's identity is considered high. A child first begins modelling their mother, and learns responsibility and develops internal control mechanisms in this process. Mothers have a considerable role in the child's education. A child's identity is determined by their mother's behaviour. Girls are generally known to model the mother and boys their father.

Many of those who have experienced domestic violence in childhood become violence-inflicting adults (Kaufman & Zigler, 1987). How violence is learned is explained through the social learning theory. Children learn adult behaviours through imitation, and these become habits through the reinforcers the social

environment forms (Bandura & Barab, 1971). The intergenerational transmission of violence was developed based on the social learning theory (Kaalmuss, 1984). According to this theory, one exposed to or has observed violence can learn it as a social norm (Neighbors et al., 2010). Boys who have learned violence in this way can inflict it upon their spouse or children in the future. Girls who have learned violence in this way regard it as normal and direct it to their children. Experiencing things like this in one's early years contributes to the normalisation, spread, and transmission of violence to new generations (Hergüner, 2011, p. 48; Karal&Aydemir, 2012). However, violence alone is not transmitted, so is the emotional atmosphere in which the violence was experienced. The anger and fear children internalise can affect their attitudes and behaviours throughout their lives. Some children will identify themselves with the victim, withdraw, and draw a depressing picture full of fear. In contrast, others will identify themselves with the aggressive figure and start applying aggressive behaviours (Ernst et al., 2008). Even though many children who have been exposed to or witnessed domestic violence are not exposed to violence later on in life, domestic violence is transmitted from generation to generation (Steketee, 2017). Those who have seen more violence are not said to inflict violence; those who have witnessed more direct violence later inflict violence (Osofsky, 1995; Vahip, 2002; Kitzmann, Gaylort, Holt, & Kenny, 2003). The research done with men who have inflicted violence shows that children who have witnessed their father inflict violence on their mother during childhood adopt their father as a role model and view violence as a normal form of behaviour. This impacted how they inflicted violence on women in adulthood (Peralta et al., 2010, p. 397; Bevan & Higgins, 2002, p. 240; Abramsky et al., 2011, p. 114).

According to Boğaziçi University, Humanist Bureau and Frekans Research (2014): Domestic Violence Against Children Aged 0-8 Years in Turkey, 74% of parents inflict emotional violence, and 23% inflict physical violence on their children. In cases where emotional or physical violence occurs at home, 70% of the children aged 0-8 years witness the violence. Studies have shown that children under 6 years old have a greater risk of witnessing domestic violence; these children are vulnerable to violence, and being exposed to violence at this age directly impacts the child's cognitive development (Funzotto& Fusco, 2007; Enlow et al., 2012; Herman-Smith, 2013).

Ezen and Açıkgöz (2017) found that 45% of children (7-18 years old) had been exposed to physical abuse and 51% to emotional abuse; the mothers exposed to maltreatment in childhood were more likely to mistreat their children. Research on Domestic Violence Against Women (KSGM, 2015) showed that 28% of married women's mothers and 27% of married men's mothers had been exposed to physical violence throughout Turkey. The women most exposed to physical violence are those whose mothers had experienced physical violence. Throughout Turkey, the research showed that 51% of women whose mothers had been exposed to physical violence were also exposed to physical violence themselves, and 28% of women whose mothers had not been exposed to physical violence were victims of violence in childhood. According to Akalın and Arıkan (2017), 28% of women subjected to violence by their spouses inflict violence on their children, and 23.5% of those women had also been exposed to violence in their childhood. In the Domestic Violence Against Children Aged 0-8 Years in Turkey research (Boğaziçi University, Humanist Bureau, & Frekans Research, 2014), while 86.4% of mothers who stated being exposed to physical violence have inflicted emotional violence, and 47% of them have inflicted physical violence on their children, 75% of those who had not been exposed to physical violence have inflicted emotional violence, and 24.7% have inflicted physical violence on their children. In Aydemir and Demircioğlu's (2017) study, 60% of women had been subjected to violence. Of these women, 58.3% had been subjected to violence by their spouses, 33.3% their mothers, and 31.6% their fathers.

According to Yüksel-Kaptanoğlu and Çavlin (2015), 66% of women whose mothers had been subjected to violence also inflicted violence on their children. Children living in rural areas whose grandmothers and mothers had been subjected to physical violence make up the group with the most victims of physical violence (at a rate of 72%). Violence occurs less (37%) in cases where neither the women nor their mothers had been victims of physical violence. Studies show that women who had been subjected to violence in childhood and who have experienced problems and violence with their spouse after getting married tend to inflict violence on their children. Çalışkan et al.'s (2019) study reported that mothers who'd been exposed to verbal abuse from their spouse and had experienced physical violence from their parents in childhood were more likely to have inflicted physical violence on their children three or more times. Witnessing or being

exposed to violence affects violent actions and attitudes toward violence (KodanÇetinkaya, 2013). According to Straus (1991), the more families inflict physical violence on children, the more likely these children will inflict violence in the future. This is as valid for women as it is for men.

On inflicting violence on their own families in adulthood, White and Widow's (2003) 20-year research showed the difference between those who witnessed or had been exposed to domestic violence in childhood and those who had not at 12%. Although this may not seem like much, this difference does contribute to explaining domestic violence.

Yağmurlu and Sanson (2009) determined that Turkish mothers possess more obedience-oriented goals and use more punishment-oriented strategies than the parenting styles of Australian mothers with mothers who had migrated from Turkey to Australia.

UNICEF (2014) noted that the impact of violence children witness or are subjected to can continue throughout life and pass down to next generations; today's victims can become tomorrow's perpetrators. When domestic violence is mentioned globally and in Turkey, it is perceived as the violence directed toward women by men, and solutions are sought in this direction. There have been many studies on violence in Turkey. A considerable part of these studies is based on the causes of violence against children. The violence inflicted on children by mothers who have been subjected to violence themselves and bear the scars from this has not come into question.

The purpose of this study is to explore mothers' experiences with childhood violence, current child-rearing difficulties and reactions (i.e. punishment methods), and their perspectives on violence. For this purpose, the research asks the following questions:

- What is the mothers' situation regarding being exposed to or witnessing violence in their childhood?
- Which of the children's behaviours are unwanted by the mothers?
- How do the mothers behave when they get angry at their children?
- Which punishments do the mothers apply when their children make them angry?
- What are the mothers' views on violence?

## **2. Method**

### **2.1. Research Model**

This research, which was conducted in Turkey to examine mothers' experiences of childhood violence, their current child-rearing difficulties and reactions (i.e. punishment methods), and their perspectives on violence, was carried out in a qualitative design. Qualitative studies aim to explain and understand concepts, phenomena, and relationships with data collection methods such as observations, interviews, and document reviews (Merriam, 2013). This research is a phenomenology research from qualitative research designs. Phenomenology studies aim to reveal examples, explanations, and experiences that will help better understand a phenomenon (Cropley, 2002). Data sources are individuals/groups who experience the research phenomenon and reflect this phenomenon. The focus of this study is violence, and the people whose opinions are consulted are mothers.

### **2.2. Study Group**

The research study group has been determined using the criterion sampling technique, a purposeful sampling method. The criterion sampling method is based on understanding the study of cases that meet a specific set of criteria. The researcher can create these criteria, or a preprepared criteria list can be used (Yıldırım&Şimşek, 2018). The criteria for this study are that the participants are mothers with a child between the ages of 5-6 enrolled in kindergarten. The 30 voluntary mothers who met these criteria constitute the study group of the research. Assistance was requested for selecting the study group by giving information about the study to the two kindergartens where the children are enrolled. Upon completing the required institutional approval processes, the voluntary mothers who met the criteria were interviewed. The characteristics of the interviewed mothers are given in Table 1 below.

**Table 1.** Demographic Findings from the Participants

		Frequency	Per cent			Frequency	Per cent
Working status	Working	4	13.3	Economical situation	Middle	25	83.3
	Not working	26	86.7		Good	5	16.7
	Total	30	100		High		
Age	24 years and under	1	3.3	Number of children	Total	30	100
	25-34 years old	14	46.7		1-2 children	23	76.7
	35-45 years old	14	46.7		3-4 children	7	23.3
	46 years and older	1	3.3		Total	30	100
	Total	30	100		Extended family	6	20.0
Education status	Primary education	3	10.0	Family structure	Nuclear family	22	73.3
	High school	13	43.3		Single parent family	2	6.7
	University	13	43.3		Total	30	100
	Total	30	100		Verbal violence by a spouse	Yes	8
The fighting situation of the spouses	Yes	3	10	No		20	66.7
	No	25	83.3	Total		28	93.3
	Total	28					
Physically abused by their spouse	Yes	1	3.3	Parental violence	Yes	13	43.3
	No	27	90		No	11	36.7
	Total	28	93.3		Total	24	100

Of the mothers participating in the study, 26% are unemployed, 83.3% are in the middle-income group, 76% have 1-2 children, 73.3% have a nuclear family, 3.3% have been physically abused by their spouse, 26.7% have been verbally abused by their spouse, and 26.7% have been exposed to violence from their parents.

### 2.3. Data collection and procedures

*Personal Information Form:* This form asked the participants about their educational status, age, employment status, family structure, number of children, economic status, if they fight with their husband, whether or not their husband has inflicted physical or verbal violence on them, and whether or not they had been exposed to violence from their parents during their childhood.

*Qualitative Data Collection Tool:* This study uses the semi-structured interview technique as the data collection method. This method, being neither as rigid as fully structured interviews nor as flexible as unstructured interviews, lies between these two extremes (Karasar, 1995, p. 165). The semi-structured interview technique has been used because of the flexibility it provides the researcher. Before preparing the interview questions, a national and international literature review was conducted on the research topic. The questions to include on the interview form were determined after contemplating the issue. Three faculty members and three mothers were interviewed to evaluate these questions regarding objective, understanding, and scope. The questionnaire form was finalised using the information obtained following these stages. The questions asked of the mothers in the research are:

- Did you experience or witness violence in your childhood?
- Which of your child's behaviours make you angry?
- How do you treat your child when they make you angry?
- What is your reason for these behaviours?
- Which punishments do you apply to your child?
- What are your thoughts on violence?

The data was gathered between 5/1/2019 and 5/31/2019 from the voluntary mothers identified by performing an approximately 20-minute interview in the kindergarten where their children are enrolled. During the interviews, the participants were informed about the research. Their permission was requested for using a voice recorder to prevent data loss. They were told they could end the interview whenever they wanted. At

the end of the interviews performed with the participants, they were told they could listen to the recordings if they wanted, and part or all of their unwanted views could be deleted if necessary. Therefore, the recording device's negative impacts on the participants were prevented. Care has been taken in the research to provide an interview environment where the participants felt comfortable, relaxed, and were able to express their opinions sincerely. An appropriate interactive environment was created. The researcher was cautious not to affect the participants while answering the questions.

### 2.3. Data Analysis

Content analysis has been performed in this research, designed following the qualitative research approach. The data have been analysed in four stages: coding the data, identifying the themes in the coded data, organising the codes and themes, and defining and interpreting the findings (Yıldırım & Şimşek, 2018, p. 228). First, the interview recordings and written forms were encoded and analysed during the analysis. In analysing the mothers' opinions, groupings were made according to the similarity of expressions. Explanations have been made in the analyses by giving each of the mothers whose views had been consulted a code number (e.g., M1, M2). The data obtained using the interview technique have been digitised and expressed as frequencies. Similar objects in the statements were grouped, and themes were formed according to the groups. Whether or not the mothers had witnessed/been exposed to violence was coded first and then supported with direct quotations to provide the internal validity of the research. The researcher constantly tested the significance and integrity of the findings. The consistency of the concepts forming the themes was assessed among themselves and through the other themes to ensure the consistency of the findings (whether or not they formed a meaningful whole was tested). The relevance of the findings has been compared with previous research. The themes have been explained and interpreted using either the deductive or inductive method based on the situation. The research process has been explained in detail, from preparing the data collection tools to implementing and analysis phases to ensure external validity. Arriving at the significance of the findings and the authenticity of the application was done by comparing the findings with the literature. Making the explanations required to test the research through other studies has been attempted using the research details. The mothers whose opinions had been taken were re-interviewed, and their views were confirmed by sharing the findings.

### 2.4. Ethical

The data related to the research was gathered between 5/1/2019 to 5/31/2019 from the voluntary mothers that had been identified by performing an approximately 20-minute interview in the kindergarten where their children are enrolled.

## 3. Findings

### 3.1 Findings Regarding Witnessing Violence During Childhood

The following results have been reached as a result of this study, which has been performed to examine the childhood experiences of mothers in Turkey, their behaviours toward their children, and their attitudes toward violence.

Five different forms of behaviour were determined in line with the participants' answers to the question, "Did you witness or experience violence during your childhood?". The findings are presented in Table 2 below.

**Table 2.** Mothers' Status Regarding Witnessing or Experiencing Violence in Their Childhood

Category	Participant	Frequency (f)
Witnessed/experienced violence	M1, M2, M9, M10, M14, M15, M16, M17, M19, M21, M23, M26, M30	13
Physical violence	M2, M14, M15, M16, M17, M19, M30	7
Psychological violence	M1, M9, M10, M21, M23, M26	6
Didn't experience violence	A3, A4, A5, A6, A7, A8, A11, A12, A13, A18, A20	11
Didn't answer	A22, A24, A25, A27, A28, A29	6
Total		30

Note: Mothers can give more than one answer.



According to Table 2 above, 13 mothers (43.3%) stated facing a violent event that had affected them in their childhood. Of these mothers, while seven (53.8%) were exposed to physical violence, six (46.1%) were exposed to psychological violence. Of the participants, 11 mothers (36.7%) stated having no encounter with any violent event that had affected them. Six participants did not want to answer. The participants who stated witnessing violent events in their childhood said they witnessed these events mostly in the family and at school.

The mothers' views on witnessing/being exposed to violence in childhood are as follows:

*My father had stuccoed the wall of our shanty house; I had found a key and stuck it in the wall. My father slapped me twice when he saw the key in the stucco. I will never forget it. (M2)*

*One time I had made my mother very angry. I had insulted and berated her. She struck me on my face with the beads in her hand as she was making dhikr. I got a black eye from it. (M14)*

*My father had thrown the remote control at my head. My older sister constantly hit my head. My older sister would always say, "You're too little to understand." Because of this, I had no self-confidence. (M17)*

*Yes, I had come home late one evening. My dad beat me. I can't forget it. (M19)*

*I can't forget the way my dad would beat me. My mom would beat me too. (M30)*

*It wasn't physical, but our kindergarten teacher was intolerant of foreigners, and she would deliberately hurt their feelings in class. (M9)*

*I can't forget how our kindergarten teacher struck and broke a ruler over one of our classmates in front of all of us. (M15)*

*It didn't happen to me, but I did see a male teacher inflict serious violence on our classmates. (M16)*

Seven different types of behaviours were identified in line with the responses the mothers who had witnessed/been exposed to violence in childhood gave to the question, "Which of your child's behaviours anger you?" The findings are presented in Table 3 below.

**Table 3.** *The Child Behaviours That Anger the Mothers Who Had Witnessed/Been Exposed to Violence in Their Childhood*

<i>Category</i>	<i>Participant</i>	<i>Frequency (f)</i>
Not listening	M2, M10, M14, M17, M26, M30	6
Physical violence	M9, M16, M21	3
Being insistent/stubborn	M9, M26, M17	2
Not taking responsibility	M1, M19, M30	2
Not eating their food	M22	1
Talking too much	M2	1
Expressing what they want by crying	M15	1
Rejecting the mother	M14	1

Note: Mothers can give more than one answer.

When examining Table 3 above, the children's behaviours that anger the mothers were determined as not listening ( $f = 6$ ), inflicting physical violence ( $f = 3$ ), being insistent/stubborn ( $f = 2$ ), not taking responsibility ( $f = 2$ ), not eating their food ( $f = 1$ ), talking too much ( $f = 1$ ), and saying what they want by crying ( $f = 1$ ).

The views of the mothers regarding the child behaviours that anger them are as follows:

*When I explain something to him, he says, "Okay, mum, it needs to be done." When I ask him why he didn't do it when it needed to be done, he says, "I forgot." (M1)*

*The way she doesn't listen and talks too much is bothersome. It is irritating. (M2)*

*This year, he tends to hit, despite never seeing it from us. But we don't allow him to hit. (M16)*

*The way they cry about the things they want. (M15)*

*Not taking responsibility. (M19)*

*Not listening. Not doing what they are supposed to do on time. (M30)*

*Saying, "I'm not your son." (M14)*

Five different forms of behaviour were identified in line with the mothers' responses to the question, "What do you do when your children make you angry?". The findings are presented in Table 4 below.

**Table 4.** What the Mothers Who had Witnessed/Been Exposed to Violence in Their Childhood Do When Their Children Make Them Angry

Category	Participant	Frequency (f)
Get Angry/Shout/Berate	M10, M14, M17, M19, M23, M30	6
Stay quiet/Wait for them to calm down	M1, M16, M2, M21	4
Talk	M1, M23, M26	3
Don't do what they want	M19, M21	2
Ignore them	M9, M15	2

Note: Mothers can give more than one answer.

According to Table 4 above, when the mothers who'd witnessed/been exposed to violence in their childhood get angry at their children, they show the following behaviours: get angry/shout/berate ( $f = 6$ ), stay quiet/wait for them to calm down ( $f = 4$ ), talk ( $f = 3$ ), don't do what they want ( $f = 2$ ), and ignore them ( $f = 2$ ).

The mothers' views regarding what they do when getting angry at their children are presented below:

*I prefer to stay quiet. When I get angry, I can say things I don't want. I respond to their questions later and talk about what had made me angry. (M1)*

*I take a deep breath. I hold them tight in my arms and kiss them. (M2).*

*Sometimes I ignore them and wait for them to notice their mistake. Sometimes I can't stand it because they did it intentionally. I don't tolerate the mistakes when he's been repeatedly warned (like hitting his sister). (M9)*

*I get angry, I shout, I get uncontrollably loud. (M10, M23, M30)*

*I just ignore him. I go somewhere else. (M15)*

*I yell. I berate. (M17)*

*It varies according to the situation. For example, I won't do what they want. (M19)*

Six different types of behaviour have been identified in line with the mothers' responses to the question, "Why do you behave the way you do when you get angry at your children?". The findings are presented in Table 5 below.

**Table 5.** Reasons for the Responses Mothers Who had Witnessed/Been Exposed to Violence in the Childhood Show to Their Children When They Get Angry

Category	Participant	Frequency (f)
To stop the bad behaviour	M9, M10, M14	3
To not cause harm/not to make a mistake	M1, M15	2
To show love/understanding	M2, M26	2
To make them listen	M14,	1
The unrest in the family	M17	1
What they'd experienced in their childhood	M19	1

Note: Mothers can give more than one answer.

When examining Table 5 above, the reasons for the responses shown to their children when they get angry were determined as to stop bad behaviour ( $f = 3$ ), not cause harm/not to make a mistake ( $f = 2$ ), show love/understanding ( $f = 2$ ), make them listen ( $f = 1$ ), unrest in the family ( $f = 1$ ), and what they had experienced in their childhood ( $f = 1$ ).

The reasons for their behaviours when they get angry are as follows:

*My love is higher than everything and overcomes everything. (M2)*

*I can't figure him out when mistakes are repeated. The only way to stop it is to get angry. (M9, M10)*

*I'm suddenly screaming before I'm aware of it; after a while, I apologise when I see they're upset. I can't change how they look at me (the traces remain when you grow up). (M14)*

*It's to not hurt them. (M15)*

*There is unrest in the family. The peace with my husband is disturbed. (M17)*

*It's what I'd experienced in my childhood. (M19)*

Eight different forms of behaviour have been identified in line with the mothers' responses to the question, "What punishments do you give when you are angry at your children?". The findings are presented in Table 6 below.

**Table 6.** *The Punishments Mothers Who had Witnessed/Been Exposed to Violence in Their Childhood Give to Their Children When Angry*

Category	Participant	Frequency (f)
Shout/Scold	M1, M9, M10, M11, M14, M15, M17, M19, M21, M23, M30	11
Intimidate/Threaten	M2, M10, M14, M17	4
Ignore/Let it slide	M2, M26, M17	3
Not show that you love them	M9, M14, M21	3
Ignore what they want	M10, M19	2
Spank/Pinch	M14, M17	2
Wait for them to calm down/Calm them down	M16	1
Send them to their room	M26	1

Note: Mothers can give more than one answer.

According to Table 6 above, the mothers who had witnessed/been exposed to violence in their childhood punish their children by: shouting/scolding ( $f = 11$ ), intimidate/threaten ( $f = 4$ ), ignore/let it slide ( $f = 3$ ), not show their love ( $f = 3$ ), ignore what they want ( $f = 2$ ), spank/pinch ( $f = 2$ ), send them to their room ( $f = 1$ ), and wait for them to calm down/calm them down ( $f = 1$ ).

Three different behaviours have been identified to the question, "What are your thoughts on violence?". The findings are presented in Table 7 below.

**Table 7.** *The Attitudes Toward Violence of Mothers Who had Witnessed/Been Exposed to Violence in Their Childhood*

Category	Participant	Frequency (f)
Opposed to violence	M1, M2, M9, M10, M15, M16, M23, M26	8
Inflicts the violence they saw from their mothers on their children	M14, M19	2
Inflicts violence because she's in a loveless environment	M17, M30	2

Note: Mothers can give more than one answer.

According to Table 7 above, when examining the thoughts and attitudes of the mothers who had psychologically and physically punished their children are seen to be opposed to violence ( $f = 7$ ). They inflict violence on their child even if they do not want to because they have been exposed to violence in childhood (by their mother;  $f = 2$ ). They inflict violence on the child because they have grown up in a loveless environment in their childhood, their husbands do not love them, and the problems between spouses.

The mothers' opinions on violence are as follows:

*There's no need for violence. Life is beautiful when there's love. (M1)*

*It's just despair, I think. There's no other meaning in violence toward children apart from insecurity. A healthy individual does not resort to violence. (M2)*

*I am definitely opposed to it. Children who inflict violence should not procreate. (M9)*

*I've never desired to inflict violence on a creature smaller than myself (my child, others, or all life), and I would intervene if I saw this outside. (M15)*

*All forms of violence are evil and should not be inflicted. (M23)*

*Unfortunately, those who are unloved and not taught to love are inclined toward violence. (M30)*

*When I was little, I was exposed to violence by my family (mother). Even though I said I wouldn't be like that, I've unwittingly yelled at my child and pinched them. (M14)*

*Because my psychology isn't good and my spouse is not at my side, I can resort to violence. Because I am not loved. The greatest deficiency is that I am in a loveless environment. The lack of love brings about violence. (M17)*

Six different forms of behaviours have been identified in line with the responses to the question, "At which of your child's behaviours do you get angry?". The findings are presented in Table 8 below.

**Table 8.** *The Child Behaviours That Anger Mothers Who have Witnessed/Been Exposed to Violence in Their Childhood*

Category	Participant	Frequency (f)
Not listening	M1, M3, M4, M6, M8, M13, M20, M24, M28	9
Not eating their food/Irregular sleep hours	M4, M5, M6, M23	4
Shyness/Timidness	M11, M12	2
Expressing themselves by crying	M6, M29	2
Sibling jealousy/Acting like a baby	M28	1
Protecting their friends	M25	1

Note: Mothers can give more than one answer.

When examining Table 8 above, the behaviours that anger mothers are not listening ( $f = 9$ ), not eating their food/irregular sleep hours ( $f = 4$ ), shyness/timidness ( $f = 2$ ), expressing themselves by crying ( $f = 2$ ), sibling jealousy/acting like a baby ( $f = 1$ ), and protecting a friend.

The mothers' views about child behaviours that anger them are as follows:

*... when I tell him something, he says, "Okay, mum, that needs to be done." When I ask him why he didn't do what needed to be done in time, he says, "I forgot." (M1)*

*...the bad behaviours I see are like saying they don't care when I say something. (M3)*

*My child doesn't listen much to what I say. (M8)*

*He gets very insistent about things and cries a lot when he can't do it. (M6)*

*I get frazzled because they don't eat their food. (M4)*

### 3.2. Findings of Mother's Who had Not Witnessed/Been Subjected to Violence in Their Childhood

Six different behaviours have been identified in line with the responses the mothers who have not witnessed/been subjected to violence in their childhood gave to the question, "What do you do when your children make you angry?". The findings are presented in Table 9 below.

**Table 9.** *What Mothers Who have Not Witnessed/Been Subjected to Violence in Their Childhood Do When They Get Angry at Their Children*

Category	Participant	Frequency (f)
Talking after calming down/Talking	M3, M6, M8, M20, M22, M23, M25, M27, M28, M29	10
Raising their voice/Warning	M4, M5, M11, M12, M22, M29	6
Getting Angry/Threatening	M18, M22, M23, M28	4
Questioning the reason for the behaviour	M4, M8	2
Not doing what they want	M13	1
Applying rules	M27	1

Note: Mothers can give more than one answer

According to Table 9 above, when their children make them angry, the mothers who have not witnessed/been exposed to violence in their childhood respond by talking after calming down/talking ( $f = 10$ ), raising their voice/warning ( $f = 6$ ), getting angry/threatening ( $f = 4$ ), questioning the reason for the behaviour ( $f = 2$ ), not doing what they want ( $f = 2$ ), and applying rules ( $f = 1$ ).

The mothers' stated the following about what they did when getting angry at their children:

*We question and solve together the improper behaviour I see. (M3)*

*I raise my voice. I warn. I shout. (M4, M5, M11, M12, M22, M29)*

*I ask him to sit without speaking for a bit. Or I go to another room. I go back to him after my nerves have settled. (M20)*

*First, I try to stay calm and hopefully act slow. Then I raise my voice and threaten a little, unfortunately. (M22)*

*I sulk; let's kiss and make up. (M25)*

*I apply the valid rules we have. Of course, I first calm him down then say we need to talk. (M27)*

Six different behaviours have been identified in line with the responses to the question, “What is the reason for your behaviours when you get angry at your children?”. The findings are presented in Table 10 below.

**Table 10.** *Reasons for the Responses the Mothers Who Have Not Witnessed/Been Exposed to Violence in Their Childhood Showed Their Children When Getting Angry*

Category	Participant	Frequency (f)
To show love/understanding	M3, M6, M7, M8, M20, M27	6
To stop the bad behaviour	M3, M4, M5, M12, M13	5
To not harm/make a mistake	M1, M15, M27	3
Current mood/Sadness/impatience	M24, M25, M28	3
Not listening/being insistent	M12, M18	2
Intensity of housework	M22	1

Note: Mothers can give more than one answer.

When examining Table 10 above, the reasons for these responses are seen as follows: to show love/understanding ( $f = 6$ ), stop the wrong behaviour ( $f = 5$ ), not cause harm/not make a mistake ( $f = 3$ ), current mood/sadness/impatience ( $f = 3$ ), not listening/being insistent ( $f = 2$ ), and intensity of housework ( $f = 1$ ).

The mothers stated the following as reasons for the responses they showed to their children when getting angry:

*I feel they'll get sick if they don't eat healthily. (M5)*

*I say things I can regret when I get angry, and I'm scared of upsetting my child. (M6)*

*It's to prevent them from doing the same thing again. (M13)*

*I'm trying to listen to and understand my child. (M8)*

*I supposed I'm a little impatient. I have no tolerance. I guess I'm a little tired of my child and spouse. (M22, M28)*

*I always feel that talking is the most logical and most beautiful way. (M26)*

*Because I can be hurtful in anger. I need to calm down to understand and be useful to them. (M27)*

Seven different behaviours were identified in line with the responses to the question, “What punishments do you give your children when you get angry at them?”. The findings are presented in Table 11 below.

**Table 11.** *The Punishments the Mothers Who'd Not Witnessed/Been Exposed to Violence in Their Childhood Give Their Children When Angered*

Category	Participant	Frequency (f)
Shouting/Berating	M11, M12, M17, M18, M24, M28, M29	7
Scaring/Threatening	M4, M8, M11, M12, M17, M22, M25, M28	8
Ignoring what they want	M8, M12, M17, M22, M24	5
Ignoring/Neglecting them	M5, M7, M18, M22, M28	5
Not showing their love	M8, M12, M18, M24	4
Spanking/Pinching	M17, M29	2
Sending them to their room	M27	1

\*Mothers can give more than one answer.

According to Table 11 above, the mothers punish their children when angry by shouting/berating ( $f = 7$ ), scaring/threatening ( $f = 8$ ), ignoring what they want ( $f = 5$ ), ignoring/neglecting ( $f = 5$ ), not showing their love ( $f = 4$ ), spanking/pinching ( $f = 2$ ), and sending them to their room ( $f = 1$ ).

The mothers' views related to the punishments they give their children when angry are as follows:

*... Unfortunately, I raise my voice a bit afterwards and make little threats. (M22)*

*I prefer to stay silent. I can say things I don't want to say when I get angry. I answer their questions and talk about the issue that made me angry. (M11)*

*I ask him to explain to me why he's acting this way. I wait for him to calm down and explain the mistake again. (M8)*

Three types of behaviours were identified in line with the answers to the question, "What are your thoughts on violence?". The findings are presented in Table 12 below.

**Table 12.** *The Attitudes Toward Violence of the Mothers Who have Not Witnessed/Been Subjected to Violence in Their Childhood*

Category	Participant	Frequency (f)
Opposed to violence	M3, M4, M5, M6, M7, M8, M11, M20, M22, M23, M24, M25, M29	13
Regrets inflicting violence	M12	1
Children need to be scared	M18	1

When examining their attitudes towards violence, the mothers are opposed to violence. They do not approve of it ( $f = 13$ ), are regretful for having inflicted violence ( $f = 1$ ), and consider violence necessary for scaring their child ( $f = 1$ ).

Their views towards violence are as follows:

*It's a situation that absolutely never needs to occur. (M3)*

*I feel that violence doesn't solve anything. (M11)*

*I'm definitely against it and don't inflict it on my child. (M22)*

*It's the worst thing that can happen to a person. I think inept people inflict it. (M24)*

*I absolutely don't accept any form of violence. (M25)*

*It's an evil thought. God willing, may no woman or child be subjected to violence. (M29)*

#### 4. Discussion, Conclusion, and Recommendations

In Turkish culture and society, violence is an acceptable child-rearing method and affects the structure of society through a variety of dimensions. At the same time, witnessing and/or being exposed to domestic violence reflects negatively on the child's future life. This study has examined the behaviours toward children, the status of inflicting violence, and the views on the violence of mothers who have witnessed/been exposed to violence in their childhood and mothers who had not.

According to the research findings, while 13 mothers had encountered violent events that had impacted them in their childhood, 11 mothers had not encountered any violent events. Girls who witness and/or experience violence are more likely to be exposed to violence from their husbands in adulthood and inflict violence on their children (Neugebauer, 2000). Experienced violence is generally seen to continue from father to mother and mother to child as a cycle in the form of the child reflecting the violence they have seen onto their peers or siblings or onto their own family at a later age (TAYA, 2018).

Studies show that mothers who have been exposed to or witnessed violence in their childhood are more likely to inflict violence on their children (Karakoç et al., 2015; Ezen&Açıkgöz, 2017). KüçükBiçer et al. (2017) determined the rate of exposure to violence in childhood to be 35.8%. Kara-Doruk (2012) found that 9.4% of mothers had been exposed to violence in their childhood. The same research showed that mothers who had been subjected to violence in their childhood inflict violence on their children. Ezen and Açıkgöz (2017) found that mothers were exposed to emotional abuse most during their childhood and that these mothers exposed their children to physical abuse. According to the *Research: Domestic Violence Against Children Aged 0-8 Years in Turkey* (Boğaziçi University, Humanist Bureau, & Frekans Research, 2014), parents' experiences with violence in their childhood are seen as follows: 15.1% had witnessed emotional violence in childhood, 17.4% witnessed physical violence in childhood, 14.1% experienced emotional violence in childhood, and 23.1% experienced physical violence in childhood. According to the same research, while parents who had been exposed to emotional or physical violence in childhood stated that emotional violence harmed them, they felt that it "did not harm" their children. Mothers who have witnessed/been exposed to violence in their childhood are more likely to inflict all types of violence on their children. Mothers who had not witnessed/been subjected to violence in their childhood are seen less likely to inflict any violence on their children. In the UNICEF-Turkey (2008) research, while the percentage of emotional violence inflicted on children by mothers with no experience of physical violence is 75.0%, this rate increases to 86.4% for mothers who say they had been subjected to physical violence. The perception of violence as a form of training and

discipline in Turkey and being considered legitimate both in the family and in society has caused the repetition of violence.

Differences exist between the child behaviours that anger mothers who have witnessed/been exposed to violence in their childhood and those who have not. Mothers who have witnessed/been exposed to violence in their childhood get angry at their children's behaviours when they do not listen, take responsibility, act insistent/stubborn, or inflict physical violence. Mothers who had not witnessed/been exposed to violence in the childhood get angry at their children's behaviour where they do not listen, do not eat their food/sleep irregularly, act timid/shy, express themselves by crying, or get jealous of their siblings/act like a baby.

While not listening is common in both, the other behaviours show differences. The most striking situation here is children inflicting violence for the mothers who had not witnessed/been exposed to violence in their childhood. In KüçükBiçer et al.'s (2017) research, 44.9% of the participants who had inflicted violence on their children and 38.4% of those who had not inflicted violence on their children believe that a child always needs to listen to their mother.

What is expected from children in Turkey is being well-behaved/smart. Indicators of this are obeying the rules the mother has set down without question, listening to one's elders, and being respectful. Mothers expect behaviours that align with their expectations and wishes without knowing or considering the child's level of development. What makes mothers angry is not the behaviour of the child but the meaning attached to the behaviour. A child not eating their food is associated with the rule in Turkish culture that mothers are as satisfied when their children eat and love food. The more the child eats, the better/more successful the mother feels.

According to the research results, mothers who have witnessed/been exposed to violence in their childhood have different responses regarding their children's behaviours that anger them than mothers who had not witnessed/been exposed to violence.

When mothers who have witnessed/been subject to violence in their childhood get angry at their children, their responses appear mostly as getting very angry/shouting/berating, staying silent/waiting to calm down, talking, not doing what the child wants, and ignoring the child. When mothers who have not witnessed/been exposed to violence in their childhood get angry at their children, they respond by mostly talking after calming the child down, raising their voice/warning, getting angry/threatening, questioning the reason for the behaviour, not doing what the child wants, and applying rules.

Mothers who have not witnessed/been subjected to violence in their childhood show the behaviours of calming their child or talking with the child after they have calmed themselves down. In contrast, mothers who have witnessed/been subject to violence in their childhood show the behaviour primarily of getting angry/shouting/berating their children. The mothers in the first group noteworthyly question the reasons for their children's behaviours, and rules exist between the mother and child.

In Turkish culture, problems are experienced in the mother-child relationship and communication. No matter how much mothers love their children, they can get angry, shout, and harass their children for many reasons. Studies have been performed that support this result. According to *Research: Domestic Violence Against Children Aged 0-8 Years in Turkey* (Boğaziçi University, Humanist Bureau, & Frekans Research, 2014), when mothers' children behave in a way that makes them angry, 74% apply emotionally violent methods (e.g., depriving the child of something they like, cutting off basic needs, locking them in their room, shouting, making threats) and 23% apply physically violent methods (e.g., slapping, pushing, shaking, pulling hair/ears). Research (Kırcaali-İftar, 2005; Tahiroğlu et al., 2009) has shown that 18%-26% of mothers prefer threatening the child with punishment without giving the punishment. According to Kutlu et al. (2007), mothers give these punishments for the child to learn education, authority, discipline, respect, and responsibility. Mothers resort to emotional violence because they think it disciplines their children. They resort to physical violence because they lose control. Emotionally violent behaviours such as yelling, rude and harsh attitudes, ignoring, walking away from the child, and punishing them by not giving them what they want jeopardise children's psychological and social development.

According to the findings, the reasons for the responses of the mothers who have witnessed/been subjected to violence in childhood to their children when angered differ from the mothers who have not

witnessed/been subjected to violence in childhood. The mothers who had witnessed/been subjected to violence in their childhood explained their behaviours toward their children when getting angry as: to stop bad behaviour, not harm/make a mistake, show love/understanding, make them listen, the lack of peace in the family, and because of what they experienced themselves.

The mothers who had not witnessed/been subject to violence in their childhood stated the reasons for their responses primarily as to show love/understanding, stop bad behaviour, not harm/make a mistake, their current mood/sadness/impatience, the child's disobedience/stubbornness, and the intensity of housework.

When comparing both groups, mothers who witnessed/were exposed to violence in their childhood are seen to primarily exhibit behaviours for stopping bad behaviour, while those who had not witnessed/been subjected to violence in their childhood primarily exhibited behaviour to show love/understanding. Another important point that draws attention here is that the mothers who witnessed/were exposed to violence in their childhood justified their behaviours with the lack of peace at home and their childhood experiences.

Explaining the behaviour made toward the child before inflicting a harsh technique is seen as a popular disciplinary method in the studies performed in Turkey. While 37.1% of families prefer telling their children the wrong aspects of what they are doing according to the data from Tahiroğlu et al. (2009), the study done by Kırcaali-İftar (2005) stated that 74% of the population apply the methods of verbally explaining and of getting angry. Nearly half the mothers in KüçükBiçer et al.'s (2017) study stated that children cannot be raised without fear and that actions such as shouting and slapping without hurting can be done to scare them.

According to the study's findings, the punishment mothers who have witnessed/been subjected to violence in their childhood give their children when angered show similarities to those given by the mothers who did not.

Those who witnessed/were subjected to violence in their childhood are seen to punish their children when they get angry by shouting/berating, scaring/threatening, ignoring/neglecting, not showing their love, ignoring what the children want, slapping/pinching, and sending them to their room. Mother's who did not witness/be subjected to violence in their childhood punish their children by shouting/berating, scaring/threatening, ignoring what the children want, ignoring/neglecting, not showing their love, slapping/pinching, and sending them to their room. When comparing the behaviours of both groups, what is most striking is that both punished similarly and applied psychological and physical violence in the same way.

In Turkey, mothers accept psychological violence as disciplinary and educational methods. The *Turkish Family Structure Research* (TAYA, 2011, 2016) showed that shouting/berating come in first and slapping comes in third place among the punishments mothers give. Research results show mothers in Turkey use the shouting/berating method the most for education and discipline (Kırcaali-İftar, 2005; Akduman, 2010; Tahiroğlu et al., 2009; Kartal&Bilgin, 2009; Altıparmak et al., 2013). According to Altıparmak et al. (2013), 64.8% of children have been subjected to physical abuse, 63.3% to emotional abuse, 36% to physical neglect, and 7% to emotional neglect. In the research TAYA (2016), 26.4% of mothers punish by not talking to the child, 36.6% ignored their requests for a while, and 37.5% used slapping. In Tahiroğlu et al.'s (2009) study, 21% preferred the method of not letting the child get what they want and depriving them of the things they like. Studies show that mothers also enable their children's morality to not become dysfunctional or overindulgent by not showing their love and that mothers adopt this as a disciplinary tool (Toros, 2010; Güler et al., 2002; Kara Doruk, 2012).

According to research (Dallar-Bilge et al., 2013; Orhon et al., 2006; Çayköylü et al., 2011; Kutlu et al., 2007; KüçükBiçer et al., 2017; Kırcaali-İftar, 2005; Erkmann&Rohner, 2006; Tahiroğlu et al., 2009; Altıparmak et al., 2013), mothers think they have the right to physically punish (beat) when a child makes a mistake; 20%-65% find slapping a child to be appropriate for educating them and approve of emotional abuse. The same studies show that mothers who have witnessed/been exposed to violence in their childhood use physical and emotional violence and neglect their children and think that children deserve a beating from time to time compared to mothers who have not witnessed/been exposed to violence in their childhood. At the same time, mothers apply the same methods to their children that were applied to them in their childhood.



Studies show mothers who have been subjected to violence by their husbands have more violent and negligent behaviours toward their children (Toros, 2010; Güler et al., 2002; Kara-Doruk, 2012; Dallar-Bilge et al., 2013; Orhon et al., 2006; Çayköylü et al., 2011; Kutlu et al., 2007; KüçükBiçer et al., 2017). Ezen et al. (2017) found that mothers exposed to emotional violence during childhood are the most likely to abuse their children. The research *Domestic Violence Against Women in Turkey* (Republic of Turkey Ministry of Family and Social Policies, 2014) determined that 30.6% of the children of women who had been subjected to violence are aggressive toward their mother or other children. The same behaviour was 17.2% for the children of mothers who had not been subjected to violence. While roughly half of the children of women who have been subjected to abuse show the behaviour of crying to be irritating, this same behaviour was shown to be much less among children whose mothers had not been subjected to abuse.

Studies conducted in Turkey reveal that many of the methods mothers use to discipline their children negatively affect their health, physical development, and psycho-social development. Mothers generally consider the reason for using violence against children to be the child's behaviour, and punishing the child is the method for changing their behaviour. They view punishment not as a detrimental factor but as an aid in child development. Additionally, these punishments are accepted as normal behaviours in society. A mother can support her attempt to educate her child by punishing them by accepting it as necessary for being a good parent instead of evaluating it as improper behaviour. Experiences of violence in the early childhood years, especially emotional violence, can leave permanent scars on a child. These may negatively affect a child's attitudes and behaviours regarding violence later in life.

According to the findings from the study, the attitudes toward the violence of the mothers who witnessed/were subjected to violence show similarities to those who were not in terms of being against violence. The mothers who had violence in their childhood stated being opposed to violence even while imposing psychological and physical punishments on their children by getting angry at their behaviours. However, mothers also stated being subjected to violence by her mother during childhood, growing up in a loveless family environment, and having a husband who did not love her as the reasons for inflicting violence on their children.

The mothers who did not witness/be subjected to violence in their childhood are also opposed to violence. Despite this, some of these mothers also believe that children need to fear their mothers and regret having inflicted violence. The mothers think that violence does not solve any problems but leads to more violence. Despite saying they are opposed to violence, the mothers are seen to continue to inflict violence on their children. Here the difference can be seen between attitudes and behaviours. Studies on violence show that violence is not a solution among those who inflict violence as much as those who have been subjected to violence. In Aydemir and Demircioğlu's (2017) study, while 64% of men advocate violence never to be a solution, this percentage is 76% among women (12% higher than men). In KüçükBiçer et al.'s (2017) research, 79.5% of the participants who inflicted violence on their children and 90.9% of the participants who did not inflict violence on their children consider striking a child to be an abnormal situation. Çalışkan et al. (2019) found that mothers subjected to verbal violence from their spouses and physical violence from their parents during childhood committed three or more acts of physical abuse upon their children.

Children face different psychological or physical punishments when they display behaviours following their developmental characteristics but are behaviours that their mothers do not want. Of course, many cultural, psychological, and personal reasons exist for this. However, witnessing or being exposed to violence in childhood, being subjected to violence by a spouse, and having a peaceless-loveless family environment makes transferring the experiences of violence to their children easy for mothers. Mothers who react quickly and suddenly when angered by the child may confront themselves after a while, regret it, and feel remorse. Once they realise this, they attempt to compensate for their violent behaviour with a positive attitude and approach toward their child. This situation disrupts the child's balance more, and the child has difficulty learning proper behaviours. When they get angry, they can express the behaviour and relationship style they witnessed/were subjected to to those around them.

The following results have been reached as a result of this study, which has been performed to examine the childhood experiences of mothers in Turkey, their behaviours toward their children, and their attitudes toward violence. Mothers who witnessed/were exposed to violence in their childhood and mothers who did

not inflict violence on their children who show disobedient behaviours. The mothers who'd witnessed/been exposed to violence in their childhood mostly respond by getting angry/shouting/berating when angered by their children. Meanwhile, the mothers who did not witness/experience violence in their childhood mostly respond by talking after calming down the child or raising their voice/warning when angered by their child. The mothers who witnessed/were exposed to violence in their childhood respond to their child when angry to cease the wrong behaviour, while the mothers who did not respond to show love/understanding to their children. Both groups are against violence. The mothers who witnessed/were exposed to violence state being opposed to violence while psychologically and physically punishing their children for behaviours that appear in children's natural developmental process. However, these mothers inflict violence on their children because they saw violence from their mothers. They grew up in a loveless family environment, have a husband who does not love them, and have problems with their spouse.

Mothers in Turkey still use emotional and physical methods of punishment as a method for training children despite the strong evidence of its negative effects on children's development. Domestic violence against women and children should be prevented, and the negative effects of violence experienced by the child should be prevented. Therefore, raising parents, especially mothers, in an environment centred on love, affection, compassion, and peace is important for a healthy future society and world. As such, mothers should be made aware of how to correctly apply reward-punishment methods within the family by raising awareness on this issue. Healthy disciplinary policies should be developed that can guide parents. In addition, support should be obtained using written and visual media.

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## Design Thinking Model in Early Childhood Education

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### ABSTRACT

This study aims to investigate the usability of the design thinking model for the education of pre-school children and the effects of the activities performed in line with the design thinking model on children. This research was conducted as a case study of 16 teachers working in a private school. Research data were collected through interviews with teachers and analyzed using the content analysis method. The analysis results demonstrated that the design thinking model could be easily used in the education of pre-school children. The Design Thinking model improves children's creativity, problem-solving, cooperation, communication, curiosity, questioning, and empathy. It allows children to express their ideas freely and supports social, emotional, language, and cognitive developmental domains. Also, the design-oriented learning process appears to actively involve children in the learning process, enable peer learning, and give children self-confidence. On the other hand, while the design thinking model does not seem to be a problem for children aged 4 and 5, children aged 3 have issues in task sharing, being a group, belonging to a group, fulfilling duties and responsibilities. or tap here to enter text.

#### Keywords:

Early childhood education, pre-school education, design thinking model.

### 1. Introduction

Constructivism, viewed as the reconstruction of knowledge by individuals from their own subjective perspectives as a function of learning, social implications, and models (Wheatley, 1991), has been expressed by theorists in various ways. The first is cognitive constructivism, as defined by Piaget, based on the cognitive development theory. Piaget tried to explain the cognitive structures and cognitive development in human beings by using such concepts as assimilation, adaptation, and balance. According to studies, if new information is not adapted to existing cognitive structures, the mind chooses to set a balance by creating new cognitive structures (Philips & Soltis, 2005). In radical constructivism, on the other hand, Ernst von Glasersfeld (2013) emphasized that information is not collected passively. Still, on the contrary, individuals take an active role in the formation and structuring of knowledge. Also, knowledge is not expected to match or be similar to the realities of the outside world in radical constructivism, for experiences may change, and consequently, knowledge may change. Finally, from the standpoint of socio-cultural constructivism, which is based on the views of Vygotsky and Dewey, knowledge represents the midpoint of objective and subjective understandings. Learning is not independent of language and culture, which play significant roles in the learning process (Demirel, 2008; Fer & Cırık 2007; Uzun, 2019).

#### 1.1. Design Thinking Model

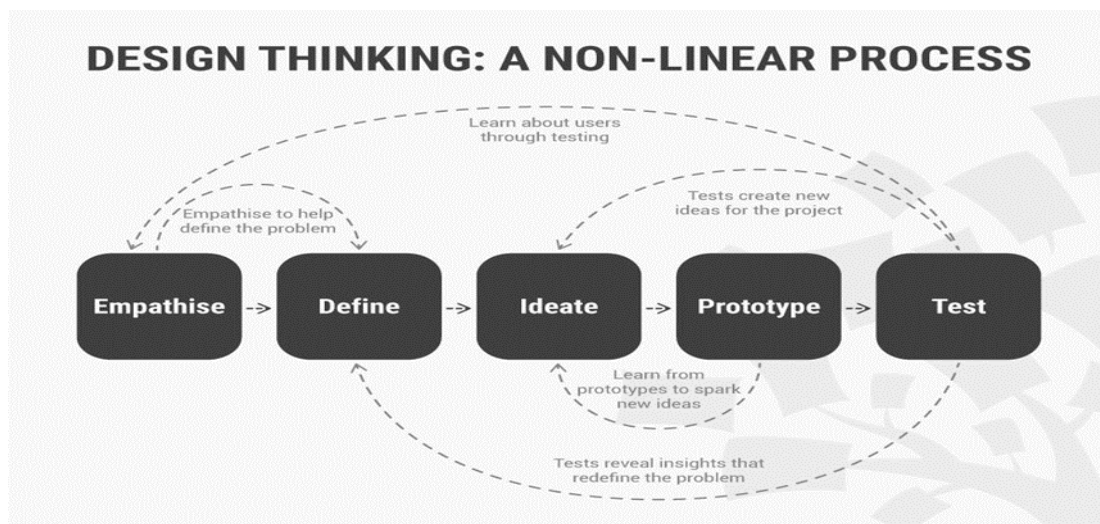
The rise of various teaching models that help build knowledge based on constructivism has facilitated the process of building it. One of such models is the design thinking model. Design thinking is a nonlinear process that is not visible at first glance, but enables us to understand individuals, examine possible solutions, and redefine problems to develop new and different solutions (Dam & Siang 2018a). It allows

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individuals to develop new and creative solutions to the problems they encounter with a solution-oriented perspective. Design thinking is not only a method for designers to work with, but a design model utilised by people in all professions, and is used to come up with new solutions to new problems and to catch new opportunities in a well-trying design process (Moggridge, 2010). Design thinking plays a very important role in terms of reconstructing the general framework of a problem with advanced methods that focus the human being, producing different ideas with the brainstorming technique, creating a new design in line with the emerging ideas, and ultimately redefining unidentified or poorly defined problems (Dam & Siang, 2018b)

Brands such as Apple, Google and Samsung, and leading universities such as Stanford, Harvard and MIT often use the design thinking model to come up with innovative ideas (Dam & Siang 2018a). The relevant literature shows that although the design thinking models used today are basically the same, there are different forms with 3 and 7 stages in practice (Yalçın&Erden, 2021; Yalçın, 2020). This study has focused on the usability of the five-staged design thinking model in preschool, as created by Nobel Prize winner Herbert Simon in the field of artificial sciences in 1996.



**Figure 1.** *The stages of design thinking (Dam & Siang, 2018a)*

These five stages can be briefly explained as follows:

- **Empathise:** It is very important that you empathise with the participants in the programme and know their interests and needs in order to identify the issues involved.
- **Define:** It is necessary to define the problems specified in line with the interests and needs of the participants.
- **Ideate:** By avoiding prejudices and assumptions, innovative solutions that have not been tried before should be developed. Individuals may not want to produce a product where emotions and intuitions are mingled and composed of sources of inspiration. However, while the product is being created, extreme reality and analytical thinking may prevent the emergence of creative ideas and related products. At this stage, design thinking with a holistic approach should be put into practice as a third way.
- **Prototype:** The best solution should be identified from among the solution-related suggestions for the solution of a problem, and an example of the solution should be constituted.
- **Test:** The proposed solutions found in this phase are tested. Depending on whether the problem is solved or not, the problem definition, design and prototype phases can be reviewed again.

These stages may not always follow a linear path. A certain sequence is followed, and in some cases, it may occur in parallel. For this reason, these stages should not be perceived as the steps following a hierarchy.

## 1.2. Problem Situation

As seen in the literature, the design thinking model is generally used with secondary school and older students in educational activities and research. Still, there is no study involving the design thinking model with pre-school children. The relevant studies in the literature include those conducted with different age groups such as primary school students (Dorie, Cardella, & Svarovsky, 2014; Noel & Liub, 2017), secondary school students (Carroll et al., 2010), high school students (Gardner, 2017; Mentzer, Becker, & Sutton, 2015),

and higher education students (Melles, Howard, & Thompson-Whiteside, 2012; Şahin, 2019). In addition, the studies mentioned above also focus on the possible relationships with a variety of concepts such as intelligence (Özegin, 2006), creativity (Erden&Yalçın, 2021; Rauth, Köppen, Jobst, &Meinel, 2010; Yalçın&Erden, 2021; Yalçın, 2020; Yalçın, 2019), engineering-oriented thinking (Dym, Agogino, Eris, Frey, &Leifer, 2005), mood and motivation (Noweski, Scheer, Büttner, von Thienen, Erdmann, &Meinel, 2012), and self-esteem and creativity (Erden&Yalçın, 2021; Şahin, 2019; Yalçın&Erden, 2021; Yalçın, 2020; Yalçın, 2019). The studies in the literature show that the activities prepared according to the design thinking model increase the creativity, cognitive flexibility levels, and self-reporting of the students at the Faculty of Architecture and Design, that in turn, they reduce the negative feelings of the participants (Şahin, 2019), that the activities could be an ideal method to determine the needs of different users and produce appropriate solutions, with or without being aware of the design thinking model (Parlar et al., 2017), that they are likely to increase the academic achievement, decision-making skills and knowledge level of engineering discipline of students in the 7th grade for the force and motion unit in the science course (Ercan, 2014), that the educational programs implemented as to the design thinking model contributed to the development of primary school students in problem-based learning, human-oriented creativity, product development, and testing (Noel &Liub, 2017), that the participants had high awareness in the design process and thought differently from adults in the study, where students' engineering behaviours were examined using the design thinking model, (Dorie, Cardella, &Svarovsky, 2014), and that the design thinking increases motivation at stages such as observation, comprehension, and generating ideas (Kröper et al., 2011).

In addition, the design thinking process in secondary schools has been shown to support children in developing learning techniques and inquiry skills, and to enable peer learning by encouraging teamwork, with children actively participating in the process through which the product creation phase enables rapid learning. The study found that the design thinking process encourages children to express their opinions so that children can make a connection between academic learning and the design-oriented learning process (Carrollet al, 2010), that it showed a statistically significant difference in the test scores of children with high academic achievement, despite an insignificant difference in the low-achieving class (Doppelt, Mehalik, Schunn, Silk, &Krysinski, 2008), and that high school students gain scientific understanding of genetics and gene transfer, and transfer their scientific understanding to new and different subjects (Ellefson, Brinker, Vernacchio, &Schunn, 2008). Additionally, Wendell (2008) stressed the importance of design thinking for science education, its relationship with different educational approaches, and relevant information about the use of design thinking in science teaching. Finally, Fortus et al. (2004) reported in their study with high school students that children's learning levels increased significantly with the design thinking learning model, that this instructional model helps children construct knowledge, that it can be a foundation for science instruction for all children, and that the school curriculum can be managed with the design thinking model. However, no research has been found in the literature that examines an applied design thinking model with pre-school children or the applicability of the model with pre-school children.

### **1.3. The Significance of This Study**

A variety of studies, including the design thinking model, were encountered in the literature review. However, it appears that the design thinking model has generally been used with middle school and older students in educational activities and educational research, but on the other hand, no study has involved the design thinking model with pre-school children (Carroll et al., 2010; Dorie, Cardella&Svarovsky, 2014; Doppelt, Mehalik, Schunn, Silk &Krysinski, 2008; Ercan, 2014; Ellefson, Brinker, Vernacchio&Schunn, 2008; Fortus et al., 2004; Kröper et al., 2011; Noel &Liub, 2017; Parlar et al., 2017; Şahin, 2019; Wendell, 2008)

This study aims to examine the usability of the design thinking model, which is generally used in the engineering, design and architecture faculties of industry and universities as well as R&D activities of different companies, in the education of pre-school children, and the effects of the activities conducted with the design thinking model on the developmental domains of pre-school children concerning the example of Süperbaba schools.



## 2. Methodology

### 2.1. Research Model

Conducted to determine the usability of the design thinking model in the education of pre-school children, this research was carried out with a case study method, which is a type of qualitative research designs. A qualitative research design is planned to contribute to the foundation of knowledge, develop field-specific applications, determine the value of something, and emphasize a specific problem (Merriam & Grenier, 2019). Case studies are meant to describe and examine a limited system in depth. The main feature that distinguishes case studies from other qualitative studies is their limitation, and the fact that the subject studied remains within a framework (Creswell, 2013). This study aims to explore whether the design thinking model could be used in pre-school education.

### 2.2. Participants

The study population is constituted by a pre-school education institution named 'Süperbaba Schools', operating under the Ministry of Family, Labour and Social Services in Kilis, Turkey, in the academic year of 2020-2021. The study's sample group consisted of 16 volunteer teachers working in Süperbaba Schools and applying the design thinking model in their classrooms. All of the teachers who use the design thinking model at the school participated in the study. The participants of the study were selected through criterion sampling, which is a type of purposive sampling. Criterion sampling examines all situations that meet a predetermined set of criteria (Baltacı, 2019). The criteria are created by a researcher or a previously prepared criteria list can be used (Marshall & Rossman, 2014). The criterion determined in this study is whether the design thinking model is applied in the activities. Table 1 presents the demographic information of the sample group.

**Table 1.** *Demographics of the Participants*

<i>Teachers</i>	<i>Age</i>	<i>Gender</i>	<i>Teaching Experience</i>	<i>Education status</i>	<i>Teaching experience with design thinking model</i>	<i>The age group he/she teaches</i>
Gül	26	F	4	University	2	5
Filiz	26	F	4	University	2	5
Eda	26	F	4	University	2	5
Zeynep	26	F	3	University	2	4
Sinem	22	F	3	University	1	3
Tuğçe	22	F	3	University	1	3
Ela	24	F	2	University	2	4
Elif	23	F	2	University	2	3
Begüm	22	F	1	University	1	4
Arzu	22	F	1	University	1	4
Canan	24	F	2	University	2	4
Meltem	23	F	2	University	2	3
Zeliha	22	F	1	University	1	4
Hüseyin	22	M	2	University	1	5
Fatma	24	F	2	University	2	4
Kübra	22	F	1	University	1	4

When Table 1 is examined, 16 teachers participating in the study were between the ages of 22 and 26, 15 were female and one was male, their teaching experience ranged from 1 to 4 years, their teaching experience ranged from 1 to 2 years with the design thinking model. It is seen that they give education to children of

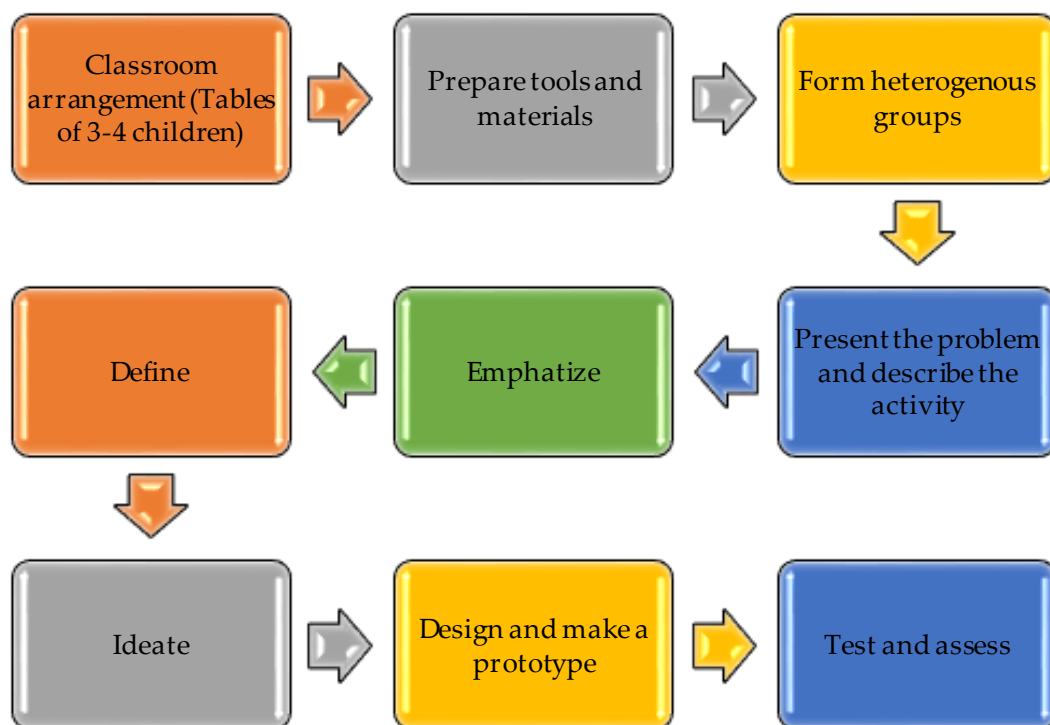
age. Also, in accordance with ethical rules, the information of the participants was protected and pseudo names were used to ensure the confidentiality of the participants in the abovementioned information.

### 2.3. Süperbaba Schools

It is a pre-school institution that offers education and care services, including breakfast, lunch, and mid-afternoon meals, between 8 am and 5 pm. Education activities in Süperbaba Schools are divided into two parts as morning and afternoon. Morning activities mostly consist of those in the classroom, especially following the design thinking model (Dam & Siang 2018) for children’s cognitive, social-emotional, and language development. The design thinking model is applied in eight classes with children aged 3-6. There are activities and workshops in the afternoon, mostly including garden and indoor playground activities to develop children's social skills and artistic perspectives. The basic principle of Süperbaba Schools is to be able to build childhood with an education that combines science-art and character education. Süperbaba Schools generally have children from families with medium socio-economic status.

### 2.4. Application Process of Design Thinking Model

Design thinking model is applied in small groups of 3-4 people depending on the number of children in classrooms. Small group activities include creating different products after being divided into groups according to their age, developmental stages, interests, and abilities (MoNE, 2013). Small activity groups were formed by paying utmost attention to making heterogeneous groups according to the children's age, developmental stages, interests, and abilities. In this way, children have been given the opportunity to achieve the same acquisitions in different ways. Figure 2 presents the general overview of the pre-implementation preparation process.



**Figure 2.** Application stages of the design thinking model in a pre-school classroom

*Arranging the physical layout of the application area:*

Tables and chairs for children to sit should be prepared for three or four children, depending on the class size. It is important that the groups are distant from each other to make them focus their attention on the activity and the process.

*Preparation of necessary tools and materials for the activity:*

The teachers can prepare the materials for the activity before the application. Depending on the type of activity, children participating in the practice may be allowed to collect materials themselves from the classroom or the school garden.

*Forming heterogeneous groups:*

Heterogeneous groups are formed for the small-group activities according to the children's age, development levels, interests, and abilities. In this way, children are given the opportunity to achieve the same acquisitions in different ways.

*Presentation of the problem and introduction of the activity:*

The teacher explains the problem or situation to the children. The activity is introduced.

*Empathize:*

At this stage, it is aimed to make children notice the problem or situation, and determine the extent of their sense of empathy as to "What would I feel if I were in the same situation?".

*Define:*

Children who empathize with the problem in the activity are expected to describe the problem/situation in general terms. A literal description of the situation is important to come up with a solution.

*Ideate:*

At this stage, ideas are generated for possible solutions to the problem or situation. At this stage where communication is intense, children are encouraged to express their views and to come up with different ideas.

*Design and make a prototype:*

The groups identify and illustrate the best solution found during the idea generation phase. The prototypes are made by trying to stick to the children's drawings.

*Test and assess:*

It is the stage in which each group explains their designed product to other groups. The contribution of the products to the solution of the problem is discussed and similar/different aspects between the designs are examined. The resulting product is examined in terms of operability and durability, and a process-oriented evaluation is made. Communication, cooperation, and interaction are important throughout the process.

## **2.5. Data Collection Tool**

Interviews can be conducted with different techniques, such as structured, semi-structured, unstructured, and focus group interviews (Marshall, 1996). The interview form developed and designed by the researcher was evaluated in accordance with the opinions of seven experts in the field of preschool education; the reliability of the study was increased by evaluating the validity of the interview questions and their suitability for the study. The interview form consists of 10 basic questions and drilling questions. Questions are included in the interview form, "Question 4- What effect do you think the activities carried out with the design thinking model have on children?".

## **2.6. Data Collection**

Semi-structured interviews were performed to collect the teachers' views and experiences regarding the applicability of the design thinking model in pre-school children's education. The interviews were conducted one-on-one in the teachers' room, where teachers would not be distracted. Interviews lasted at least 24 and at most 32 minutes. Since the teachers did not allow voice recording, the researcher wrote and noted the interview data, and possible data loss was prevented.

## **2.7. Validity and Reliability in Qualitative Research**

In order to increase the validity and reliability of the present study, all participants were asked to confirm their participation during the interview. The researcher objectively stated the study process clearly and comprehensibly. Also, the reliability of the study was further increased by explaining the demographic information of teachers participating in the study in detail. The facts that the findings and results obtained from the data collected in the research were compatible with the study's theoretical framework, and that the results were supported with similar results of the related studies are other factors that increase the reliability

(Golafshani, 2003; Maxwell, 2008). In this regard, the reliability of the study results was increased by supporting them with the results of similar studies in the literature.

On the other hand, the facts that data obtained through qualitative data collection techniques were systematically included in the research, that participant confirmation and expert opinion were obtained, and that the appropriate methods of data collection and analysis were selected in accordance with the theoretical framework before the applications in the study began can also be listed as important steps contributing to internal reliability in this study (Baltacı, 2017; Merriam & Grenier, 2019; Neuman & Robson, 2014).

### 2.8. Data Analysis

The data obtained from the interviews were transcribed and analysed by content analysis in which codes, categories, and themes were created (Merriam & Grenier, 2019). In this analysis method, an in-depth analysis is performed by organizing, classifying and comparing texts, and drawing theoretical results (Cohen, Manion, & Morrison, 2007). In the present study, the data were supported by making direct quotations in the results, conclusion and discussion section of the study regarding the specific examples of teacher experiences and applications during the implementation of the design thinking model.

### 2.9. Ethical

In this study, all rules stated to be followed within the scope of “Higher Education Institutions Scientific Research and Publication Ethics Directive” were followed.

Ethical Review Board Name: Kilis 7 Aralık University Ethics Committee

Date of Ethics Evaluation Decision: 13.11.2019 Ethics Assessment Document Issue Number: 2019/20

### 3. Result

Relevant codes, categories, and themes were created according to the content analysis of the data. As a result of the analyses, the usability of the design thinking model in the education of pre-school children and the effects of the design-thinking-based activities on pre-school children were examined under the themes of creative thinking, problem-solving, communication, cooperation, feedback, developmental areas, and teacher competencies.

**Table 2.** *Design thinking model in preschool*

Themes	Categories	Codes	f
Creative thinking	Active participation	Freely expressing opinion	7
		Participation in events	6
		Communication and interaction	6
		Interesting activities	4
	Transforming knowledge into practice	Generating different solutions	6
		Productivity	5
		Use your imagination	4
	Empathize	Inquiry skill	5
		Changes in children throughout the process	3
	Problem Solving	Productivity	Alternative ways of solution
Increased skills			5
Practical solutions			3
Self-confidence			2
Daily life problems		Real-life problems	5
		Concretization	3
		Drawing on previous experiences for new situations	3
Brainstorming	Active participation	6	
	Inquiry skills	3	
	Developing a sense of curiosity	2	
Communication	Small group activity	Language use	6
		The ability to take responsibility	5
		Communication problems	3
		Listening skills	3

	Suitable environment / opportunities	Language use	6
		Generating ideas	5
Cooperation	Sense of belonging to a group	Being aware of responsibilities	8
		Acting with the group	5
		Social cohesion	5
	Duties and responsibilities	Being aware of responsibilities	8
		Taking part in the implementation process	6
Feedback	Parent feedback	Problem solving	9
		Generating ideas	8
		The ability to transfer knowledge to real life	7
		Creative solutions	4
		Changes in children throughout the process	3
	Feedback from children	Problem solving	9
		Creative solutions	4
		Egocentric	2
		Use of materials suitable for the purpose	2
		Belonging to the group	2
		Showing respect to other children's ideas	2
		Similar/identical ideas	2
Developmental domains	Social and emotional domain	Fulfilling responsibilities	13
		Small group activity	10
		Empathy	6
		Inter-disciplinary	5
	Cognitive development	Problem solving	14
		Active participation	12
		Creativity	10
		Brainstorming	6
		Meaningful learning	3
	Language development	Communication	10
Cooperation		8	
Teachers' competence	Application process	Mentor	7
		Motivator	6
		Observant	5
		Encouraging	4
		Cooperative	2
	Classroom environment	Fun-loving	6
		Mild classroom atmosphere	3

### *Creative Thinking*

The results show that one of the most important effects of the activities conducted with the design thinking model on pre-school children is creativity. Some of the sample opinions of the teachers participating in the study are as follows: teacher Elif said, "They immediately generate ideas in the difficulties they encounter. Design thinking provides benefits in many areas such as creative thinking, empathy, being active in the process, and using imagination. For example, when the play dough seems drying, they wrap it in a wet wipe and put it in its box so that it will not dry out." On the other hand, Teacher Fatma said "I think design thinking helps children be productive and creative, to question and develop their sense of curiosity".

Similarly, according to Teacher Kübra, "The children are able to generate ideas and solve problems they face in daily life from a different point of view", and Teacher Gül said, "I would say that children generate different, innovative and scientific solutions to problems more quickly. For example, when asked, 'Turtles walk very slowly. What can we do to make them walk faster?', the children answered, 'We can produce skates, skateboards, cars, etc. for turtles'". Building on this, it can be assumed that activities carried out with the design thinking model develop creativity in children, encourage children to generate new and creative ideas, and enable them to be solution-oriented, curious, and questioning beings.

### *Problem Solving*

The results show that another important effect of the activities performed with the design thinking model on children is the development of problem-solving skills. Some sample opinions of the teachers who participated in the study are as follows: Teacher Begüm said, "Through design thinking, children have learned that there is always a solution to any difficulties they encounter. They become incredibly happy as they come up with solutions", and Teacher Kübra added, "Design thinking enables children to think differently, to cope with the problems they may encounter in their daily lives, to be solution-oriented, and to put them into design to concretize". Similarly, Teacher Filiz said, "I have noticed that while children are playing games in the leisure time, if they see a broken toy, they try to repair it in different ways, saying, 'Let's find a solution!'. I have also noticed that they ask each other questions just like the problem-based questions I often ask them".

About her relevant experience, Teacher Zeynep presented a dialogue with the children in her classroom during the implementation of the design-oriented learning model given as follows:

"They can make an association and empathize when faced with a problem similar to what they have experienced before. It becomes easier for them to understand the situation and come up with solutions. For example, once I said, 'In my classroom are four tables. One of the tables' legs is longer than the others' legs. I could not bring the four tables together. How can I put the tables side by side', turning to the kids, I continued saying, 'How can I make their length the same?' to enable them to think and come up with solutions. After the children thought for a while with their groupmates, I had the following dialogue with them:

- C1. "Let's cut the legs of the long table and make it equal with the other tables."
- C2. "No. We are just kids. It's dangerous for us to use such tools. Let's find another solution."
- C3. "We can make the legs of the short tables as long as the long-legged table."
- T. How?
- C. We can fold some paper and put it under the tables.
- T. What else?
- C. We can put some of our wooden Legos.

Design thinking helps children to come up with solutions to problems they encounter in real life or to improve their imagination." the teacher expressed a memory.

On this basis, it can be assumed that the design-based learning process actively involves children in the process, shows children that there can be more than one solution to a problem, enables children in groups to support each other through peer learning, encourages children to express their thoughts freely, and makes children feel happy and confident when they find solutions to problems. Communication

In the present study, the activities carried out with the design thinking model appeared to have another important impact: communication skills. Some sample opinions of the teachers are as follows: Teacher Canan said, "They express themselves more easily during the process", just like Teacher Eda who said, "I think the design thinking process encourages every child to think innovatively. Finding a solution and learning to empathize is a very good method for children's development. And every child communicates with each other in this process. I think this is a very positive process for the children socially." Teacher Fatma added, "One of the most important contributions of the Design Thinking process is that the children have the opportunity to express themselves freely.. Friendships are getting stronger, their vocabulary improves as they use verbal communication to express themselves," and according to Teacher Ela, "Children who have difficulty expressing themselves can do it better after a few weeks. Even the children with developmental delay are now beginning to express themselves better. Children are in constant communication and interaction in a small group. Naturally, disadvantaged children find the opportunity to express themselves in this process". Teacher Naz said, "It is possible to see that the children with speech retardation express themselves better; their self-confidence and comprehension skills improved. For example, introverted children can now express themselves better. They can express their thoughts and ideas freely,"; and these findings evidently support the previous finding. Consequently, it could be asserted that the design thinking model provides children with a free space where children have the opportunity to express themselves freely. Perhaps most importantly, children who have language delays and problems with speaking skills more than

their peers will have the opportunity to gain self-confidence, express themselves better, and develop their language and speaking skills.

### *Cooperation*

Another important result of the study regarding the effect of the activities performed with the design thinking model on children is the ability to cooperate. Some sample views of the teachers involved in the study are as follows: Teacher Fatma said, "Those who usually do individual activities have started to act with and tend to belong to the group. They fulfil their responsibilities as a carrier, an architect and a spokesperson within the group." According to Teacher Hüseyin, "In the process, children develop their empathy skills and work in groups and in cooperation rather than staying alone." Similarly, Teacher Meltem said, "Tasks can be shared in the design thinking model and a group work emerges", and as stated by Teacher Canan, "Over time, the activities in the design thinking process have been implemented better. For example, children who insisted on doing such activities individually rather than in a group were later able to work more comfortably in groups at the end of the fifth week. They were also able to express their ideas more comfortably and learn to listen to their friends in the group." In this regard, it can be argued that children acquire important skills such as acting with a group rather than individually, the sense of belonging to a group, respecting decisions within the group, fulfilling duties and responsibilities in the group, and showing empathy.

### *Feedback*

Feedback was received from teachers about the applicability of the design thinking model in pre-school education and its effects on children. Some sample expressions given by the teachers are as follows: Teacher Fatma said, "During the process, I saw that children used the materials appropriately, could express their opinions easily, and created the identical or similar prototypes in line with their ideas. For example, I have received creative feedback from the children such as guessing and writing down the rest of the story on new sheets of paper instead of the torn pages of a book or drawing and pasting pictures according to the story." Teacher Hüseyin said, "In our classroom, the protective board of the heater was broken one day. The children immediately gave their opinions to solve the problem and they said, 'We can fix it with tape,' adding that the ends coming out of the board were dangerous and that they would cover the sharp ends with paper so they would not harm them." Mentioning a similar occasion, Teacher Gül said, "A mat fell from the building on the protection net of the school garden and the children said, 'Miss, let's figure out how to solve the problem.'" At that moment, we thought and found a solution. And we picked the mat from there with the help of a long stick", and Teacher Begüm said, "The children come up with solutions for the situations they encounter at home. Parents are very happy about it. They think that the ideas generated by the children are very creative". Teacher Zeliha said, "When children come across a problem at home, they come up with their solutions and design them with the materials available at home. Later, they explain the product they have made to their family". It can, therefore, be stated that children can make a connection with what they learn at school and their real lives and use what they learn at school in various problems at home. In other words, the design thinking model results in permanent behavioural change in children; that is, learning occurs in children.

### *Developmental Domains*

Based on the results, it can be concluded that the activities carried out with the design thinking model have significant contributions to the developmental domain in pre-school children. Some sample opinions of the teachers are as follows: Teacher Sinem said, "Design thinking positively affects children's cognitive, motor, and language development", and Teacher Fatma said, "We can say that design thinking model is a program aimed at increasing the thinking and producing potential of children. It guides our children in the sense that they produce rather than consume." Similarly, teacher Zeliha said, "We can see very clearly that the application process strengthens the children's curiosity and interest in research," and teacher Elif added, "Instead of teaching the basic disciplines independently, it is a multifaceted method of inquiry, which means knowledge is not used in the singular but in the plural. The implementation process aims a fluent, productive, and planned progress." Teacher Zeliha also said, "I think design thinking helps children to be productive and creative, ask questions and develop their sense of curiosity," and teacher Sinem added, "In this process, children develop their empathy skills and learn to work together in groups instead of staying

alone."Teacher Filiz said, "They become individuals who are aware and fulfil their responsibilities in the process. They become active not only physically but also mentally, in which case, the process is no longer boring but fun for children." Teacher Kübra said, "The application process enables children to be active. In addition, their social skills of communicating, cooperating, and acting in a group improve. Their emotional skills improve as they show empathy. Their minds are constantly active in the process. They brainstorm and come up with different and new solutions. In other words, the design thinking model also supports the cognitive-developmental domain of children." Based on this, it can be assumed that the design thinking model is effective in the social, emotional, language and cognitive development as well as the development of fine motor muscles in children.

#### *Teachers' Competence*

The participant views on the design thinking model regarding the implementers, teacher competencies, and teachers' position in the application process revealed the following findings. Teacher Hüseyin said, "Teachers can help children by presenting relevant examples to those who have difficulty in finding ideas, or by explaining the problem to those who do not fully understand the problem with different examples as well as guiding them." Teacher Arzu said, "I am more in the position of a guide as a requirement of the design-oriented learning process. I get children to think with open-ended questions without directing them much." Similarly, Teacher Zeliha said, "When I help my students to carry out thinking-oriented activities, I teach them more successful and practical methods within the framework of certain rules and discipline, or try to instil in them this way of design thinking as an observer and a collaborator to increase motivation and highlight their skills in this process", and Teacher Eda said, "First of all, I talk to the children about the problem, and we chat. If there is something I have to show, I show them its picture. I also get the kids to watch videos on this topic. After the kids have expanded their knowledge, I try to ask them open-ended questions and get them to come up with innovative solutions. At the beginning and at the end of the activity, I am more passive in the active process", and finally, according to teacher Meltem: "A teacher's job is to act as an observer, to get the children's opinion on what each group is doing by asking questions, and to support the children where they need it and, above all, to act as a guide". On the basis of such data, teacher competencies for the design thinking model can be listed as being a guide and an observer as well as being entertaining, friendly, and motivating.

In addition to the situations expressed in the themes above, the participants also talked about different situations experienced in the design-oriented implementation process. One of them indicates that especially three-year-old children have problems in task sharing, being a group, sense of belonging to a group, fulfilling duties and responsibilities within the group, and distribution of group tasks. For example, Teacher Meltem expressed her negative experiences regarding the application of the design thinking model in pre-school children, saying, "Egocentric characteristics of children at the age of three, which is due to their developmental stage, can cause problems in the distribution of tasks", just like Teacher Tuğçe who said, "After a certain period of time, children can start to find similar solutions"; both comments indicate the egocentric characteristics of the children aged three, which can be regarded as a highly probable explanation. No other similar or different kind of negative situations were mentioned in the four and five-aged group of children regarding the applicability of the design thinking model in pre-school education.

#### **4. Discussion**

The research first concluded that the activities planned with the design-oriented thinking model encouraged preschool pre-school children to produce new and creative ideas and develop their creativity, curiosity, and research.

In addition, the design-based learning process actively involves children in the process, shows children that there can be more than one solution to a problem, allows children in groups to support each other in a process where peer learning can be achieved, encourages children to express their thoughts freely, and makes children feel happy and confident when they find solutions to problems. The current study also concludes that the Design Thinking model provides children with a free space and enables children with developmental delays in speech and language compared to their peers to gain confidence, express themselves better and develop their speech and language skills.



The teachers' views led us to conclude that the children gained important skills in the design-based learning process, such as acting with a group rather than remaining alone, belonging to a group, respecting decisions within the group, fulfilling their duties and responsibilities within the group, and showing empathy. In addition, it can be stated that children can transfer what they learn at school to their real lives and use what they learn at school for other problems at home. The design thinking model causes permanent behavioural changes in children; that is, learning occurs in children.

Finally, the design thinking model has been found effective in developing social-emotional, language, and cognitive skills, and of fine motor muscles of children and supports the developmental domains of children. In addition, features such as being a guide, an observer, and fun, friendly, and motivating emerged as teacher competencies of the design thinking model. The relationship between the design thinking model and other factors was examined in relevant studies in the literature, including those conducted with different age groups such as primary school students (Dorie, Cardella, & Svarovsky, 2014; Noel & Liub, 2017), secondary school students (Carroll et al., 2010), high school students (Gardner, 2017; Mentzer, Becker, & Sutton, 2015), and higher education students (Melles, Howard, & Thompson-Whiteside, 2012; Şahin, 2019). Also, the studies mentioned above focus on the possible relationships with a variety of concepts such as intelligence (Özeken, 2006), creativity (Rauth, Köppen, Jobst, & Meinel, 2010), engineering-oriented thinking (Dym, Agogino, Eris, Frey, & Leifer, 2005), mood and motivation (Noweski, Scheer, Büttner, von Thienen, Erdmann, & Meinel, 2012), besides self-esteem and creativity (Şahin, 2019).

Several researchers of the studies in the literature concluded that activities prepared according to the design thinking model increase students' creativity, cognitive flexibility, and self-evaluation and reduce their negative emotions (Şahin, 2019), that the design thinking model can be an ideal method to identify the needs of different users and develop appropriate solutions (Parlar et al., 2017) and that science education based on design thinking increases students' academic performance, decision-making ability, and knowledge of the engineering discipline (Ercan, 2014). According to some other studies, the design thinking model contributes to the development of problem-based learning, human-centred creativity, product development, and testing (Noel & Liub, 2017). Design thinking increases motivation in stages such as observation, understanding, and imagination. (Kröper et al., 2011). It has also been asserted that the design thinking process supports children in questioning, teamwork, peer learning, and active participation (Carroll et al., 2010), and that high school students gain scientific understanding on genetics and gene transfer, and can make use of their scientific insights in new and different subjects (Ellefson, Brinker, Vernacchio, & Schunn, 2008).

The study by Fortus et al. (2004) emphasized that the learning ability of high school students increased significantly with the design-based learning model, that design-based learning helped children construct knowledge, that this teaching model could be the basis for science education for all children, and that the curriculum could be applied with the design thinking model. It is apparent in various studies that the design thinking model can be applied in education due to its important benefits for the participants. Likewise, the results of this study seem to support those in the literature. Hence, it is evident that using the design thinking model in pre-school education will most likely provide serious benefits to children in a developmentally critical period. It can be used easily, especially for children aged 4 and 5, as the model proves beneficial in terms of children's social, emotional, language, and cognitive development.

Last but not least, the results of this study also draw attention to gains such as acting with the group, belonging to the group, respecting group decisions, fulfilling duties and responsibilities within the group, and showing empathy. Belonging has been asserted as a basic requirement by many theories and theorists (Ersanlı & Koçyiğit, 2013). Considering close relationships as a precondition for human development to survive, Bowlby suggested that close emotional ties are fundamental in development and that the individuals initially need to establish a relationship with their families (Ecke, Chope, & Emmelkaamp, 2006). According to Maslow, people generally want to establish close relationships with others and to be in a group when their physiological needs and safety needs are met (Maslow, 1943; Boeree, 2006; Maslow, 1954). Belonging to a group, interpersonal relationships and the sense of being part of these relationships are very important for developing closeness and adapting to other circumstances in life (Shifron, 2010). In a similar sense, relevant results in the literature reveal that individuals' belonging to a group is extremely important for human life. According to the results of this study, it can be argued that the design-oriented thinking

model is a very remarkable educational process in making individuals gain the sense of belonging, which is a critically important element for the whole of human life.

In this study, a few negative results were also obtained regarding the applicability of the design thinking model in pre-school education. It was, therefore, concluded that especially three-year-old children experienced problems in sharing tasks, being a group, belonging to a group, fulfilling duties and responsibilities within the group, and distribution of group tasks, though the problems tended to decrease in time. The relevant literature reports the well-known fact that preschool children do not show empathy due to their egocentric way of thinking (Gerrig& Zimbardo, 2017) and cannot recognize that other people may think differently from them (Atkinson, Smith, Bem, Nolen, 2010). In this regard, the fact that the group of three-year-old children in this study exhibited egocentric characteristics in relation to their developmental stage can be considered as a quite possible reason for the negative situation. On the other hand, no similar or different negative situation was found in the group of four- and five-year-old children in relation to the applicability of the formative thinking model in preschool education, which is quite important as an indicator of the applicability and effectiveness of the formative thinking model in preschool education (Yalçın, 2020; Yalçın&Erden, 2021).

## 5. Limitations

- This study is limited to the qualitative findings from the semi-structured interviews with the teachers who participated in the study.

## 6. Recommendations

- Considering the limitations of this study, another study can be planned in which data will be collected both quantitatively and qualitatively. In this way, more comprehensive research results could be obtained by making a method, data and observer triangulation.
- In addition, pre-school teachers can contribute to the multifaceted development of children by frequently using activities planned according to the design thinking model.

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# The Analysis of Problem Posing Skills about Integers of Prospective Primary School Mathematics Teachers Who Have Experienced in Problem Posing

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## ABSTRACT

This study aims to analyze the problem-posing skills of primary school mathematics teacher candidates with problem-posing experience and their views on problem posing. The case study, one of the qualitative studies, was used in the study. The study group is ten prospective elementary mathematics teachers who were selected using the purposive sampling method and are in their third year in the academic years 2020-2021 Teaching Mathematics in Primary Schools Major at a private university in Istanbul. The data collection process consists of two stages: 9 problem-posing drafts in total for performance evaluation prepared by examining the literature and obtaining an expert opinion and semi-structured interview forms with three questions. The participants were asked to pose problems on the subject of integers. The problems were evaluated and analyzed by the researchers and two mathematics teachers according to the problem-posing evaluation criteria developed by the researchers. As a result of the findings obtained in the performance determination phase of the study, it was determined that the participants posed more successful problems in the case of structured problem posing. It was determined that some of the problems were not problematic; they were prepared without paying attention to grammar rules, the sentences were not in a clear and logical framework that the middle school students could understand. The numbers were not used according to a certain logic pattern to make the problem solvable. Some problem situations were left unanswered. In the second stage of the study, the data obtained through semi-structured interviews with the primary school mathematics prospective teachers were analyzed using content analysis. In examining the research findings, the main issues are what the participants pay attention to in problem setting, whether they emphasize problem setting in the instructional process, whether problem setting is necessary for each student, and whether anxiety occurs in problem setting.

Keywords:

Mathematics education, problem posing, mathematics prospective teachers, integers

## 1. Introduction

Teaching mathematics with traditional methods in the 21st century may not be helpful to acquire the skills of this century. For this reason, teachers should design the mathematics course for students to participate in mathematics lessons actively. Problem posing is on the agenda as one of the activities that foster active learning (Kwon & Capraro, 2021). There are studies emphasizing the importance of posing problems in our country (Akay & Boz, 2010; Arıkan & Ünal, 2014; Dede & Yaman, 2005; Ev-Çimen & Yıldız, 2018; Kaba & Şengül, 2016; Kılıç, 2013). It is seen that problem-posing is emphasized in the secondary school mathematics curriculum,

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which has been updated with these studies and is currently in force. Raising individuals who believe in the benefit of mathematics, have a critical point of view, can solve problems, pose problems, and have affective skills specific to mathematics is among the goals of mathematics education (Ministry of National Education [MoNE], 2018a).

Individuals who can solve problems can also create a starting point for other problems in the problem-posing phase by reformulating the problem (Kilpatrick, 1987). From this point of view, emphasis is placed on implementing original problem-posing processes in the mathematics education program applied in Turkey (MoNE, 2018a).

Knowing mathematics and being involved in Mathematics means having reasoning skills and having skills to be able to solve problems encountered in daily life (Altun, 2006). In the simplest form, numbers can be seen in measuring, shopping, interpreting graphics and establishing formulas (Işık, Çiltaş & Bekdemir, 2008). Since every learned concept is a step for the upcoming concepts in Mathematics, difficulties in learning or misinformation will lead to a misunderstanding for other concepts (Soylu & Soylu, 2005). For instance, when the integer subject is not completely understood, it will cause a misunderstanding about the exact meaning of the concepts in exponential and root numbers. There will be some difficulties in determining the operation sign when the number in the root is negative and the number in the base and exponent is negative (Duatepe Paksu, 2010). As Mathematics classes are conducted cumulatively, teaching integers before passing through the exponential and root numbers (Kutluca, 2012). Similarly, it is necessary to have a complete understanding of negative integers before transitioning from arithmetic operations to algebraic thinking (Linchevski & Williams, 1999). Therefore, the integer unit should be emphasized thoroughly by thinking that it constitutes the basis of abstract thinking to realize conceptual and operational learning.

## **Theoretical Framework**

### **Problem posing and problem-solving as an alternative way of assessment.**

People who can approach problems with a different perspective can produce more different and various solutions to them. For this reason, the problem-solving process is a critical element of mathematics classes, and putting problem-solving at the center of the curriculum can make educators give a special emphasis to this process (Berisha, 2015). Studies conducted to improve problem-solving skills involve first understanding the problem, developing a strategy for the solution, implementing the strategy, verifying whether the solution is correct or not, generalizing the solution to other problems, and posing similar problems.. In short, raising people who can “solve problems” is among the expectations of the teaching program (Bintaş & Yazgan, 2005). There is a positive relationship between problem-posing skills and problem-solving skills, and also, problem-posing skills are as important as problem-solving skills (Kojima, Miwa, & Matsui, 2015). While problem-posing contributes to developing skills such as creativity, reasoning skills, and understanding concepts, it is also used as an assessment tool about individuals' mathematical abilities and knowledge (Lin, 2004).

Problem posing, the initial stage of problem-solving, is defined as generating new problems by students or creating different problems by changing an existing problem (Silver, 1994). Although it is seen as an operation only composed of writing, it is a long and comprehensive process contrary to the general opinion (Ev-Çimen & Yıldız, 2018). The biggest difference between the problem-posing operation and problem-solving is that it is a comprehensive process and requires reasoning skills (Çıldır & Sezen, 2011). In other words, problem-posing develops skills like internalizing mathematics concepts, expressing them by using a mathematical language, and being able to use mathematical expressions (Akay, Argün, & Soybaş, 2006). Problem posing provides convenience for students to express themselves both in verbal and written ways during mathematics classes. Besides, it also helps students to discover their levels in mathematics classes (Gür & Korkmaz, 2003). Especially, more studies on problem posing in mathematics lessons can provide a better understanding of students' mathematical thoughts (Cai & Hwang, 2020). In the studies, problem sets are found to enable people to be communicative, questioning, critical thinking, analyzing their environment and developing similar behaviors (Nixon Ponder, 2001). Guezel and Biber (2019) emphasize that problem settings have a positive effect on affective processes such as motivation and attitude. Thus, students who pose a problem develop positive attitudes toward mathematics and overcome prejudices about the problems in which they have difficulties (Altun, 2001). At the same time, problem-posing is an assessment tool that can measure students' knowledge of mathematical concepts and structures (English, 2020). When problem posing is used as an

assessment tool, students' misconceptions and mistakes about mathematical concepts can be revealed (Cai & Hwang, 2020).

In the problem-posing process, most of the students can have difficulties reasoning while employing information. Notably, they can display incorrect approaches in problem-posing stages. At this point, teachers have most of the responsibility. For students to understand the problem and have problem-posing skills, teachers must know suitable methods and strategies according to the levels of their students. For this, teachers should conduct activities that are suitable to their student's individual development. We need well-equipped teachers to create higher quality problems, which will increase our students' creativity (Dede & Yaman, 2005). For this reason, it is necessary to make prospective teachers take problem-posing skills in teacher training programs (Gonzales, 1994).

Teachers can use problem posing as an alternative testing and assessment activity. The challenges which are faced by students and the points which students have difficulty understanding can be detected in the studies which are carried out to develop problem-posing skills (Işık & Kar, 2015). Detecting students' challenges and misconceptions will contribute to students in their learning process and be beneficial to teachers to increase the quality of their teaching (Arıkan & Dede, 2020).

When the literature is examined, it is seen that several researchers (Brown & Walter, 2005; Gonzales, 1994; Stoyanova & Ellerton, 1996) have developed a problem-posing strategy. In this study, the strategy developed by Stoyanova and Ellerton was used. Ellerton and Stoyanova (1996) classified their studies as structured problem posing, free problem posing and semi-structured problem posing. Free problem-posing includes creative problems which are posed by moving from any given situation without a restriction. In semi-structured problem posing, it is asked to pose problems that involve an image, a table, a story, or a situation given to the students. However, structured problem posing is expected to pose a problem that is suitable to the solution or the answer of a given problem (Stoyanova & Ellerton, 1996).

### **Why are Integers important?**

One of the mathematics topics that we see students having difficulties in terms of learning is students' mistakes and misconceptions frequently is the unit called integers and problems associated with integers (Kilhamn, 2008). The studies show that the integers, especially negative ones, generate difficulties for the students because students assume that their knowledge of natural numbers is also valid for the integers by dealing with the integers as natural numbers (Gallardo, 2002). Students who cannot visualize that negative numbers show a direction have problems in situations such as extracting the bigger number from the smaller one and extracting a positive number from a negative one (Bağdat & Yenilmez, 2014). It is suggested to deal with daily challenges like income-depth, profit-loss, and below-over sea level (Ministry of Education [MoNE], 2008a).

Students have encountered numbers in every part of their academic and daily lives since they started school. When students do operations with natural numbers, they meet with negative numbers in the next stage. Together with the differentiation of the needs, it is achieved cardinal numbers first, then natural numbers by adding them zero, which expresses absence. Finally, it is time for the integers due to insufficiency of the natural numbers (Cihangir & Çevik, 2020). While counting numbers can be made concrete by representing them with objects in mind, operations performed using negative numbers can be interpreted with the logic of mathematics (Kiraz & Işık, 2020). It is important to give students this logic in the best way possible by associating negative integers with daily life and including them in the process (Akyazı & Kaplan, 2018).

In the Mathematics teaching program, which was re-written by the Ministry of Education in 2018, students meet with the integers in 6<sup>th</sup> grade. They study four operations with integers that are difficult to understand in the 7<sup>th</sup> grade when they start to understand abstract concepts. Within the scope of the national-level education program and international-level reform studies related to mathematics education, it is emphasized that associating integers with real-life will help students to understand integers better (NTCM, 2000). Learning the unit of the integers and imagining the operations performed with these numbers are important as they form a foundation for the units to come (Doğan & Işıtan, 2018). Learning the unit of integers will significantly contribute to learning other mathematical units that are interrelated. Students who understand positive numbers with the help of decimal numbers have difficulties in problems involving operations with negative numbers as they encounter negative integers for the first time (İpek & Ünal, 2009). The purpose of the Primary

School for 6th-8th Grades Teaching Mathematics Program and Guide, which was enacted in 2005 (MoNE, 2005), is to improve students' communication, association, and reasoning skills by offering different modelling methods for the modelling of integers to overcome these difficulties. At the same time, it is foreseen to include studies for students to find solutions by making sense of the problems posed on four operations, such as addition and subtraction with positive and negative numbers (MoNE, 2018a). While positive numbers can be concretized using real objects, problems created with negative numbers are interpreted using logic (Bahadır & Özdemir, 2013).

Understanding negative numbers will ease the learning of the following subjects. For instance, not completely learning negative numbers conceptually is the basis of the difficulties that students have in the algebra learning field (see. Seng, 2010).

Integers are the basis for advanced subjects in mathematics education, and they should be understood and learned by students rather than memorizing them (Dereli, 2008). After detecting the difficulties and misconceptions of students when they have operations with integers, it is seen that teachers and researchers have tried various teaching methods or materials as a solution to this situation (Fuadiah, Suryadi, & Turmudi, 2017). Performing activities on problem posing by associating information about integers with daily life can be applied as one of the teaching methods that will contribute to students' understanding of integers more easily (Berkant & Yaren, 2020). Since it is recommended to use examples such as profit-loss, debit-credit, elevator, thermometer from daily life during the teaching of integers in the curriculum of the mathematics course, which was reorganized in 2018, it is believed that doing problem-posing activities by making use of these examples related to integers will be more successful in learning integers. However, the purpose of this study is both to learn the competencies of prospective teachers regarding integers by means of problem posing and their preference about whether they will use problem posing in their future teaching careers. If the teachers have any misconceptions, associations, or understanding problems, it is dangerous to transfer the same problems directly to the students (Can, 2019). In addition to this, at this point, their opinions about whether problem-posing studies contribute to their improvement or not will also affect their positions in using problem-solving activities when they become teachers. Problem posing has a positive effect on academic achievement in teaching integers (Özdemir & Şahal, 2018) and enables students to use integers in contexts (Wessman-Enzinger & Tobias, 2020).

By moving from the explanations based on the literature, since there are challenges in teaching and learning integers subject, the purpose here is to conduct a study with the participation of prospective teachers about their different problem-posing situations in integers.

The strategy developed by Stoyanova and Ellerton'un (1996) was used as the purpose of this study is to analyze problem-posing types of prospective teachers according to different problem-posing situations. Thus, the thinking processes of prospective teachers in different problem-posing situations will have been presented.

By moving from here, this study aims to analyze problems posed by primary school mathematics prospective teachers about integers. In this sense, the answers to the following questions were searched;

- What are the skills of prospective mathematics teachers in posing free, semi-structured, and structured mathematics problems related to integers?
- What do primary school mathematics primary teachers think about using problem posing for the assessment of integers?

## **2. Methodology**

### **2.1. Research Model**

The case study method, which is one of the qualitative research methods, was used to study the problem-solving skills of prospective teachers. Yin (2009) defines a case study as a method in which the focus is on the questions of why and how, and the answers to these questions are pursued through cases with variables that cannot be controlled by the researcher. The purpose of qualitative research is to examine events in their natural flow rather than to collect data numerically. The goals of qualitative researchers are to describe the study group in detail and to investigate the topic from the participants' perspective (Koç Şanlı, 2018). From this point



of view, using the case study, an in-depth examination was made about the prospective primary school mathematics teacher skills in different problem-posing situations regarding integers and their views on problem posing. While Creswell (2014) defines a case study as processes or designs that discover activities and actions, Fraenkel and Wallen (2006) define it as a deep examination of an individual, a school, or a group.

## 2.2. Research Sample

Ten prospective teachers who study mathematics in Primary Schools at a private university located in Istanbul in the 2020-2021 academic years are the study group of the research. They were selected using a purposeful sampling method. Certain criteria are considered when determining the study group in the purposeful sampling method (Patton, 1987). The criterion specified for the participants of this study is to have completed their problem posing and teaching numbers classes within their undergraduate education.

## 2.3. Data Collection Tools and Procedure

The data collection process includes two stages. Since we carry out distance education because of pandemics, Google Forms were used for problem posing draft, which is the study's first stage. Microsoft Teams Software was used to conduct semi-structured interviews in the second stage of the research as everybody can easily assess these forms and software. There is a problem-posing draft in Google Forms which contains free, semi-structured, and structured problem-posing situations. The opinions of two experts were collected to decide whether the created problem-posing draft is suitable to the research objectives. The problem-posing draft was finalized following the opinions of experts and conducted to the prospective teachers by adding shape for a semi-structured state.

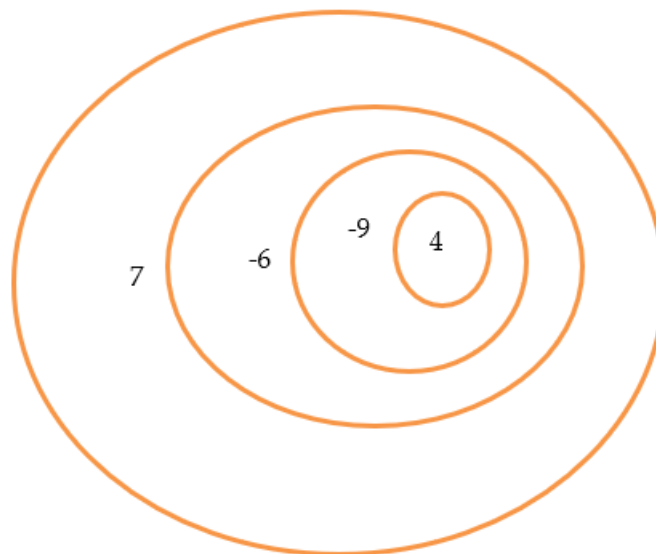
### Questions in the Problem Posing Outline

Questions about Free Problem Posing;

1. Create a problem that requires four operations about integers at the middle school 7<sup>th</sup>-grade level.
2. Create a problem about integers that you think is interesting.
3. Create a problem about trade.

Questions about semi-structured Problem Posing;

1. Create a problem containing the following solution  $(-22) + (9 \times 4) = +14$ .
2. Write a problem that is suitable for the figure.



3. Create a problem by using prompts.



Questions about structured problem posing (Bayraktar, 2020);

1. A swimmer has jumped into the sea from a diving board that is 6 meters above sea level. Since the total distance she jumps is 8 meters, how many meters is the swimmer below sea level? Write a problem that is similar to this problem.
2. After a seed sown 10 cm deep begins to germinate, it grows 2 cm every three days. Accordingly, 24 days after germination begins, what is the length of the part of the seedling that remains above the soil? Please write about a problem similar to this.
3. In a 25-question integer test, students earn 5 points for each correct answer they give and lose 2 points for each incorrect answer. When Fatma finishes the test without leaving any blank, how many points will she get since she has 19 correct answers? Please write about a problem similar to this problem.

After implementing the problem-posing outline, semi-structured interviews were conducted with prospective teachers in the second stage of the study. The semi-structured interview form was prepared as involving three open-ended questions after collecting the opinions of an expert. The purpose of asking these questions in the interview form is to collect the opinions of prospective teachers about the problem-posing process with integers.

#### The Semi-Structured Interview Form

1. Which of the free, semi-structured, or structured problem-posing situations in the problem-posing outline did you have more difficulty? Why?
2. Which stages did you follow, and what did you pay attention to most when posing problems in the problem-posing outline?
3. Do you think problem posing is a useful process? What does it mean to you? What is your general opinion about the problem-posing process?

#### 2.4. Data Analysis

The data obtained from the problem-posing outline were evaluated using a problem-posing evaluation scale by two mathematics teachers and the researchers. The reason why four people carried out the evaluation is the desire to have a reliable and valid evaluation of the data obtained from the problem-posing outline. When the answers given to the problem-posing outline were evaluated, the following formula was used to find the reliability coefficient;  $[\text{Agreement} / (\text{Agreement} + \text{Disagreement})] * 100$ . As a result of the calculation, the reliability coefficient of the study was found to be 80% and since it was above 70%, it was accepted as reliable (Huberman & Miles, 1994). When writing the assessment criteria for the task, it was necessary to make sure that the task was written clearly and in accordance with the grammatical rules so that students could understand what the task meant when they read it (e.g. Arıkan & Ünal, 2013). While preparing the evaluation criteria, items that include the indispensable elements of the problem, which are easy to apply and which can be understood by everyone in the same way, were written. Then, a lesson hour was discussed with eight teachers who are experts in mathematics education fields. The final form was obtained by removing the unanimous items from the first draft consisting of 6 questions and 6 degrees.

One of the problems created by the prospective mathematics teachers about integers was analyzed, and it was examined whether the problems posed about integers are proper problem statements in terms of grammar, spelling, and ambiguity, whether the problem statements were written clearly and understandably, whether

they are related to integer subject, whether they are suitable to the middle school level and whether the data in the problem statement is enough for having a solution. The problem-posing evaluation criteria and scoring scale developed by the researchers were given in Table 1.

**Table 1.** *Problem posing Evaluation Criteria*

	0 Point	1 Point	2 Points
1) Is the problem statement written according to grammar rules?	Not written according to grammar rules	Partly written according to the grammar rules	Written according to the grammar rules
2) Is the problem statement written clearly and understandably?	The problem statement is not written clearly and understandably	The problem statement is partly clear and understandably	The problem statement is written clearly and understandably
3) Is the Problem statement related to integers?	It is not related to integers.	It is partly related to integers.	It is about integers.
4) Is the problem statement suitable for the middle school level?	It is not suitable for the middle school level	It is partly suitable to the middle school level	It is suitable for the middle school level
5) Is the data given in the problem statement enough for the solution??	Not solvable	Partly solvable	Solvable

Although the first and second items seem close in the evaluation criteria, the correct use of Turkish by the prospective teachers was prioritized in the first criterion. Because every teacher, who writes problems, should have knowledge of Turkish grammar rules. In the second criterion, it was taken into account that the narrative should be clear and understandable.

In the evaluation of the problems posed by using evaluation criteria, prospective teachers were coded T1, T2, T3, ...T9. The teacher who was coded as T8 was taken as an example. The free, semi-structured, and structured problems of T8 obtained 72 % from the scale were given in Table 2.

**Table 2.** *The Evaluation of the Problems Created by the Prospective Teacher Coded as T8*

	Criteria	Score	Total		
Free Problem Posing	Zeynep, who got onto an elevator whose floors are indicated with numbers on the floor -2, will go up to floor 3. Ali multiplies the numbers showing the floors between the floor he is on and the floor he will get off. In conclusion, what is the result of Zeynep?	Grammar Rules	1	8	
		Being Understandable	1		
		Related to the Topic	2		
		Suitable to the level	2		
		Solvability	2		
	Free Problem Posing	A cooler reduces the room's temperature where it is located by 4 degrees in half a minute. In a room with a temperature of 18 degrees, the cooler is operated for 5 minutes. What is the temperature of the room after 5 minutes?	Grammar Rules	1	8
			Being Understandable	1	
			Related to the Topic	2	
			Suitable to the level	2	
			Solvability	2	
Free Problem Posing	A call is 13 kuruş per minute in a mobile operator's tariff. Accordingly, if Veli, who uses this tariff and is called for 320 minutes during March, puts 20 TL to his line at the beginning of April, how many minutes of phone calls can he make?	Grammar Rules	2	8	
		Being Understandable	2		
		Related to the Topic	0		
		Suitable to the level	2		
		Solvability	2		
Semi-structured Problem posing	There are award-winning and unfortunate questions in the Olympic exam questions consisting of mathematics and Turkish questions. If the unfortunate questions are solved incorrectly, the student will lose an additional 2 points. If the student solves the award-winning question, she earns an additional 4 points. There are 5 and 4 award-winning questions and three unfortunate questions in Mathematics and Turkish, respectively. How many additional points can one of the students get for his score since he got all the prize questions correctly and got all the unfortunate questions wrong?	Grammar Rules	1	7	
		Being Understandable	1		
		Related to the Topic	1		
		Suitable to the level	2		
		Solvability	2		
Semi-structured Problem posing	Students will shoot nested hoops. After three shots, the winner will be decided by adding up the scores from the shots. Deniz shot at the positive numbers. The sum of the Tuğba's shots is -	Grammar Rules	1	8	
		Being Understandable	1		

Structured Problem Posing	8'dir. Elif shot at two negative and one positive numbers. According to the given information, which of the following is wrong? A) Deniz may hit number 7 B)Elif got a maximum of -8. C) Tuğba definitely exceeded Elif's score. D) Deniz got the highest score.	Related to the Topic	2	
		Suitable to the level	2	
		Solvability	2	
	For every successful task in a video game Thirty points are awarded and 10 points for each failed mission. Selin, who played this game, finished the game consisting of 20 missions. How many points did Selin receive at the end of the game, given that the ratio between the number of successful missions and the number of failed missions is 2?	Grammar Rules	1	
		Being Understandable	2	
		Related to the Topic	2	9
		Suitable to the level	2	
		Solvability	2	
	The fishing line that a fisherman throws into the sea is 25m below sea level. The fisherman waiting for half an hour is pulling his fishing line up 14m. How many meters is this fisherman's fishing rod below sea level?	Grammar Rules	1	
		Being Understandable	1	
		Related to the Topic	2	8
		Suitable to the level	2	
		Solvability	2	
	Aunt Ayşe has planted bean seeds in her garden at a depth of 10 cm. When the beans are given regular water, they grow in length every two days. Since the length of the bean on the soil is 22 cm after 20 days, please find out how many cm it grows every two days?	Grammar Rules	2	
		Being Understandable	2	
		Related to the Topic	1	8
	Suitable to the level	1		
	Solvability	2		
Eleven traditional type-exam questions about integers were prepared and scored according to their level of difficulty. Ms. Tuğba Teacher has added the 11 <sup>th</sup> question as a bonus of 5 points. In this question, students were asked to write and solve a problem. The remaining ten questions were written in order by their difficulty levels. The first six questions are 10 points. Since the scores of other questions are different from each other, and they are odd numbers at the same time, what is the maximum score of a student who can give a correct answer for question 7 and as well as the bonus question?	Grammar Rules	1		
	Being Understandable	1		
	Related to the Topic	2		
	Suitable to the level	2	8	
	Solvability	2		

Content analysis was created based on the answers obtained as a result of the questions in the semi-structured interview form and asked the primary school mathematics teacher candidates during the interview following the process. The candidates, who were asked the question which one they had the most difficulty in according to their problem-posing situations, stated that they had the most difficulty in semi-structured, structured, and the least free problem-posing situations, in order from difficult to easy. It has been observed that when they start to practice the teaching profession, if they do problem-posing activities for their students, they give a positive or negative answer to the question asked if they make any preparations for this. Again, our teacher candidates answered the question in which order would you like to teach your students according to their problem-posing status while practising your profession.

The draft problem set identified categories such as "What stages did you go through?", "What did you look for?", "What features did you look for in the problem set?", and "What points did our prospective teachers look for in the answers?". When the answers to the questions of "Are the problem-posing process a useful process, what does it mean to you, what are your general thoughts about problem-posing, what are the benefits of the problem-posing process, what are the most repetitive answers?" Responses such as improving power are categorized. During the interviews, do you apply the problem-posing activity, which is asked in the sub-addition, to your whole class, and the students provided positive or negative feedback in response to the questions of whether they are more anxious while solving or posing problems.

## 2.5. Ethical

Ethical approval and written permission were obtained from the Educational Research Ethics Committee, Istanbul Sabahattin Zaim University (dated 14.04.2021 and number E.5449).

### 3. Findings

In this part, the findings obtained from the semi-structured interviews and the problems posed in the problem-posing outline were given.

#### *The Findings Regarding Problem Posing Performances*

The data obtained in the study show that prospective teachers created more successful problems in structured problem-posing situations than free and semi-structured problem-posing situations. The fact that prospective teachers are free to pose problems without constraints in free problem posing and are asked to pose problems according to certain patterns in semi-structured problem posing can be considered as a cause of more successful problem posing. It was found that each of the prospective teachers had asked three problems for structured problem setting. It was also found that some of the questions they had created for free and semi-structured problems did not have the characteristics of a problem or did not provide an answer. When we consider the evaluation criteria, it is seen that they tried to pose problems that are grammatically correct, understandable, related to the integers, suitable to the middle school level, and solvable problems. By considering the privacy issues, the names of the participants were stated through using codes. Prospective primary school mathematics teachers were numbered as T1, T2, T3, T4, T5, T6, T7, T8, T9, and T10. The frequency table of the scores obtained by prospective teachers for their posed problems as a result of their evaluation according to problem-posing criteria was given in Table 3.

**Table 3.** *The Scores of Prospective Teachers from Problem-Posing Situations*

Problem-Posing Types	Criteria	T1	T2	T3	T4	T5	T6	T7	T8	T9
F1	C1	1	1	2	1	1	1	1	1	2
	C2	1	2	1	1	1	1	1	1	2
	C3	1	1	1	2	2	1	2	2	2
	C4	2	1	2	2	1	2	2	2	2
	C5	2	2	2	2	2	2	2	2	2
	<b>Total</b>		<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>
F2	C1	0	1	0	1	1	1	0	1	1
	C2	0	1	0	1	1	1	0	1	0
	C3	0	2	0	2	2	1	0	2	0
	C4	0	1	0	2	1	2	0	2	1
	C5	0	2	0	2	2	2	0	2	1
	<b>Total</b>		<b>0</b>	<b>7</b>	<b>0</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>0</b>	<b>8</b>
F3	C1	1	1	1	2	1	1	2	2	1
	C2	1	2	1	1	1	1	1	2	1
	C3	0	1	0	0	0	0	2	0	0
	C4	2	2	2	2	2	2	2	2	2
	C5	2	2	2	2	2	1	2	2	2
	<b>Total</b>		<b>6</b>	<b>8</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>9</b>	<b>8</b>
SS1	C1	1	1	1	1	1	1	1	1	1
	C2	1	1	2	1	1	1	1	1	1
	C3	1	2	2	1	1	2	2	1	2
	C4	2	1	2	2	1	1	2	2	2
	C5	2	2	2	2	2	1	2	2	2
	<b>Total</b>		<b>7</b>	<b>7</b>	<b>9</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>7</b>
SS2	C1	0	0	0	0	1	0	0	1	1
	C2	0	0	0	0	1	0	0	1	1
	C3	0	0	0	0	1	0	0	2	1
	C4	0	0	0	0	2	0	0	2	2
	C5	0	0	0	0	2	0	0	2	2
	<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>8</b>
SS3	C1	1	2	2	1	1	1	1	1	1
	C2	1	2	2	2	1	1	1	2	2
	C3	1	2	2	2	2	1	2	2	2
	C4	2	2	2	2	2	1	2	2	2

	C5	2	2	2	2	2	2	2	2	2
	<b>Total</b>	<b>7</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>
<b>S1</b>	C1	1	1	1	2	1	1	1	1	1
	C2	1	1	1	0	1	1	2	1	1
	C3	1	2	2	2	1	2	1	2	2
	C4	2	2	2	2	2	2	2	2	2
	C5	2	2	2	2	2	2	2	2	2
	<b>Total</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>
<b>S2</b>	C1	2	1	1	1	1	1	2	2	1
	C2	2	1	2	1	1	2	1	2	1
	C3	0	2	2	2	2	2	2	1	2
	C4	2	2	2	2	2	2	2	1	2
	C5	2	2	2	1	2	2	2	2	2
	<b>Total</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>8</b>
<b>S3</b>	C1	2	1	1	1	1	2	2	1	1
	C2	0	2	1	1	2	2	2	1	1
	C3	0	1	2	2	2	1	1	2	2
	C4	2	2	2	2	2	2	2	2	2
	C5	2	2	2	2	2	2	2	2	2
	<b>Total</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>8</b>

F1= Free Problem-Posing 1, F2= Free Problem-Posing 2, F3= Free Problem-Posing 3; SS1= Semi-Structured Problem-Posing 1, SS2= Semi-Structured Problem-Posing 2, SS3 = Semi-Structured Problem-Posing 3; S1= Structured Problem-Posing 1, S2= Structured Problem-Posing 2, S3= Structured Problem-Posing 3; C1= Criteri1, C2= Criteri2, C3= Criteri3, C4= Criteri4, C5= Criteri5

Ten prospective teachers who study ied teaching mathematics in primary schools, completed teaching numbers class, and most importantly, had problem-posing training participated in our study. When creating the frequency table (by considering the fact that each teacher posed problems), the calculations were made over each problem as  $3 \times 10 = 30$ .

According to the frequency distribution of the scores obtained by the prospective teachers as a result of an evaluation according to the criteria for problem setting, 3 of the problems created for free problem setting were scored 0 because they had not posed a problem and had not answered the question "Write a problem you think is interesting about integers". 3 of the tasks created for free problem setting were scored 5 because they partially conformed to grammar rules and were partially understandable, had no relation to integers, but were solvable and suitable for intermediate level. Six of the problems created for semi-structured problem-posing situations got 0 points as they could not produce a problem from problem posing outline which was suitable to the given image. One of the problems got 4 points, and 2 of them got 6 points. The reason for this evaluation is because of the fact that they were not suitable to the grammar rules, not understandable, not related to integers, and not appropriate to the middle school level. Unsolved questions were coded as 4 points, and solvable questions were coded as 6 points.

In structured problem-posing situations, problems created obtained a maximum of 8 points. They could not get 10 points as they partly followed the grammar rules, and they contained clear and understandable problem statements. Since the researchers and two mathematics teachers who made the evaluation had a common view that the problems established in structured problem-posing situations were not written clearly and understandably, and the grammar rules were followed partly, they rated 18 of the problems as 8 points.

In terms of making a general evaluation, it is understood that there was one problem that got full 10 points since problems were created freely without having restrictions and without having a certain pattern in free problem-posing situations. On the other hand, 6 of the prospective teachers with great difficulty could not pose any problems since there were restrictions. They were asked to pose problems by giving equations, figures, and cards in semi-structured problem-posing situations. It was also understood from the frequency table that there were not any teachers who got full scores.

After the problems were evaluated following the evaluation criteria developed by the researchers, semi-structured interviews were conducted with the prospective teachers.

**Findings obtained from Semi-structured interviews**

Two teachers, T1 and T2, did not attend the semi-structured interviews due to their health problems. The answers obtained from the semi-structured interviews conducted with the prospective teachers were classified by using content analysis. An anxiety question was added to the interview questions after a pre-service teacher stated that she was worried while posing a problem during the semi-structured interview. The answers given were considered as one of the sub-dimensions of the third question. The classification of the prospective teachers' answers according to content analysis was shown in Table 4.

**Table 4.** *The Classification of the Prospective Teachers' Answers According to the Content Analysis*

Semi-structured interview questions	Deepening questions asked during the interview	Categories	Codes of prospective teachers	
In which of the free, semi-structured, and structured problem-posing situations in the problem-posing outline did you have more difficulty?	If you rank, sort it from difficult to easy	Free-Structured-Semi-structured	T8	
		Semi-structured-Structured-Free	T3, T5, T6, T10	
		Structured-Semi-structured-Free	T4, T9	
		Semi-structured-Free-Structured	T7	
	Is it necessary to make any preparations before the problem-posing?	I got prepared beforehand	T3, T4, T5, T6, T7, T8, T10	
		I did not get prepared.	T9	
	When you are a teacher, which orders for giving the problem-posing situations will be useful for your students?		Free-Semi-structured-Structured	T6, T4, T10
			Semi-structured-Structured-Free	T3
			Structured-Semi-structured-Free	T7, T8, T9
			Semi-structured-Free-Structured	T5
What steps did you follow, and what did you pay attention to while posing a problem in the problem-posing outline?	What are the characteristics of the problems you created? What are the points you pay attention to?	Being logical	T3, T8, T9	
		Being related to everyday life	T8, T10	
		Having appropriate numbers	T3, T4, T5, T7, T8, T10	
		Being authentic	T5, T10	
		Being suitable to the grammar and spelling rules	T9, T10	
		Being solvable	T3, T4, T10	
		Having a short and understandable problem	T4, T6	
		Being a new generation type of question	T5, T9	
		Covering integers	T9	
		Do you think the problem-posing process is a useful process? What does it mean to you? What are your general opinions on posing problems?	What are the benefits of the problem-posing process?	Being helpful when preparing examinations
Determining the extent of understanding regarding the topic	T3, T7, T8			
Being helpful to problem-solving	T3, T7, T10			
Having a different perspective	T4, T7, T8			
Being helpful to improve thinking	T7, T10			
Improvement of imagination	T4, T6, T10			
When you are a teacher, will you apply the problem-posing activity to the whole class?	I include all of my students		T3, T4, T9	
	I do not practice problem-posing with the whole class		T5, T7, T8	
Do you think students are more anxious while posing or solving problems?	While posing problems		T3, T4, T6, T8, T10	
	While solving problems		T5, T7, T9	

As seen in Table 4, prospective teachers stated for the question about which problem situation challenged them most that they had difficulties posing problems for free-structured-semi-structured, semi-structured-structured, structured, semi-structured-free, and semi-structured –free-structured problem-posing situations, respectively. Thus, four different categories appeared, and the codes of the prospective teachers were given in the table.

During the interview, the researchers asked the prospective teachers, based on their responses, whether or not they needed preparation for problem-based instruction. From the responses, T9 did not prepare while the

other prospective teachers needed preparation. The teacher coded as T8, who indicated that she would prepare, believed that it was necessary to know the topic and understand details to be able to pose problems, and that it was healthier to prepare beforehand to prepare students for the problem-setting process and to familiarise them with the topic. When the researcher asked the prospective teachers in what order they would use this process with their students if they were to use problem situations in the future as teachers, they indicated the order they would use with their students: free-semi-structured-structured, semi-structured-structured-free, structured-semi-structured-free, and semi-structured-free-structured, creating four categories. The second question given to the prospective teachers is, "What steps did you follow, and what did you pay attention to while posing problems in the problem-posing outline? And some of their answers were exemplified below.

*T8: What I dislike when solving problems is to have unreasonable problems; I don't want to solve unreasonable problems. So I made sure that it makes sense when posing problems. I created problems by thinking about whether it is really happening in daily life within the framework of logic. Another issue I pay attention to is that the numbers are given in proportion. I thought if these numbers are appropriate for real life. For example, since the length of a young tree cannot be 5 meters, I paid attention to give it in centimeters.*

*T10: I prepared a problem by considering it to be authentic and that the student had seen the problem style for the first time. I paid attention to having meaningful numbers to create problems that make students think differently, related to daily life and suggest different things. Sometimes we have to read the problem statement 5-10 times to understand it. We even read it over and over again from the very beginning. For this, I paid attention to the writing style. I tried to make a problem by calculating the numbers so that the results would be even numbers.*

*T6: I made sure that the problem was understandable. I was careful to see if there was a way to solve it later. I think the numbers should match the problem.*

As for the last question in the interview form, when the prospective teachers were asked whether the process of problem setting is beneficial or not, what this process means, and what they think about the process of problem setting in general, the prospective teacher coded as T3 said, "I think problem setting helps us both in understanding other problems and in writing and taking exams when we become teachers in the future. We can see the points that students have or do not have difficulties better, and I think it will be a useful process in this respect.", the prospective teacher who coded T7 said, "I think we can see how well we understand the issue while posing a problem. That's why I said I would show the student the latest free problem-setting situation. At first, we learn the subject, and then we create problems within the framework of certain boundaries and patterns. Finally, it helps us to improve our minds and find different points of view. It also enables teachers to work by themselves first to explain the subject, find something and then teach the subject. The problem is something similar to how mathematics teaches the subject. It shows how students have progressed and is a necessary activity". The answer of the prospective teacher who was coded as T10 is as the following "I think problem-solving is very useful, but problem posing is more useful than that. First of all, you need to be able to solve problems well in order to create a problem. Then you need to have a good knowledge of mathematics. In order to write the questions, one must have Turkish grammar knowledge. It is necessary to write logical questions. Since the problem is a complex structure, it is necessary to have certain features. We do something while solving problems, but our brain develops even more because we do more than one thing while posing a problem. We are trying to expand our imagination as much as possible. While posing problems, we realize that we should have a wide imagination. As a result, we can orient ourselves as I would improve myself better in this area, and I would pose problems well if I knew this and that. In the future, I can make my students do some activities such as a problem-posing contest. There are too many question banks to meet this need, but we must create problems to improve." Finally, the prospective teacher with code T8 answered the question as follows: "Since my students will be used to my writing style, I want to ask a problem because I want to ask questions that I have prepared myself instead of taking advantage of another problem. I think problem-posing improves many skills. In the process of setting up a new generation problem, it is necessary to investigate the issues and create problems. Doing research and posing problems with correct information improves our general culture. We know more about the issues. That is why I want my students to have the problem-posing process. I think performance assignments should be given in this way. These assignments also cause the teacher to learn and develop new things. "

When the researcher asked prospective teachers whether they would employ problem-posing activities when they are teaching, T3, T4, and T9 stated that they would implement these activities with the whole class, and T5, T7, and T8 expressed that they would pay attention to the willingness of the students and instead of



evaluating them with points as a compulsory task, they would give importance to carry out these activities with the volunteers for an expanded period of time.

While the interview with the teacher candidates was in progress, when the researcher asked whether the students were more anxious during the problem-posing process or if they experienced more anxiety while solving problems, the sample answers provided by prospective teachers are below.

*T9: When we give a problem to a student, we highlight the number of right and wrong answers that he will make, so we put the student under stress while solving the problem. When we encourage the student to pose a problem, it will be more efficient if we think about how we can produce a problem by using student knowledge without grading.*

*T4: When the problem is given to the students in a ready form, they focus only on the solution. When they create and solve the problem, they undertake two different responsibilities. When creating the problem, we should have foresight regarding the following steps, and we should move forward by correlating the solution to the problem. While preparing the problem, we try to create it by analysis and reasoning. While solving the problem, students only use the trial and error method once and use more than one method while creating the problem. They will both think to create the problem and think while solving the problem. They will be more concerned as they will have two responsibilities in creating the problem by themselves.*

*T5: I think they become more anxious and worried when solving problems. When I give students a question in their exam, the problem has only one single answer, and the student has to find that correct answer. But when I ask him to pose a problem, after all, there are no one correct answers to the problem-posing. The problem can be created logically. The students can pose difficult or easy problems for themselves; they will write the problem they have created in their own minds. So I think they will have less anxiety when posing problems. They will be more anxious and worried as they will try to find the right answer in solving the given ready problem.*

#### **4. Conclusion and Discussion**

The study aims to analyze prospective teachers' problem-posing skills about integers and determine their opinions about the problem-posing process.

First of all, when the prospective teachers' problems were examined according to different situations, ten prospective teachers who participated in the study produced 30 new problems from all of the structured problem drafts given based on the structured problem-posing situation. It was determined that three prospective teachers did not write anything for three problems in case of free problem posing, and six prospective teachers did not write anything for six problems in case of semi-structured problems. In previous studies with prospective teachers, it was determined that their performance in problem posing was low (Özgen, Aydın, Geçici, & Bayram, 2017) The study conducted by Bayazit and Dönmez (2017) revealed that they were more successful in posing structured problems which appeared as a result of re-arrangement, but they did not have the same success with this study in terms of semi-structured and free problem-posing situations. This can be considered the limitation of prospective teachers by asking them to pose new problems based on the given problem in structured problem-posing situations and by asking them to produce problems from the given templates in semi-structured problem-posing situations. Işık and Kar (2012) stated that prospective classroom teachers could not produce new problems based on semi-structured problem-posing situations in their study. On the contrary, the result of Çetinkaya and Soybaş's (2018) research is more difficult in the free problem-posing process.

In examining the interviews with the trainee teachers who were found to be unable to write tasks for semi-structured assignments, it was evident that they had greater difficulty in setting semi-structured assignments where they had to set tasks according to a given number, they could not set free tasks as there were constraints and they had problems in understanding the given number. In line with this research, it was found that it was easier to set problems by making changes to the structured task or to create new problems by making changes to the given task compared to semi-structured and free tasks (Stickles, 2011). Some of the prospective teachers who created new problems from the problems given in structured problems stated that there was a plot in the given example problem and that it was easier to create a new plot by changing the numbers and event based on the given example question. As a result of the evaluation according to the problem-solving criteria established by the researchers, it was found that the problems did not arise due to the consideration of grammatical rules. When we examined the problems at the sentence level, it was determined that the problem statements were not clear and understandable, and the prospective teachers generally used daily spoken language. There are studies with different results on the success of using grammar rules correctly in problem

posing. While Kanbur (2017) achieved successful results in using understandable sentence structure and grammar in problem-posing situations, Yıldız and Özdemir (2015) reached the opposite conclusion. Since the purpose of the Ministry of Education (2013) in Teaching Middle School Mathematics Curriculum is to make prospective teachers use everyday informal language rather than using mathematical language in their problems, this can be evaluated as a positive result.

Whether the problems related to integers or not were examined in the evaluation process. The majority of the created problems partially covered the subject of integers. One of the main factors that should be kept in the foreground in the problem-posing process is that the problems are solvable and whether they contain errors in terms of logic (Kırnap-Dönmez, 2014). Almost all the problems posed in this study were created according to the middle school level and the solvable structure. It was found that 90% of the problems were solvable. It was found that the reason why other problems could not be solved was due to the use of inappropriate numbers. Kılıç (2013) also came to similar conclusions as this study in her study.

Only one of the prospective teachers who wanted to teach problematic situations in their classes indicated that they would not make preparations for their students. The prospective teachers indicated the order in which they would use problematic situations in their teaching process in four different ways: free-structured-structured, semi-structured-structured-free, structured-structured-free, and semi-structured-free-structured. In the study conducted by İskenderoğlu and Güneş (2016), it was found that students had difficulty in problem-solving as teachers incorporated more problem-solving activities in their lessons. Since the use of problem-solving activities in the teaching process enables students to improve their mathematical understanding, prospective teachers are recommended to include these activities. (Stoyanova, 2003). The stages passed through in the task and the points to be considered by the prospective teachers are given below. The task may be related to daily life, be made within the framework of logic, conform to the original and new generation style of questioning, relate to the subject of whole numbers, and consist of suitable numbers. Also, the problems should be solvable. The problem should be short and understandable and be written by grammar and spelling rules. Problem posing is a way to make connections between daily life and mathematics and to improve mathematical thinking. (Abu Elwan, 1999). At the same time, problem-posing not only informs teachers about the areas that students are curious about and are interested in but also helps them determine how the subjects are understood by the students (Freire, 2018). Thus, teachers have the opportunity to look at their students' thinking styles from a window through problem posing (Çıldır & Sezen, 2011). In this direction, the expectation from teachers is to design learning environments using problem-posing activities from the perspective of their students (Aydın-Güç, 2021).

The prospective teachers indicated that when preparing for an exam, they do not use pre-made questions but create their own problems to determine how well the topic is understood by the students, to help the students solve the problems, to take a different perspective, to improve mentally, and to expand their imagination. When the researcher asks about the applicability of the problem-posing activity to every student in the classroom, three of the prospective teachers have the idea that problem-posing should be associated with mathematics. It would be healthier to produce the information presented instead of consuming the information presented since problem posing is a situation encountered in daily life and students need to produce solutions constantly. The other three prospective teachers stated that although the contribution of this process to the students would be great, not every student could do it at the same level when we consider the classroom environment, so this process should continue with the interested students. Having more problem-solving activities rather than problem-posing activities in lessons causes that students have fewer experiences in terms of problem-posing (Aydoğdu-İskenderoğlu & Güneş, 2016). Thinking that problem-posing activity will improve students' curiosity and imagination, Silver (1997) advocated that activities related to problem-posing should be done as much as possible. In the semi-structured interview, when one of the prospective teachers said that there was a fear of not being able to pose a good problem in the problem-posing process, a new question was asked to the prospective teachers. The researchers asked prospective teachers whether students will be more anxious when posing or solving problems. Five of the participants said when their anxiety levels rise when posing problems, and three participants said they become more anxious when they are solving problems. In the art of problem posing, Brown and Walter (2005) say that writing problems threaten students less than single-answer questions (p. 166). However, in this study, a prospective teacher

stated that problem-posing creates more anxiety than problem-solving because she has to do problem-solving during problem posing.

## 5. Recommendations

The results of this study show that prospective teachers must improve their free and semi-structured problem-posing skills. When current studies are examined, it can be ensured that teachers develop their problem-posing skills through in-service training. By including more activities and elective courses that include problem posing in prospective primary school mathematics teachers' curriculum, their experience and skills for problem posing can be increased. Each week, they can be asked to create a problem related to a mathematical concept, and then these problems can be discussed in the classroom. Finally, their mistakes can be corrected. Problem-posing exercises can be carried out interactively with Turkish Language lessons, and problem statements can be discussed and examined in terms of having clear and understandable grammar rules. Just as problem-posing skills on integers are analyzed, researchers can examine problem-posing skills at different grade levels and in various topics of the mathematics course. Similar studies can be made based on problem-posing situations by establishing different evaluation criteria. Qualitative research can be conducted by examining the problem-posing skills of prospective teachers in-depth.

Another issue that attracts attention in the study is the feeling of anxiety that may arise during the problem-solving process. There are plans to study this topic in the future.

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# Adaptation of Xenophobia Scale to Turkish: A Validity and Reliability Study

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## ABSTRACT

In this research, we aimed to adapt the Xenophobia Scale developed by Olonisakin and Adebayo (2021) into Turkish. We conducted research on two separate study groups comprising 563 teacher candidates. Before starting the adaptation process of the scale, we obtained necessary permissions from the authors, who developed the original form. When developing the translation form, we removed two of the scale items from the instrument because they were not suitable for the Turkish culture. Afterwards, we performed an item analysis and found that the item correlations of two of the items in the scale remained less than the threshold value of .30. We removed the two items in question, thereby leaving 20 items in the scale. In the applied EFA and CFA, we obtained a two-dimensional structure that overlaps with the original form of the scale. In the reliability analysis, we determined that the internal consistency coefficients exceeded .70 criterion values for both subscales. In conclusion, the results we acquired from psychometric analyses indicate that the Turkish form of the Xenophobia Scale yielded valid and reliable measurements.

Keywords:

Xenophobia scale, scale adaptation, validity, reliability.

## 1. Introduction

The concept of xenophobia derives from the Greek word “xenos,” which means stranger/guest and “phobos” meaning fear or escape (Lee, 2020; Rzepnikowska, 2018). It can also mean contempt and dislike and a type of perspective that looks down on outsiders (Canetti-Nisim ve Pedahzur 2003). Therefore, xenophobia is defined as the fear of strangers, and it feeds on hatred, antipathy, intolerance, hostility, and prejudice (Lesetedi & Modie-Moroka, 2007; Psychology Dictionary, 2015; Tafira, 2011). According to Yakushko (2009), xenophobia is a form of affective and behavioral prejudice toward immigrants and others considered “foreigners.” Alternatively, Nyamnjoh (2006) defines xenophobia as intense dislike, fear or hatred toward the “others,” whereas the United Nations (2013) describes it as hostility, dislike or hatred toward persons/groups who are positioned as “other” because of their origin, gender, religion, or sexual orientation. Similarly, Ullah and Huque (2014) identified this concept as malicious discrimination based on differences in ethnic, religious, and sexual orientation.

Based on the aforementioned definitions, xenophobia is generally characterized as a pathological discomfort toward individuals who belong to different cultures, nations, ethnic groups, regions, or neighborhoods. Underlying xenophobia may lead to an individual to regard the “other” as unreliable and a threat to their own group (van der Veer et al., 2013). The feeling of discomfort arising from the effects of foreigners (refugees) on the cultural, economic, and social capital of the host community is another crucial component of xenophobia

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(Esses et al., 2001). This element is further included in Levada's (1994) description of the term. Levada (1994) states that xenophobia can be explained by two factors: fear of losing resources and one's identity. Moreover, Levada's definition later became a conceptual framework for the operationalization of xenophobia (Barry, 2019).

Indeed, various factors can fuel xenophobia. Omoluabi (2008) lists economic parameters, regional migration movements, perceived threat to culture, political instability, religious doctrines, and terrorism among the causes that exacerbate xenophobia. The rise of xenophobia generally coincides with times of economic and political instability because economic disparity can force people to migrate to countries where they can earn more and experience a better quality of life; ample evidence suggests that political, economic, and cultural tensions are responsible for driving people away from their homeland (Marsella & Ring, 2003). However, when people seeking a better life finally manage to cross the borders, they often experience the hostility of the local communities, who worry that the incoming foreigners will bring unemployment and poverty into their society. Such concerns lead to fear and insecurity regarding the future, thereby resulting in xenophobia in the long run (Akillioğlu, 1997), so much so that in times of economic turbulence, foreigners are generally scapegoated and xenophobia can turn violent and lead people to attack those who they perceive as responsible for their misfortunes (Nell, 2009). Evidently, in addition to economic elements, cultural factors can further cause xenophobia. Inhabitants who come face to face with foreigners may feel that their own culture is under threat, and therefore, they may develop hostile feelings/behaviors toward the newcomers (Esses et al., 2001).

### 1.1. Xenophobia and Racism

To better understand xenophobia, we must clarify the difference between xenophobia and racism (Özmete et al., 2018). Essentially, these two concepts are highly interrelated and mutually supportive forms of oppression. Although they may overlap, they differ in their origins, goals, and typical expressions (NGO Committee on Migration, 2001; Yakushko, 2009). Racism refers to the belief that one's race is superior in terms of physical properties (e.g., skin color, hair type, and face), cultural characteristics, and economic wealth. This belief may lead to discrimination and prejudice against people from other races in favor of their own race. Xenophobia, on the other hand, covers the negative feelings and behaviors felt toward non-natives or people perceived as others/foreigners in a particular community. In numerous cases, differentiating between racism and xenophobia is difficult because diversities in physical properties are believed to distinguish the "other" from a shared identity. However, if discrimination and prejudice occur between people of the same color, this behavior is generally deemed as xenophobia rather than racism. Nevertheless, xenophobia turns into one of the social exclusionary forms of racism with its elements of distrust, fear, and hatred toward the "foreigner" or "other" defined outside of common physical characteristics and cultural identities (NGO Committee on Migration, 2001). Racism is considered the most extreme level of xenophobia (NGO Committee on Migration, 2001).

### 1.2. Xenophobia in the 21<sup>st</sup> Century

Xenophobic attitudes are not new and are unlikely to disappear in the near future. In the early 21<sup>st</sup> century, xenophobic and racist attitudes are still common (Hjerm, 2001). A notable example of this can be found in the report presented by the European Monitoring Centre on Racism and Xenophobia (2001). According to this report, the percentage of citizens in the European Union who claim to be disturbed in their daily life by the presence of people from other races and nationalities and from other religions were 15% and 14%, respectively (Thalhammer et al., 2001). Data in South African Migration Project survey conducted in 2001 revealed a similar xenophobic pattern. According to this report, by international standards South Africans have a highly restrictive perspective toward immigration. In the related report, 21% of the respondents desired a complete ban on the entry of foreigners and 64% of them wanted strict limits on the number of people allowed entry (Solomon & Kosaka, 2013). The situation of xenophobia in the 21<sup>st</sup> century is no different in the United States. Lee (2020) in her book entitled *America for Americans: A history of xenophobia in the United States* notes that by the 21<sup>st</sup> century, American xenophobia had reached beyond the defense of "America for Americans," far beyond the actual boundaries of the United States.

Xenophobia has become a highly debated topic in Turkey, particularly in the past 10 years because the country has received intense immigration from neighboring states and is a transit area for immigrants (Ünal, 2014). A study conducted in Turkey revealed that the local community felt uncomfortable with the Syrian refugees. In

the aforementioned research, the local people stated that the Syrian refugees crowd the emergency services and thus cause problems in the health services. Moreover, local people primarily associate refugees with theft, prostitution, extortion, and damage to public property. Furthermore, participants in the research emphasized that the Turkish economy was damaged because of Syrian refugees as Syrians took their jobs. The participants further expressed worry that Syrians would harm them and their families. Therefore, they stated that they do not wish to have Syrian people as neighbors (Erdoğan, 2014). The listed findings are behaviors and attitudes that may be the result of xenophobia. Ünal (2014) further stated in a recent study that immigrants coming to Turkey may have to cope with problems, such as social exclusion, discrimination, xenophobia, and poverty.

### 1.3. Measuring Xenophobia

Xenophobia is a multidimensional concept covering numerous disciplines, such as sociology, social psychology, psychopathology, anthropology, race and racism, nationalism, human geography, history, international relations, law, and economics. Each of these disciplines has its own perspective on xenophobia (Omoluabi, 2008). Nonetheless, the literature reveals that this multidimensional nature of xenophobia is neglected in some of the existing scales that attempt to measure this concept. In a significant part of the existing instruments, the conceptual framework of xenophobia is generally associated with immigrants (Yakushko, 2009) and is thus focused on attitudes toward foreigners. Table 1 presents the summary of the scales on xenophobia in the international literature.

**Table 1.** Scales in the International Literature Related to Xenophobia

Research tag	The scale name
Ommundsen and Larsen (1997)	Scale of attitudes toward illegal aliens
van der Veer et al. (2008)	Scale of attitudes toward unauthorized migration
van der Veer et al. (2011)	Fear-based Xenophobia Scale
Symeonaki and Kazani (2012)	Xenophobia Scale
van der Veer et al. (2013)	Fear-based Xenophobia Scale
Haque (2015)	Xenophobia Scale
Olonisakin and Adebayo (2021)	Xenophobia Scale

Table 1 reveals that the content of the first scale is limited to attitudes toward illegal aliens. However, xenophobia is a substantially broader construct and is not restricted to illegal immigrants alone. An individual may show xenophobia toward anyone they perceives as the "other." The same is true for the second scale, which comprises 19 items divided in three categories (improving life, courage to live, and right to immigrate), and where xenophobia has been operationalized to only include attitudes toward unauthorized immigrants. Another instrument is the Fear-based Xenophobia Scale, which has a unidimensional structure and two different versions: comprising 14 and 5 items. In both versions, all of the items are related to immigrants. In summary, the people who are positioned as foreigners on the Fear-based Xenophobia Scale are limited to this specific group. The focus of the Xenophobia Scale developed by Symeonaki and Kazani (2012) in the sample of Northern Greece/Macedonia included foreigners coming from other countries. This tool includes 18 items under four major categories termed rights, impacts, general issues, and actions. The Likert scale developed by Hague (2015) consists of six items (cited in Bozdağ & Kocatürk, 2017). The scale developed by Olonisakin and Adebayo (2021), on the other hand, does not confine the groups in which the individual may display xenophobia to immigrants, aliens or foreigners from other countries; handles the concept of xenophobia from a much broader perspective taking into account religion, ethnic grouping and other cultural elements in a society.

When we examined the Turkish literature, we found three scales designed to measure xenophobia. The first one is the Xenophobia Scale developed by Bozdağ and Kocatürk (2017). In this scale, hate and humiliation dimensions are included in addition to the fear dimension in the Fear-based Xenophobia Scale developed by van der Veer et al. (2013). In summary, the scale has a three-dimensional structure: fear, hate, and humiliation. The scale has 18 items in total, and all of which are intended to measure the attitude toward immigrants. The second xenophobia instrument found in the Turkish literature is the Fear-based Xenophobia Scale developed by van der Veer et al. (2011), which is adapted into Turkish by Özmete et al. (2018). This scale has a 14- and 5-item version; the adaptation study was conducted on the 14-item scale version. In the adaptation study, three items from the original scale were eliminated because their factor loadings were not sufficient, and the

remaining 11 items were grouped under a single factor. More recently, Özer and Akbasli (2020) conducted an adaptation study on the 5-item version of the aforementioned scale.

When we analyzed the Turkish scales, we noticed that, once again, they only focused on immigrants. Therefore, we deemed them insufficient in measuring the multidimensional structure of xenophobia. We considered that introducing an instrument that can measure the multidimensional structure of xenophobia into the Turkish literature is crucial. From this perspective, we aimed to adapt the Xenophobia Scale developed by Olonisakin and Adebayo (2021) into Turkish culture. This scale includes items that measure the fear of ethnic, religious, economic, and political groups. It further captures perceived superiority among diverse clusters and the dread of the erosion of sacred cultural norms, which may be explained in a wish for ethnic naivete or an aversion for inter-ethnic contact and an antipathy toward out-group members (Olonisakin & Adebayo, 2021). If there is an existing instrument with sufficient psychometric properties that measures the desired attributes, it is faster and more economical to adapt it to the target culture instead of developing a new one from scratch (Hambleton & Kanjee, 1995; Hambleton & Patsula, 1999). Therefore, we decided to adapt the scale developed by Olonisakin and Adebayo (2021) to the Turkish culture for the present research.

## 2. Methodology

### 2.1. Research Sample

We performed convenience sampling to select the research group. In this sampling technique, the researcher selects the group to be studied based on how easy they are to reach. Within this framework, we performed our study on teacher candidates. The inclusion of university undergraduates in the group, where the original form of the scale was developed, was another factor that influenced our selection of teacher candidates for the sample. We conducted the research on two separate study groups comprising a total of 563 teacher candidates studying at Dicle University. The first study group comprised 275 teacher candidates aged 17–40 years ( $\bar{X}$  = 21.38). We collected data from this group in the spring semester of the 2020–2021 academic year and conducted an exploratory factor analysis (EFA) on the obtained data. The second study group comprises 288 teacher candidates aged 17–36 years ( $\bar{X}$  = 21.71). We collected the data of the second study group in the fall semester of the 2021–2022 academic year and performed a confirmatory factor analysis (CFA) on the data of this group. For the both study groups, we have presented the distribution of teacher candidates on their gender and the department enrolled in Table 2.

**Table 2.** *Distribution of the Participants According to Their Gender and the Department They Enrolled in*

Demographic variables		Frequency (Percentage)	
		Dataset for EFA	Dataset for CFA
Gender	Female	206 (74.90%)	208 (72.20%)
	Male	69 (25.10%)	80 (27.80%)
Department	Classroom teaching	64 (23.30%)	69 (24%)
	Elementary mathematics teaching	39 (14.20%)	46 (16%)
	English language teaching	18 (6.5%)	18 (6.30%)
	Pre-school teaching	40 (14.50%)	41 (14.20%)
	Science teaching	13 (4.70%)	12 (4.20%)
	Secondary school mathematics teaching	23 (8.40%)	20 (6.90%)
	Social studies teaching	63 (22.90%)	65 (22.60%)
	Other	15 (5.50%)	17 (5.90%)

### 2.2. Instrument

We collected our data through the Xenophobia Scale developed by Olonisakin and Adebayo (2021). The original form of this scale was developed on a participant group comprising undergraduates and civil servants in Nigeria. The scale has a five-point Likert-type rating (strongly disagree, disagree, neutral, agree, and strongly agree) with 24 items. Olonisakin and Adebayo (2021) applied EFA and CFA, calculated internal consistency coefficients, checked item correlations, and examined evidence for convergent validity while investigating the psychometric properties of the Xenophobia Scale.

Olonisakin and Adebayo (2021) conducted the EFA on 36 items and excluded 12 items from the scale because their factor loadings were lower than their criterion value of .35. Furthermore, they grouped the remaining 24 items under two factors. The emerging dimensions were labeled as In-group Centredness and In-group Exclusivity. The In-group Centeredness dimension comprises 17 items that reflect an egocentric perspective of the prosperity of one's group. This dimension further reveals a conviction in the superiority of the in-group over the out-group and the perception that the in-group has priority over the out-group in the use of available resources. On the other hand, in-group exclusivity includes 7 items that express tolerance toward intergroup relations. For the scale's total score, all of the items in the In-group Exclusivity dimension must be scored in reverse.

Olonisakin and Adebayo (2021) conducted CFA on another sample and tested the two-dimensional structure they reached in EFA and concluded that the structure in question was confirmed ( $\chi^2/df=3.15$ , CFI=.92, RMSEA=.05, SRMR=.05). According to the CFA results, the factor loadings of the items in the dimension of In-group Centeredness ranged from .36 to .56, and the factor loadings of the items in the In-group Exclusivity dimension varied between .39 and .59. Within the scope of the reliability analysis, Cronbach's alpha coefficients were calculated, and reliability values were estimated as .82 and .67 for In-group Centeredness and In-group Exclusivity dimensions, respectively. The result of the item analysis revealed that the corrected item-total correlations of the items in the In-group Centeredness dimension ranged between .29 and .51. For the In-group Exclusivity dimension, item correlations were between .31 and .48.

To provide evidence for convergent validity, Olonisakin and Adebayo (2021) examined the correlations between the scores of the participants on the Xenophobia Scale and the scores of the same participants on other variables related to xenophobia, such as social dominance orientation, cultural intelligence, intergroup contact, adherence to the in-group, and need for closure. The correlation analysis results were generally as anticipated and thus supported the validity of the Xenophobia Scale.

### 2.3. Translation of the Scale to Turkish

Prior to starting the adaptation process of the scale, we obtained the necessary permissions from the authors, who developed the original instrument. To this end, we contacted Tosin Tunrayo Olonisakin through e-mail on February 6, 2021. Following the authors approval, the items were translated from the source language (English) to the target language (Turkish). Translations were performed by three experts, each from the field of measurement and evaluation, social studies education, and English language education. In the second step, we endeavored to determine the most appropriate Turkish expression for each item by comparing three translated versions of the scale. Meanwhile, we decided that items 16 (*For ethnic survival in this country, some people must be willing to become martyrs*) and 17 (*The idea of unity in diversity cannot work in Nigeria*) in the original form of the scale were not suitable for Turkish culture. Therefore, with the permission of the researchers who developed the scale, these two items were excluded from the Turkish version of the Xenophobia Scale. In the following step, we obtained the opinion of another expert from the field of English language education to evaluate the linguistic equivalence of the original scale and the new Turkish version. The expert stated that the two forms were linguistically equivalent. Therefore, we applied for ethical approval by utilizing a rating similar to the scale's original form. After being informed that the study was in compliance with scientific ethical standards, we moved on to the data collection phase.

### 2.4. Data Collection and Analysis

Some of the data were collected face to face and some online. We presumed that a hybrid data collection process would not impact the research results considering that the research group was familiar with digital devices. Moreover, because the instrument did not have a protocol related to the use of technology, we predicted that collecting data either face to face or online would not make a significant difference in the research results. Thus, we sent the online scale form to the teacher candidates through the platform they used to take lessons during the Covid-19 pandemic. When we switched to face-to-face training in October 2021, we also started to use the scale in the paper-pencil format. In face-to-face administrations, we applied the scale to the teacher candidates in their actual classroom environment. We ended the data collection process on October 15, 2021 and initiated the data analysis.

For the data analysis, we initially reviewed the data set for outliers and examined standardized Z-scores to identify them. The Z-score of one participant in the EFA dataset and three participants from the DFA dataset scored outside the  $\pm 3$  range boundaries. Therefore, we classified these participants as outliers. After eliminating the outliers from the dataset, we tested data distribution by calculating the skewness and kurtosis coefficients. Table 3 presents the obtained skewness and kurtosis values.

**Table 3.** *Skewness and Kurtosis Coefficients of the Data*

	Dimension	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Std. Error
Dataset for EFA	In-group Centredness	.154	.147	-.443	.293
	In-group Exclusivity	-.064	.147	-.679	.293
Dataset for CFA	In-group Centredness	.031	.144	-.630	.288
	In-group Exclusivity	-.163	.144	-.671	.288

According to Büyüköztürk et al. (2011), the skewness and kurtosis coefficients within the interval of  $[-1, +1]$  indicates that the data does not display a significant deviation from the normal distribution. The values in Table 3 reveal that the skewness and kurtosis coefficients remain within this range. Therefore, it can be concluded that the data has a normal distribution. After purifying the data set from outliers and ensuring the necessary checks for the distribution properties, we examined the psychometric properties of the Turkish version of the Xenophobia Scale.

To test the psychometric properties of the Turkish version of the Xenophobia Scale, we first assessed item discrimination. In this context, we calculated corrected item-total correlations consistent with the dimensions revealed in the original form of the scale. We took the value of .30 as benchmark for the item-total correlation (Field, 2009) and eliminated the items lower than this criterion from the scale. Following the item analysis, we conducted factor analyses to ascertain the validity of the interpretations based on the scale scores. While we performed EFA on the data of the first study group, we performed CFA on the data collected from the second study group.

In EFA, we primarily tested the assumptions. To this end, the Kaiser Meyer Olkin (KMO) value and the result of Bartlett's test were evaluated. We found the KMO coefficient as .87 and determined the Bartlett's test to be statistically significant ( $\chi^2 = 1563.22$ ,  $df = 190$ ,  $p < .001$ ). Because the KMO value was higher than .60 and the Bartlett's test result was significant (Büyüköztürk, 2010), we concluded that the sample was adequate and data suitable for factor analysis. Subsequently, we conducted EFA and decided that the number of factors to be extracted in the EFA be determined according to the parallel analysis. Moreover, we selected the minimum residuals as the estimation method and applied promax rotation, which is one of the oblique rotation methods.

Afterwards, CFA was performed on the second study group data to obtain additional evidence for the factor structure of the scale's Turkish form. Because the data were normally distributed, we selected the maximum likelihood method for the estimation in CFA. To evaluate the model-data fit, we assessed the fit indices  $\chi^2/df$ , RMSEA and SRMR. We interpreted that  $\chi^2/df$  being lower than 3, and RMSEA and SRMR lower than .10 as an indication of acceptable fit (Schermele-Engel et al., 2003). Furthermore, we referenced Tabachnick ve Fidell's (2007) suggested value of .32 when interpreting factor loadings in both EFA and CFA.

Finally, we analyzed the internal consistency reliability of the measurements by calculating the Cronbach's alpha and McDonald's  $\omega$  coefficients. We adhered to the .70 criterion while interpreting the reliability coefficients (Pallant, 2005). We conducted all the analyses we implemented in the study in JASP 0.15.

## 2.5. Ethical

Before starting the data collection process, we applied for the ethical approval to Dicle University. To this end, we submitted our research permission petition to Dicle University Social and Human Sciences Ethics Committee Presidency on February 22, 2021. With the letter of consent dated March 1, 2021, and numbered 32841, we were informed that the study was in compliance with scientific ethical standards.

### 3. Findings

This section comprises analysis outputs related to the psychometric properties of the Turkish version of the Xenophobia Scale. At first, we examined the item correlations ( $r_{ix}$ ). Table 4 shows the item analysis results.

**Table 4.** Item Correlations for the Turkish Version of the Xenophobia Scale\*

Dimension	Item Number	Dataset for EFA		Dataset for CFA	
		$r_{ix}$ for initial analysis	$r_{ix}$ after excluded items	$r_{ix}$ for initial analysis	$r_{ix}$ after excluded items
In-group Centredness	I-1	.47	.49	.54	.57
	I-2	.52	.53	.45	.47
	I-3	.44	.46	.34	.36
	I-4	.25	–	.12	–
	I-5	.61	.62	.56	.59
	I-6	.33	.35	.31	.30
	I-7	.64	.63	.53	.54
	I-8	.37	.36	.32	.32
	I-9	.50	.51	.48	.46
	I-10	.48	.48	.38	.41
	I-11	.50	.49	.55	.55
	I-12	.42	.44	.43	.45
	I-13	.00	–	–.18	–
	I-14	.48	.53	.47	.49
	I-15	.56	.57	.49	.51
In-group Exclusivity	I-18	.34		.35	
	I-19	.47	Since no item was	.52	Since no item was
	I-20	.50	excluded in this	.48	excluded in this
	I-21	.32	dimension, we did	.36	dimension, we did not
	I-22	.51	not perform a second	.50	perform a second item
	I-23	.40	item analysis.	.37	analysis.
	I-24	.53		.50	

\* Since items 16 and 17 were not suitable for Turkish culture, we removed them from the scale. Nevertheless, we did not change the item numbers after we removed the items just mentioned to ensure that our results could be compared with the original scale.

Table 4 shows that the correlations of items 4 and 13 in both data sets were lower than the .30 threshold value. Therefore, we repeated the item analysis by removing the two items in question for the In-group Centredness dimension. After this process, item correlations exceeded the .30 cut-off value in all items in the scale; 20 items remained in the scale. We applied EFA and CFA on these 20 items. Table 5 presents the results of EFA.

**Table 5.** EFA Results for the Turkish Version of the Xenophobia Scale

Factor 1		Factor 2	
Item Number	Factor Loadings	Item Number	Factor Loadings
I-1	.53	I-18	.38
I-2	.56	I-19	.59
I-3	.48	I-20	.62
I-5	.72	I-21	.37
I-6	.39	I-22	.63
I-7	.73	I-23	.44
I-8	.42	I-24	.64
I-9	.57		
I-10	.54		
I-11	.53		
I-12	.46		
I-14	.56		
I-15	.61		
Variance Explained = 19.20%		Variance Explained = 12.20 %	
Total Variance Explained = 31.40 %, $\chi^2/df = 2.24$ ( $\chi^2=338.204$ , $df=151$ ), RMSEA=.067 [90% CI (.058, .077)]			

Table 5 illustrates that there is a two-factor structure in the Turkish version of the Xenophobia Scale, just like the original form. The distribution of the items to the factors also overlaps to the original form of the scale. The first factor comprises 13 items and explains 19.20% of the total variance. The factor loadings of the items in this dimension range from .39 to .73. Considering the contents of the items and the naming in the original scale, we labeled this dimension as Group-Centrism in the Turkish version. The second factor, on the other hand, includes 7 items and contributes 12.20% to the explained variance. The factor loadings of the items in this dimension varied between .37 and .64. Based on the items' content, we named this dimension as Tolerance to Other Groups in the Turkish form. When we performed the EFA using JASP software, we also obtained the Chi-square Test and RMSEA value for the fit of the factor structure. The  $\chi^2/df$  and RMSEA values in Table 5 show that the Turkish version of the Xenophobia Scale has sufficient fit for the two-factor structure. After EFA, we performed CFA, and the results revealed that the two-factor model had an acceptable fit [ $\chi^2/df = 2.47$  ( $\chi^2 = 416.876$ ,  $df = 169$ ), RMSEA = .073 (90% CI = .064–.081) and SRMR = .067]. Table 6 presents the other results obtained in CFA.

**Table 6.** CFA Results for the Turkish Version of the Xenophobia Scale

Factor	Item Number	Estimate	Std. Error	z-value	95% Confidence Interval		Std. Est.**	R <sup>2</sup>	Std. Residual
					Lower	Upper			
Group-centrism	I-1	.51	.05	11.17*	.42	.60	.64	.41	.59
	I-2	.46	.05	8.71*	.36	.57	.52	.27	.73
	I-3	.31	.05	6.97*	.23	.40	.43	.18	.82
	I-5	.58	.05	12.43*	.49	.67	.69	.48	.52
	I-6	.41	.08	4.97*	.25	.58	.31	.10	.90
	I-7	.55	.05	10.26*	.45	.66	.60	.36	.64
	I-8	.30	.06	5.07*	.18	.41	.32	.10	.90
	I-9	.50	.06	8.01*	.38	.62	.48	.23	.77
	I-10	.51	.07	7.52*	.38	.64	.46	.21	.79
	I-11	.68	.06	10.64*	.55	.80	.62	.38	.62
	I-12	.60	.07	8.23*	.46	.75	.50	.25	.75
	I-14	.39	.04	9.32*	.30	.47	.55	.30	.70
	I-15	.47	.05	10.19*	.38	.56	.59	.35	.65
Tolerance to other groups	I-18	.32	.05	6.39*	.22	.41	.41	.17	.83
	I-19	.55	.05	10.76*	.45	.65	.65	.42	.58
	I-20	.56	.06	10.16*	.45	.66	.62	.38	.62
	I-21	.37	.06	5.79*	.25	.50	.38	.14	.86
	I-22	.37	.04	8.74*	.29	.46	.54	.30	.71
	I-23	.56	.07	7.99*	.43	.70	.50	.25	.75
	I-24	.39	.04	10.06*	.32	.47	.61	.37	.63

\*  $p < .001$ , \*\* The "Std. Estimate" column represents the factor loadings.

Table 6 shows that the factor loadings of the items in the Group-Centrism dimension ranged from .31 to .69. The factor loadings of the items in the Tolerance to Other Groups dimension, on the other hand, varied between .38 and .65. The factor loadings of all items were higher than the criterion of .32. Moreover, the correlation between the two factors was .71 in CFA. Finally, we proceeded to evaluate the reliability of the measurements we obtained through the Turkish version of the Xenophobia Scale. In this context, we calculated the internal consistency coefficients. Table 7 shows the results of the reliability analysis and all estimates for the reliability exceeded the limit value of .70.

**Table 7.** Internal Consistency Coefficients for the Turkish Version of the Xenophobia Scale

Data set	Dimension	McDonald's $\omega$ (CIs)	Cronbach's alpha (CIs)
The dataset used in EFA	Factor 1: Group-centrism	.84 (.81–.87)	.84 (.81–.86)
	Factor 2: Tolerance to the other groups	.72 (.67–.77)	.72 (.67–.77)
The dataset used in CFA	Factor 1: Group-centrism	.81 (.78–.85)	.81 (.78–.84)
	Factor 2: Tolerance to the other groups	.72 (.67–.77)	.71 (.66–.76)

### **3.1. Interpretation of Scores from the Xenophobia Scale**

The Turkish version of the Xenophobia Scale include 20 items under two factors. In the scale, a score can be calculated on the basis of dimensions, or a total score can be obtained by reversing the items in the dimension of Tolerance to the Other Groups. If a total score is calculated, the possible points range from 20 to 100, where higher scores indicate higher xenophobia.

## **4. Conclusion and Discussion**

In this research we set out to adapt the Xenophobia Scale developed by Olonisakin and Adebayo (2021) to Turkish culture. After obtaining permission from the authors who developed the original instrument, we sent the scale to experts for translation into Turkish. Subsequently, the Turkish version of the scale was created by bringing together and comparing the forms translated by linguistic and field experts. In this process, two of the items in the original form of the scale were removed because they were not suitable for the Turkish culture. The remaining 22 items in the scale were subjected to a study adaptation. In the item analysis, we found that two of the items in the scale were not discriminating enough. Therefore, we removed them from the scale. A subsequent analysis was conducted on the remaining 20 items.

We performed EFA and CFA to ascertain the validity of the Turkish version of the Xenophobia Scale. In EFA, we reached a structure that was similar to the original scale and explained 31.40% of the total variance. In addition, we established that the factor loadings of the items varied between .37 and .73, and that  $\chi^2/df$  and RMSEA indexes did not exceed the upper limit. Correspondingly, the explained variance rate exceeded the 30% limit value (Bayram, 2009). The factor loading of all items in the scale were higher than the .32 criterion (Tabachnick & Fidell, 2007), and the fit indices were within the acceptable range. Therefore, we concluded that the EFA results support the validity of the Turkish version of the Xenophobia Scale. Upon the examination of the CFA results, we observed that all items had sufficient factor loadings and that the fit indices were satisfactory. Thus, the CFA results further corroborated the validity of the Turkish version of the Xenophobia Scale.

The results of the reliability analysis revealed that the internal consistency coefficients exceeded the acceptable lower limit of .70 in both dimensions of the scale. However, the internal consistency coefficients of the dimension of Tolerance to Other Groups were lower than the Group–Centrism dimension. We assumed that this finding was related to the number of items in the subscales. As mentioned by Urbina (2014), the internal consistency reliability tends to increase with the increasing number of items in the scale. Because the number of items in the Tolerance to Other Groups dimension is approximately half of the group–centrism dimension, it is unsurprising that the internal consistency coefficients calculated for this dimension were lower. In conclusion, the results obtained from the validity and reliability analysis indicate that the Turkish version of the Xenophobia Scale yielded valid and reliable measurements.

## **5. Recommendations**

Similar to any research, the present study had limitations. First, the psychometric properties of the Turkish version of the Xenophobia Scale were tested on university students. Future research could assess the validity and reliability of the scale on other groups. Furthermore, the evidences of validity presented in this study were limited to EFA and CFA, and the evidence of reliability is restricted to internal consistency coefficients. Further evidence of validity can be obtained by performing convergent and divergent validity studies in future investigations. Again, it may be proved the test–retest reliability in further studies to reveal the consistency of the scale over time. Finally, the current study used validity and reliability analyses within the framework of the classical test theory. Future research could explore the validity and reliability of the Turkish version of the Xenophobia Scale based on item response theory.



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## Appendix–1. The Items in the Original Form of the Xenophobia Scale

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- Ingroup centredness
1. Other religions are a threat to my religion.
  2. I believe in the idea of having schools where only people of the same religion are enrolled.
  3. I don't care if protecting the interests of my ethnic group results in violence and discomfort of other ethnic groups.
  4. The way politics is practised in this country, there is need for each ethnic group to try and acquire political power of its own.
  5. Other ethnic groups are a threat to my ethnic group.
  6. I do not believe I have to like people of other ethnic groups, religion or political parties.
  7. Having inter-ethnic relationship of an intimate nature will lead to the erosion of the cherished values of my ethnic group.
  8. All is fair and just in ethnic wars.
  9. For security reasons, when occupying a public office, one should surround the self with people of one's ethnic group.
  10. One of the reasons for ethnic clashes in this country is that people of different ethnic groups have refused to remain in their region.
  11. Interacting with people of other ethnic groups can sometimes be unpleasant.
  12. The religion of my ethnic group is superior to those of other ethnic groups.
  13. In this country, it should be every ethnic group for itself.
  14. Some ethnic groups and their religion(s) and traditions should be abolished in this country.
  15. I would consider it a betrayal if my child marries from another ethnic group.
  16. For ethnic survival in this country, some people must be willing to become martyrs.
  17. The idea of unity in diversity cannot work in Nigeria.
- 
- Ingroup exclusivity
18. Coexisting/living with people of other ethnic group(s) can be an interesting experience.
  19. It is always nice to interact with people of other ethnic group(s).
  20. I believe in inter-ethnic marriage.
  21. Nigeria can be peaceful; we only need to be tolerant of each other.
  22. It is possible to genuinely like people of other ethnic group.
  23. It is okay for political leadership of the country to rotate between the different ethnic groups.
  24. There are always ways for ethnic groups to live in peace with one another.
-

## Appendix–2. The Items in the Turkish Form of the Xenophobia Scale

Grup–merkezçilik	<p>1. Diğer dinler benim dinim için tehdit oluşturur.</p> <p>2. Sadece aynı dine mensup kişilerin kayıtlı olduğu okulların olması gerektiğine inanıyorum.</p> <p>3. Ait olduğum etnik grubun çıkarlarının korunması söz konusu olduğunda diğer etnik grupların bundan rahatsızlık duymasını ve/veya şiddete maruz kalmasını önemsemem.</p> <p>4. <i>Madde ayırt ediciliği düşük olduğundan ölçeğin Türkçe formundan çıkarılmıştır.</i></p> <p>5. Diğer etnik gruplar benim etnik grubum için tehdit oluşturur.</p> <p>6. Diğer etnik gruplardan, dinden veya siyasi partilerden insanları sevmek zorunda olduğuma inanmıyorum.</p> <p>7. Etnik gruplar arası yakın/samimi ilişkiler kendi etnik grubumun önemli değerlerini erozyona uğratabilir.</p> <p>8. Etnik savaşlarda her şey adil ve haklıdır.</p> <p>9. Güvenlik nedeniyle, bir kamu kurumunda makam işgal ettiğinde kişi etrafını kendisiyle aynı etnik gruptan olan insanlarla çevrelemelidir.</p> <p>10. Bu ülkedeki etnik çatışmaların nedenlerinden biri farklı etnik gruplardaki insanların kendi bölgelerinde kalmayı reddetmesidir.</p> <p>11. Diğer etnik gruplardan insanlarla etkileşim kurmak bazen rahatsız edici olabilir.</p> <p>12. Ait olduğum etnik grubun dini, diğer etnik grupların inancından üstündür.</p> <p>13. <i>Madde ayırt ediciliği düşük olduğundan ölçeğin Türkçe formundan çıkarılmıştır.</i></p> <p>14. Bu ülkede, bazı etnik gruplar ile bu grupların dinleri ve gelenekleri yasaklanmalıdır.</p> <p>15. Çocuğum farklı etnik gruptan biriyle evlenirse bunu bir ihanet olarak algılarım.</p> <p>16. <i>Türk kültürüne uygun olmadığı için ölçeğin Türkçe formundan çıkarılmıştır.</i></p> <p>17. <i>Türk kültürüne uygun olmadığı için ölçeğin Türkçe formundan çıkarılmıştır.</i></p>
Diğer Gruplara Karşı Tolerans	<p>18. Diğer etnik grup(lar)dan insanlarla bir arada yaşamak ilginç bir deneyim olabilir.</p> <p>19. Diğer etnik grup(lar)dan insanlarla etkileşim kurmak her zaman güzeldir.</p> <p>20. Etnik gruplar arası evliliğe inanıyorum.</p> <p>21. Türkiye huzurlu bir yer olabilir; bunun için birbirimize karşı hoşgörülü olmamız yeterli.</p> <p>22. Diğer etnik gruplardan insanları sevmek gerçekten mümkündür.</p> <p>23. Ülkenin siyasi liderliğinin farklı etnik gruplar arasında dönüşümlü olması sorun değildir.</p> <p>24. Farklı etnik grupların birbirleriyle barış içinde yaşamalarının her zaman bir yolu vardır.</p>



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# Comparative Analysis of Democratic Attitude and Value Perceptions of School Administrators, Teachers, Preservice Teachers and Students: A Meta-Analysis Study

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## ABSTRACT

This study aims to comparatively analyze the effect size of perceptions related to democratic attitudes and values of school administrators, teachers, preservice teachers, and students. The meta-analysis method, one of the research synthesis methods, was used in the research. Within the scope of the study, master's and doctoral theses and research articles dealing with this topic in Turkey were investigated. Based on the screening results, a total of 101 studies from 2013 to 2020 abided by the inclusion criteria. For these 101 studies comprising a sample of 33,774 people, four effect sizes were calculated. According to research results, high levels of effect size were determined based on the random effect model for opinions related to democratic attitudes and values of school administrators, teachers, preservice teachers, and students ( $d=41.14$ ). The perceptions of democratic attitudes and values of participants were ranked from low to high as students ( $d=30.45$ ), school administrators ( $d=38.66$ ), teachers ( $d=47.86$ ), and preservice teachers ( $d=51.73$ ). There was a significant difference between the opinions of participants ( $p=0.00$ ). Students appeared to have the lowest perceptions of democratic attitudes and values. According to the results of moderator analysis, the effect sizes of studies were determined to differ depending on publication type ( $p=0.00$ ), educational level ( $p=0.00$ ), gender of the researcher ( $p=0.00$ ), and the region of the research ( $p=0.00$ ). Concerning the meta-regression results for the effect size in terms of the year the research was performed, there appeared to be a falling trend in perceptions related to democratic attitudes and values of participants.

Keywords:

Democratic attitude and values, meta-analysis, teachers, students, school administrators

## 1. Introduction

The origin of the word 'democracy' is the ancient Greek "dēmokrateía," meaning "popular government." It is a concept embracing many different values specific to humanity such as human rights and democratic awareness. It has a multidimensional meaning including features, such as freedom, equality, justice, respect, pluralism, inclusion, forgiveness, peace, participation, and development (Pover & Scott, 2014). Democracy may be defined as both a form of administration and a lifestyle (Yesil, 2002). One of the most important duties of education is to raise good citizens who have adopted a democratic lifestyle. In this situation, democracy becomes a lifestyle, and the importance of teachers and school administrators having positive democratic

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attitudes becomes evident (Yasar Ekici, 2014). Educators, who direct society, reflect the democratic attitudes and values of the society.

Democratic attitude is required to display sincere attachment to the basic principles of democracy. People with a democratic attitude use the requirements of democracy in every aspect of life, have a character that reflects respect for human rights, accommodate positive values, and are individuals with a positive world view (Buyukkaragoz & Ure, 1994). The systematic way to transfer these attitudes and values to future generations is through education. The democratic culture of a country develops in relation to the quality of democracy education in schools. For this reason, the attitudes and values of preservice teachers, who will be educators in the future, teachers and school administrators have an essential role in the construction of society (Halstead & Taylor, 2000). Morrison (2009) stated that democratic education may be received in a variety of forms, from in-class democracy at micro level to administration of the educational system at macro level. A democratic school environment may be provided by displaying a democratic attitude in the mutual relations, behaviors, speech and thoughts between all stakeholders, from administrators to cleaning staff (Saracaloglu et al., 2004). Democratic attitudes of school employees affect the attitudes of students. Research showed a positive correlation between the democratic attitudes of students with attitudes of teachers (Wentzel, 2002), between democratic attitudes of school administrators with institutional commitment of teachers (Ozdemir, 2012; Gulmek, 2012), organizational trust (Sarac, 2019), organizational socialization (Ozer, 2019), motivation of teachers (Arslan, 2012), and student success (Arslan, 2012). Positive democratic attitudes of preservice teachers affect their attitudes to children's rights positively (Bagceli Kahraman & Onur Sezer, 2017), and as the democratic values of teachers increase, it is known that their multicultural adequacy perceptions also increase (Akyildiz, 2018). Students raised in a democratic school environment may play roles in decision-making processes, act empathically and respectfully towards people, have coping power for failure, and display courage in solving problems they encounter. Democratic values of individuals are associated with their democratic attitude perceptions (Dundar, 2013; Karadag, Baloglu, & Yalcinkayalar, 2006). For this reason, the primary condition to become a society with democratic attitudes and values involves having positive attitudes.

While individuals who have high democratic attitudes ensure self-realization, people with low democratic attitudes are known to have high neurotic tendencies such as losing temper rapidly in the face of criticism, frequent anger and irritation with people around them, frequent feelings of regret due to things they have done, insomnia, general tension and problematic status, inability to concentrate, general feeling of fatigue, and psychosomatic complaints (Karahan et al., 2006). Individuals with low democratic attitudes were identified to experience inadequacy in social relationships and social skills. Teachers and school administrators with high democratic attitude and value perceptions were determined to be less dogmatic (Şahin, 2008), to have high self-efficacy perceptions (Topkaya & Yavuz, 2011), high critical thinking skills (Aydin, 2019; Gun, 2019; Ulucinar, 2012), high empathic thinking skills (Palavan & Agboyraz, 2017), and high professional satisfaction (Bayramoglu & Kaya, 2017). These study results, revealing that democratic attitudes of individuals support them psychologically, demonstrate that individuals with high democratic attitudes are essential in creating healthy societies. The democratic attitude and value perceptions of members of the school community (students, teachers, school administrators and parents) have a critical impact on education, learning and teaching processes.

When the educational programs currently implemented in Turkey are investigated, it appears that the Human Rights, Citizenship and Democracy course is mandatory in the 4th grade of primary school. At the secondary school level, the Folk Culture, Thinking Education, Law and Justice courses that support democratic attitudes are included in the elective courses program. In high school education programs, Democracy and Human Rights is included in elective courses (Ministry of Education, 2018). Although the lesson contents of courses such as life science, social science, history and sociology at primary education and secondary education levels bring the concept of democracy to the forefront, it was stated that the Turkish education system does not include democracy education and democratic attitudes at the desired level (Okutan, 2010). One reason for this condition may be that democracy education remains within the scope of the lesson program and acquirements, and is not converted into behavior. In this respect, courses are not sufficient for the internalization and implementation of attitudes and values. It is important that school administrators, teachers and preservice teachers internalize democratic attitudes and values and act as models for students during the education process.

In the literature, the increase in studies investigating the democratic attitudes and values of school administrators, teachers, preservice teachers and students in Turkey in recent years has led to the need to determine and synthesize the common results by examining sample numbers and reviewing outcomes. There are no meta-analysis studies comparatively analyzing the results of research in this field encountered in the literature in Turkey or at the international level. For this purpose, international databases such as ERIC, Web of Science, EBSCOhost, Google Scholar and national databases such as ULAKBİM (Turkish Academic Network and Information Center) were examined. The aim of the research was a comparative analysis of the effect sizes related to democratic attitudes and values of school administrators, teachers, preservice teachers, and students. In line with this aim, the problem in the study comprised determining the perceptions related to democratic attitudes and values among school administrators, teachers, preservice teachers, and students.

## 2. Methodology

### 2.1. Research Model

In this study, the meta-analysis method, one of the methods for synthesizing research results, was used. Meta-analysis is a method that systematically analyzes and synthesizes data from quantitative studies which were independently conducted on the same topic. The group comparison meta-analysis method of group differences was used for the analysis of the data (Card, 2012; Cumming, 2012). In a meta-analysis study, singular and independent quantitative studies about the same research question and topic are chosen according to inclusion criteria. Data obtained from these studies is synthesized using advanced statistical methods to determine and interpret effect sizes (Dinçer, 2014; Ellis, 2012). The aim of meta-analysis is to compare quantitative data obtained from empirical studies performed about the same topic in different places and times, combine with appropriate methods, increase sample numbers and thus lower the confidence interval for general outcomes that can be obtained from the study results to achieve a synthesis with the least rate of errors (Cumming, 2012; Hartung, Knapp & Sinha, 2008). The meta-analysis process stages are shown in Figure 1 (Dinçer, 2014).

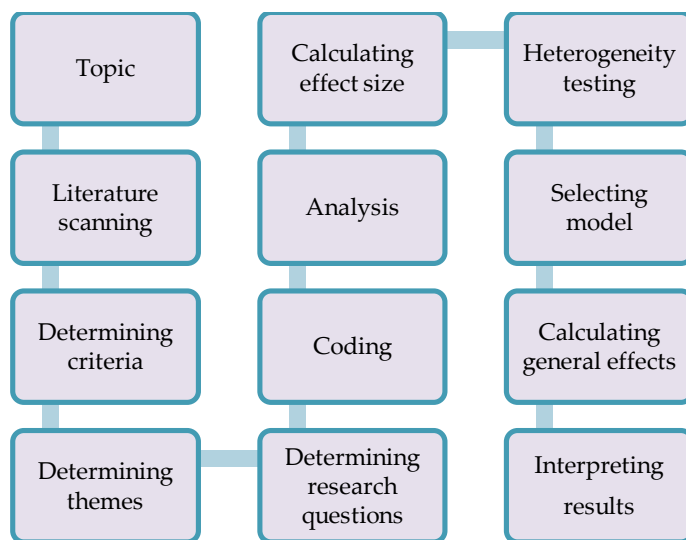


Figure 1. Process stages in the meta-analysis method

### 2.2. Data Collection Tools and Procedure

The primary data source and scope in this study comprised master’s and doctoral theses and research articles about the topic of democratic attitudes and values completed in Turkey. To retrieve these studies, Web of Science, ERIC, ULAKBİM, EBSCOhost, Google Scholar and the National Thesis Center (Ulusal Tez Merkezi) were screened with the English and Turkish keywords of “democratic attitude/demokratik tutum,” “democratic value/demokratik değer,” “school administrators/okul yöneticileri,” “teachers/öğretmenler,” “preservice teachers/öğretmen adayları,” and “student/öğrenci.” After screening, 101 studies abiding by the



inclusion criteria were determined among 127 studies. The inclusion and exclusion criteria used when selecting studies to be included in the research are given in Table 1.

**Table 1.** *Inclusion and exclusion criteria for the studies*

Inclusion Criteria	Exclusion Criteria
1. <i>Sources of published or unpublished studies:</i> Master's and doctoral theses and published research articles in the field were included.	1. Abstracts, proceedings books, editor comments, interviews, advertisements, news, bulletins, and reports were excluded.
2. <i>Suitability of dependent and independent variables in studies for meta-analysis:</i> In order to obtain effect size in meta-analysis studies, care was taken that the studies were empirical and revealed the democratic attitudes and values of school administrators, teachers, preservice teachers and students.	2. Studies not meeting dependent and independent variable criteria were excluded.
3. <i>Sample group:</i> Studies completed in Turkey involving the research topic (school administrators, teachers, preservice teachers, and students).	3. Studies with sample groups from abroad or not involving the research topic if completed in Turkey were excluded.
4. <i>Inclusion of quantitative data required for meta-analysis:</i> Care was taken to include quantitative data (e.g., mean, standard deviation, sample number, p-value) in order to calculate the effect size required for meta-analysis studies.	4. Studies without the necessary statistical data for meta-analysis and studies only including qualitative data were excluded.
5. Care was taken to include studies performed in Turkey from 2003 to 2020.	5. As there were no studies documented before 2003, they were considered to be excluded.
6. Studies in Turkish and English languages with samples in Turkey were included.	6. Studies in languages other than Turkish and English were excluded.

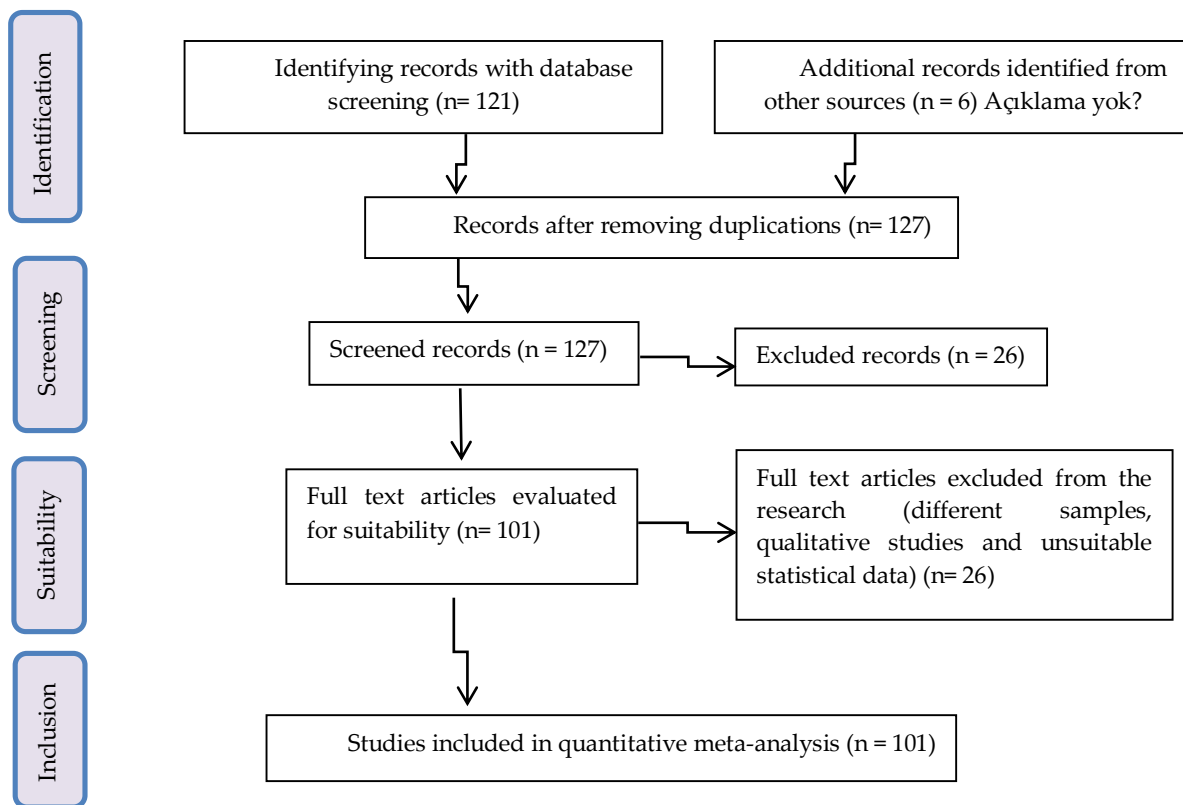
According to the inclusion/exclusion criteria mentioned above, the process of determining studies to be included within the scope of meta-analysis is given in Table 2.

**Table 2.** *Determination of studies included within the scope of meta-analysis*

1. Number of studies determined in the context of key words	2. Number of studies excluded by the exclusion criteria	3. Number of studies abiding by the inclusion criteria
127 studies (11 doctoral theses, 57 master's theses, 59 articles)	26 studies (3 doctoral theses, 10 master's theses, 13 articles)	101 studies (8 doctoral theses, 47 master's theses, 46 articles)

### Reporting

The reporting for this study was performed following the "Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA)" guidelines, a protocol used for systematic reviews and meta-analyses (Moher, Liberati, Tetzlaff & Altman, 2009). The PRISMA flow chart for systematic reviews and meta-analyses is shown in Figure 2 (Aşık & Özen, 2019).



**Figure 2.** PRISMA flow diagram for meta-analysis

*Research reliability:* For the reliability of meta-analysis study results, the reliability between coders during the coding of studies is important. With this aim, a coding protocol and form was created including the study identity, content, and data. Data from studies to be included were separately coded with the coding protocol by at least two coders. After the coding procedure, the interrater reliability was found using Cohen's kappa (Lipsey & Wilson, 2001) statistic, and the reliability was found to be 0.95. This result shows perfect compatibility between coders (Card, 2012).

*Research validity:* Screening using all databases in order to reach all studies abiding by the meta-analysis inclusion criteria and inclusion of all studies is an indicator of the research validity (Petticrew & Roberts, 2006). Validity can be said to be provided in the context of accessing all studies as a result of the screening process. In this context, each of the 101 studies included in the meta-analysis was investigated in detail, and the validity and reliability of data collection tools used in the research was confirmed. For this reason, this meta-analysis can be said to be valid.

#### 2.4. Data Analysis

The software CMA Ver. 2. [Comprehensive Meta-Analysis] was used for statistical calculations in this study. In this meta-analysis study, the random effects model was used to calculate the general effect size. The group comparison method from the group comparison meta-analysis methods was used for data analysis. The effect sizes for perceptions related to democratic attitudes and values of school administrators, teachers, students, and preservice teachers were compared (Bakioglu & Özcan, 2016).

#### 2.5. Ethical aspects

Ethics committee approval was not required since this research was a meta-analysis study.

### 3. Findings

Findings obtained from the research within the scope of meta-analysis studies (publication bias, forest plot, random effects model, and moderator analysis) are presented in this section.

## Publication Bias

In this study, the funnel plot, Orwin's fail-safe N, Duval and Tweedie's trim and fill method, Egger test, and Kendall's tau coefficient were employed to determine whether publication bias was present or not (Borenstein, Hedges, Higgins, & Rothstein, 2009; Cooper, 2009). The majority of the 101 studies included in the research were located in the upper section of the graph and close to the combined effect size (Figure 3). In this sense, the funnel plot did not detect publication bias regarding the studies included in the research (Borenstein et al., 2009).

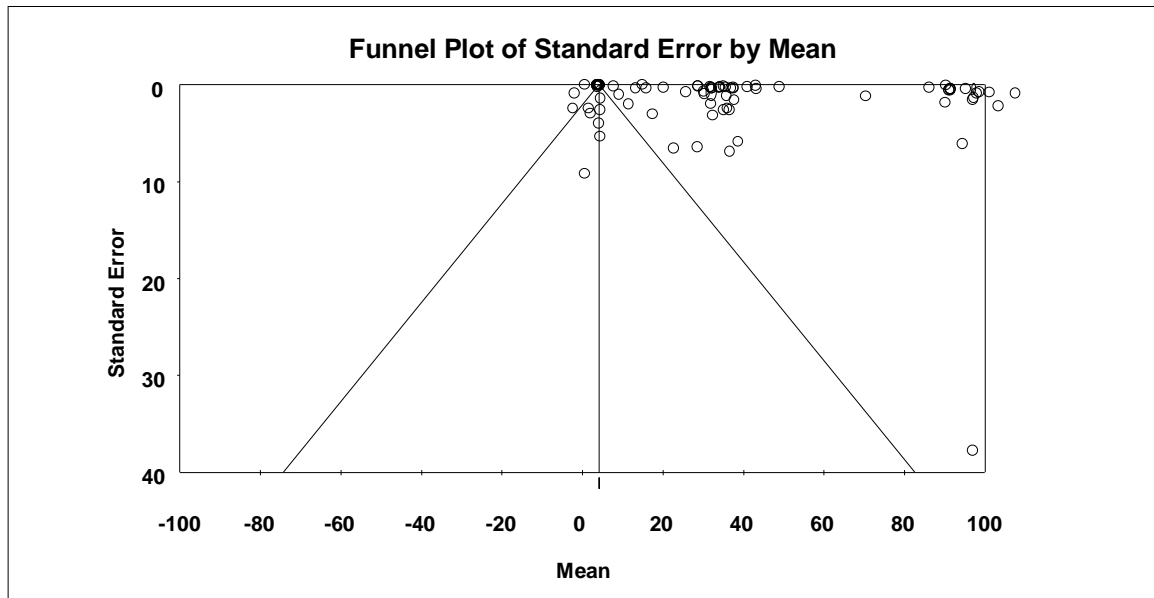


Figure 3. Funnel plot

The test results for publication bias of the studies included in the meta-analysis are given in Table 3. Orwin's fail-safe N was calculated to test publication bias. Orwin's fail-safe N calculates the number of studies that may be missing from a meta-analysis (Borenstein et al., 2009, 285). As a result of this analysis, Orwin's fail-safe N was calculated as 1173. For the mean effect size found with the meta-analysis results of 41.46 at 0.01 level (trivial), the number of studies required in order to reach an effect size of nearly zero is 1173. The 101 studies selected according to the inclusion criteria were all studies carried out relevant to this research question in Turkey. As it is not possible to access 1072 studies apart from these, this is accepted as another indicator that there is no publication bias in this meta-analysis.

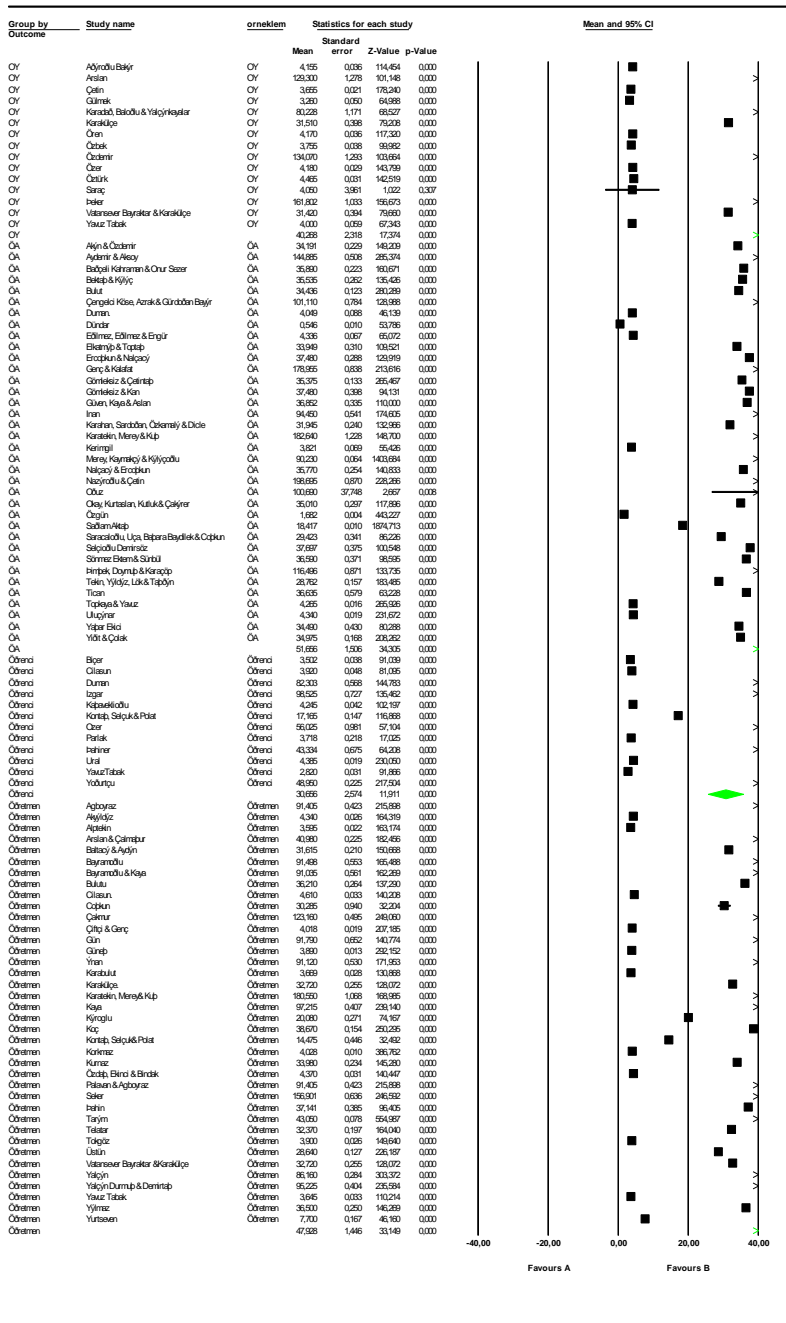
Table 3. Publication bias test results

Number of included studies	Orwin's protected N number	Duval and Tweedie's trim and fill method		Kendall's Tau coefficient
		Trim studies	SOF observed (filled)	
101	1173	48	44.44 (47.53)	P=0.28

According to the result of Duval and Tweedie's trim and fill method, when 48 similar studies are included in the research, the mean effect size for the meta-analysis of 41.46 changes to 44.44. As this variation is at an insignificant level, the reported effect size is accepted as reliable. Another method of Kendall's tau coefficient was 24 and  $p=0.28$ ; in this situation, the  $p$  value not creating a significant difference, in other words being larger than 0.05, meets expectations and reveals that there is no publication bias statistically (Table 3).

## Uncombined findings for effect size analysis for democratic attitudes and values of school administrators (SA), teachers (T), preservice teachers (PT) and students (S)

The forest plot for effect sizes, standard error, and upper and lower limits of 95% confidence intervals related to the sample groups included within the scope of the research is given in Figure 3.



**Table 4.** Combined findings according to fixed and random effects model for effect sizes and heterogeneity test results

Model/ subdimension	Effect size and 95% confidence interval						Homogeneity				
	Number of studies	Effect size	Standard error	Variance	Lower limit	Upper limit	Z-value	P-value	Q-value	df (Q)	I <sup>2</sup>
School											
Administrators	15	38.66	0.82	0.67	37.05	40.27	47.09	0.00			
Teachers	38	47.86	1.08	1.18	45.72	49.99	44.02	0.00			
Preservice											
Teachers	36	51.73	1.77	3.14	48.25	55.20	29.15	0.00			
Students	12	30.45	1.41	1.99	27.69	33.22	21.57	0.00			
Total	101	41.14	0.56	0.31	40.04	42.25	73.01	0.00	140.153	3	99.99

According to the random effects model for effect size values from studies included in the research related to the SA, T, PT and S dimensions, the mean effect size value was 41.14, the mean effect size standard error was 0.56, and the mean effect size confidence interval upper limit was 42.25 while the lower limit was 40.04. According to the random effects model, perceptions related to democratic attitudes and values of participants appeared to have high levels of total effect size. When assessing the effect size, if  $d$  is between 0.20-0.50, the effect size is small; if it is between 0.50-0.80, it is moderate; and if it is greater than 0.80, it is large effect size in Cohen's classification (Cohen, 1988). In this study, the effect size value was between 0.50-0.80, which indicates a large level of effect size according to Cohen's classification. Considering the classification of Thalheimer & Cook (2002),  $-0.15 < d < 0.15$  is insignificant,  $0.15 < d < 0.40$  is low,  $0.40 < d < 0.75$  is moderate,  $0.75 < d < 1.10$  is high,  $1.10 < d < 1.45$  is very high, and  $1.45 < d$  is perfect level of effect size. With regard to this classification, there appears to be a high level of differences. When statistical significance is calculated according to the Z test,  $Z=73.01$  was found, which signifies statistical significance ( $p=0.00$ ).

Based on the findings, the perceptions related to democratic attitudes and values of participants were ranked from low to high for S ( $d=30.45$ ), SA ( $d=38.66$ ), T ( $d=47.86$ ), and PT ( $d=51.73$ ). There was a significant difference ( $p=0.00$ ) present between the opinions of these participants.

#### *Homogeneity Tests with Q and I<sup>2</sup> statistics*

Another name for the homogeneity test is the Q-statistic, and  $Q=140.153$  was calculated. From the chi-square table, the three degrees of freedom value at 95% significance level was found to be 0.35. The Q-statistic value ( $Q=140.153$ ) exceeds the critical value for three degrees of freedom and chi-square distribution ( $\chi^2_{0.95}=0.35$ ), so the hypothesis of the absence of homogeneity for effect size distribution is rejected for the fixed effects model. In other words, it was determined that the effect size distribution had heterogenic properties according to the random effects model.

Developed as a complement to the Q statistic, I<sup>2</sup> reveals clearer results related to heterogeneity. The I<sup>2</sup> shows the total variance rate related to effect size. Contrary to the Q statistic, the I<sup>2</sup> statistic is not affected by the number of studies. For the interpretation of I<sup>2</sup>, 25% is low-level heterogeneity, 50% is moderate-level heterogeneity, and 75% shows a high level of heterogeneity (Cooper et al., 2009). The results of homogeneity tests in the context of participant perceptions (Q and I<sup>2</sup>) found high level of heterogeneity between studies. Moderator analysis was performed to determine possible causes of this heterogeneity.

#### *Moderator analysis results according to participant perceptions*

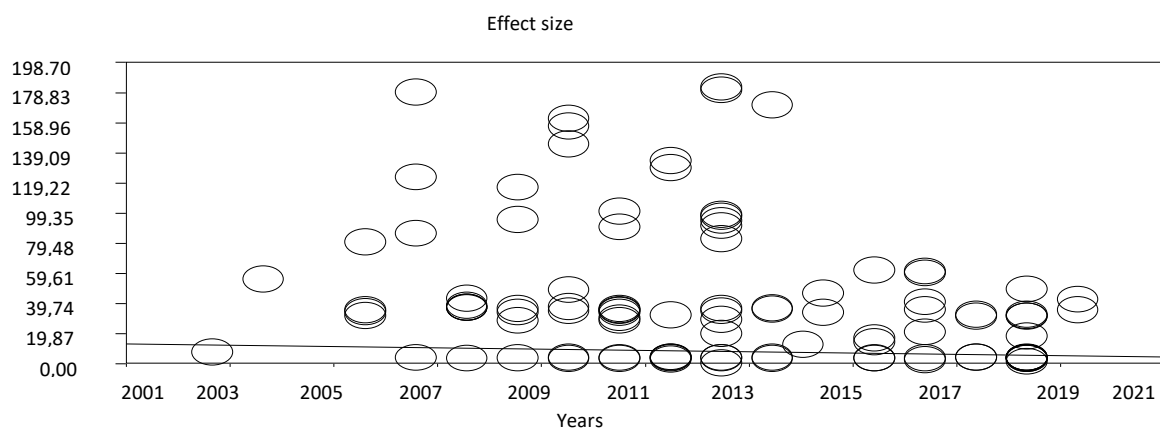
With the aim of revealing the causes of heterogeneous perceptions among participants, the moderator analysis results are demonstrated in Table 5.

**Table 5.** Categorical moderator results related to participant perceptions

Moderator	k	d	SE	95% CI	Q
Publication type					50.80
Master's thesis	47	42.32	1.09	[40.17; 44.46]	
Doctoral thesis	8	28.72	2.89	[23.04; 34.40]	
Article	46	53.90	1.97	[49.22; 56.95]	
Teaching level					3013.33
Preschool	1	4.46	0.03	[4.40; 4.52]	
Primary education	44	52.66	1.08	[50.53; 54.78]	
Secondary education	11	24.86	2.15	[20.63; 29.09]	
Higher education	35	53.12	1.80	[49.58; 56.66]	
All levels	10	20.12	1.02	[18.10; 22.13]	
Region of the research					486.80
Mediterranean	4	43.67	12.18	[35.59; 54.75]	
Eastern Anatolia	14	65.73	22.95	[60.02;71.44]	
Aegean	5	45.90	23.64	[17.91; 73.88]	
Southeast Anatolia	16	40.84	0.02	[36.84; 44.85]	
Central Anatolia	21	54.92	0.03	[47.97; 61.66]	
Black Sea	6	44.95	23.64	[38.54; 51.36]	
Marmara	28	24.05	42.18	[40.26; 44.10]	
All regions	7	25.09	12.03	[9.32; 14.75]	
Gender of the researcher					141.12
Male	47	52.78	0.92	[50.97;54.58]	
Female	42	35.49	1.13	[33.27; 37.70]	
Male+Female	12	55.92	13.44	[29.58; 82.26]	

NOTE: k= number of studies, d= Cohen's d (SOF), SE=Standard error, CI=confidence interval, Q=heterogeneity between studies. Comparative analysis was performed for studies with subgroup numbers of 2 or more. \* $p < .05$

As a result of the moderator analysis, the effect sizes of studies differed according to publication type ( $p=0.00$ ), teaching level ( $p=0.00$ ), gender of the researcher ( $p=0.00$ ), and region of the research ( $p=0.00$ ). In terms of teaching level, the results for studies dealing with primary education and higher education appeared to have higher rates compared to other levels. It appeared that in studies performed at preschool and secondary education levels, participants had lower perceptions related to democratic attitudes and values. Regarding the region of the research, participants in studies conducted in the East Anatolia region appeared to have perceptions related to democratic attitudes and values at higher rates compared to other regions. On the other hand, in studies performed with samples from the Marmara region, it is noteworthy that participants had lower perceptions related to democratic attitudes and values compared to other regions. Participants in studies published as master's theses and research articles appeared to have higher effect level for perceptions of democratic attitudes and values. According to the gender of researchers ( $p=0.00$ ), the effect sizes of studies were determined to differ. It is interesting that in studies where the researcher was female, the perceptions of democratic attitudes and values of participants were lower.



**Figure 4.** Meta-regression results for effect sizes based on years of the research

As seen in Figure 4, there appears to be a decreasing trend in perceptions related to democratic attitudes and values of participants throughout the years in terms of effect size in the research. According to meta-regression results, a statistically significant difference was found between the year of study variable with the effect size ( $B=-74.66$ ;  $Z=-161.66$ ;  $p=0.00$ ).

#### 4. Discussion and Conclusion

In this study, four effect sizes were calculated for 101 studies comprising a sample of 33,774 people. According to research results, the random effects model for opinions about democratic attitudes and values of SA, T, PT and S had high levels of effect size ( $d=41.14$ ; [40.04; 42.25]). These meta-analysis results show that teachers and preservice teachers have higher perceptions of democratic attitudes and values than school administrators and especially students. Students were observed to have the lowest level of democratic attitude and value perceptions. It is known that teachers and administrators generally adopt an authoritarian attitude in school environments in Turkey (Okutan, 2010). These meta-analysis results are significant considering that school administrators adopt traditional and bureaucratic administration approaches. However, it is thought-provoking that students have low democratic attitude and value perceptions. Democratic attitudes and values comprise the basis of trust, cooperation, responsibility and tolerance (Cankaya, 2011). School administrators and teachers should be role models to give students responsibility in decision-making and implementation processes and show respect for their opinions. There can be said to be inadequacies about this topic. The democracy education and school assembly directives were abolished by the Ministry of National Education in 2019 and instead, a project and practice based on macro-scale participation and democracy was implemented.

This meta-analysis study found that primary education and higher education levels had higher perceptions of democratic attitude and values than preschool and secondary education levels. In the literature, there are research results revealing differences according to democratic attitudes based on the education level of learning or employment. Teachers employed in primary schools are known to have higher democratic attitude and value perceptions compared to teachers employed in middle schools and high schools (Çakmur, 2007; Gozutok, 1995; Korkmaz, 2013). The curriculum applied and the class conditions differ according to education level. At the primary education level, there are mandatory lessons supporting democratic attitudes. Additionally, the content of lessons such as social science, life science and Turkish include acquirements that support democratic attitudes and values. Additionally, as it is known, at the primary school level in Turkey, teachers work with the same class in every lesson and for long durations (four years). In this way, teachers have the opportunity to recognize the personality traits and individual differences of students. In this situation, it may be considered that more effective results are obtained for acquiring democratic attitudes and values. In the teaching process, there is an increased possibility of including activities to support student participation, active learning methods and upper-level thinking skills that will strengthen democratic attitudes and values.

This meta-analysis study observed higher democratic attitude and value perceptions of participants in the research performed in the East Anatolia region compared to participants from other regions in terms of the region of the research moderator. Interestingly, the lowest democratic attitude and value perceptions were obtained from studies with samples from the Marmara region with high socioeconomic status. Contrarily, it is expected that as the socioeconomic level increases, democratic attitude and value perceptions will also increase. When the general trends in Turkey are assessed, individuals living in regions and cities with high developmental levels are known to have more democratic attitudes and values than those living in regions with low socioeconomic levels (Bingol, 2000). In the context of this meta-analysis study, the higher democratic attitudes and values perceptions of school community members (school administrators, teachers, students, and preservice teachers) in the East Anatolia region require detailed evaluation and discussion in sociological terms. The Marmara region is a cosmopolitan region with excessive migration and difficult as well as highly competitive working and life conditions, which may have caused the emergence of low democratic attitude and value perceptions. There may be many different variables playing a role in this finding.

Participants in studies published as master's theses and articles appeared to have a higher effect level for democratic attitude and value perceptions compared to doctoral thesis studies. This situation may be explained by doctoral theses being completed over longer periods with more comprehensive scope compared to master's theses and articles in addition to the inclusion of five lecture staff in the doctoral process. This comprehensive assessment and meticulous working process may lead to consideration of a range of differences occurring in results obtained from doctoral thesis publications.

Democratic attitude and value perceptions in studies performed by female researchers were lower compared to studies performed by male researchers. There are studies revealing that women have higher rates of democratic attitudes compared to men (Akin & Ozdemir, 2009; Arslan & Calmasur, 2017; Gomleksiz & Cetintas, 2011; Karatekin et al., 2013; Kaya, 2013; Ozdas et al., 2014; Van Engen & Willemsen, 2004; Yasar Ekici, 2014; Yigit & Colak, 2010). However, in this meta-analysis research, lower democratic attitude and value perceptions were encountered in studies performed by women. This situation appears to be associated with female researchers not being perceived as democratic by society or not facing democratic attitudes in social life. In this study, it appears the gender of the researcher affected the research results. Whether the gender of a researcher has the potential to affect research results based on personal traits like attitude may be further assessed as it has the quality of inspiring new research. As there are no scientific research findings related to this question and this outcome, it is not possible to interpret or debate the causes.

Another noteworthy result of the research is the declining trend in democratic attitude and value perceptions of participants since 2013. The political and economic events and crises experienced in Turkey in 2013 and later years, lack of participation-based educational policy decisions and implementations (Aytac, 2020; Karip, 2019), and inability to fully internalize lessons and topics dealing with democracy in schools (Izgar, 2017, Okutan, 2010) may have caused a decrease in democratic attitude and value perceptions. The fall in democratic attitude and value-based perceptions and practices of school administrators and teachers in the context of school and class management in recent years (Gunes, 2019, Ozbek, 2016) may be assessed as an indicator of this result.

Harber (2002) emphasized that democratic attitudes and values can be taught and are not hereditary. For this reason, it appears necessary that sensitivity should be shown from the first years of education towards democratic educational environments and a democratic lifestyle for the future of society, and all stakeholders in education should display democratic attitudes and behavior consistently.

## **5. Recommendations**

The results of the research show that students attending preschool and secondary education have lower levels of democratic attitudes compared to other participants. For this reason, lessons should ensure that students can express their own opinions and thoughts and participate in decision-making processes by encouraging them with teaching strategies, methods and techniques which provide democratic participation. Students should be supported to acquire a feeling of responsibility by developing self-management and self-regulation skills. In Turkey, studies should be performed to develop the democratic attitude and value perceptions of all stakeholders in education. To develop the democratic attitude and value perceptions of education stakeholders, especially students, teachers and school administrators, there should be a move away from traditional education approaches and school-based projects, and activities and international cooperative studies should be conducted. During this process, digital and social media channels should be used effectively.

Additionally, democratic attitudes and values should be acquired not just in class, but also at home. It is important to inform parents about this process. The democratic attitude and value perceptions of parents, some of the most important stakeholders in education, were not included in this study. Future research is recommended to provide more detail and expand the results by including different participants and different moderators. In the context of the results of this meta-analysis, it is recommended to perform qualitative and quantitative studies to determine which factors affect the low democratic attitude and value perceptions of students and school administrators in particular.



## 6. References

(The symbol \* refers to the studies included in the meta-analysis).

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## Assessment of Social, Moral and Spiritual Challenges Facing Students in Secondary Schools in Nyeri County, Kenya

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### ABSTRACT

Contemporary educational institutions have been faced with emerging social-cultural, spiritual and moral issues that have brought with them new choices in views, cultural orientations, and philosophy. Ultimately, their health wellbeing is affected. This has created a contextual social crisis that necessitates the need to guide young people in various ways of approaching contemporary life. This article assesses the main social, moral and spiritual challenges facing students in secondary schools in Nyeri County, Kenya. The study was conducted descriptively with a total of 99 secondary school students, and 68 Christian Union(CU)/Catholic Action(CA) patrons. From the results of the study, it was established that most of the students are faced by various social, moral and spiritual challenges among others; unhealthy relationships that leads to early pregnancy among girls; religious relativism; negative influence from modern social media; and membership to pseudo-religious groups. The study, hence, recommend to various educational stakeholders on the need to change the traditional methodological approaches that have been used addressing the above mentioned challenges faced by the 21st century young generation. Hence, the nneed to develop a more contemporary methodoligies that can address the revolutionized social-cultural, moral and spiritual contexts. In this case, an effective complementary Christian pastoral care and counseling programmes interventions becomes vital in contemporary educational contexts.

#### Keywords:

Social, moral, spiritual, challenges, secondary school students

### 1. Introduction

Education sector is one of the key areas of human developments. In the Kenyan contexts, various systems have been developed with the aim of cultivating a more relevant and contextual human capital. Today, the government have taken the initiative to change the education system from 8.4.4 to 2.6.6.3. In its background information, the Kenya Institute of Curriculum Development (KICD), (2017) justifies that previous reviews and systems only addressed issues of curriculum content, overloads within and across subjects, unnecessary overlaps and emerging issues. Additionally, the body further noted that various reviews have not adequately addressed fundamental issues that would transform society by enhancing the productivity of every Kenyan citizen and accelerate economic growth. As such, it is vital for continuous and up to date assessments of other social, moral and spiritual valuables that influence such systems. This should be informed by the fact that within the education sector, students as the ultimate consumers of any educational programme are faced with various social, moral and spiritual challenges that negatively affect their transition to other levels of life. As such, this work is informed by the question; what are the major social, moral and spiritual challenges facing contemporary secondary schools students today? This article seeks to answer the above question in reference to secondary schools in Nyeri County, Kenya.

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Today, most of Kenyan primary and secondary schools have witnessed a dearth of pathological issues facing students. These include among others; uncontrollable drugs and substance abuse, membership to pseudo-religious organizations, early teenage pregnancies among girls that affect their smooth learning process and unhealthy social networking. It is within this context that Kagema et al (2019) notes that the contemporary emerging new cultures brought about by the modern technologies, socialization platforms among others, have given young people various choices that have affected their moral and ethical decision-making process. As a result of latter challenges, there has emerged a contextual social crisis which necessitates the need to guide young people in various ways of approaching contemporary life. In this case, proper contextual guiding becomes paramount on every choice to be made.

This article views various challenges faced by students in contemporary learning institutions as an image of sociological problem faced by contemporary society. Abbas (2009) define a social problem as an alleged situation that is incompatible with the values of a significant number of people who agree that action is needed to alter the situation. The situation hence, leads to social disorganization, value conflict, deviant behavior, labeling, critical and social constructionist perspectives. Curtis (2015) notes that young people undergo transitional process involving a progression from immaturity and social dependency of childhood into adult life. Analyzing Kohlberg's theory of moral development, Niekerk (2014) observes that adolescents believe that good behavior means having good motives. They also believe that interpersonal feelings, such as trust and concern for others, make any behavior justified and morally good. Hence, the intentions of the actors play a more significant role in reasoning at this stage. Such understanding is vital for the schools in developing structures on moral awareness to develop relevant actions of addressing emerging moral, spiritual and social challenges faced by students.

Contemporary social tech platforms have adversely produced a very delicate young people in terms of personal moral valuation. This was confirmed by the popular social media trending, '#IfikieWazazi' has been one of the shocking incidents from young teenagers where they were caught having posted their half-naked photos in social media. According to Kigo (2018) in *The Kenyan Daily Nation*, 27<sup>th</sup> April 2018, this was a wake-up call for parents and the nation to evaluate ourselves and holistically address parenting and whether we inculcate the values that produce a whole person. The above incident shows disconnect in the emerging social environments in de-linking the moral from immoral. In practice, the moral agents seem not to recognize the moratorium in young people from physical social interaction to technological social environments on social media. As such, in the latter environments, Opara (2014b) notes people finds satisfying psychological environment comprising of the feelings, expectations of those around them and personal attitudes, among others. In view of this, it is important that young people at their optimal ages to be taught on how to distinguish a virtue-based social environments and vice-based social environment. This is only possible where children at family environments are trained at early stage to distinguish good and bad, sacred and profane and, vice and virtue.

After the home environment, the learner finds the school environment which becomes paramount in promoting student's well-being and health. Students' social, emotional and ethical needs are addressed through various interventions such as guidance and counseling, contextual discussions in the class among others. Chauhan (2013) posits that teachers are expected to deal sincerely with the problems associated with students' behavior as they occur. He therefore, notes that the main task of a teacher is to make for a way out of the myriad social and behavior-oriented problems as posed by family/home, school and culture to students. However, he questions whether teachers can effectively develop an atmosphere of trust and an attitude of acceptance and cultivate empathic understanding to grapple with the emerging problems. This is because most teachers have the overall responsibility of ensuring discipline in the students along with ensuring academic performance among the students.

Inter-relationship between the students is vital for a healthy school environments. With this understanding, Kenyan secondary schools need to create an environment where students accommodate each other's opinions, taste values, and live as a community. Based on the philosophy of empathy, schools need to teach students on the need to understand the feelings of others and to treat people with kindness. This will ensure the promotion of life skills to prevent violence against students in schools. In return, this will reduce the frequent bullying behaviors from students to other students. Expectedly, those who go

through this empathy training, when compared with those who have not, are more likely to be less aggressive.

The spiritual contexts of students in Kenyan schools has been wanting. The Catholic Commission for Education and Religious Education (2015) in Kenya, observe that some of the secondary school students often experience some forms of religious radicalization without their knowledge. This religious radicalization is done secretly where the students are indoctrinated based on propaganda of radical ideologies, beliefs, and practices. The Commission observes that the radicalized young people are promised religious, social-economic and political opportunities. These promises make them engage in evil and criminal missions of violence and extreme activities of disrupting social order, religious integrity, harmony and transformation among people.

Today, some of the young people have blindly engaged themselves into cultic religious social groups that entice them of social, spiritual and economic prosperity. Zhang (2017) identifies the following five characteristics that are associated with the contemporary cults: First, using psychological coercion to recruit, indoctrinate and retain its member; second, forming an elitist totalitarian society; third, founder leader is self-appointed, dogmatic, messianic, not accountable and has charisma; fourth, believing "the end justifies the means" to solicit funds recruit people and fifth, wealth does not benefit its members or society. According to Hunter (1988) such cults employ unethically manipulative techniques of persuasion and control designed to advance the goals of the group's leaders to the detriment of members, their families, or the community. He importantly notes that cults attract youth experiencing psychological stress, rootlessness, and feelings of emptiness and of being disenfranchised, and identity diffusion and confusion. To attract these youths in society, cults seem to offer confused and isolated adolescents social, spiritual and economic moratorium.

Positive morality in society is vital as it promotes harmonic moral value, and understand the right or wrong (Mathlala, 2011). This helps to reduce some social problems like crime, conflicts and other social erosions within the adolescent's stage. In school context, most of the students inhabit the concept of moral relativism as influenced by their fellow moral agents. Majority lack a personal and a critical definition of the rightness and the wrongness of a moral decision. These students usually adopt the accepted behavior of the group that is most significant to them. Parke (2010) hence, argues that the school's focus on students' moral behavior should focus on their ability to differentiate between good and bad as they grow in their different cultural settings

Teenage pregnancy has been one of the major alarming moral challenge within in basic education system in Kenya. According to the Ministry of Health, Kenya (2015), 37% of girls and 44% of boys aged 15 to 19 years have had sex. Approximately, 18% of adolescents (15-19 years) had begun childbearing, ranging from 10% among girls in secondary school education to 32% with no secondary education. Besides, Siddharth (2018) notes that almost one in five Kenyan teenagers are at a threat or is a teenage mother. He observes that recent media reports of the high number of girls failing to sit their final K. C. S. E. or K. C. P. E. This reveals the extent to which as a society, we have continued to sweep under the carpet the candid discussions about adolescent sexuality. To be successful in addressing the above challenge, Siddharth notes that drastic efforts to reduce the incidence of teenage pregnancy among the school girls must be put into place. This should be facilitated through comprehensive programmes of behavioral change, social and economic development and sex education, reproductive rights and gender equality.

To control the negative impact associated with social, moral and spiritual challenges, it is imperative to facilitate social and emotional learning in students. This will facilitate social and emotional well-being where every student realizes his or her potential, learn to cope with the normal stress in life. Besides, the student will be able to withstand and acquire the capacity to respond adaptively to a challenging environment and still thrive in life.

In addition, to arrest the existence and emergence of students' pathological challenges in schools today, Waweru and Otieno (2018) argue that secondary schools need to facilitate platforms that create an environment of opening up for immediate assistance. This is because, in fear of being stigmatized, students may attempt to conceal their troubled feelings which later manifests through their overt behavior. As such,

they advise that secondary school institutions in Kenya need to develop a strong chaplaincy structure that encourages self-expression to candidly open up their struggles while inviting others to give out their views freely.

Where postmodern society presents the youth with the challenges of diverse views, culture, and philosophy, both adolescents and youth guides need to understand how these changes affect the dynamics of their integral development (Akpanessien, 2015). Besides, a clear understanding of the social and cultural changes that have taken place today would help adolescents to adapt and integrate into diverse context, with healthy self-affirmation. Schools require trained student peer counselors to complement the guidance and counseling teacher working with them. Such students have the advantage that they can informally interact with their colleagues in class, during games, in the hostels and at any time whenever there is an opportunity.

## **2. Methodology**

### **2.1. Research Model**

This article is guided by James Fowler's theory of Faith Development. The theory's concern is with understanding the phenomenology of how people develop ways of relating to their world and themselves in light of their understandings of ultimate reality. Andrade (2014) notes that drawing from the work of Kohlberg's theory of moral reasoning, Erikson, and Piaget's theory of cognitive development, Fowler developed a stage theory of faith development that has been continuously referred to by those interested in the faith and moral development process. James Fowler, therefore, bases his theory in five cumulative stages that human beings follow in development and defining meaning within their realm of life. The Intuitive Projective, the Mythic-literal faith, Synthetic-conventional faith, the Individuate-reflective faith and the Conjunctive faith.

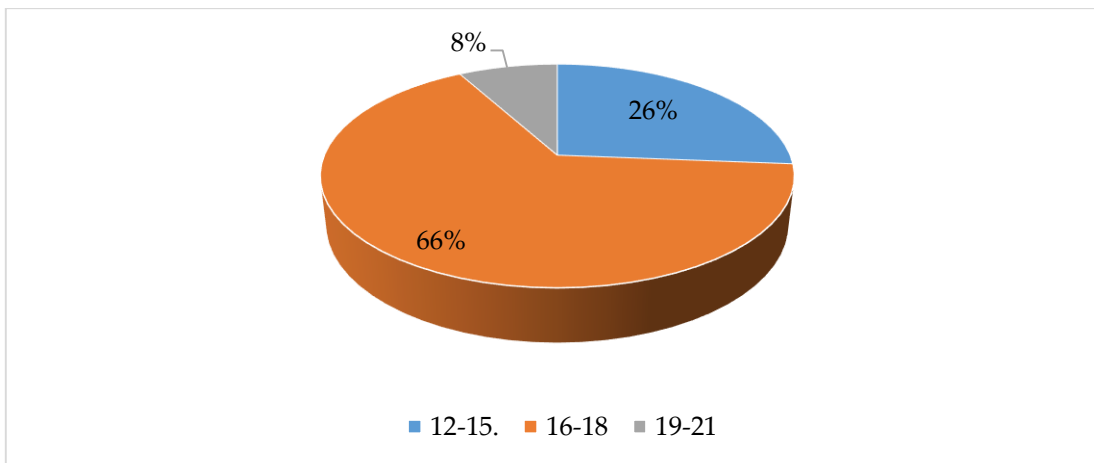
In synthetic-conventional stage, relationships become critical to identity and meaning making and as a result, personal worth is determined by the approval of significant others. When present, this stage emerges during adolescence and may remain into adulthood. In addition, relationships in this stage become critical to identity and meaning making; as a result, personal worth is determined by the approval of significant others. Beliefs and values are deeply held at this stage but have not been subjected to critical reflection. Besides, their understanding of meaning and beliefs lies on what they have been taught, and what they see everyone else believing. There is strong identity with the group and place a lot of trust on external authorities and figures as point of reference.

Since the study is more interested with the students who are teenagers/ adolescents, Fowler's theory was beneficial in understanding on various meaning-making and beliefs on young people as adolescents and the challenges resulting in the processes during the transition of the present stage in life. Synthetic-Conventional stage of faith development that ranges from the age 12 to adulthood. As such, the theory is used as a template for understanding the major and possible pathological issues faced by secondary school students especially at their developmental stages. Hence, the theory provides a good ground to justify the great need for establishment of supportive programmes to check the effects of the latter challenges. This understanding becomes very crucial if the students are to transit successfully in their developmental stage in a holistic manner.

### **2.2. Research Sample**

The study aimed at identifying some of the social, moral and spiritual challenges faced by secondary school students in Nyeri County. In this study, the main research respondents were; Christian Union(CU)/ Catholic Action(CA) patrons who majorly acts as providers and the custodian of guidance and counseling services in secondary schools, and students. These provided vital information on major issues that affects students in secondary schools in Nyeri County, as well as measures taken to arrest and prevent some of the emerging social, moral and spiritual challenges faced by the students. A sample of 68 CU/CA patrons and 99 students who were randomly selected from the 217 public secondary schools in Nyeri County, Kenya. Yamane (1967) formula,  $N/ 1+N (e)^2$  with a 10% level of precision was used to acquire a sample representative from the target population.

Student’s response rate in the study was 43% girls while boys ranged at 57%. The study established that majority of the students in secondary schools in Nyeri County are at their optimum age of teenagers at the age bracket of 16 to 18 years. Normally, most of the teenagers at this age bracket faces challenges of identity crises, need direction on moral and spiritual decision making process, and should be provided with value-based education that helps them to have maximum self-understanding. Figure 1 below shows the age distribution of students in secondary school in Nyeri County.



**Figure 1.** Students’ Age Bracket

As shown in Table 1 below, majority of the secondary school students were at the ages of 16-18 years, majority being boys with 71% while girls at 58%.

**Table 1.** Students’ Gender by age

		12-15	16-18	19-21
Students’ Gender	Male	16%	71%	13%
	Female	40%	58%	2%

**2.3. Data Collection Tools and Procedure**

The study adopted a descriptive survey approach where is used questionnaires and interview schedules to collect primary data from target population. The design was important as it helped the researcher to descriptively analyze the nature, impact and the major social-cultural, moral and spiritual challenges facing secondary school students in Nyeri County. The study used questionnaires and interview schedules to collect primary data.

To establish the consistency of the research instruments, the researcher used the test-retest method. A sample size of 25 respondents who comprised 15 students and 10 CU/CA patrons in Gatanga Sub-County in Murang’a County, Kenya was randomly selected and questionnaires were distributed to the above respondents. Their responses were analyzed and then the coefficient was computed which ranged at 0.721. The instruments were seen to be reliable according to the social sciences standard, and ready to be used in the main study for maximum responses. In addition, the pilot study area ensured that the target population involved in the pilot study were not the ones involved in the actual research hence ensured reliability.

In the study, the school CU/CA patrons through questionnaires, provided information about their roles in the school as they are the main custodian of pastoral care services aimed at ensuring the students’ holistic development in school; some of the challenges they face that hampers their efforts to address the rising challenges in students.

Students on their part, through questionnaires, provided information on how they utilize pastoral care services offered in school. Their responses provided important information on the extent to which they

responds to various complementary programmes aimed at promoting holistic development in school. Students' data, therefore provided vital information on how effective the developed complementary programmes address their issues as they arise and how they prepares them to be socially, morally and spiritually competent people.

**2.4. Data Analysis**

The data from the research was adopted and analyzed using the Statistical Package for Social Sciences (SPSS) version 21.0. The data was analyzed by arranging responses according to the research questions and objectives. Quantitative data were analyzed through descriptive statistical approaches such as mean, frequencies, and percentages. Qualitative data from the open-ended questionnaires and interviews were analyzed thematically using content data analysis. This was done by assessing respondents' opinions based on identified themes. This enriched and supported their opinions in the study.

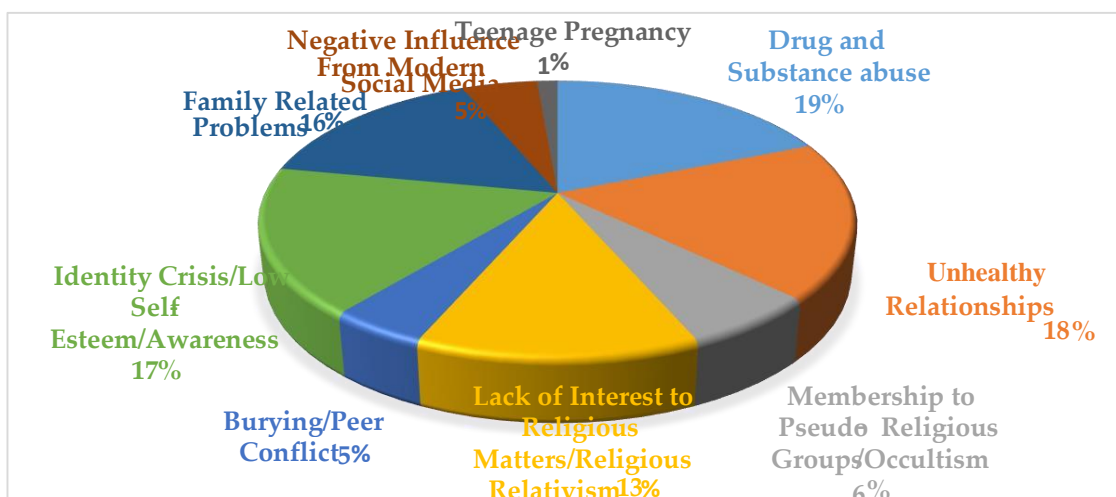
**2.5. Ethical Considerations**

To validate the research, the researcher first obtained an introduction letter from the School of Education and Social studies, Karatina University. A research permit was sought from the National Council of Science Technology and Innovation (NACOSTI) in Nairobi. The researcher had the following ethical considerations; voluntary participation, assurance of research confidentiality and anonymity in identity for the research respondents. The ethical principles were applied during the data-collection process. This is according to Mugenda and Mugenda (2003) who argue that since researchers are people genuinely concerned about other people's quality of life, they must be people of integrity who will not undertake research for personal gain or research that will have negative impacts on others. This research work is therefore, aimed at promoting and helping both the education planners and managers in planning their educational policies for the benefit of the students.

**3. Findings**

**3.1 Social, Moral and Spiritual Challenges Facing Secondary School Students in Nyeri County**

The study sought to assess the major social, moral and spiritual challenges facing secondary school students in Nyeri County as presented in Figure 2 below.



**Figure 2: Major Social, Moral and Spiritual Problems from Students in Schools**

**3.1.1 Social Challenges**

The study established that 19% of the CU/CA patrons in various schools have been dealing with issues of drug and substance abuse from the students. Some of the drugs that were commonly reported included among others; *bhang*, *kubel*, cigarettes, alcohol, and tobacco. These drugs were reported to either have been supplied from the outside the school environment or the students themselves who may introduce them to other innocent students through the process of negative peer pressure in the school. As noted from Figure 2, 5% CU/CA patrons noted that most of the students find themselves in the conflict between modern technology and social media and Christian values. In addition, 16% of the pastoral care providers noted that family-related problems have been a great hindrance to the students' wellbeing. Identity crises/low

self-esteem/awareness was reported by 17% of CU/CA patrons. Inter-conflicts cases manifested in burying was reported by 5% of CU/CA patrons.

### **3.1.2 Spiritual Challenges**

As such, the study established students in secondary schools in Nyeri County have no intrinsic aspect on religious issues as reported by 13% of CU/CA patron who oversees pastoral issues as shown in Figure 2. In addition, the study noted from 6% of counseling programmes providers that students ignorantly engage themselves in some of the pseudo-religious and cultic social groups, some of which are outlawed in the society as presented in Figure 2.

### **3.1.3 Moral Challenges**

The study established that unhealthy opposite-sex relationships have been affecting student's social life and their academic performance. As provided in Figure 2, 18% of the guidance and counseling services providers had observed that most of the students are not able to have boundaries when dealing with opposite-sex relationships at their adolescence ages. The inability of students to define their relational boundaries has led to early pregnancies among school girls as noted by 1% of CU/CA patrons.

## **4. Discussion, Conclusion, and Recommendation**

This study discussed various social, moral, and spiritual challenges that faces secondary school students in Nyeri County, Kenya. Today, most of the students have been exposed to most of the modern social media platforms due to the easy accessibility of mobile phones and computers that are social media enabled. The implication of this is that most of them acquire unhealthy social-cultural and spiritual values that dilutes the positive behavioral standing. As such, social media reshape the right moral direction of students in contemporary society, leading its effects to the school. According to Goodyear, Armour and Wood (2018) significant amount of unsolicited and unregulated health information on social media reaches young people and impacts negatively on their health and wellbeing. Also, they note that some young people may develop obsessive/addictive monitoring behaviors, engage with extreme diets and/or exercises. Moreover, they experience heightened levels of body dissatisfaction as a result of accessing material from social media and unhealthy lifestyle technologies. These negative values acquired from modern social media were seen to dilute the positive ethical social, moral and cultural values instilled to students through Christian pastoral programmes as facilitated and advocated by Christian pastoral care programmes.

Additionally, many social ills such as violence, unhealthy social behaviors, and unethical cultural values have been attributed to social media's influence. A study done on effects of social media in academic performance by Griffiths and Daria (2011) indicated that students who are frequent Facebook users had lower grade point averages and spent less time studying than students who were not addicted to it. Griffith and Diaria observed that of the 26% of students reporting an impact of their usage on their lives while three-quarters (74%) claimed that it had a negative impact, namely procrastination, distraction, and poor time-management. In addition, he argues that students who used the internet to study may have been distracted by simultaneous engagement in social media which implies that this form of multitasking is detrimental to academic achievement.

Today, most of the parents have neglected their parental roles. This has led to low attention to children's social needs from parents. As such, most of the students take school environment as a place to seek alternative guidance on their personal problems they come across. This demands that various schools to come up with policies that will provide an alternative home environment vital in helping students solve and address students' social, moral and spiritual needs and challenges. According to this study, family related challenges affects students' wellbeing. As the majority of CU/CA patrons explained, these were due to the ever-decreasing time that most of the parents have with their children. This was seen to create a laissez-faire altitude in students as most of the parents turn away from being family disciplinarians. As a result, most of the affected students may seek guidance from their colleagues who may mislead them with immoral and anti-social behaviors such as drug and substance usage.

The study, however, recognizes changing nature of traditional African community and family unit, and the decreasing time that the modern parents are spending with their children in their efforts to meet their economic responsibilities. As such, more responsibilities have been placed on the teacher and the entire

school. The implication of this is that schools will be required to take on responsibilities that will be more concerned with moral, social and spiritual welfare of the learners.

In modern society, most of the young people have had a decreasing attitude and self-motivation on religious matters. As such, the study noted that some students adopt religious relativism where issues of faith are taken with minimum concern. For example, majority of CU/CA patrons who are mainly the Christian pastoral care and counseling providers explained that they had observed poor morning devotion attendance, participation in Bible studies, and non-volunteering in preaching to fellow students. This was seen to have led to students having poor spiritual knowledge, doctrinal understanding, and Christian values. This relaxed nature of students on authentic spiritual matters may lead to students being lured into some pseudo-religious and cultic social groups. As majority of CU/CA patron reported that these cultic religious groups were seen to instill unwanted doctrines to the learners that are against Christian ethics and values through religious radicalization.

The above observation confirms an analysis done by the Catholic Commission for Education and Religious Education, Kenya (2015) on religious occultism where it observed that some of the secondary school students have been introduced to some degree of religious radicalization in learning institutions without their knowledge. The commission notes that religious radicalization becomes a secretive forced indoctrination or propaganda of radical ideologies, beliefs, and practices in people, especially the young and vulnerable groups. This commonly affects students who are poorly founded on Christian religious values in life. In this case, the above mentioned social-cultural values discourage Christian values that are promoted by the church through Christian Pastoral ministries in schools. Ultimately, the improper religious and cultural values introduced in young people, make Christian values to have a short-lived impact as well as discouraging them to practice what they are taught during Christian pastoral care and counseling services.

Huitt (2011) defines unhealthy relationship as the inability of a person to establish and maintain a healthy and rewarding relationship based on clear communication, cooperation, resistance to inappropriate social pressure. In the context of this study, unhealthy relationships especially among the girls has promoted the occurrence of early pregnancies. This often makes the affected girls students to drop out of school, hence, terminating their education and subsequent their blight future. High rate of school discontinuity by pregnant girls may be attributed by stigmatization faced by the pregnant girls from fellow students, teachers, parents, and the immediate communities. In addition, due to early pregnancy, Achoka et al (2012) notes that this makes the girls to feel that they deserve to be punished for getting pregnant by dropping out of school or are too shy to return to school. By discontinuing school, teenage motherhood spells a blank future for both the teenager and her child.

In a report by the Ministry of Health (2015), six percent (6%) of girls aged 15-19 years in Murang'a County have begun childbearing, which is notably low compared to the national rate. Specifically, 3.8% are pregnant with their first child and 2.6% have ever given birth compared to 3.4% and 14.7%, respectively, at the national level. Additionally, the county government of Murang'a was highly concerned by the great number of school girls who became mothers at their teenage. He observes that according to the 2018 Murang'a County Health Department report, there were 6,710 teenage pregnancies in 2018. In this case, the survey by the county government showed that the affected girls were aged between 10 and 19. This situation leads to most of the pregnant schoolgirls to face unique challenges of balancing their motherly roles with identities as students.

To arrest the effects of moral decay situation in the society, Muthamba (2017) advises that schools must acquire a balanced formation of students, they must nurture their morals and restore in them the integrity of reason. As such, proper moral education of students will influence their choice so that they may choose what is good and avoid what is evil. Hence, education can only be useful and meaningful when it empowers people to face challenging situations resulting in positive changes in their lives spiritually, morally and socially.

The social, moral and spiritual context established in this study illuminates a contextual social crises that have been buried in contemporary educational institutions. It also reveals the relaxed nature of complementary guidance and counseling programmes such as Christian pastoral care services. Ultimately, the need to review the approaches and methodology of their implementation to make them students' centered for them to effectively address the rising contemporary social, moral and spiritual challenges faced by the 21<sup>st</sup> century young generation.

The findings of this study indicates major social, moral and spiritual challenges that Nyeri secondary school students are facing. These include unhealthy relationships; religious relativism; negative influence from modern social media; membership to; membership to pseudo-religious groups, among others. These challenges should provide a platform where proper educational policies should be structured based on the contemporary needs as young generation today has specific health and wellbeing needs that differ from both the adults and children.

This study hence, recommends that there is need to revitalize the place of Christian pastoral care ministry in secondary schools. These programmes will ensure development of holistic students through healing, guiding, reconciling and sustaining. However, such programme in secondary schools, should be developed to enhance positive altitudes to students by developing in them coping strategies such as positive statements, self-control and resilience as important aspects of social, moral, psychological and spiritual competence in life.

The Ministry of Education through the Kenya Institute of Curriculum Development (KICD) should help in the development of relevant and effective complementary programm syllabi such as Christian pastoral care and counseling based on the contemporary needs of students. This would ensure competent, well-structured and planned delivery of counseling services to the affected students.

The study calls for the need for proper educational policies by the Ministry of Education, Teacher Service Commission and the churches to ensure training and deployment of chaplains and other trained guidance and counseling providers in schools who have both theological and psychological foundations in their training.

In addition, to arrest the effects of the studied challenges which reflects the situation in Kenyan education institution context, all stakeholders in the education sector must collaboratively work towards addressing contemporary needs of students that are triggered by the ever-changing society as they arise.

This study identifies the following areas that need further enquiring; Assessment of teaching methods in Christian Religious Studies in facilitation of holistic development of students in secondary schools. Assessment of impact of students' Christian societies in peer counseling among students in secondary schools.

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