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# Is Reward A Punishment? from Reward Addiction to Sensitivity to Punishment

**Ayşe Aypay**

*Eskişehir Osmangazi University, Eskişehir, Turkey.*

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ABSTRACT

This study introduces the topics of reward addiction and sensitivity to punishment in academic contexts to the literature. This study was designed firstly to develop reliable and valid measurement tools that can measure high school students' reward addiction and sensitivity to punishment in academic contexts, and secondly to test the structural equation model formed to identify the relationships between reward addiction and sensitivity to punishment. The participants of the study were a total of 506 high school students. Exploratory and confirmatory factor analyses showed that the developed measurement tools were valid and reliable. According to the structural equation model formed between the variables of reward addiction and sensitivity to punishment, the reward addiction variable significantly and positively affected sensitivity to punishment. The findings of this study inform both parents and educators with a new perspective about the possible negative results of using punishment and rewards in academic context.

Keywords:
Reward Addiction, Punishment Sensitivity, Academic Context, Student

## 1. Introduction

Reward and punishment have, more or less, always been in educational environments. They are sometimes believed to be a facilitator, or sometimes an inhibitor, and indispensable practices of education systems. Reward and punishment are means of external intervention to behaviour and can be used for different purposes. Although they are used for different purposes, it is thought that reward and punishment that intervene the behaviour from external world are in fact processed through individuals' filter of perception and interpretation, and weakens their locus of control by negatively affecting it in a similar way. Despite being used for different purposes, it is thought that as a result of the common meaning attached to reward and punishment in internal perception processes, an increase in the sensitivity to one of these practices would cause an increase in the other as well. In this study, this hypothesis was tested in the academic context where reward and punishment widely exist.

In the literature, only one study, which was conducted by Aypay (2015), examined the sensitivity to punishment in the academic context on middle school students. In other studies, sensitivities to reward and punishment were investigated without being specific to a certain context, but based on different variables by regarding them as general tendencies. Some of these studies include Morgan, Bowen, Moore and van Goozen (2014), Hundt, et al. (2013), Cavanagh, Frank and Allen (2011), Guimón, Las Hayas, Guillén, Boyra and González-Pinto (2007), Van der Linden, Taris, Beckers and Kindt (2007).

The concepts of reward sensitivity and punishment sensitivity emerged from Gray and McNaughton's (2000) Reinforcement Sensitivity Theory (RST). Reward sensitivity can be defined as one's learning that feeling

[1] Corresponding author's address: Eskişehir Osmangazi University, Faculty of Education, Department of Educational Sciences, Eskişehir/Turkey
Telephone: 505 883 54 85
e-mail: ayseaypay@hotmail.com
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situations and behaviours are strongly reinforced by positive encouragers (Van Der Linden, Beckers & Taris, 2007). In this case much effort is made to obtain the positive results of behaviours. This is because there are feeling situations that lead to both motivation to gain rewards and reward-seeking behaviours (Gray, 1991). Individuals' insisting on achieving the goal to get a reward and the increase of energy they need to do this are a result that is revealed by the feelings of expectation, happiness, pleasure and anger together (Carver, 2004). In the case of reward sensitivity, individuals react with behaviours of approaching or active avoiding (Van Der Linden, Beckers, et al., 2007).

New exciting findings on reward practices have started to be revealed through a detailed examination of brain mechanism with technological tools. The works of researchers such as Delgado, Locke, Stenger and Fiez (2003), and Knutson, Adams, Fong and Hommer (2001) showed that rewards, about which individuals are informed at the beginning or conditioned, have an addictive characteristic. It was revealed that the reactions of human brain to reward stimuli are largely similar to its reactions to situation of addictive stimuli. Individuals feel relieved for a short period due to both reward stimuli and addictive stimuli, and then this effect disappears, leading to the need for a new dose (Pink, 2009). Addictive effect of rewards can be an extended version of "Sensitivity to Reward" in Gray and McNaughton's (2000) Reinforcement Sensitivity Theory (RST). Reward addiction may emerge when one's feelings and behaviours are controlled by positive encouragers (Aypay, 2016).

Sensitivity to punishment can be defined as the sensitivity that results in being over sensitive to punishment and punishment stimuli, and fear, anxiety, inhibition and reactivity that is not functional. Sensitivity to punishment, hinders individuals from achieving their goals and finalises the approach-hindrance tension mostly with an avoidance reaction, is responsible for feelings such as anxiety, fear, sadness and inhibition due to punishment, unrewardedness and innovation clues (Gray, 1990). Reward and punishment sensitivities are argued to be the characteristics of the brain that are controlled by feeling systems that work independently from each other (Gray & McNaughton, 2000). However, as getting reward is pleasing for an individual with high reward sensitivity, being unrewarded or lack of a reward would be unpleasant in the same extent (Carver, 2004; Corr, 2002; Harmon-Jones, 2003). However, as being punished is unpleasant for an individual with high punishment sensitivity, lack of punishment would be pleasing in the same extent.
One of the most important common reasons for similar effects of external rewards and punishment is the feeling that behaviour is controlled from outside. Individuals' ways of reaction to environmental effects are largely influenced by their ways of interpreting their experiences (Patterson, 1973). For this reason, even in an activity such as rewarding that is performed for pleasure and hoping that it will have a positive effect, when individuals attribute it a meaning like "*I am controlled externally*", then it will have a destructive effect, not remedial or healer. They emotionally become distant to that activity with such a meaning, and at the same time, start demanding short-term relief from outside. In other words, they can develop addiction to external rewards. This addiction can make them more sensitive to negative effects like punishment.

Based on these explanations, it can be argued that as students' reward addiction in the academic context increase, their sensitivity to punishment in the academic context would also increase. To test this argument, this study firstly aimed to develop valid and reliable measurement tools to measure high school students' reward addiction and sensitivity to punishment in academic contexts. Then, the study aimed to test the structural equation model formed to identify the relationships between reward addiction and sensitivity to punishment. Because little or no studies have focused on students' reward addiction and sensitivity to punishment in the academic contexts in the literature, this study is considered to provide a new and different perspective to reward and punishment practices.

## 2. Method

This study was conducted in the context of scale development by employing cross-sectional design and relational survey model. Convenience sampling method was used in the study.

**2.1. Participants**

The participants of the study were a total of 506 9th, 10th and 11th graders studying at three state high schools in the city of Eskisehir. 300 of the students were female (59.3%), and 206 were male (40.7%). The distribution of the students based on schools are 89 (17.6%), 295 (58.3%) and 122 (24.1%). 134 of the students (26.5%) were 9th graders, 244 (48.2%) were 10th graders and 128 (25.3%) were 11th graders.

**2.2. Data Gathering Tools**

The measurement tools, High School Students' Reward Addiction Scale (HSSRAS) and High School Students' Sensitivity to Punishment Scale (HSSSPS) that were used to identify the relationships between reward dependence and sensitivity to punishment, were developed within the scope of this study.

**2.3. Procedure**

Written data gathered from 65 high school students was used to form the items in the scales. Additionally, theory and research findings in the literature on the effects of rewards and punishment were also utilized. An item pool of 26 items was formed for the reward dependence scale, whereas that of 21 items was formed for the sensitivity to punishment scale. Based on the views of experts in the fields of educational psychology, and guidance and psychological counselling, it was decided that the scale forms were suitable for measuring the characteristics that were aimed to be measured. The scale items were prepared on a four-point Likert scale as "Strongly agree", "Agree", "Somewhat agree" and "Strongly disagree". Pilot forms were administered to 30 high school students and their intelligibility was tested. The final forms were administered to 550 students. However, only those of 506 students were accepted as valid and included in the analyses.

**2.4. Data Analysis**

The data were analysed using descriptive statistics, Exploratory (EFA) and Confirmatory Factor Analyses (CFA), reliability analyses, correlation analysis and path analysis. For factor analyses, the dataset obtained from 506 individuals were split into two groups. EFA was conducted on the first dataset and Varimax Rotation Technique was employed. CFA was then applied to the second group of data and it was examined whether the structures revealed in EFA were confirmed. CFA is used to test the relationships between the set of variables observed in the model and the set of implicit (latent) variables (Muthén & Muthén, 1998-2010). Then, it is aimed to predict and explain the implicit variables (dimensions of the scale) by means of the observed variables (scale items). The reliability of scales was measured using Cronbach alpha coefficient and item discrimination indices. For this aim, both item-total correlations were used and the differences between the item mean scores of the bottom and the top 27% groups formed based on the total scores in the scale was tested using T-test. The significance level was taken as $\alpha$=.001. The anti-image correlations were also calculated for the scale items. Then, the structural equation model formed to identify the relationships between reward dependence and sensitivity to punishment was analysed through path analysis.

## 3. Findings

### 3.1. Findings for the Validity and Reliability of the High School Students' Reward Addiction Scale (HSSRAS)

The KMO value of HSSRAS was found as 0.95, and the Bartlett's test result was significant ($\chi^2_{(153)}$=5321,719, $p$<.001). The results of EFA in which varimax rotation technique was used are presented in Table 1. As a result of EFA, three factors having an eigenvalue higher than 1 and explaining 64% of the total variance was revealed. Eigenvalues of the basic elements were 5.83, 3.17 and 2.55, respectively. The common variances of the three factors defined related to the items ranged from .44 to .77. The variances that the factors explain were 32.42%, 17.62% and 14.18%, respectively. The scale factors consisted of nine, five and four items, respectively. Since the items in the first factor included statements emphasizing that students' high reward expectations for studying should be met, this factor was named as "Conditional Performance Related to Reward Expectation" (CPRRE). As the items in the second factor included items emphasizing the reinforcing

effects of students' rewards in the school context, this factor was named as "Reinforcement Effect of Reward at School" (RERS).

**Table 1.** Results of Explanatory Factor Analysis Related to HSSRAS

| | | Rotated Factor Loadings | | | |
|---|---|---|---|---|---|
| Factor Name | Item Number | Factor-1 | Factor-2 | Factor-3 | Commu-natilites |
| Conditional Performance Related to Reward Expectation (CPRRE) | 12 | **.80** | .23 | .17 | .72 |
| | 14 | **.79** | .20 | .11 | .69 |
| | 8 | **.78** | .15 | .05 | .64 |
| | 7 | **.76** | .19 | .16 | .66 |
| | 15 | **.73** | .27 | .20 | .65 |
| | 13 | **.73** | .16 | .09 | .56 |
| | 9 | **.71** | .23 | .19 | .60 |
| | 16 | **.69** | .19 | .17 | .55 |
| | 6 | **.69** | .15 | .26 | .57 |
| Reinforcement Effect of Reward at School (RERS) | 19 | .14 | **.78** | .28 | .71 |
| | 20 | .10 | **.78** | .39 | .77 |
| | 23 | .38 | **.71** | .16 | .68 |
| | 21 | .37 | **.68** | .26 | .67 |
| | 24 | .46 | **.63** | .05 | .62 |
| Reinforcement Effect of Reward at Home (RERH) | 5 | .08 | .14 | **.82** | .70 |
| | 17 | .18 | .31 | **.75** | .69 |
| | 11 | .47 | .20 | **.61** | .64 |
| | 1 | .17 | .20 | **.60** | .44 |
| Cronbach Alpha | | .92 | .86 | .79 | Total .93 |
| Explained Variance | | % 32.42 | % 17.62 | % 14.18 | Total % 64.22 |

The items in the third factor included items emphasizing the reinforcing effects of students' rewards for their academic work at home, and this factor was named as "Reinforcement Effect of Reward at Home" (RERH). The correlations of the sub-dimensions of HSSRAS with the total score and between each other are presented in Table 2. As is seen in Table 2, all the factors were strongly related to the total score, moderately related to each other.

**Table 2.** Correlation Coefficients Among HSSRAS Factors

| | CPRRE | RERS | RERH |
|---|---|---|---|
| CPRRE | | | |
| RERS | .62** | | |
| RERH | .55** | .65** | |
| HSSRAS TOTAL | .91** | .85** | .79** |

**p<.01

To confirm the structure of HSSRAS determined by EFA, CFA was applied to the second half of the dataset. When first-order relational confirmatory factor analysis was conductor for the reward dependence scale, it was found that there was a relationship at the level of .95 between the second and third dimensions of the scale. A relationship at such a level causes a multicollinearity problem in the path analysis established between reward dependence and sensitivity to punishment (Licht, 1998). For this reason, it was found that the confirmatory factor analysis model established for the reward dependence scale showed the most suitable fit values in the second-order. The initial fit values of the second-order confirmatory factor analysis were below the criteria [CMIN=338.973, df=132, p=.000, CMIN/df=2,568, GFI=.87, IFI=.92, CFI=.92,

RMSEA=.07]. Therefore, modifications were needed to improve the model fit of the scale on the condition of keeping the theoretical relationships (Bayram, 2010). The fit indices of the model following the modifications [CMIN=220,786, df=122, p=.000, CMIN/df=1,810, GFI=.92, IFI=.96, CFI=.96, RMSEA=.057] showed that the model had a better fit (Arbuckle, 1995-2008; Kline, 2011).

The Cronbach alpha coefficients for the HSSRAS factors and the total score are, respectively, as in the following: .93, .92, .86. and .79. The item-total correlations for all the items in HSSRAS ranged between .43-.75. The t-test result showing the difference between the item mean scores of the bottom and top 27% achieving groups that were formed based on the scale total scores was found to be significant (p<.001). The anti-image correlations were also calculated for the HSSRAS items. All items, expect Item 20 (.87), had correlation values between .92-.96. According to these values, the items in the scale had high reliability and were towards measuring the same behaviour.

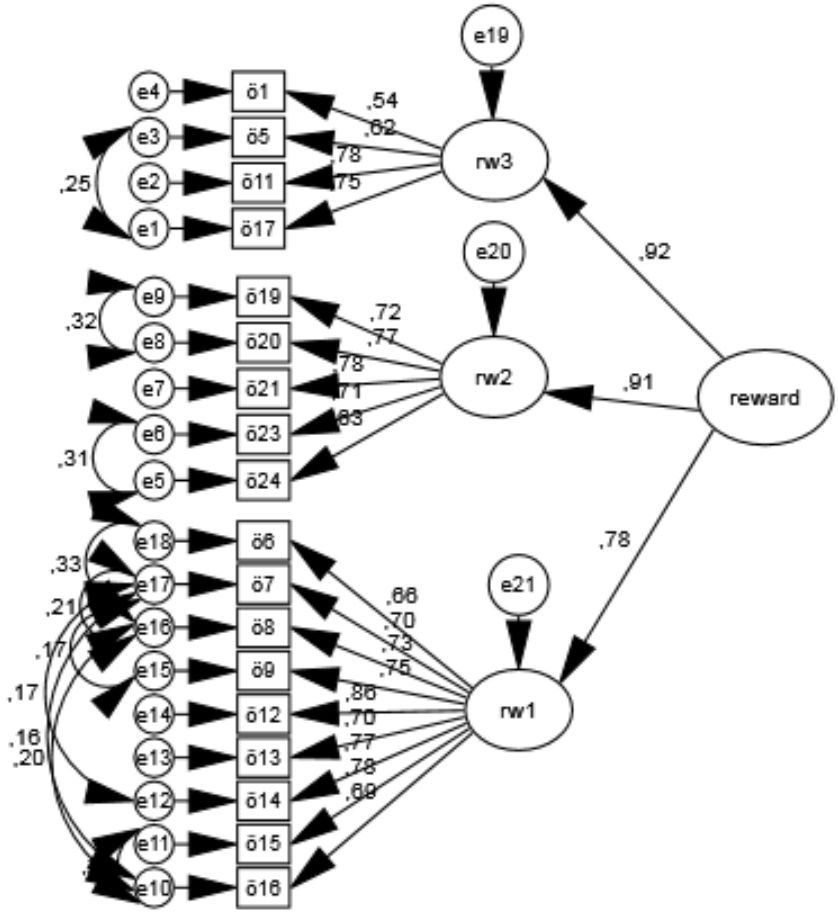


**Figure 1.** *Second-order confirmatory factor analysis for the reward addiction scale*

### 3.2. Findings on the Validity and Reliability of High School Students' Sensitivity to Punishment Scale (HSSSPS)

The KMO value of HSSSPS was found as 0.90, and the Bartlett's test result was significant ($\chi^2_{(153)}$ =2260,070, $p$<.001). EFA results of HSSSPS are presented in Table 3. As a result of EFA, four factors having an eigenvalue higher than 1 and explaining 64% of the total variance was revealed. Eigenvalues of the basic elements were 4.06, 2.79, 2.53 and 2.19, respectively. The common variance of the four factors defined related to the items ranged from .49 to .79. The variances that the factors explain were 22.55%, 15.54%, 14.08%, and 12.17%, respectively. After rotation, the factors included seven items, four items, four items and three items, respectively. Since the items in the first factor emphasized the students' fear of being punished at home or at school related to the academic context, it was named as "Fear of Being Punished" (FBP). As the second factor emphasized the negative feelings that the students developed towards school, teachers and courses due to being punished in the academic context, this factor was named as "Negative Attitudes towards Punishment Contexts" (NATPC). As the third factor emphasized the negative feelings that the students developed towards school, teachers and courses due to being punished in the academic context, this factor was named

as "Negative Self-Feelings Due to Punishment" (NSFDP). The items in the fourth factor emphasized that students stay passive or do not participate in lessons when they are in expectation of a result for which they can be punished in the academic context, and thus, this factor was named as "Inhibition Due to Punishment" (IDP).

**Table 3.** Results of Explanatory Factor Analysis Related to HSSSPS

| | | Rotated Factor Loadings | | | | |
|---|---|---|---|---|---|---|
| Factor Name | Item Number | Factor-1 | Factor-2 | Factor-3 | Factor-4 | Commu-natilites |
| Fear of Being Punished (FBP) | 12 | **.80** | .07 | .12 | .01 | .68 |
| | 13 | **.74** | .02 | .24 | .08 | .59 |
| | 4 | **.71** | .21 | .19 | .27 | .66 |
| | 5 | **.70** | .21 | .10 | .15 | .58 |
| | 9 | **.67** | .17 | .20 | .20 | .59 |
| | 10 | **.64** | .29 | .20 | .25 | .64 |
| | 15 | **.55** | .26 | .25 | .16 | .53 |
| Negative Attitudes Towards Punishment Contexts (NATPC) | 7 | .05 | **.78** | .25 | .11 | .74 |
| | 6 | .14 | **.77** | .20 | .17 | .68 |
| | 8 | .40 | **.68** | .03 | .16 | .63 |
| | 11 | .24 | **.65** | .16 | .05 | .54 |
| Negative Self-Feelings Due to Punishment (NSFDP) | 20 | .28 | .26 | **.77** | .20 | .76 |
| | 21 | .28 | .12 | **.73** | .26 | .69 |
| | 19 | .27 | .08 | **.63** | .05 | .49 |
| | 17 | .07 | .32 | **.59** | .15 | .61 |
| Inhibition Due to Punishment (IDP) | 2 | .22 | .13 | .24 | **.81** | .79 |
| | 1 | .10 | .21 | .09 | **.79** | .70 |
| | 3 | .42 | .07 | .32 | **.64** | .70 |
| Cronbach Alpha | | .88 | .80 | .80 | .79 | Total .92 |
| Explained Variance | | % 22.55 | % 15.54 | % 14.08 | %1 2.17 | Total % 64.35 |

To determine whether HSSSPS was prepared in the form of an additive scale, Tukey's Additivity Test was conducted. The results showed that the nonadditivity value of the scale was not significant, (F=06, P>.05). This means that the scale had an additive form characteristic. For this reason, HSSSPS can be used either as four factors or as a total score. The correlations of the sub-dimensions of HSSSPS with the total score and between each other are presented in Table 4. All the factors were strongly related to the total score, moderately related to each other.

**Table 4.** Correlation Coefficients Among HSSSPS Factors

| | FBP | NATPC | NSFDP | IDP |
|---|---|---|---|---|
| FBP | | | | |
| NATPC | .53** | | | |
| NSFDP | .60** | .56** | | |
| IDP | .57** | .46** | .57** | |
| HSSSPS TOTAL | .88** | .77** | .83** | .76** |

**p<01

To confirm the structure of HSSSPS determined by EFA, CFA was applied to the second half of the dataset. According to the CFA results, the scale showed a better fit in the second-order. The initial fit values of the

second-order confirmatory factor analysis were below the criteria [CMIN=369.984, df=131, p=.000, CMIN/df=2,824, GFI=.86, IFI=.89, CFI=.89, RMSEA=.085]. Therefore, modifications were needed to improve the model fit of the scale on the condition of keeping the theoretical relationships (Bayram, 2010). The fit indices of the model following the modifications [CMIN=263,367, df=127, p=.000, CMIN/df=2,074, GFI=.90, IFI=.94, CFI=.94, RMSEA=.065] showed that the model had a better fit (Arbuckle, 1995-2008; Kline, 2011).

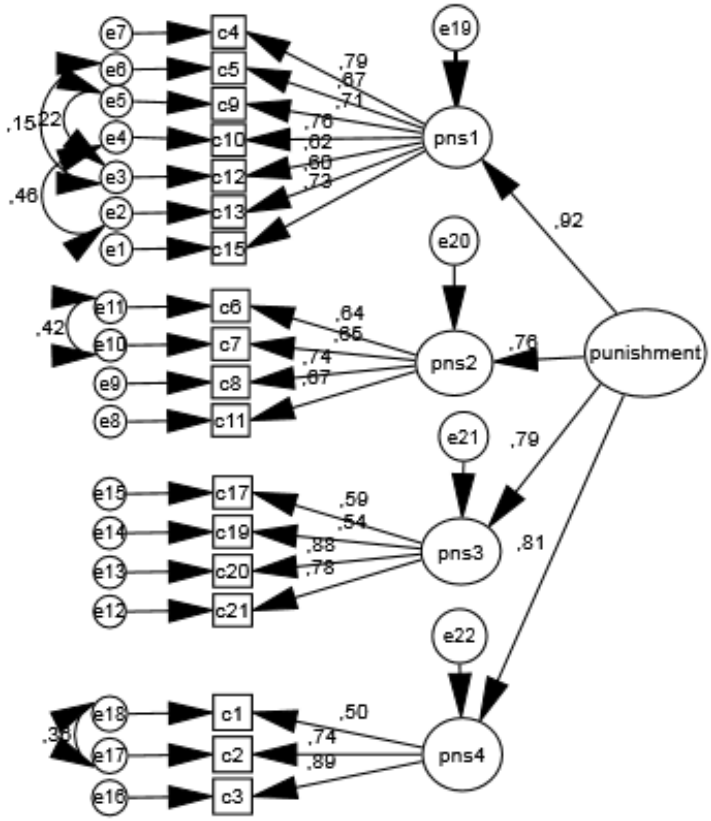


**Figure 2.** *Second-order confirmatory factor analysis for the sensitivity to punishment scale*

The Cronbach alpha coefficients for the HSSSPS factors and the total score are, respectively, as in the following: .92, .88, .80, .80 and .79. The item-total correlations for all the items in HSSSPS ranged between .48-.70. The t-test result showing the difference between the item mean scores of the bottom and top 27% achieving groups that were formed based on the scale total scores was found to be significant ($p<.001$). In addition, the anti-image correlations of the HSSSPS items ranged between .84-.95 According to these values, the items in the scale had high reliability and were towards measuring the same behaviour.

### 3.3. Findings for the Structural Equation Model Established Between High School Students' Reward Addiction and Sensitivity to Punishment in the Academic Contexts

Then, the structural equation model formed to identify the relationships between reward addiction and sensitivity to punishment was analysed through path analysis. According to the structural equation model in Figure 3 formed between the variables of reward addiction and sensitivity to punishment, the reward addiction variable significantly and positively affected sensitivity to punishment ($p<.05$). The standardised regression coefficient results related to the path analysis revealed that reward addiction affected sensitivity to punishment at the level of ($\beta=.74$).

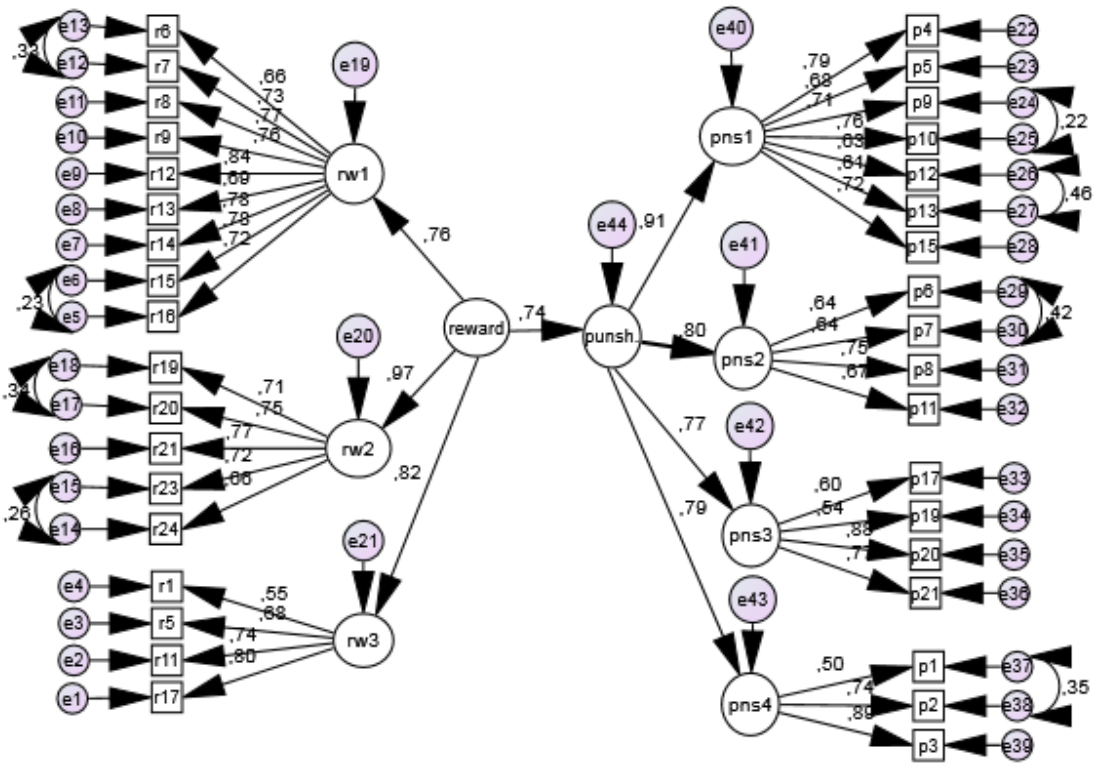


**Figure 3.** *Structural equation model for the relationship between reward addiction and sensitivity to punishment*

Consequently, as the high school students' reward addiction increased, their sensitivity to punishment also increased. On the other hand, reward addiction, as an independent variable, explained 54,8% of the variation in the sensitivity to punishment variable. The fit values prior to the modification related to the structural equation model established between reward addiction and sensitivity to punishment in the academic contexts were below the criteria [CMIN=1274.701, df=586, p=.000, CMIN/df=2.175, GFI=.78, IFI=.87, CFI=.86, RMSEA=.068]. The fit indices of the model following the modifications [CMIN=1087.185, df=578, p=.000, CMIN/df=1.880, GFI=.81, IFI=.90, CFI=.90, RMSEA: .059] showed that the model showed a substantially good fit.

**4. Discussion, Conclusions and Recommendations**

HSSRAS revealed a three-factor structure. The factors revealed that performing or acting in the case of reward addiction in the academic context was conditioned on a high level of reward expectation, and the students performed behaviours in accordance with short-term goals due to rewards taken at home and at school. Based on the works of Gray (1991), Gray and McNaughton (2000) and Carver (2004), it is argued that HSSRAS was suitable for measuring reward addiction. This is because these works mentioned that individuals with high level of reward expectation had high motivation for winning and the feeling states to enable them perform the necessary behaviours to win a reward, and they react by approaching the reward or actively avoiding the situations without any rewards.

HSSSPS revealed a four-factor structure. The factors showed that the students felt fear in the case of sensitivity to punishment in the academic context (fear of being punished), developed negative feelings and attitudes towards contexts in which they exposed to punishment practices, their sense of self and self-value were damaged due to being punished, and inhibition that made students passive was experienced. Based on the works of Farmer (2005), Segarra, et al. (2007) and Van Der Linden, Beckers, et al. (2007), it seems that HSSPS properly represented the phenomenon of punishment sensitivity. The reason is that these works mentioned hesitance in the activation of BIS, a state of inhibition as actively avoiding stimuli that stir fear or being unwilling to enter certain environmental contexts, social anxiety or generalised anxiety disorders, and repression of participation.

Another aim of this study was to test the prediction that reward addiction developed in students would increase their sensitivity to punishment. According to the results of the path analysis in which the structural equation model formed between the variables of reward addiction and sensitivity to punishment was tested, the reward addiction variable significantly and positively affected sensitivity to punishment ($p<.05$). The standardised regression coefficient results related to the path analysis revealed that reward addiction affected sensitivity to punishment at the level of ($\beta=.74$). According to this finding, as the high school students' reward addiction increased, their sensitivity to punishment also increased. Reward addiction, as an independent variable, explained 54,8% of the variation in the sensitivity to punishment variable.

In Reinforcement Sensitivity Theory, BAS and BIS are controlled by sense systems of the brain that work independently from each other (Gray & McNaughton, 2000). However, the findings obtained in this study showed that reward and punishment sensitivities that are argued to be controlled by sense systems that work independently from each other in the brain are in fact closely related to each other. This can be related to that the sensitivity developed for rewards and punishment actually cause developing sensitivity to unrewardedness and unpunishedness (Van Der Linden, Beckers, et al., 2007)

Another explanation for this finding could be that reward addiction make students lose control or become open to being controlled from outside. According to Cognitive Evaluation Theory, individuals perceive external rewards as their behaviours being controlled (Deci & Ryan, 1985). With external rewarding practices, individuals who have reward addiction become more dependent to rewards, and they can be losing their feeling of control gradually in return for the temporary and short-term feeling of pleasure that rewards create in them. Individuals who get used to the temporary pleasure that come from outside lose their ability to please themselves or forget this capacity of theirs in this regard. The reason is that the pleasure they feel is not what is created with their own will. In this way, they may start to pin their hope upon external powers rather then internal motivators as their pleasing experiences increase due to external intervention. When considered from this perspective, rewarding is in fact the process of making individuals lose control. Addiction can develop easily in this context. As individuals who lose their control through the rewarding process hope for pleasure from outside, they might be attributing the negative events they experience mostly to external sources by generalising the weakening in their feeling of control. Therefore, as rewarding makes individuals be dependent on itself, it can increase their sensitivity to punishment to the highest point.

It is thought to be of significance to develop tools that can measure reward addiction and sensitivity to punishment. The exploratory and confirmatory factor analysis and the reliability analyses showed that HSSRAS and HSSSPS were valid and reliable tools. As the high school students' reward addiction increased, their sensitivity to punishment also increased.

The findings of this study are of significance in the sense of informing both parents and educators once again and with a different perspective about the possible negative results of using punishment and rewards. Parents and educators should not refer to external rewards and punishment practices by being deceived by the outcomes that seem like quick and useful. At least, they should use these only when they need such an intervention after analysing the situation carefully. Further studies should focus on identifying other related variables that can help explain reward and punishment sensitivities and reward addiction.

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# A Measure of Pre-teachers' Self-regulated Learning Strategies on Industry 4.0 & 107 Curriculum Reform

**Chun-Mei Chou[1], Chien-Hua Shen[2], Hsi-Chi Hsiao[3], Tsu-Chguan Shen[4]**

[1] *Institute of Vocational and Technological Education, Taiwan*
[2] *Department of Business Administration, Taiwan*
[3] *Department of Business Administration, Taiwan*
[4] *Department of Information Engineering, Taiwan*[1]

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ABSTRACT

This study describes the development and validation of self-regulated learning strategies scale, a 30-item scale that measures pre-teachers self-regulated learning strategies toward Industry 4.0 & 107 Curriculum Reform. A total of 476 pre-teachers completed the questionnaire. A pilot study (n= 120) was examined factorial validity and reliability of questionnaire and study objects (n= 356) used confirmatory factor analysis. The Self-regulated learning strategies Measure (SLSM) has three-factor model (Environmental Orientation, Behavioral Orientation and Process Orientation Self-regulation) was fit using maximum likelihood estimation (MLE). The self-regulated learning strategies scale could be useful for understanding the ways in which teachers think about self-regulation learning issues and could be used to investigate the relationship between other variables. The applications of the SLSM were discussed.

Keywords:
Industry 4.0; 107 Curriculum Reform; Self-regulated learning strategies

## 1. Introduction

In the global economic landscape, the manufacturing industry is understood to be the engine of growth. Germany proposed the concept of "Industry 4.0"; the USA proclaimed "making the Renaissance"; and China changed the slogan "Made in China" to "Created in China". Taiwan strongly advocates the need to emphasize its large manufacturing scale, while also enhancing its manufacturing strength In the face of future or on-going challenges and competition, companies must capitalize on tools such as the Internet of Things (IoT) and Big Data to further enhance productivity and decrease the time taken to reach markets. Business also needs to enhance resilience through digitalization in order to increase its competitiveness. The German government's proposed Industry 4.0 in 2012 offered the important concept of a smart factory to the world. In the leading German automation industry, Industry 4.0 is regarded as the development axis of Germany's future products, providing corresponding solutions for all walks of life (Fear & Sandmann, 2016; Geeraerts, Vanhoof, & Bossche, 2016).

In response to the rapidly growing global industry environment many call for changes in how individuals should deal with the industry 4.0 & 107 Curriculum Reform. An important aspect of moving towards an industry sustainable development is to promote self-regulated learning strategies adjust Industry 4.0 & 107 Curriculum Reform. Pre-teachers strengthen the self-regulated learning strategies is important who teaching profession and industry practice ability of the vocation practice course (Hoffman, Wetzel, Maloch, Greeter, Taylor, DeJulio, & Vlach,

[1] Institute of Vocational and Technological Education, Taiwan

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2016; Ingen & Ariew, 2015; Macià & García, 2016). In view of the practical needs and 107 Curriculum Reform, the vocation education curriculum content of the professional subjects is influenced by the industrial development trend (Janssen, Grossman, & Westbroek, 2015; Kilday, Lenser, & Miller, 2016). Pre-teachers' industry professional competence and specialized learning mechanism of self-regulation learning adjust Industry 4.0 & 107 Curriculum Reform will be emphasized of environmental orientation, behavioral orientation and process orientation self-regulation (Brockner& Wiesenfeld, 2016; Donnell & Gettinger, 2015; Facker & Malmberg, 2016).

Pre-teachers face two challenges of self-regulated learning strategies in Industry 4.0 & 107 Curriculum Reform, there are: 1. To understand the impact of the self-regulated learning strategies on teaching professionalization abilities, as well as to the industry practice abilities and preparation of 107 Curriculum Reform industry practice, is very important. 2. The digitalization of work is not just something that lies ahead; it has already changed work more and more over the last few years, e.g. making it more mobile. In view of the industry practical needs of the vocation education contents of Industry 4.0 & 107 Curriculum Reform, the content of professional subjects is influenced by the industrial development trend, and the industry practice competence of pre-teachers (Bryant, Maarouf, Burcham, & Greer, 2016; Geldenhuys & Oosthuizen, 2015). In the face of the industry change, the industry teaching ability of pre-teachers is challenged (Head, Schapmire, Earnshaw, Faul, Hermann, Jones, Martin, Shaw, Woggon, Ziegler, & Pfeiffer, 2016; Helgevold, Næsheim-Bjørkvik & Østrem, 2015).

Pre-teachers' self-regulated learning strategies adjust Industry 4.0 & 107 Curriculum Reform was conducted in the industry practice specialization process of pre-teachers' cognitive process, not only to participate in the common self-regulation learning behavior, but also to practice quite personal characteristics. The self-regulated learning strategies adjust Industry 4.0 & 107 Curriculum Reform process is cognitive adjustment that to use knowledge and main contributions of this study and to set up the industry learning (Hascher & Kittinger, 2014; Ho, Lee, & Teng, 2016; Körkkö, Kyrö-Ämmälä, & Turunen, 2016; Oliver, Wehby, & Nelson, 2015). It is important to understand pre-teachers' views of self-regulated learning strategies in the vocation and technology education of human cultivation and industry connotation (Ruttan, & Nordgren, 2016). The review of the literature reveals that the research studies conducted in the context of self-regulated learning strategies and applications have measured attitudes and behavior of pre-teachers regarding environmental orientation, behavioral orientation and process orientation self-regulation (Ingen & Ariew, 2015). Scholars researchers classify self-regulation learning strategies there are environmental orientation, behavioral orientation and process orientation self-regulation. The content is: 1. Environmental orientation self-regulation learning, includes: seeking information, environmental structuring, seeking peer assistance, assistance from teachers and adults, etc. 2. Behavioral orientation self-regulation learning, includes: self-assessment ( self-evaluation, organizing and transforming, goal-setting and planning, keeping records and monitoring, rehearing and memorizing, reviewing , notes and textbooks, etc.; 3. Process orientation self-regulation, includes is self-consequences (Chen, 2016; Cheng & Wu, 2016; Dal, Alper, Özdem-Yilmaz, Öztürk, & Sönmez, 2015; Facker & Malmberg, 2016; Jiménez & O'Shanahan, 2016; Marshall, Smaaaart, & Alston, 2016).

The self-regulated learning strategies is one of the majority of the research on teaching professionalization is concerned with household setting. Growing importance of self-regulated learning strategies adjust Industry 4.0 & 107 Curriculum Reform has made it imperative to study the same in vocaiton education settings. The purpose of the present article is to present a framework to explain self-regulated learning strategies adjust Industry 4.0 & 107 Curriculum Reforms in pre-teachers teaching professionalization (Hascher & Kittinger, 2014; Leavy & Hourigan, 2016). Researchers reviewed self-regulation sustainability literature in the self-management discipline and self-regulated learning strategies adjust Industry 4.0 & 107 Curriculum Reforms related literature from psychology and social psychology. Based on the conceptual framework for explaining self-regulated learning strategies of teaching professionalization was proposed. It argue that individual characteristics such as self-assessment, goal-setting and planning will influence the pre-teachers' self-regulated learning strategies in Industry 4.0 & 107 Curriculum Reforms (Claessens, et al. 2016; ; Geldenhuys & Oosthuizen, 2015; Ruttan, & Nordgren, 2016; Pfitzner-Eden, 2016).

The purpose of the study was to develop a valid and reliable instrument to be used for measuring pre-teachers' attitudes toward self-regulated learning strategies adjust Industry 4.0 & 107 Curriculum Reform and its applications. With this instrument, it is believed that the gap in the professional literature indicated above will be partially met.

## 2. Method

### 2.1. Participants

The participants in this study were 476 pre-teachers from 12 teacher programs institutes in Asian countries. A total of 476 pre-teachers completed the questionnaire and adopted both random sampling and cluster sampling for the survey. The stratified sampling was in accordance with the basic information (e.g. school, teaching professional, and gender), and a computer randomly selected the department samples. The stratified sampling was in accordance with the basic information (e.g. school attributes, teaching background, current post, seniority, and gender), and a computer randomly selected the department samples.

### 2.2. Measure

The purpose of this study was to evaluate the 30-SLSM factorial validity. All participants were volunteers and they were briefed on the purpose of this study and informed of their rights not to participate and withdraw from completing the questionnaire at any time during or after the data have been collected]. Participants took about 20 min to complete the questionnaire. This study aimed to test and refine the items. These items were presented using a 5-point Likert response scale with 1 = strongly disagree and 5 = strongly agree.

## 3.Results

The principal component analysis with varimax-rotated see Table 1, and results of confirmatory factor analysis see Table 2.

**Table1.** Principal component analysis with varimax-rotated

| | EO | BO | PO | H2 |
|---|---|---|---|---|
| **EO 1** | **.769** | .216 | .356 | .828 |
| **EO 2** | **.749** | .329 | .782 | .867 |
| **EO 3** | **.787** | .398 | .794 | .874 |
| **EO 4** | **.842** | .261 | .389 | .845 |
| **EO 5** | **.799** | .249 | .243 | .839 |
| **EO 6** | **.812** | .324 | .317 | .841 |
| **EO 7** | **.866** | .341 | .216 | .857 |
| **EO 8** | **.872** | .268 | .311 | .832 |
| **EO 9** | **.824** | .232 | .342 | .887 |
| **EO10** | **.741** | .732 | .238 | .819 |
| **BO1** | .235 | **.789** | .276 | .824 |
| **BO 2** | .341 | **.823** | .312 | .798 |
| **BO 3** | .267 | **.821** | .226 | .891 |
| **BO 4** | .289 | **.869** | .317 | .832 |
| **BO 5** | .311 | **.742** | .238 | .819 |
| **BO 6** | .243 | **.796** | .326 | .823 |
| **BO 7** | .327 | **.839** | .325 | .856 |
| **BO 8** | .345 | **.823** | .210 | .844 |
| **BO 9** | .354 | **.793** | .297 | .865 |

| | | | | |
|---|---|---|---|---|
| **BO10** | .279 | **.741** | .789 | .877 |
| **PO 1** | .288 | .216 | **.756** | .828 |
| **PO 2** | .419 | .329 | **.782** | .867 |
| **PO 3** | .234 | .289 | **.808** | .882 |
| **PO 4** | .278 | .390 | **.833** | .878 |
| **PO 5** | .342 | .306 | **.842** | .797 |
| **PO 6** | .387 | .398 | **.794** | .874 |
| **PO 7** | .279 | .411 | **.789** | .877 |
| **PO 8** | .824 | .232 | **.742** | .887 |
| **PO 9** | .798 | .367 | **.868** | .828 |
| **PO 10** | .837 | .355 | **.789** | .845 |
| **Eighenvalue** | 6.872 | 7.694 | 3.498 | - |
| **% of variance explained** | 32.56 | 39.34 | 17.56 | - |

Note. EO=Environmental orientation; BO= behavioral orientation; PO= process orientation. All factor loadings=.74 or greater are underlined. H2=communality.

**Table 2.** Results of confirmatory factor analysis

| Item | Understandardized esitmate | Standardtized estimate | *t* value | $R^2$ | $\alpha$ |
|---|---|---|---|---|---|
| **Environmental Orientation** | | | | | .917 |
| EO 1 | .984 | .8783 | 65.783 | .789 | |
| EO 2 | .955 | .874 | 48.327 | .765 | |
| EO 3 | .992 | .891 | 34.461 | .740 | |
| EO 4 | 1.403 | .987 | 13.209 | .942 | |
| EO 5 | 1.109 | .993 | 23.093 | .935 | |
| EO 6 | 1.056 | .992 | 21.434 | .972 | |
| EO 7 | 1.387 | .978 | 13.478 | .956 | |
| EO 8 | 1.388 | .996 | 13.024 | .938 | |
| EO 9 | 1.022 | .973 | 27.389 | .589 | |
| EO10 | 1.052 | .983 | 26.359 | .578 | |
| **Behavioral Orientation** | | | | | .912 |
| BO1 | 1.022 | .921 | 78.934 | .967 | |
| BO 2 | .982 | .899 | 78.544 | .958 | |
| BO 3 | .993 | .882 | 23.598 | .542 | |
| BO 4 | 1.018 | .972 | 39.873 | .923 | |
| BO 5 | 1.361 | .992 | 13.367 | .962 | |
| BO 6 | 1.388 | .996 | 13.024 | .938 | |
| BO 7 | .969 | .895 | 78.256 | .965 | |
| BO 8 | 1.387 | .978 | 13.478 | .956 | |
| BO 9 | 1.484 | .993 | 13.459 | .971 | |
| BO10 | 1.403 | .987 | 13.209 | .942 | |
| **Process Orientation** | | | | | .921 |
| PO 1 | 1.104 | .984 | 22.319 | .925 | |
| PO 2 | 1.022 | .984 | 89.356 | .978 | |

| | | | | |
|---|---|---|---|---|
| PO 3 | 1.001 | .985 | 70.984 | .958 |
| PO 4 | .992 | .895 | 79.320 | .978 |
| PO 5 | 1.388 | .996 | 13.024 | .938 |
| PO 6 | 1.387 | .978 | 13.478 | .956 |
| PO 7 | .965 | .917 | 76.953 | .944 |
| PO 8 | 1.403 | .987 | 13.209 | .942 |
| PO 9 | 1.108 | .992 | 22.378 | .943 |
| PO 10 | 1.137 | .992 | 24.043 | .987 |

### 3.1. Model comparison

The CFA was conducted to test the above three models. Table 3 shows the results of the model comparison, indicating that the model has a better index and is within the SEM's recommended values. On this basis, the model is retained as the best model.

**Table 3.** Confirmatory factor analysis of alternative models

| Mode | $\chi^2$ | $\chi^2$/df | TLI | CFI | RMSEA | RMR | Model description |
|---|---|---|---|---|---|---|---|
| **1** | 573.25 | 3.45 | .937 | .958 | .115 (.106, .116) | - | Null model |
| **2** | 29465.33 | 17.68 | .657 | .726 | .217 (.278, .328) | .167 | One-factor (30-item) |
| **3** | 354.56 | 2.29 | .968 | .981 | .081 (.067, .089) | .058 | Three-factor corrlated |

### 3.2. Compare different pre-teachers in self-regulated learning strategies

Table 4 presents the results of testing the presence of significant differences in the grade on self-regulated learning strategies ($F(356)= 36.177$, $p <.05$). Pre-teacher was higher than college pre-teacher on self-regulated learning strategies, and university pre-teacher behavior was high than college pre-teacher on pro-industry. It has reaching a significant level between environmental orientation ($F(356)=45.051$, $p <.05$), behavioral orientation ($F(356)=43.311$, $p <.05$) and process orientation ($F(356)=11.488$, $p <.05$). Master pre-teacher higher than university pre-teacher on environmental orientation and behavioral orientation, and university pre-teacher was higher than college pre-teacher. Master pre-teacher was higher than college and university pre-teacher on process orientation.

**Table 4.** ONE-WAY ANOVA of pre-teachers' education level for self-regulated learning strategies

| Factor | Source of variation | SS | *df* | MS | *F* value | Sig. | Comparison |
|---|---|---|---|---|---|---|---|
| **Environmental orientation** | between | 1927.997 | 2 | 963.999 | 45.051 | .000 | Master > University > College |
| | within | 18019.192 | 354 | 20.928 | | | |
| | total | 19947.189 | 356 | | | | |
| **Behavioral orientation** | between | 1793.299 | 2 | 896.649 | 44.421 | .000 | Master > University > College |
| | within | 16955.744 | 354 | 19.693 | | | |
| | total | 18749.043 | 356 | | | | |
| **Process orientation** | between | 960.790 | 2 | 480.395 | 15.598 | .000 | Master > College |
| | within | 30414.260 | 354 | 35.324 | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | total | 31375.050 | 356 | | | | Master > University |
| **Total** | between | 13581.758 | 2 | 6790.879 | 37.287 | .000 | Master > |
| | within | 152270.300 | 354 | 176.853 | | | University > |
| | total | 165852.057 | 356 | | | | College |

### 3.3. Compare different teaching profession group pre-teachers in self-regulated learning strategies

Table 5 presents the testing results of significant differences teaching profession group on self-regulated learning strategies ($F(356)= 7.867$, $p <.05$). The business pre-teacher and industry pre-teacher was higher than design pre-teacher on self-regulated learning strategies. The compare analysis has reaching a significant level between environmental orientation ($F(356)= 10.399$, $p <.05$) and behavioral orientation ($F(356)= 9.264$, $p <.05$), but don't reach a significant level on process orientation ($F(356)= 2.556$, $p >.05$). Industry pre-teacher was higher than business pre-teacher of teaching profession group, and business pre-teacher was higher than design pre-teacher of teaching profession group. Business pre-teacher and Industry department pre-teacher were higher than design pre-teacher on behavioral orientation.

**Table 5.** ONE-WAY ANOVA of pre-teachers' department in self-regulated learning strategies

| Factor | Source of variation | SS | df | MS | F value | Sig. | Comparison |
|---|---|---|---|---|---|---|---|
| **environmental orientation** | between | 515.053 | 2 | 246.416 | 10.399 | .000 | Industry >Business >Design |
| | within | 19432.137 | 354 | 21.469 | | | |
| | total | 19947.189 | 356 | | | | |
| **behavioral orientation** | between | 399.609 | 2 | 198.795 | 9.264 | .000 | Business > Design |
| | within | 18349.434 | 354 | 20.202 | | | Industry > Design |
| | total | 18749.043 | 356 | | | | |
| **process orientation** | between | 193.204 | 2 | 95.592 | 2.556 | .064 | |
| | within | 31181.846 | 354 | 35.106 | | | |
| | total | 31375.050 | 356 | | | | |
| **Total** | between | 3017.653 | 2 | 1189.726 | 7.867 | .000 | Business > Design |
| | within | 162834.405 | 354 | 188.212 | | | Industry > Design |
| | total | 165852.057 | 356 | | | | |

## 4. Conclusion

The purpose of this study was to test awareness among pre-teachers using the newly developed Self-regulated learning strategies Measure (SLSM) adjust Industry 4.0 & 107 Curriculum Reform. The tool provides an alternative to existing measures where pre-teachers support self-regulation learning, with a focus on pre-teacher industry recognition, behavioral orientations and process orientations' views on self-regulated learning strategies. The consisting of three factors, the SLSM measures user perceptions of the industry, behavioral orientations, and process orientations' views on using self-regulation learning. The self-regulated learning strategies measurement (SLSM) is developed and validated through research using separate samples (Bryant, Maarouf, Burcham, & Greer, 2016; Lee, & Schallert, 2016).

In general, the validity of this study was found to support SLSM as a measure of the utility of pre-teachers in supporting self-regulation learning. The results of the CFA show that the data for the third model is the best compared to the two alternative models and that these items have good normalized loading for the hypothetical underlying factors constructs, which are less highly correlated between them. These results provide evidence of the molecular structure of SLSM and may be useful to educational researchers. A better understanding of pre-teachers' understanding of the industry will increase their awareness of self-regulation and industry-related behaviors and will make teaching more meaningful in the field of education (Marshall, Smart, & Alston, 2016; Oliver, Wehby, & Nelson, 2015).

Several researchers have demonstrated a positive relationship between pre-teacher "self-regulation learning" awareness and their teaching professionalization and industry practice ability development (Ho, Lee, & Teng, 2016; Hoffman, et al., 2016). As part of supporting industries as part of teacher education, SLSM allows researchers to measure and understand how users respond to instruction. For example, researchers investigating teaching practices to facilitate supportive industries can use SLSM to collect data on various factors that influence underlying pedagogical awareness ( Jiménez, & O'Shanahan, 2016; Macià & García, 2016; Witte & Jansen, 2016) ).

In addition, pre-teachers of in business have a higher professional performance than those in design. Masterpre-teachers have higher self-regulation learning than colleges. These findings can be used to identify teachers who can use the SLSM to gather information about pre-teacher reactions and then implement any course through pro-industry activities. This information will help teachers make decisions about resource allocation, practical instructional design and teaching strategies. For example, if pre-teachers in a school are found to have low Industry 4.0 & 107 Curriculum Reform, teachers can organize a series of mutual aid activities to highlight the potential and availability of industries and how pre-teachers can effectively learn through parenting teaching (Kilday, Lenser, & Miller, 2016).

Although this study reports the study, the structure of the factors in the SLSM needs further evaluation due to its limited validation. In particular, samples from universities institutions of higher learning may limit the universality of results and the utility of SLSM for more people. Therefore, future research is needed to examine other psychometric information on this measure. Moving forward, the SLSM factors can be modeled as structural relationships with other structures that are seen as influencing parental behavior.

In doing so, the usefulness of SLSM can be expanded to further inform researchers about the factors that affect user behavior. Such future research may be based on user demographics, such as the level of industry development, the level of industry experience, and attitudes toward industrial learning.

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# Views, Perceptions and Recommendations of Nursing Students with regard to a Screen-Based Computer Simulation: A Qualitative Study

**Aylin Durmaz Edeer[1], Aklime Sarıkaya[2]**

[1]*Faculty of Nursing, Dokuz Eylul University, Izmir,Turkey*

[2]*Faculty of Health Science, Istanbul Sabahattin Zaim University, Istanbul, Turkey*

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ABSTRACT

Educational methods should be continuously evaluated. In this study, the views, perceptions and recommendations of undergraduate nursing students with regard to a screen-based computer simulation are defined. This was a qualitative research study. Two focus group interviews were conducted. The students said that the simulation was beneficial for practice, improved their self-confidence and decision-making, and decreased the number of mistakes made. Although the students were satisfied with this method of education, they said that this simulation alone was not sufficient. They stated that it should be supported by practice in the skills laboratory to avoid doing harm to the patient in a real-world situation.

Keywords:
Nursing education, qualitative research, screen-based computer simulation

## 1. Introduction

Educational technologies provide an opportunity to create meaningful learning environments both for students and educators. These technologies provide ready access to information and can overcome some of the difficulties presented by time and place (Moyle, 2010). Different learning technologies have recently been used for this purpose at all stages of the education process in various educational settings. The use of different education technologies in nursing has been gradually increasing and the World Health Organization recommends the use of new approaches such as electronic learning and simulation in training programs (World Health Organization [WHO], 2009).

Simulation allows the student to learn the skills of clinical practice skills successfully in a non-risk environment. Different simulation methods are used in training. Among these, screen-based computer simulations or web-based simulations are the most cost-effective and favored methods (Decker, Sportsman, Puetz and Billings, 2008). These simulations are designed and programmed using computers. Training programs designed in computers can change the educational system and its structure. With computer-based training, individuals and groups learn more information in a shorter time and more quickly (Isman, 2006). In these approaches, in order to ensure that the training is of high quality and the learning efficient, continuous evaluation and improvement of the process are needed. One of the best methods to achieve this is by obtaining the students' opinions and determining their expectations.

Students' views about web-based methods in nursing have been investigated in some studies. There is, however, a limited number of studies in which students' views on web-based skills training have been assessed. In two studies, nursing students stated that web-based training provided a chance to study when

[1] Corresponding author's address: Faculty of Nursing, Dokuz Eylul University, Izmir, Turkey
e-mail: aylin_durmaz@yahoo.com
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and how they wanted to (Gerdprasert, Pruksacheva, Panijpan, and Ruenwongsa, 2010; Koch, Andrew, Salamonson, Everett and Davidson, 2010). In Leski's study (2009), the majority of the nursing students assessed web and computer-based training as positive since it provides new, integrated information and a different point of view, but as also having negative aspects since there is a lack of practical experience. In another study, all the nursing students thought that the simulation was not sufficient in terms of clinical application (Baxter, Akhtar-Danesh, Valaitis, Stanyon and Sproul, 2009). In one of Blake's studies (2010), the students stated that the ability to re-use the web-based training method was an important advantage. Furthermore, the students expressed their opinion about barriers to using the web-based learning methods. In Salyers' research (2007), it was determined that nursing students had a low level of satisfaction with web-based psychomotor skills training due to problems with the technology, software and hardware. In another study, the students reported the obstacles to web-based learning methods as being 'insufficient computer facilities, problems in online connections and technical problems' (Blake, 2010). According to the results of a systematic review of these obstacles, poorly designed training packets and insufficient technology were determined to be the main barriers in electronic learning (Childs, Blenkinsopp, Hall and Walton, 2005). In our study, these obstacles were taken into consideration when designing the web-based training. No other such studies have been conducted in Turkey on nursing students with regard to the use of web-based learning methods both for theoretical lessons and for skills training like pre-postoperative care.

Other than decreasing educational costs, screen-based computer simulation provides learning for a desired duration and in a specific place. As a result of problems identified by students, it was decided to conduct web-based preoperative and postoperative care management training. Determining students' views, perceptions, and recommendations with regard to learning pre-postoperative care management using a web-based simulation will aid in the development of this training method and lead to future studies. The aim of this study was thus to understand the views of second-year students in undergraduate nursing about screen-based computer simulation (SBCS), and to determine their perceptions of and recommendations for the training course and how it could be improved.

## 2. Method

This study was carried out using a phenomenological approach, which is one of the qualitative research methods (Yıldırım & Şimşek, 2011).

### 2.1. Participants

In the study, the students who received pre-postoperative care management using an SBCS were interviewed. The sample of the study was formed using the targeted sampling method (Yıldırım & Şimşek, 2011). The inclusion criteria included agreeing to participate voluntarily and attending simulation training and post-training evaluation. Focus group interviews were performed with students after clinical practice. A total of 41 second-year nursing undergraduate students received education about pre-postoperative care management with the SBCS. 28 students (68.3 %) out of 41 students participated in the assessments. Out of these 28 students, 24 students participated in focus group interviews. There were thus 12 students in each focus group interview. The mean age of the students was 20.2±0.8., 83.3% (n=20) of the students were female and 16.7% were (n=4) male. Since new information was not acquired and previous information was confirmed and repeated, two focus group discussions were found to be satisfactory (Yıldırım & Şimşek, 2011).

This project was carried out in a Faculty of Nursing in Izmir. In the faculty, skills are performed in skill laboratories that are similar to clinical environments. It takes four years to complete a bachelor's degree program in nursing in Turkey, and nursing education is provided to students by nurse educator and other medical professionals.

The SBCS was prepared as a web-based application. It was focused on preoperative and postoperative care management. This content is important as it provides students with competence in care management for a complex clinical situation. The design and programming of the content regarding preoperative and postoperative care management in the SBCS was carried out in conjunction with computer software engineers.

The content of the simulation was structured according to information-processing theory. In this theory, learning is explained as a process in which new information is associated with already acquired information. In structuring the care management content, a relationship was established between information learned in the previous and current classes. Topics of special importance were indicated in summaries, sample cases were included and significant relationships were emphasized (Durmaz Edeer and Dicle, 2014).

The care management content in the SBCS was prepared by two educators in the nursing school who had doctoral degrees in surgical nursing, and was further evaluated by four specialist instructors with similar doctorates in surgical nursing. In the SBCS, pre-postoperative care management topics were explained using textual information, images, flow charts, tables, sample cases and videos. There is no comparable simulation available in Turkey. In the first stage of the project, a randomized controlled trial was conducted using the SBCS to teach pre-postoperative care management to second-year nursing undergraduate students (Durmaz, Dicle, Cakan, Cakır, 2012).

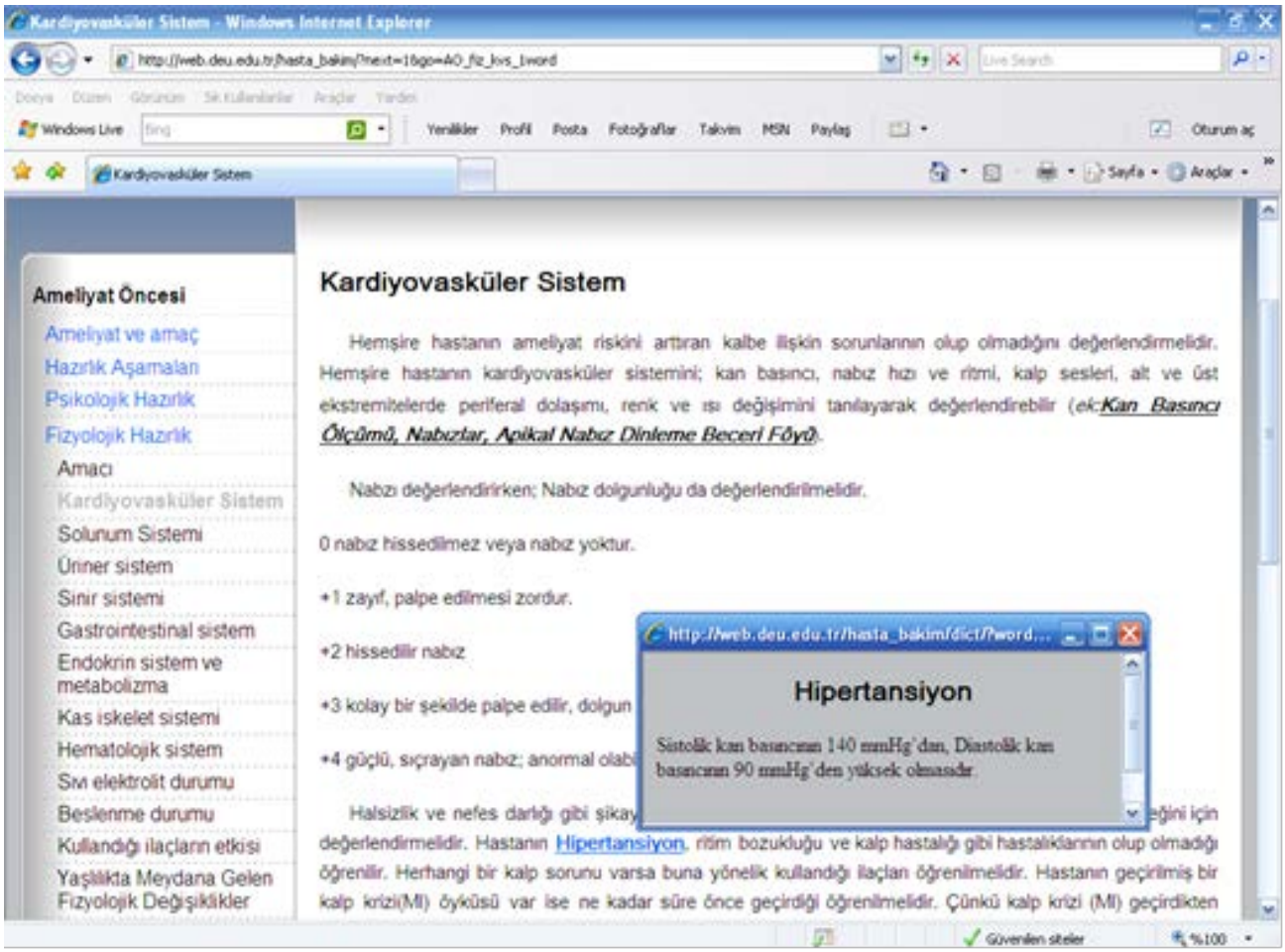


**Figure 1.** Sample screen view

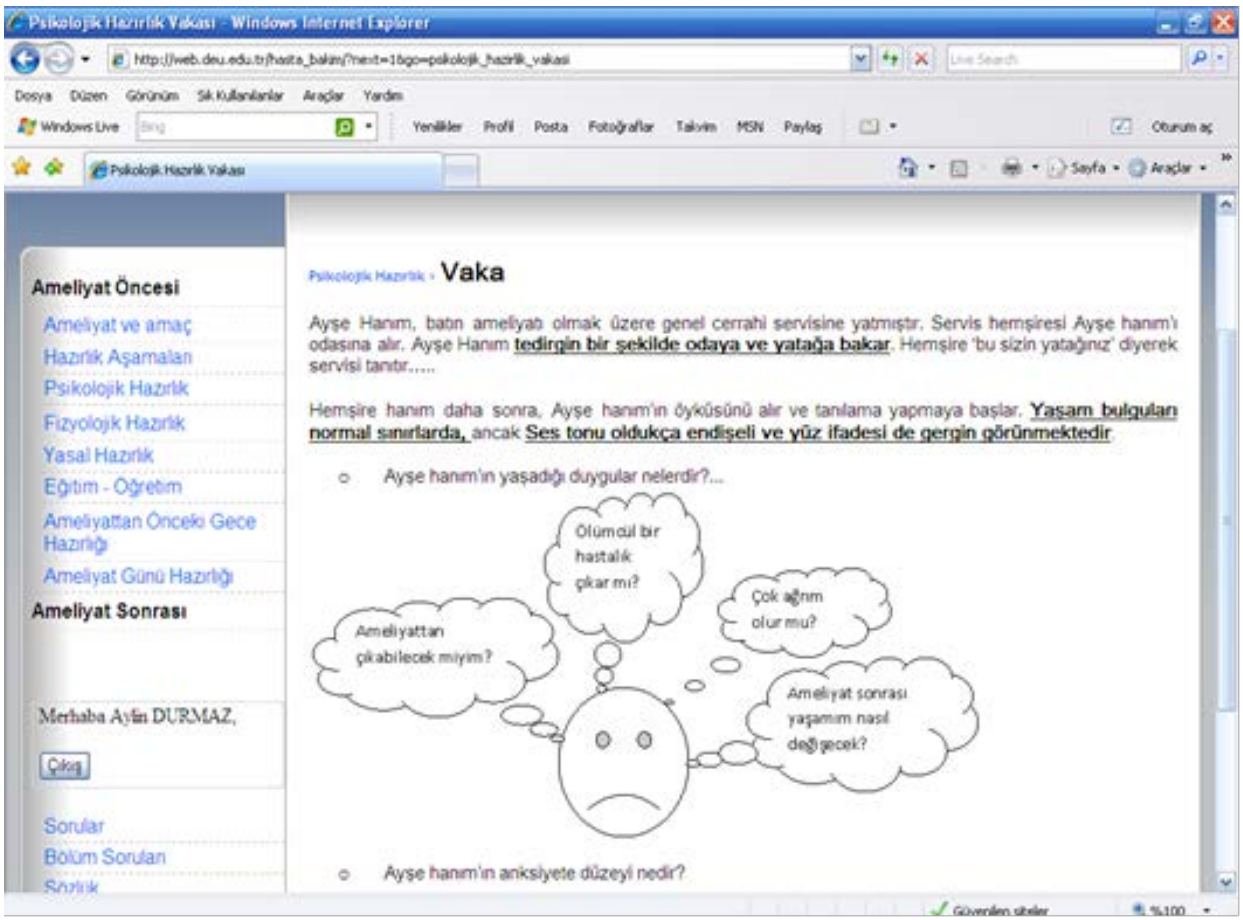


**Figure 2.** Sample case page

### 2.2. Ethical considerations

Ethics committee approval was obtained from Dokuz Eylul University and permission was obtained from the nursing school. The aim of the study was explained to the students both in written form and orally. Written consent was obtained from the students who had volunteered for the study. It was also explained to them that an audio recorder would be used and that the study data would be kept confidential.

### 2.3. Data collection

In this study, data were collected in two focus group interviews in 2010. The focus group interviews were carried out in a silent, well-lit and well-aerated room in the nursing school. The room where the focus group interviews were carried out was comfortable and all the necessary equipment was present.

Interviews were recorded on an audio recorder. They lasted for an average of 60 minutes. During the data collection, semi-structured open-ended questions were used. Prior to the interviews, the opinions of two qualitative research specialists about what to ask were sought. In the focus group interviews, students were then asked the following open-ended questions:

How do you think the SBCS has contributed to your learning?

How do you think the SBCS has contributed to your practice?

What has been the effect of the SBCS on your clinical decision making?

What is your assessment of your own ability to use the SBCS?

Are you satisfied with the training for preoperative and postoperative care management provided by the SBCS?

During the focus group interview, a 'manager' and an 'observer' were both present. The manager spoke to the student, while the observer noted specific discussion points, the students' body language and their emotional state. The main researcher, who had previously received training on how to conduct focus group interviews, took the role of manager in the first interview. This researcher was also the one who had prepared the content of the simulation content and collected the data. Therefore, when the first focus group interview was assessed, it was thought that the students may have had difficulty in expressing their real opinions to this interviewer. In the second focus group interview, the management was thus undertaken by another person who was not involved in the study, but who had also been trained in interviewing, and who had previously conducted focus group and personal interviews.

### 2.4. Data analysis

The data collected in the focus group interviews were transferred from the audio recorder to a computer. The data were recorded in the computer using codes for the students' names. The data recordings of the focus group interviews were made by the first author. For data analysis, the content analysis method was used. Content analysis was performed using the inductive method, which requires coding-based content analysis (Yıldırım & Şimşek, 2011). In the content analysis, similar data were classified under specific concepts and themes, and commented on after having been arranged in an understandable way.

In order to improve the reliability and credibility of the data analysis, the statements of the students were analyzed independently by two people and coded separately. These two people were one of the researchers and another individual who was not involved in the content of the study but who had experience with qualitative studies. Each of them performed the data analysis, drew up a code list, and decided on the theme and the sub-themes independently. The analyses were then compared, differences were discussed and common codes were determined. This process allowed for the dependability and confirmation of the research data (Elo & Kyngos, 2008; Graneheim & Lundman, 2004; Yıldırım & Şimşek, 2011).

## 3. Results

Five main themes were determined from the data obtained as a result of interviews with the students. These themes were 'learning', 'practice', 'barriers', 'attraction' and 'recommendations'.

### 3.1. Theme 1: Learning

Most of the students stated that the SBCS provided detailed and sufficient information about pre-postoperative care, and that it integrated previously learnt information with new knowledge. Most of the students reported that learning pre-postoperative care management using a computer was appropriate for understanding the subject. The students explained the effects of the SBCS on their learning as follows:

- *'Better than the skills laboratory, because the amount of information was higher; it was more detailed and explained more; we experienced many new things in the project.'*
- *'The information in the application changed my point of view'.*
- *'It was comprehensive; I think it contributed a great deal to my knowledge.'*

### 3.2. Theme 2: Practice

Most students stated that the SBCS on clinical practice improved their self-confidence, made their decision-making more effective and decreased the number of mistakes they made. They also stated that videos in the simulation were very effective and beneficial in their communication with patients. In particular, the students said that their concerns in initiating an interview with a patient had been resolved as a result of watching the videos. Some of the students' statements with regard to their practice were as follows:

- '*I think I easily used my knowledge in practice…This training was very helpful for me. I think I transferred the information I acquired into practice.'*

- *'I think that I had sufficient proficiency on this subject. I easily took care of my patients…We made very few mistakes in preoperative and postoperative care.'*
- *'It made it easier for me to decide what to do.'*
- *'Since detailed information was given, our decision-making process was shorter. We could predict probabilities in advance.*'
- *'The videos demonstrated how to communicate properly with patients...It taught me a great deal about practice and communication. It was good in this respect.'*

**3.3. Theme 3: Barriers**

About half of the students stated that they usually had technical problems using the SBCS. These barriers to use were technical problems, such as problems with internet access or their connection. Some of the students' statements about the barriers they faced in using the simulation were:

- '*We don't have access to free internet in our dorms…so we couldn't log in*.'
- '*I couldn't use it properly. I tried to use the simulation, but it was disconnected…Internet access was difficult.'*
- '*I had no internet access! So I had problems.*'

**3.4. Theme 4: Attraction**

Most of the students found the visual material and the figures in the SBCS understandable and attractive. Presenting the training material using a pedagogic approach facilitated their learning. They found the ability to re-use the simulation very helpful. In particular, they liked that the videos were in their native language. Some of the students' statements with regard to the theme of 'attraction' were as follows:

- *'I liked the videos so much! It was good to see what to do and what to say to patients in the videos...The figures given about the subject were clear…It made our understanding easier. '*
- *'When I wished to remember specific points, I could just open the program and watch it anywhere and anytime. So I think it was very helpful for us.'*
- '*I also think it is good for the program to be online! I could access it whenever I wanted. We can use it whenever we find a computer with internet access, everywhere and all the time.'*

**3.5. Theme 5: Recommendations for the simulation**

Most of the students suggested that the visual material (number of videos, photographs and other images) in the SBCS for care management should be increased in order to better contribute to learning and practice. They said that the meaning of medical terms, particularly in cases related to the subject and research results, should be provided. Finally, they emphasized self-assessment; they requested that tests be included and that answers be evaluated with immediate feedback. They also wished to have the chance to provide feedback to the educator. Some of the students' statements related to these suggestions were:

- '*There are many words that we don't know or whose meanings we get confused about. It would be perfect if their meanings were given.*'
- '*In the online training, sample cases and questionnaires or short tests could be given after each topic*.'
- *'It is important to have tests. In particular, if feedback were given about our mistakes and the correct answers were explained, we would be able to remember them better*.'

Although the students felt that the SBCS was very useful, they said that it should be supported by practice in the skills laboratory, since it is not solely sufficient for their learning.

- '*It is not sufficient to read about a subject or watch something on a screen. I think that I understand better, do things better and learn more when I practice something in the skills laboratory. Hence, I think computers are not sufficient*.'

Moreover, the students stated that simulation was very useful in learning communication techniques and how they should begin and maintain communication with the patient.

- '*It would be better to learn not only professional skills but also communication techniques. It may be more helpful to demonstrate the right and wrong ways to communicate*.'

These results revealed the students' ideas about the benefits and limitations of SBCS. Furthermore, the students' views about the characteristics they found impressive and those that they felt needed improvement have also been given.

**4. Discussion**

This qualitative research shed light on undergraduate nursing students' views, perceptions and recommendations with regard to the SBCS. Almost all the students said that the SBCS provided detailed and sufficient information on pre-postoperative care management, integrated previous and new information, and that it included interventions for nursing care. In the study of Leski (2009), nursing students stated that web and computer-based training which provides new and integrated knowledge also creates a new point of view. It is thought that the SBCS provided the information needed by the students for pre-postoperative care management; it was helpful for them to be able to correlate videos with specific cases and knowledge.

Most of the students said that learning care management through the SBCS was useful, but that it was not sufficient alone and that it should be supported by skills laboratory practice. In the study of Leski (2009), the negative aspect of web and computer-based training expressed by nursing students was the lack of practical experience involved. Students said that computer and web-based training was not useful in acquiring skills, but was helpful for clinical preparation. In the study of Terzioglu et al. (2012), the nursing students stated that simulation training is beneficial.

In another study, all students thought that simulations were insufficient for clinical practice (Baxter et al., 2009). Our findings are similar to the results of this study. The students assessed the lack of practical experience in the simulation as negative. Despite this fact, the students stated that they felt themselves competent in clinical practice and were self-confident. In addition, they said that the simulation made decision-making easier, decreased the number of mistakes made, and that the videos helped them in communicating with patients. In spite of the limitations in practice, students had acquired knowledge. The practical limitations experienced could be decreased by including virtual reality elements in the simulations. However, due to the expense, it may be more helpful to plan the training for topics with high cognitive content and requiring communication management, rather than for practical skills.

In learning communication techniques that can be difficult to put into practice, a simulation may have an advantage, as it can be easily and repeatedly re-used. Furthermore, the students' statements suggested that they had made safe decisions for their patient in clinical practice. In this regard, an SBCS may be used as a training method for transferring knowledge into practice and accomplishing reliable patient care.

The use of the internet can be a double-edged sword. The web can offer opportunities to engage students in a dynamic learning experience, but it can also present challenges in the appropriate use of the technology (Hart, 2012). About half of the students stated that they had problems using the SBCS. Factors that hinder the use of simulations include technical problems such as troubles with internet access and connections, and materials, such as programs or videos, that cannot be opened. In the systematic review of Childs et al. (2005) on obstacles to learning in an electronic environment, inadequate technology was among the main barriers. In the study of Salyers (2007), nursing students who received web-based training displayed low satisfaction due to problems with technology, software and hardware. In the study of Blake (2010), students stated the barriers to using web-based learning methods were the inadequacy of computer facilities, problems with online connections and other technical problems. These obstacles were similar to those found in previous studies. Minimizing the barriers preventing the use of these methods may increase their use. To achieve this, an adequate technological infrastructure needs to be created.

In terms of pre-postoperative care management taught using an SBCS, most of the students stated that visual materials (images, videos etc.) should be included, content should be provided in a step-by-step manner, and they also said they were pleased that they could connect to it whenever they wished. In other studies, students said that web-based methods allowed them to study where and how they wished (Gerdprasert et al., 2010; Koch et al., 2010). In the study of Blake (2010), students stated that the repeated use of web-based training was important. Being able to access knowledge whenever and wherever it is wanted and the presence of

understandable visual material increases usage. Web-based training is often preferred to other training methods due to its low cost and ease of access. It should be considered as an alternative option due to these characteristics.

Most of the students stated that the SBCS was appropriate and made learning pre-postoperative care easier. Since second year students are obliged to incorporate previous and new knowledge in the management of pre-postoperative care, they can face difficulties in making connections between the two and have problems in applying them in clinical environment. The students were satisfied that the simulation helped solve these problems. As a result of these assessments, it would be helpful if web-based simulations were improved and used for topics which students have difficulty learning and understanding.

This study assessed the views, perceptions and recommendations of undergraduate nursing students who had received pre-postoperative care management through an SBCS. An SBCS allows students to access education whenever they want to and wherever they are, which strengthens self-learning in student-centered training models. In conclusion, the results of this study suggest the use of an SBCS is beneficial in aiding communication with patients and supports self-learning. The results also emphasize that web-based learning methods need to be improved.

In future studies, it is necessary that simulations specific to different clinical conditions be developed and that their effects on transferring knowledge into practice in nursing education be evaluated. It is recommended that the focus be placed on simulations directed towards developing problem-solving and decision-making in nurses.

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# Chinese Students' Cultural and Behavioural Differences among Domestic and Internationally Oriented Educational Institutions

**Ron Haarms[1], Jed Holtzman[2], Tiki Xue[3], Dominic Darbyshire[4]**

[1,2,3,4]*Southville International School: Affiliated with Foreign Universities, Philippines*

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ABSTRACT

Research has found a link between active student participation in the classroom and memory retention. Participation can encompass many aspects, including asking questions in class and partaking in classroom activities. Extensive studies have been conducted on Chinese students concerning their overall involvement in class. When compared to their Western counterparts, Chinese students are often regarded as silent passive learners (i.e. not active), hence negatively affecting their ability to learn in the classroom environment. The changeability of education together with ongoing globalization has led to an increase in Chinese students going abroad. As a result, there has been an increase in demand for international high schools and other educational training centres that prepare Chinese students for tertiary education in the West. This research investigates classroom behaviours and face values of students attending a Chinese international high school and compares them with students attending a conventional Chinese public high school. A MANOVA is used to assess these differences based on a questionnaire submitted to 349 students from Taiyuan, Shanxi province in China. Results show that students following an international program ask more questions in class, but no difference is found in regards to the Chinese cultural value of face. Subsequently, auxiliary qualitative research was performed to clarify quantitative outcomes. These outcomes showed that efforts to save face, academic pressure, classroom environment, and pre-existing individual factors contribute to this found difference.

Keywords:
Classroom behaviour, international education, face value

## 1.Introduction

International education is on the rise, and Chinese students are leading the race. More and more students from China are looking to further their studies in Western educational institutions; in 2014 there was an 11% increase of Chinese students studying abroad, and although data is yet unavailable, this increase is expected to further expand (ICEF Monitor, 2015). The most popular places to go to are the United States, the United Kingdom, Australia, and Canada. Out of the almost one million international students in the U.S., one third are Chinese (Allen-Ebrahimian, 2015). The influx of Chinese students to the West has resulted in an increased interest in the underlying academic attitudes and behaviours of this particular group of students. In the Eastern-style classroom, students primarily listen and show respect to the teacher; they follow traditional manners in hope of achieving harmony. In contrast, students in the Western-style classroom are encouraged to raise questions and challenge the teacher for the purpose of promoting critical thinking skills (Roberts and Tuleja, 2008). Chinese education has been greatly influenced by Confucian values of respect for authority and seniority, while Western education has been influenced by the Socratic method of questioning (Lehman and Tweed, 2002).

These differences have led to a tendentious assessment of Chinese students by Western teachers. According to anecdotal evidence, Chinese students are considered shy, and show little participation in class. They are

[1] Corresponding author's address: Southville International School: Affiliated with Foreign Universities, Philippines
e-mail: rhaarms@southville.edu.ph
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passive learners and value the teacher's opinion over those of their peers (Roberts and Tuleja, 2008). Though they value their teacher's insights, they do not ask many questions in class.

The different academic attitudes of Chinese students can be explained using Hofstede's factors of cultural diversity. Hofstede's factors include: power distance, individualism versus collectivism, uncertainty avoidance, masculinity versus femininity, long-term versus short-term orientation, and indulgence versus restraint. Particularly eminent factors in the Chinese educational setting are collectivism and power distance. Collectivism in cultures relates to identifying in-groups and out-groups, working on tasks together, and focusing on commonalities within a group (Basu-Zharku, 2011). In traditional Chinese culture, the idea of collectivism comes from values of respect for age and hierarchical position, group orientation, face, and relationships (Lockett, 1988). Collectivism leads to different norms and expectations within a society. Power distance as a factor of cultural diversity can be considered when members of a society expect power to be distributed unequally (Hofstede, 1985). It has been argued that respect for authority has an effect on the educational attitude of learners (Hwang, 1994). This could lead to a constraint in asking questions to a person in power (i.e. the teacher) since this might be seen as a challenge to the person of authority.

Collectivism and power distance are universally applicable concepts in terms of human behaviour. These factors of cultural diversity contribute to an ideological value which is distinct to Chinese society and is often referred to as face. The Chinese cultural focus on face can be defined as "the need to be respected by others and not be embarrassed in social situations" (Hwang, 1987). In regards to education, this value of face is related to certain classroom behaviours. For example, it can lead to the avoidance of answering difficult questions posed in public (e.g. during class). This type of behaviour can become problematic when a student doesn't learn the content because they do not try to answer questions asked by the teacher. Asking questions tends to be difficult as well, since not understanding something might be considered a lack of diligence or knowledge on the student's part. The behavioural observations by Western educators of Chinese students that they are shy and do not actively participate have been attributed to this specific cultural value of "face", and this jargon is preferred by educational researchers.

Face can have negative effects on academic performance and is therefore a topic of interest among educational researchers. It is evident that face is related to classroom behaviour and more specifically to feedback seeking behaviour in class. Moreover, it has long been accepted that active feedback seeking behaviour is positively related to multifarious cognitive aspects, such as critical thinking (Smith, 1977), motivation (Karabenick & Knapp, 1991), and intellectual development (Belensky, Clinchy, Goldberger, & Tarule, 1986). A student's behaviour in the classroom is regarded as representative of one's educational attitude, which is based on environmental factors and cultural influences. Inherent ideologies and values that are based upon cultural aspects are difficult to change. A student's behaviour however, can be considered malleable through environmental factors.

This is where international preparation programs come in place, and it is a booming business (Clark, 2014). Preparatory international schools are on the rise in China, promoting an educational environment that cultivates their students' academic attitude. Using an international style curriculum and appointing foreign teachers to deliver some or many of the courses, these schools try to simulate classes similar to those of Western countries. Through this simulation, students are expected to have a smooth transition for when they attend school in the West. In this paper the researchers assess face values and classroom behaviours of high school students in mainland China. A comparison is made between students attending an international program and students that follow the regular Chinese program. It is hypothesized that students who have been exposed to foreign teachers and their Western methods do not differ in face values but do differ in their classroom behaviour, compared to students that follow the domestic Chinese education.

## 2. Method

This research uses a quantitative and qualitative mixed methods approach. Data collection is of a descriptive nature. Quantitative results are followed by focus group qualitative data collection.

### 2.1.Participants

The participants in this study were Chinese students, grades seven to 12. All the students attended the

Subsidiary High School of Taiyuan Normal University, located in the capital of Shanxi Province, China. Half of the participants from this school attended the international high school department, which only included grades 10 to 12. These internationally bound students took classes which followed a mixed curriculum incorporating the local Chinese curriculum and a partner American high school's curriculum. The other half of the participants attended the same school but not in the international department. These participants were students from grades seven to 12 and they only followed the Chinese curriculum.

**Table 1.** Participant demographic information for Quantitative data

| Item | Category | Number |
|---|---|---|
| Gender | Male | 154 |
| | Female | 179 |
| Grade | Middle School (7-9) | 126 |
| | High School (10-12) | 223 |
| Department | Chinese school | 254 |
| | Chinese International school | 95 |

*n*=349 (16 missing items for gender)

Quantitative data results were followed up by four different focus-group discussions, with students and teachers. Participant distribution can be found in table 2.

**Table 2.** Participant demographic information for Qualitative data

| Focus Group | Category | Number |
|---|---|---|
| International students | Chinese International school | 4 |
| Public school students | Chinese school | 5 |
| Mixed | Chinese International school | 3 |
| | Chinese school | 2 |
| Teachers | - | 7 |

*n*=21

**2.2.Instruments**

The quantitative instrument used for this research was a 15 questions survey. Hwang, Ang, and Francesco (2002) created a valid and reliable questionnaire to assess cultural values and classroom behaviours specifically for Chinese students. For this paper a translation of the questionnaire into Chinese was used due to participants' varying levels of English. The questionnaire used was translated using forward and backward translation by three bilingual experts. Afterwards a pre-test was done using cognitive interviews, hereby following the translation process described by Su and Parham (2002). The questionnaire has five factors. INask, questions are related to feedback seeking behaviour in class. Facegain, consisting of statements related to the importance of gaining face. Faceloss, about the perceived importance of losing face. Outcheck, related to feedback seeking behaviour outside of class with other students. Finally, Outask, related to feedback seeking behaviour outside of class with the teacher.

Focusgroup discussions were used to collect qualitative data. Questions discussed focused on explaining quantitative outcomes. Four focus group discussions were held. A group with international students, a group with public school students, a mixed group of students with international and public school students, and a group of teachers.

Focus groups discussed the following topics:

- How are face values manifested in the current sample?

- Are there differences in feedback seeking behaviour between international and public school students?
- What are factors that are related to differences in feedback seeking behaviour between international and public school students?

**2.3.Analyses**

Quantitative data was analysed using both descriptive and inferential statistics. In the MANOVA the independent variable is school (public high school, international school, public middle school) and the dependent variables are factors measured by the questionnaire (Inask, Outcheck, Incheck, Facegain, Faceloss). The MANOVA was followed by ANOVA's for each dependent variable.

Qualitative data was analysed by transcribing the raw data from the focus group discussions into a text format. This text was then analysed and nodes were assigned to common themes discussed in the different focus groups, using the Nvivo software. These nodes were then cross referenced among different groups and summarized in the results section.
Follow-up focus group interviews are used to explain quantitative findings. Findings found that students in the international education environment did not differ from students in the Chinese public education environment in terms of face values, but they did differ in terms of asking questions in class. After analyzing the data, concerning why Chinese international students asked more questions than Chinese public school students, three categories surfaced, including: face and pressure, classroom environment, and individual factors.

## 3. Results

### 3.1. Quantitative Data Analysis

The Multivariate outcome is significant for the students' school. Pillai's Trace = .11, F(10, 660) = 3.99, p = .000. Further investigation using separate ANOVA's are reported in Table 1. Adjusting omnibus criterion of significance calculated through the Holm-Bonferroni Sequential Correction shows significant differences for the variables OUTcheck (F(2, 341) = 8.67, p = 0.000 ($\alpha$'=0.01) and INask (F(2, 344) = 6.46, p = 0.002 ($\alpha$'=0.0125).

**Table 1.** ANOVA's report

Anova's

| | | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|
| Inask | Between Groups | 290.621 | 2 | 145.310 | 6.459 | .002 |
| | Within Groups | 7738.514 | 344 | 22.496 | | |
| | Total | 8029.135 | 346 | | | |
| Outcheck | Between Groups | 252.371 | 2 | 126.185 | 8.669 | .000 |
| | Within Groups | 4963.556 | 341 | 14.556 | | |
| | Total | 5215.927 | 343 | | | |
| Faceloss | Between Groups | 12.366 | 2 | 6.183 | .271 | .763 |
| | Within Groups | 7771.030 | 341 | 22.789 | | |
| | Total | 7783.395 | 343 | | | |
| Outask | Between Groups | 15.133 | 2 | 7.567 | .458 | .633 |
| | Within Groups | 5664.869 | 343 | 16.516 | | |
| | Total | 5680.003 | 345 | | | |
| Facegain | Between Groups | 4.338 | 2 | 2.169 | .322 | .725 |
| | Within Groups | 2310.645 | 343 | 6.737 | | |
| | Total | 2314.983 | 345 | | | |

**Outcheck**

Outcheck differences were determined by one-way ANOVA. Due to violation of the homoscedasticity assumption the Games-Howell test was used for further post hoc investigation and can be found in Table 2. The average score on OUTcheck of students from the international high school was significantly lower (M= 13.89, SD = 3.49) than the public high school students (M=16.04, SD=3.44) and the public middle school (M=15.40, SD=4.37). The effect size is small, $\eta^2$= 0.048.

**Table 2.** Games-Howell Post-hoc test for OUTcheck

| | | | | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | (I) School | (J) School | Mean Difference (I-J) | Std. Error | p | Lower Bound | Upper Bound |
| Games-Howell | International High School | Public High School | -2.148* | .474 | .000 | -3.27 | -1.03 |
| | | Public Middle School | -1.512* | .536 | .014 | -2.78 | -.25 |

*The mean difference is significant at the 0.05 level.

**INask**

INask differences were determined by one-way ANOVA. Tukey HSD post hoc criterion for significance is used and can be found in Table 3. The average score on INask of students from the international high school was significantly higher than the public middle school students (M=10.33, SD=4.86). The effect size is small, $\eta^2$= 0.036.

**Table 3.**Tukey HSD Post hoc test for INask

| | | | | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | (I) School | (J) School | Mean Difference (I-J) | Std. Error | p | Lower Bound | Upper Bound |
| | International High School | Public High School | 2.190* | .646 | .002 | .67 | 3.71 |
| | | Public Middle School | 1.903* | .648 | .010 | .38 | 3.43 |

*The mean difference is significant at the 0.05 level.

**3.2. Qualitative Data Analysis**

**Face and pressure.** A reoccurring theme brought up during the focus groups included the need to save face and pressure. In other words, the students' willingness to participate depended on either fear of losing face or pressure from the teacher and the over all academic environment. Both the Chinese international students and public school students said they feared other students would laugh at them if they asked a low-level question. One student said, in order to save face, they would pretend to understand the questions posed in

class, even though they didn't. Another student mentioned that he/she felt ashamed to ask further questions due to prior response of other students to his/her previous question. Some students from the public school said they would save their questions to ask other students after class. The teachers in the focus group do not believe face is the primary reason. They believe it is mainly due to students' personalities, study habits, learning efficiency, class topic, and teaching style.

Students from both the international and public school said the differences in pressure attributed to their willingness to ask questions. For example, if the classroom environment is more relaxed and students have a good relationship with teachers, they will participate. Due to an often stressful environment due to pressures to perform well on the Chinese university entrance exams (Gaokao), some public students didn't feel comfortable asking questions. They also mentioned that the teacher has so much material to teach in preparation for the Gaokao, there is also not enough time. General conscientious among all students is the international department is overall more relaxed. One student from the international department did argue that they might not have the Gaokao, but they do have to prepare for exams like SAT, TOEFL, and AP.

**Class environment.** Focus group discussions found class environment to be a significant factor in students' classroom behaviour. Students and teachers discussed issues like overall atmosphere (e.g. stressful, quiet, lively, etc.), classroom topic, teaching style of teacher, and classroom size. Of the 21 interviewees, 12 felt teaching style either negatively or positively affected students' willingness to ask questions in class. Two of the seven teachers mentioned teaching style as a factor, while 10 of the 14 students identified it as a factor. A public school science teachers said, "If the teacher encourages the students to express their opinions freely, they will be more confident to do so, but if the teacher is strict and temperamental, students will not open their mouth". A public school student reiterated similar sentiments, "I will feel nervous if the teacher criticizes me". Among the three student focus groups, a common theme that came up was the difference in teaching styles among Chinese teachers and their foreign counterparts. Whether perceived or experienced, students generally felt there was a difference; that difference usually included Chinese teachers being stricter while foreigners were open and active.

After teaching style, students and teachers said the overall atmosphere affected classroom behaviour. If the students feel they are in a pressured atmosphere where they have to take in a lot of knowledge, they are less likely to actively ask questions. Students and teachers said if there is too much information to accumulate, there is not enough time to ask questions. At the same time, some students fear they might waste other students' time if they ask a question, especially an easy one. All groups stated that the pressures in the public high school are greater due to the Gaokao (Chinese University Entrance Exam). One student from the international department countered that argument with the pressures international students have with TOEFL, SAT, and AP tests, but the overwhelming conscientious was that the international department offered a more relaxing environment.

The last two issues concerning class environment discussed during discussions include class size and classroom topic. All but two of the student participants mentioned classroom size affecting their willingness to participate. The larger the class, the less likely they are to ask a question because they are fearful of making a mistake in front of many students and they don't want to waste other students' time. Classroom topic also had a relatively high influence. If the student enjoys the subject, the more likely they will remain engaged, and vice-a-versa. One public school student noted, "In art class, students take notes carefully, but the situation is different in science class".

**Individual factors.** Individual factors, such as home situation and personality traits, were also discussed during focus groups. Public school students agree that family situations have no influence on their behaviour in class. To the contrary, some international students propose that parents' personality traits reflect the students' attitude in class. For example, one student said, "My parents are conservative, so I don't like to ask questions".

Teachers in the focus group argue that personality differences play a big role in the students' behaviour. They also believe that these differences exist between international and public high school students. For example, one teacher argues, "Students from the public high school tend to be conservative and, you know,

very typical in Chinese traditional culture. But for the international school students, they are more open-minded, more free-wheeling". It is argued that this influences their feedback seeking behaviour and increases their willingness to ask questions in class. Another difference the teachers see is the attitude towards education. According to them, the international students and parents see themselves as "customers" (it is a private school) and they believe the school should serve them well without any consideration.

To conclude, focus group interviews with students and teachers from international schools and teachers discovered various reasons for student participation – or lack thereof – in class. According to the groups, efforts to save face, academic pressure, classroom environment, and pre-existing individual factors all affect students' classroom behaviour.

## 4. Conclusion & Discussion

Previous research has clearly demonstrated that class participation improves deep learning and knowledge retention (Smith, 1977; Karabenick & Knapp, 1991; Belensky, Clinchy, Goldberger, & Tarule, 1986). Chinese education has traditionally applied a strictly didactic approach, while this has proved successful at primary and secondary level its effectiveness has been questioned at tertiary level where deeper learning is required. The large numbers of Chinese students entering western style education has also served to highlight the gap between an Asian didactic approach and the western dialectic approach. This gap has been especially damaging in arts and social studies majors where students are required to explore the subject under guidance, rather than be provided with ready made answers.

Previous research has identified a range of factors which underpin Chinese student behavior including – English language skills, saving face behavior, modesty related to Confucian values and Kiasu. This report indicates that smaller groups, improved language skills and closer teacher relationship can reduce 'silent student' behavior by impacting on the first three factors - language skills, face & modesty. Conversely the qualitative data indicates that the high competition associated with international programmes, and the associated qualification for foreign universities, can increase Kiasu behavior which results in a reduction in questioning and class interactions.

International schools, in China, are proving to be effective at preparing students for overseas universities by challenging the rigid assumptions of state education. Smaller class size and improved transparency have impacts on class interactions。Overseas educators further shift the permissible behaviors and are in high demand precisely because of their ability to engender new behaviors in Chinese students by breaking the existing educational paradigm.

## 5.Limitations

Despite the relationship found in this study between classroom behaviour and learning environment, there are a number of limitations which must be addressed. First of all, though the students in the international high school clearly have a lot of exposure to learning environments that encourage active participation, it does not necessarily mean all the public school students have not been exposed to the same environments in some capacity. It is very common for Chinese students – particularly students residing in urban settings – to attend English training centres that employ foreign teachers. Furthermore, in a globalised world, educational systems all around the world are sharing ideas and theories. Over the last century, China has moved—and continues to move—from a traditionally Chinese system to a more Western-style of education, which includes curriculum and teacher expectations (Niu, 2007). Therefore, though the international students have a specific curriculum preparing them to go abroad, similar elements might be present in public school students' educational experiences.

Generalisation of found results should be limited to a similar socio-economic grouped population. The Subsidiary High School of Taiyuan Normal University is a relatively affluent high school located within the city boundaries. Students who have the privilege of attending international high schools with the purpose of attending universities abroad are overwhelmingly well-off for the simple reason that is it expensive to go to schools overseas.

Due to the descriptive nature of the used research methodology a causal interpretation is not justified. This was addressed during qualitative data gathering and findings suggest that pre-existing differences might have contributed to the found significant effect. For example, students in the international school are described as more open, this personality type could contribute to differences in feedback seeking behaviour, as has been suggested in other contexts (Krasman, 2012).

## 6. Suggestions for future research

To further show the influence of face on classroom participation, students from the Chinese countryside with no exposure to Western methods can be compared to Chinese high school students already living abroad. This research believes the dichotomy would be even greater. Furthermore, other variables that could influence classroom behaviour could be tested in more depth. Examples could include: class size, teaching styles, personality traits, and more.

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# Predictors of Self-Esteem in Physical Education: Self-Determination Perspective

**Emre Karaday[1], Gökçe Erturan İlker[2]**

*[1]Teacher of Physical education, [2]Pamukkale University, Faculty of Sport Sciences, Turkey*

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ABSTRACT

This study aimed to explore the relationship between basic psychological needs, motivational regulations, and self-esteem in Turkish high school physical education environment. Nine hundred and fifty seven high school students (505 girls, 452 boys) were applied the questionnaire pack in physical education lessons. Students' general self-esteem, basic psychological needs and motivational regulations toward physical education were assessed. Hierarchical multiple regression analysis results revealed that Turkish high school students' autonomy, competence, and relatedness need satisfaction in physical education positively predicted students' global self-esteem. Physical education teachers were recommended to consider creating need supportive lesson environment for adolescents to enhance their optimal psychological functioning and well-being.

Keywords:
motivational regulation, basic psychological needs; adolescents; well-being

## 1. Introduction

Physical education (PE) has a great potential to promote youth physical activity because it comprises all individuals from childhood to adolescence. To support participation in PE and to provide healthy physical activity through PE students' motivational elements should be considered (Hagger et al., 2005).

A widely used contemporary theory to understand students' motivation in PE is Self-Determination Theory (SDT; Deci & Ryan, 1985). Research in PE context adopted this theory to facilitate our understanding of students' motivated behaviours and their cognitive, affective, and behavioural consequences. Although SDT is relevant across cultures, related outcomes are considered to be varied as a function of age and cultural background.

SDT identifies three forms of motivational regulations which are considered as a continuum from higher to lower levels of self-determined motivation. Intrinsic motivation is revealed when a person is motivated to participate in activity for fun or challenge required in the behaviour. In contrast extrinsic motivation is separated into four categories which vary in their relative degree of self-determination. External regulation can be defined as participating in activity because of external pressure, threat or punishment; introjected regulation is participating in activity because of internal pressure, guilt or shame; identified regulation is participating in activity because of believing in its importance and utility, and integrated regulation is participating in activity because of finding it congruent with personal goals and values. Lastly, in the situations people have neither intrinsic nor extrinsic motivation, they have amotivation. Amotivation is the belief that in activity is not important or not provides desired outcomes. In this self-determination continuum intrinsic, integrated, and identified regulations are self-determined, introjected regulation, external regulation, and amotivation are non self-determined form of motivation (Deci & Ryan, 2000).

[2]Corresponding author's address: Pamukkale University, Faculty of Sport Sciences, Kınıklı Campus, Denizli
Telephone: 0258 296 1285
e-mail: gokce.erturan@gmail.com
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SDT suggests that motivational regulations can be affected by contextual factors, such as teachers' teaching styles. These factors can influence students' motivation and engagement in learning environment by supporting or thwarting their basic psychological needs, namely need for autonomy, competence and relatedness. Autonomy need refers to a feeling the origin of the behaviours and feeling congruence between an activity and one's values; competence need is to experience sense of effectiveness in producing desired outcomes and relatedness need is feeling connected to significant others or feeling belonging to a social environment (Deci & Ryan, 1985; 2000). Hein and Caune (2014) argued that autonomy need satisfaction and self-determined motivation in PE facilitates the students to feel physically well which causes them to put more effort on physical activities and involve in physical exercise during their free time, which is the main objective of PE.

According to Vallerand (1997)'s hierarchical model various types of motivation had a meditational role between basic psychological needs and cognitive, behavioural, and psychological outputs. Past research has explored the aforementioned sequence in PE context (e.g., Ntoumanis, 2001; 2005; Standage, Duda, & Ntoumanis, 2003). Adaptive outcomes are derived from self-determined types of motivation (i.e., intrinsic motivation and identified regulation), oppositely maladaptive outcomes are resulted from low and non-self-determined types of motivation (i.e., external regulation, and amotivation).

Global self-esteem is one of the important outcomes that effects the quality of education due to its impact on psychological well-being (Deci & Ryan, 1995). Because when a person is not concerned about his self-esteem, the worth of the self is not an issue thus optimal well-being is more likely to be provided (Ryan & Brown, 2003). According to Ryan and Brown (2003) the absence of self-esteem is expected to be a sign of psychological need deficiencies and when these needs are thwarted self-esteem is damaged. In other words, because they are missing a sense of love, people with low self-esteem, don't feel worthy, authenticity, or effectiveness.
Existing literature has proved that self-esteem is linked with academic strivings and academic performance (Baumeister, Campbell, Krueger & Vohs, 2003). Indeed, Bowles (1999) argued that self-esteem is a result, not a cause, of success in school. PE context in particular, offers students activities, exercises and tasks to judge their own performance and compare with their counterparts'. Thus, PE entails social comparison which evokes self-esteem through self-evaluation process (O'Rourke, Smith, Smoll, & Cumming, 2012). Researchers have suggested that PE can enhance academic performance by improving self-esteem (Hills, 1998).

There have been contradictory research findings related to changes of self-esteem along with the students' age. Some have manifested that self-esteem declines with age (e.g. McMullin & Cairney, 2004; Orth, Trzesniewski & Robins, 2010), while others have showed that younger people have lower self-esteem (e.g. Brent Donnellan et al., 2012). On the other hand, researches related to gender effect on self-esteem have had similar results. Namely, men have higher self-esteem than women at not only adolescence period (McMullin & Cairney, 2004; Moksnes & Espnes, 2013; Sipos et al, 2015) but also during adulthood in different cultures (Bleidorn, Arslan, Denissen, Rentfrow, Gebauer, Potter & Gosling, 2015).

Although self-esteem and self-determined motivation have been linked in different studies (e.g., Kalaja, Jaakkola, Watt, Liukkonen & Ommundsen, 2009; Kernis, Paradise, Whitaker, Wheatman & Goldman, 2000; Mabekoje & Okubanjo, 2009; ), students' self-esteem and their motivation in PE have received little research attention (e.g., Hein & Caune, 2014; Hein & Hagger, 2007; Koka, 2014; Standage & Gillison, 2007). However, manifesting the link between these variables helps us to understand which motivational agents effect students' global self-esteem in PE.

On the other hand, no study has been done to explain the predictors and consequences of motivational regulations in Turkish PE context. High school PE in Turkey is compulsory which is hypothesized to enhance students' amotivation (Ntoumanis, 2005). Therefore, drawing from SDT and past research evidence, this study aimed to explore the relationship between basic psychological needs, motivational regulations, and self-esteem in Turkish high school PE environment.
In line with the past research (Hein & Hagger, 2007) we hypothesized that students' basic psychological needs satisfaction, intrinsic motivation and identified regulation would predict their self-esteem positively, while

extrinsic regulation and amotivation would explain self-esteem negatively. Along with existing literature (McMullin & Cairney, 2004) age and gender were also hypothesized to be the significant predictors of students' self-esteem.

## 2. Methods

This research has quantitative, cross-sectional design.

**2.1. Participants.** Nine hundred and fifty seven high school students (505 girls, 452 boys) participated voluntarily to the study. The participants ($M_{Age}$ = 16.27 ± 1.13) were attending eight different public high schools located in the central district of Denizli. Table 1 shows the distribution of participants by gender and grade level.

**Table 1.** The distribution of participants by gender and grade level

| | Grade Level | | | | |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **Total** |
| **Girl** | 188 | 107 | 131 | 79 | 505 |
| **Boy** | 149 | 98 | 116 | 89 | 452 |
| **Total** | 337 | 205 | 247 | 168 | 957 |

**2.2. Procedure.** Prior to data collection permissions from Ministry of Education and Ethics Committee were obtained. The students were requested to anonymously respond to a questionnaire pack before or during their scheduled PE classes by the researchers. The participants were explained that there were no right or wrong answers, emphasizing that they do so as personally and honestly as possible, they could withdraw from the study at anytime without any negative consequences and their answers will not share with their teachers or parents. The questionnaire pack took approximately 20 minutes to complete.

### 2.3. Measures

***2.3.1.Basic psychological need satisfaction.*** Need Satisfaction Scale was developed by Deci and Ryan (1991) and adapted into Turkish by Bacanlı and Cihangir-Çankaya (2003). Confirmatory factor analysis results of the scale were; *RMSEA*= 0.07, *GFI*= 0.86, *AGFI*= 0.82, *CFI*= 0.82, *NNFI*= 0.80 (Cihangir Çankaya, 2009). The scale consists of 21 items and three subscales, namely autonomy (six items), competence (six items), and relatedness (nine items). It is 7-point Likert scale (1 = not at all true of me; 7 = very true of me). The scale showed adequate validity and reliability for both the total scale and the subscales with Turkish sample (Bacanlı & Cihangir-Çankaya, 2003). Example item for autonomy subscale is "I feel that I have freedom to decide how I live my life"), for competence subscale is "Recently I have learnt new and interesting skills") and relatedness subscale is "I get on well with the people around me".

***2.3.2. Motivational regulations.*** The Situational Motivation Scale was developed by Guay et al. (2000) and adapted into Turkish by Kazak Çetinkalp (2010). Confirmatory factor analysis results of the scale for the Turkish PE environment were; *RMSEA*= 0.06, $\chi^2/sd$= 2.06, *GFI*= 0.92, *AGFI*= 0.89, *NFI*= 0.94; *NNFI*= 0.96, *CFI*= 0.97 (Daşdan Ada, Aşçı, Kazak Çetinkalp, & Altıparmak, 2012). Participants of the study responded the 7-point Likert type (1 = not at all true of me; 7 = very true of me) scale under the stem "Why do you participate PE classes?". It has 16 items and four subscales, namely intrinsic motivation (e.g., "Because I feel good when I am in PE class"), identified regulation (e.g., "Because I believe that PE classes are important for me"), extrinsic regulation (e.g., "Because I feel that I have to attend that class") and amotivation (e.g., "I attend this class but I am not sure whether attending is a good thing"). The scale was found to be valid and reliable within Turkish sample (Kazak Çetinkalp, 2010).

***2.3.3. Self-esteem.*** Short form of Rosenberg's Self-Esteem Scale (Rosenberg, 1965) was used to measure global self-esteem or trait self-esteem (Brown, 1998; 3). Self-esteem in this one-dimensional scale does not imply feelings of superiority or perfection, but feelings of self-acceptance, self-respect, and generally positive self-

evaluation. Scale was translated into Turkish by Çuhadaroğlu (1986). Confirmatory factor analysis results of the scale were; *RMSEA* = .07, *GFI* = .94, *AGFI* = .89, *CFI* = .95 (Yılmaz & Bilgiç, 2009). Answers were scored using a four point Likert scale: Strongly disagree=1, disagree=2, Agree=3, and strongly agree=4. Short form of the scale consists of 10 (Five items are positive and five items are negative) items (e.g., "On the whole, I was satisfied with myself"). Positive items are coded from 1 to 4 and negative items are coded reverse (i.e. 4 to 1). Total score for the scale is created by summing the responses, with higher scores indicating greater self-esteem.

**2.4. Data Analysis.** Initially, the data was screened; univariate and multivariate outliers were detected and removed from the data set. Univariate outliers were detected by using standard z-score (±3.29) and multivariate outliers were identified through Mahalanobis distance with p< .001 (Tabachnick & Fidell, 2007). Descriptive statistics for all variables were computed and Cronbach's alpha reliability coefficients were calculated to assess the internal reliability of the subscales. Pearson correlation analysis was performed to examine the correlations among all the variables used in the study.

The hierarchical multiple regression analysis was employed to test whether basic psychological needs and different motivational regulations in high school PE lesson could predict students' self-esteem. Self-esteem was the dependant variable while age and gender were entered in the first step, motivational regulations were entered in the second step and basic psychological needs were entered in the third step of the analysis. The assumptions associated with hierarchical multiple regression analysis (i.e., normality, linearity and homoscedasticity) were examined.

## 3. Results

**3.1. Preliminary Analyses.** Means, standard deviations, Skewness, Kurtosis, and Cronbach's alphas for the variables were calculated which are provided in Table 2.

**Table 2.** Descriptive characteristics of participants

| | M | SD | Range | Skewness | Kurtosis | $\alpha$ |
|---|---|---|---|---|---|---|
| Self-Esteem | 1.911 | .512 | 1-4 | .355 | .089 | .86 |
| Autonomy | 5.033 | 1.021 | 1-7 | -.327 | -.159 | .73 |
| Competence | 4.783 | 1.096 | 1-7 | -.365 | .194 | .71 |
| Relatedness | 5.331 | .986 | 1-7 | -.510 | -.074 | .77 |
| Intrinsic Motivation | 4.789 | 1.586 | 1-7 | -.644 | -.370 | .83 |
| Identified Regulation | 4.674 | 1.661 | 1-7 | -.451 | -.674 | .83 |
| Extrinsic Regulation | 3.861 | 1.743 | 1-7 | .166 | -.925 | .79 |
| Amotivation | 2.842 | 1.614 | 1-7 | .666 | -.509 | .82 |

N = 957

Participants' intrinsic motivation and relatedness need satisfaction in PE were higher than other motivation types and basic needs. The skewness and kurtosis values showed that the data were distributed normally. Cronbach's alpha coefficients indicated that the scales used in the study demonstrated acceptable internal reliability (i.e., $a \geq 0.70$).

**3.2. Correlations among variables.** Pearson's product moment correlation analysis applied the variables of the study. As shown in Table 3, bivariate correlations suggest that extrinsic regulation and amotivation were negatively correlated with all other variables while other motivation types and all three basic needs were positively correlated with each other.

**Table 3.** Bivariate correlations among study variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1.Self-Esteem | - | | | | | | |
| 2.Autonomy | .521* | - | | | | | |
| 3.Competence | .691* | .565* | - | | | | |
| 4.Relatedness | .502* | .529* | .591* | - | | | |
| 5.Intrinsic Motivation | .158* | .116* | .204* | .206* | - | | |
| 6.Identified Regulation | .193* | .155* | .232* | .179* | .825* | - | |
| 7.Extrinsic Regulation | -.131* | -.117* | -.172* | -.103* | -.476* | -.499* | - |
| 8.Amotivation | -.247* | -.239* | -.287* | -.242* | -.563* | -.596* | .616* |

*p<0.01

**3.3. Hierarchical multiple regression analysis.** Prior to the analysis linearity, multicollinearity, and homoscedasticity assumptions were checked and all those assumptions were found to fully meet for analysis. Each variable in the data set was normally distributed (Table 2) and the relationships between pairs of variables are linear. The Durbin-Watson value was 1.892 which falls within the acceptable range from 1 to 3 (Field, 2009) meaning that the analysis satisfies the assumption of independence of errors. As multicollinearity indicatives tolerance values were above 0.1 (0.58-0.99) and variance inflation factor (VIF) were greater than 1(1.01- 1.87; Field, 2009).

**Table 4.** Multiple hierarchical regression analysis for variables predicting self-esteem

| Independent Variable | $\Delta R^2$ | $R^2$ Change | β | t |
|---|---|---|---|---|
| Step 1 F(2, 897) = 14.806, p = .00 | .030 | .032** | | |
| Age | | | .146 | 4.417** |
| Gender | | | .093 | 2.825** |
| Step 2 F(6, 893) = 16.355, p = .00 | .093 | .067** | | |
| Age | | | .156 | 4.859** |
| Gender | | | .058 | 1.707 |
| Intrinsic Motivation | | | .044 | .781 |
| Identified Regulation | | | .107 | 1.803 |
| Extrinsic Regulation | | | -.044 | -1.064 |
| Amotivation | | | -.241 | -5.287** |
| Step 3 F(9, 890) = 105.227, p = .00 | .511 | .417** | | |
| Age | | | .072 | 3.007** |
| Gender | | | .051 | 1.996* |
| Intrinsic Motivation | | | .047 | 1.102 |
| Identified Regulation | | | .038 | .864 |
| Extrinsic Regulation | | | -.016 | -.519 |
| Amotivation | | | -.053 | -1.554 |
| Autonomy | | | .151 | 5.050** |
| Competence | | | .528 | 16.545** |
| Relatedness | | | .091 | 2.941** |

*p < .05, **p<.01

Multiple hierarchical regression analysis results revealed that all regressions were significant. Students' age, gender, autonomy, competence, and relatedness need satisfaction in PE positively predicted a significant amount of variance in students' self-esteem ($\beta$ = .072, .051, .151, .528, .091 respectively, $p$<.05). Self-esteem was significantly predicted by gender with females having a higher self-esteem ($M$=1.94) than males ($M$=1.84) and age with decreasing by getting older ($M_{Age14}$=2.00 to $M_{Age19}$=1.78).

## 4. Discussion

This study aimed to analyze whether basic psychological needs and different motivational regulations in high school PE context could predict students' general self-esteem. In accordance with SDT, intrinsic motivation and identified regulation were positively correlated with all three basic psychological needs; oppositely external regulation and amotivation were negatively correlated with them. In line with the previous studies (e.g., Deci & Ryan, 2000; Ntoumanis, 2001; Standage, et al., 2006; Taylor, et al, 2010) self-esteem was positively correlated with intrinsic motivation, identified regulation and all three basic needs, while negatively correlated with extrinsic regulation and amotivation.

Despite the numbers of studies testing the model including satisfaction of basic psychological needs, motivational regulations and different indices of well-being (e.g Deci, et al., 1981; Levesque, et al., 2004; Ryan & Grolnick, 1986), no studies have tested the same model in Turkish PE environment, consequently current research has contributed to the existing literature. In line with our hypothesis and the past study results, (Deci, et al., 1981; Ryan & Grolnick, 1986) hierarchical multiple regression analysis results proved that the students' age, gender, autonomy, competence, and relatedness need satisfaction in PE positively predicted students' global self-esteem. These findings supported the tenets of SDT in PE context with Turkish adolescent sample. Consistent with our results, Levesque et al. (2004) used composite autonomy index for intrinsic motivation, identified regulation, introjected regulation and extrinsic motivation and found that autonomous motivation and perceived competence were related with life satisfaction and self-esteem as components of well-being.

If an environment offer people choice, feeling of success and quality socialization instead of pressure and control people can satisfy all three needs and eventually higher quality behaviour and greater psychological well-being are obtained (Deci & Ryan, 2000). Mabekoje and Okubanjo (2009)'s study indicated that the combination of the satisfaction of all three needs enhanced adolescents' self-esteem. However in the current study, competence was found to be the strongest predictor ($\beta$=.528) of self- esteem compared with autonomy and relatedness need satisfaction. It was an expectable result because perceived competence has a central importance in PE context (Feltz, 1988). Adolescents show their skills in front of their peers which cause social comparison and if they are not satisfied with their physical capacity, they tend to be less motivated to participate in physical activities (Maiano, et al., 2004). Moreover, students' who have high competence need satisfaction showed more effort in PE and intended to be more physically active (Ntoumanis, 2001). Also the study by Sheldon et al. (1996) emphasized the importance of competence and autonomy needs for well-being. Oppositely Mabekoje and Okubanjo (2009) and Hein and Hagger (2007) stated that satisfaction of autonomy needs contributed most significantly to adolescents' self-esteem.

It was hypothesized that intrinsic motivation and identified regulation would predict adolescents' self-esteem positively, while extrinsic regulation and amotivation would explain self-esteem negatively. Although intrinsic motivation and identified regulation were significantly positively correlated with the self-esteem, opposite with our hypothesis they were found not to contribute significantly to the prediction of students' self-esteem. As Cowan and Taylor (2015) discussed, forestalled internalization of the self-determined motivation may have detrimental effects despite of short term benefits on one's self-esteem. Hidden potential opposite effects in these divergent mechanisms should be considered in future research. Unlike our result, Deci et al. (1981) found a positive significant relationship between student's intrinsic motivation and self-esteem. Similarly, 11-week period "soccer and education program" participants' identified regulation was positively predicted their self-esteem (Cowan & Taylor, 2015). Consistent with our hypothesis amotivation was found to be the significant negative predictor of self-esteem.

Introjected regulation is adopted when a person choose to do an action in order to enhance or maintain self-esteem and the feeling of worth (Ryan & Deci, 2000). The natural connection between self-esteem and introjected regulation due to its nature has been known. However introjected and integrated regulation types of extrinsic motivation were not assessed with Situational Motivation Scale therefore were not included to the present study. Future research should consider using a scale that embraces all the motivational regulations. Second limitation relates to the cross-sectional nature of the research design which prevents causal inferences. Future research may be planned as longitudinal to see the within-person variance in basic psychological needs and different types of motivational regulations in a school year, so that the effects of motivational agents on self-esteem can be analyzed more in depth.

Despite these limitations, the results of the study are interesting and have important practical implications. PE teachers should consider creating psychological need supportive environment in their lessons. Knowing that

the competence need satisfaction was the strongest predictor of self-esteem, PE teachers should organize the structure of the lesson to allow all the students, regardless of their physical skill, to experience the success to increase students' perceived competence during the lessons. Besides it is important to employ self-referenced criteria for the exercises and drills in the lesson in order to emphasize effort and personal improvement. Educational psychologists may consider the study results and guide adolescents to attend PE and other physical activity environments. By encouraging adolescents to participate a well-organized PE actively can foster their self-esteem.

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# A Comparison of Mothers Upbringing Methods Based on Adolescents Intelligence Groups (High-Intelligence, Low-Intelligence and Normal)

**Fakhr Alsadat Barati[1], Masume Kalantari[2], Mohammad Tahan[3]**

[1]*MD of psychology and education of children with special need.*

[2]*Islamic Azad University, Tehran, Iran.*

[3]*Islamic Azad University, Birjand, Iran.*

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ABSTRACT

This research has been designed to compare mothers upbringing methods based on adolescents intelligence groups; high-intelligence, low-intelligence and normal. To this purpose, 194 individuals were chosen from among male and female students of ages 14 and 15 from the city of Ghaenat from southern Khorasan province within the educational year of 2015, by the simple-random method in high-intelligence schools, by the census method in low-intelligence schools and by the multi-stage cluster sampling method in normal schools. The tools employed include the Bamrind questionnaire on upbringing methods. Pierson's codependence coefficient and multi-variant variance analysis have been used for data analysis. Results indicated that the difference is significant between intelligence groups regarding tyrannical and logical potency and no significant difference in upbringing methods based on freedom. There is positive and significant difference between mothers of children belonging to high and low-intelligence groups regarding authoritarian and logical potency, and mothers of children belonging to the normal and low-intelligence groups. There's no significant difference between other intelligence groups and upbringing methods.

Keywords:
upbringing methods, intelligence groups including high-intelligence, low-intelligence, normal, adolescents.

## 1. Introduction

The family is one of the most important factors of personality formation and the basis of personal development and the basic fundament for man's personality (Navabinejad, 1997). Prior to pubescence, parents often feel as to be able to understand their child. However by the child entering into puberty they revert to the past, become traditionally-minded and expect children to exhibit habits which were commonplace at that time. Parental control on children may diminish upon pubescence, even below to that of friends. Adolescents possess different personality traits therefore parents must avoid employing a unique method to deal with different personalities. Parental methods may have a determining role in children's personality change. The pubescence is not only a difficult time for adolescents, but also parents experience mental pressure, agitation, stress and other alterations in these times. Upon puberty lots of changes come to pass not only upon children themselves, but also upon their parents such as life style, ways of dealing with the child and … (Funtnl, 2008). Puberty is a transitory stage in one's life characterized by alterations in physical, mental, social and emotional growth and development. The most important thing parents have to remember is that they're no longer dealing with a child, but with a pubescent person. A great number of methods which are usable in dealing with children will become problematic if employed in dealing with adolescents. Parents must understand that the time of

[1] Corresponding author's address: Young Researchers and Elite Club, Birjand Branch, Islamic Azad University, Birjand, Iran.
e-mail: t.mohammad2@gmail.com
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pubescence is a transitory passage therefore they must change their methods of dealing with children to that of dealing with adolescents (Funtnl ,2008).

Child-parent relationship is a complicated network formed through bilateral actions and reactions and affects children through upbringing methods. Upbringing in fact is not a simple job, it requires a great deal of endeavor, time, patience and temperance of the upbringing method (Shariatmadar ,2010). Parents employ different upbringing styles in dealing with their children; that is semi-sustainable patterns and parental methods for the communication of family members with each other, which provide the basis for bilateral influences (Sadr Alsadat & colleagues, 2006). The meaning of upbringing methods is the methods or styles which parents employ for the upbringing of their children and indicates the outlook they have towards their children. Upbringing methods also include criteria and rules they impose upon their children (Nikuyi & Talebi, 2010).

Baumrind in his studies points out three characteristics which identify the effective method of upbringing from ineffective ones which include: 1. acceptance and close relations, 2. Controlling and 3. Granting of independence.

Through the interaction of these three factors, emerge three methods of upbringing: authoritative, authoritarian and permissive (Diaz, 2005).The authoritarian method is characterized by rigidity and inflexibility. Authoritarian parents demand total and absolute obedience. Authoritative parents emphasize children's autonomy within the scope of family rules, they know what their children do, where they go and with whom they mix. They nevertheless try to have convincing reasons. Permissive parents don't follow a certain rule in their upbringing and exercise no control on children's behaviors. They give their children total freedom to make their decisions so children act in complete freedom and without consultation with parents (Asadi & colleagues, 2007).

Intelligence may have an important role in reaching adult life. Mothers are the first among family members who maintain a direct relation with the child, not only during the fetal stage, but in rest of the life (Ahmadvand , 2004). No doubt that for many parents having and nurturing a child is potentially an enjoyable experience but they usually aren't aware of how to deal with their children in their adolescence and which upbringing method to follow. Especially for those parents who's children are different from the majority such as the high-intelligence and the mentally retarded, since any kind of extremism by parents may have undesirable consequences for the child, and may result in children's incomplete development and behavioral issues, employing a right and correct method of upbringing has a unifying role in helping adolescents to cope with these stages. Due to the importance of upbringing methods some researches have been done in this regard, some of which are pointed out here: Farzi-Golfarani and colleagues 2015 indicated in a research that there are differences between mothers with children suffering from depression, stress and mental/actual obsession, and mothers with normal children, in employing decisive reassuring and authoritarian upbringing methods. Hoseinian and Poorshahriari 2014 found in a research that there's no significant difference in upbringing methods of mothers of students suffering from auditory disorders and mothers with normal children. Most mothers in both groups employ the authoritative upbringing method. In a research (Nabavi Moghaddam, 2010) compares parental upbringing methods of parents with stuttering children and those with normal children. His results indicated that there is no significant difference between upbringing methods employed by parents with stuttering children and those with of normal children. To put it in a nutshell, this research has been designed with the purpose of comparing upbringing methods of mothers with high-intelligence, low-intelligence and normal children. This research assists parents to have a correct relationship with their children and employing appropriate upbringing methods during adolescence. In no other stage of life one needs parental support as in adolescence, and this important issue will only be realized by employing appropriate upbringing methods. In that regard, answering the following hypothesis was in consideration: there are differences between upbringing methods of mothers with high-intelligence, low-intelligence and normal adolescents.

**2. Method**

This research is fundamental regarding the purpose, and non-experimental (codependence and causal-comparative) regarding the method of collecting data.

### 2.1. Population and sampling method

Population of this research is comprised of all male and female 14-15-year-old students of high-intelligence, special education and governmental schools of the cit of Ghaenat of southern Khorasan province, within the educational year of 2015. In high-intelligence schools (n=40) 20 female students were chosen from among 32, and 20 male students from among 20 by the simple random method, in special education schools (n=34) 16 female students from among 70 and 18 male students from among 85 by the census method, and in governmental schools (n=120) 55 female students were chosen from among 499 and 65 male students from among 655 were chosen as the population by the multi-stage cluster.

### 2.2. Data collection tools

The Baumrind upbringing methods questionnaire (1991): which includes 30 bullets, subjects mothers indicate their opinion by a 5-degree measurement of completely opposed, opposed, no opinion, agreed, and completely agreed from 0-4. 10 relate to the permissive factor (28-24-21-19-17-14-13-10-6-1) 10 relate to the authoritarianism factor (29-26-25-18-16-12-9-7-3-2) and 10 relate to logical potency (30-27-23-22-20-15-11-8-5-4). By adding up the grades of questions relating to each factor of permissiveness, authoritarianism and logical potency, three independent grades are achieved for each test subject (Baumrind, 2011). In this research for the purposes of analyzing the propriety of the questionnaire of upbringing methods, the codependence of each question to the total grades of the same micro-measure is calculated. Results indicated the codependence coefficient to be significant for all questions accept for question no. 21.

**Table 1.** Sustainability of upbringing methods questionnaire of Baumrind Cronebach's Alpha coefficient

| Researcher | Reliability | | |
|---|---|---|---|
| | Grantin of freedom | Authoritarianism | logical potency |
| Buri (1999) | 0/81 | 0/86 | 0/78 |
| Esfandiari (1996) | 0/69 | 0/77 | 0/73 |
| Current Study | 0/67 | 0/81 | 0/85 |

### 3. Results

In this section, differences between methods of upbringing including granting of freedom, authoritarianism and logical potency are analyzed in three groups of high-intelligence, low-intelligence and normal.

**Table 2**. Average and deviation of mothers upbringing methods separated by intelligence groups

| Variant | High-Intelligence | Low-Intelligence | Normal |
|---|---|---|---|
| Logical potency | $\overline{X}$ =2/93<br>S=0/1<br>N=40 | $\overline{X}$ =2/53<br>S=0/16<br>N=34 | $\overline{X}$ =**2/90**<br>S=**0/05**<br>N=**120** |
| Granting of freedom | $\overline{X}$ =1/85<br>S=0/09<br>N=40 | $\overline{X}$ =1/61<br>S=0/101<br>N=34 | $\overline{X}$ =**1/60**<br>S=**0/05**<br>N=**120** |
| Authoritarianism | $\overline{X}$ =1/76<br>S=0/09<br>N=40 | $\overline{X}$ =2/20<br>S=0/16<br>N=34 | $\overline{X}$ =**1/97**<br>S=**0/06**<br>N=**120** |

In the above table, the average and deviation of upbringing methods have been presented separated by intelligence groups. Results indicate that the average of logical potency and freedom methods is higher in the high-intelligence group compared to other intelligence-based groups. The average of the authoritarian method is higher within the low-intelligence group compared to other intelligence-based groups. For the comparison of upbringing methods within the three groups of high and low intelligence and normal, the multi-variant

variance analysis has been employed. In this analysis, intelligence-based groups are the independent variant and upbringing methods comprise the dependent variant.

**Table 3.** Multi-variant test results of comparison between intelligence groups in upbringing methods (MANOVA)

| Variant | Value | Ratio F | D.F.H[4] | D.F.W[2] | Level Significance | Partial Eta Squared[2] | Ability |
|---|---|---|---|---|---|---|---|
| Pillais Trace | 0/091 | 3/006 | 6 | 380 | 0/007 | 0/045 | **0/906** |
| Wilks Lambda | 0/911 | 3/015 | 6 | 378 | 0/007 | 0/046 | **0/907** |
| Hotellings Trace | 0/096 | 3/023 | 6 | 376 | 0/007 | 0/046 | **0/908** |
| Roys Largest Root | 0/077 | 4/878 | 3 | 190 | 0/003 | 0/072 | **0/904** |

[2]Partial Eta Squared, [3]Degree of freedom wrong, [4]Degree of freedom hypothetical.

Results of the above table indicate that differences between intelligence groups have a significant correlation to upbringing methods. A more detailed analysis of intelligence groups effects on upbringing methods may be found in the following table.

**Table 4.** Inter-group test results analysis comparison of intelligence groups in upbringing methods

| Reason Of Change | Variant | Total Square Roots | Extent Of Freedom | Square Roots Average | Ratio F | Significance Level | Partial Eta Squared | Ability |
|---|---|---|---|---|---|---|---|---|
| Among intelligence groups | Granting of freedom | 4/375 | 2 | 2/188 | 2/215 | 0/112 | 0/023 | **0/448** |
| | authoritarianism | 6/992 | 2 | 3/496 | 3/950 | 0/029 | 0/036 | **0/660** |
| | logical potency | 8/318 | 2 | 4/159 | 4/301 | 0/015 | 0/043 | **0/744** |
| Error | Granting of freedom | 188/625 | 191 | 0/988 | | | | |
| | authoritarianism | 186/008 | 191 | 0/974 | | | | |
| | logical potency | 184/682 | 191 | 0/967 | | | | |
| Total | granting of freedom | 193/000 | 193 | | | | | |
| | authoritarianism | 193/000 | 193 | | | | | |
| | logical potency | 193/000 | 193 | | | | | |

Results of the above table indicate that according to Ben Fozooni revision (0/017) that difference among intelligence groups regarding authoritarian and logical potency methods are significant, same results however indicate that between the same groups there's no significant difference regarding the permissive method. The test has a higher ability for identifying the logical potency method in comparison to other methods in intelligence groups, so the significant difference is higher in this group than other methods. According to the atai separate square - 3.2% of changes in the freedom method, 6.3% in the authoritarian and 3.4% of changes in the logical potency method are a result of differences among intelligence groups and other changes are due to other factors. Differences in mothers upbringing methods among different intelligence groups are shown in the following table.

**Table 5.** Multiple comparison test results HSD regarding upbringing methods according to intelligence groups

| Upbringing Methods | The First Level Of Intelligence | The Second Level Of Intelligence | Difference Average | Standard Error Average |
|---|---|---|---|---|
| Ganting of freedom | high-intelligence | low-intelligence | 0/364 | **0/231** |
| | high-intelligence | normal | 0/372 | **0/181** |
| | Normal | low-intelligence | -0/008 | **0/193** |
| Authoritarianism | high-intelligence | low-intelligence | *0/616 | **0/230** |
| | high-intelligence | normal | -/280 | **0/180** |
| | Normal | low-intelligence | -0/336 | **0/191** |
| Logical potency | high-intelligence | low-intelligence | *0/550 | **0/229** |
| | high-intelligence | normal | 0/007 | **0/179** |
| | normal | low-intelligence | *0/542 | **0/191** |

Results drawn from the above table according to the Tuki test show a positive and significant difference between mothers of high-intelligence and low-intelligence groups regarding the authoritarian method. There's also a positive significant difference between mothers of normal and low-intelligence groups, and high-intelligence and low-intelligence regarding the logical potency method. This difference is greater between the high and low-intelligence groups. There is no significant difference between other intelligence groups relating to upbringing methods.

**4. Discussion and conclusion**

Results of this research indicated that: the difference among intelligence groups regarding authoritarian and logical potency methods is significant (p<0/017), But no significant difference regarding the permissive method. There is a positive and significant difference between mothers of high and low-intelligence groups regarding the authoritarian method. Between mothers of normal and low-intelligence, and high and low-intelligence groups a positive and significant difference is observed regarding the logical potency method, which is higher between the two groups of high and low-intelligence. There is no significant difference between other intelligence-groups and upbringing methods.

Findings of Farzi Golfarani & colleagues, 2015, Hoseinian & Pourshahriari, 2014 & Nabavi Moghaddam, 2010 are in accordance. Overall the findings of this research lead to: there's no significant difference between mothers of high and low-intelligence and normal groups regarding the permissive method, but between mothers of high and low-intelligence groups a positive and significant difference is observed regarding the authoritarian method, and between mothers of normal and low-intelligence, and high and low intelligence groups there is a positive and significant difference.

Studies show that the role of family and household is highly important for the child, especially during the primary years of his/her life. Children who've been able to actualize their talents have had parents who've encouraged, guided, approved of and appreciated their children (Ahmadvand, 2013). Thus, parents employ different upbringing methods for their children according to the intelligence level.

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# Use of Vocabulary Learning Strategies in Turkish as a Foreign Language Context

**Orhan Kocaman[1], Merve Yıldız[2], Büşra Kamaz[3]**

*[1,2]Sakarya University, Department of English Language Teaching, Turkey, [3]Ministry of National Education, Turkey*

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ABSTRACT

Since the 15th century, when the Turkish language initiated its adventure as a taught foreign language, we have come a long way. In a parallel way, with the increasing demand of Turkish as a Foreign Language (TFL), Turkish language pedagogy has been continuing to improve adjusting to the new trends in language teaching in the world. The ultimate aim of learning a language is that effective communication cannot be actualised without knowledge of substantial vocabulary. Vocabulary learning and teaching, from a 'grammaticalized lexis (Lewis, 1993)' perspective, forms a crucial part of foreign language development, and thus, Vocabulary Learning Strategies (VLS) - rooted in cognitive and psycholinguistic research paradigms - are of utmost importance (Lewis, 1993; Nyikos and Fan, 2007). With all these in mind, this study aims to investigate the vocabulary learning strategies employed by 155 international students studying Turkish preparatory year programme at the Turkish Language Learning Centre (TÖMER) of a state university in Turkey. Descriptive results reveal that lower proficiency groups (A1 and A2) employ VLS strategies more than B2 level group does. Memory, Affective and Social Strategies are found to be the most frequently used strategies. One-way ANOVA results reveal that there is a statistically significant difference among proficiency levels of the participants. With respect to gender, t-test results show a difference for one type of strategy employed. The results are discussed in terms of significance and association with previous research. In the end, suggestions and implications are given for stakeholders of learning and teaching TFL.

Keywords:
vocabulary learning strategies, language learning strategies, Turkish as a foreign language, second language teaching

## 1. Introduction

Definitions of language learning strategies (LLS) have undergone a continuous development from the first definition of Rubin (1975, p. 43), which was "... the techniques or devices which a learner may use to acquire knowledge", and the definition itself has been a matter of debate since then. Of the most appreciated, Oxford's (1990, p. 8) definition of LLS was as "... learning strategies are specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations."

Dornyei & Skehan (2003) modified the definition by adding the self-regulation component and highlighted learners' active involvement in the learning process. Chamot (2004, p. 14) later defined it as "Learning strategies are the conscious thoughts and actions that learners take to achieve a learning goal" stressing the conscious effort. By a relatively recent attempt, Griffiths (2008) made a review of previous definitions by including self-regulation and conscious actions in language learning strategy account.

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[1] Corresponding author's address: Sakarya University, Department of English Language Teaching, Hendek 54300 Sakarya, Turkey
e-mail: okocaman@sakarya.edu.tr
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The 'good language learner' has been a concept approached from multifarious SLA perspectives; in addition, the way those learners handle strategies has also been observed since Rubin's (1975) pioneering article titled "What the good language learner can teach us". She revealed the fact that good language learners use strategies, though not in current names, and identified what strategies learners use to learn better. Recent notes from the same perspective come from a number of studies. For instance, Griffiths (2003) investigated 348 language learners and found a positive correlation between proficiency and frequency of strategy use, notwithstanding other variables. Griffiths (2010), also studied the strategy use of two successful language learners by means of Strategy Inventory for Language Learning (SILL) and interviews. She found that despite individual dissimilarities, both learners were found to employ strategies frequently.

Oxford (1990) proposes six types of strategies which are cognitive, metacognitive, memory, compensatory, affective and social strategies. The strategies are divided into two categories as direct and indirect. Cognitive, memory and compensatory strategies are listed as direct, whereas the indirect ones are listed as metacognitive, affective and social strategies. Moreover, she defines language learning strategies as memory strategies for storing and retrieving information, cognitive strategies for understanding and producing the language, compensation strategies for overcoming limitations in language learning, metacognitive strategies for planning and monitoring learning, affective strategies for controlling emotions, motivation, and social strategies for cooperating with others in language learning.

Language learners, in turn, have to employ these language learning strategies to be able to gain communicative competence. Within the scope of the current study, Oxford (1990)'s direct and indirect learning strategies encompass vocabulary learning strategies.

Underlining the importance of vocabulary, Lewis (1993) asserts that "Language is a grammaticalized lexis, not lexicalized grammar". Learners develop their languages through acquisition of vocabulary items along with the grammar rules to which they are exposed. Recaptured by Schmitt (2010, p. 5), knowing a word means knowing the meaning(s) of the word, the written and spoken form of the word, grammatical behavior and collocations of the word, the register, associations and the frequency of the word and these features are interrelated with each other, which makes acquiring vocabulary complex in nature for learners.

Nonetheless, vocabulary learning enhances learners to pass the threshold level which enables them to take part in real communication and to develop high L2 reading comprehension (Clarke, 1980). Nyikos and Fan (2007) emphasize that vocabulary has a crucial role in both receptive and productive skills that are interrelated with effective communication. Additionally, Nyikos and Fan (2007) explain that VLS research has been instigated by the fact that the academic and interpersonal vocabulary needs of learners surpass their ability to learn and effectively integrate newly learned vocabulary.

In this respect, Vocabulary Learning Strategies (VLS) have been under investigation to what extent their use facilitates the learning process for foreign language learners. According to Schmitt (2000), VLS are categorised as "(1) strategies that are useful for the initial discovery of a word's meaning, and (2) those useful for remembering that word once it has been introduced."

He further classifies the strategies into five. Determination strategies (DET) contain strategies used by an individual in situations that require discovering the meaning of a new word without resorting to others' help. Social strategies (SOC) occur during interaction with other people with the aim of improving language learning. Traditionally known as mnemonics, Memory strategies (MEM) are about associating words to be retained with some previously learned knowledge, through various forms of imagery, or grouping. Cognitive strategies (COG), based on Oxford (1990) are defined as strategies that "exhibit the common function of manipulation or transformation of the target language by the learner." Metacognitive strategies (MET), on the other hand, are the ones that "involve a conscious overview of the learning process and making decisions about planning, monitoring, or evaluating the best ways to study" (Schmitt, 2000).

Regarding the employment of VLS, studies vary in results which might be a good level of success, a limited level of success in some circumstances resistance from learners (Schmitt, 2000). The level of proficiency is considered a highly significant factor in that (Kern, 1989 cited in Schmitt, 2000). Also, knowledge and acceptance of the instructors, the effects of strategy training are considered influential (Chamot, 1987; Schmitt, 2007). The varying use of VLS among proficient learners sign other factors that might act as determinants.

Gender is one of these causal factors as put forward by a number of researchers (Nyikos, 1987; Grace, 2000; Catalan, 2003; Gu, 2005). To this end, this descriptive study aims to contribute to the literature investigating the variables of proficiency and gender in an international Turkish as a foreign language learning context.

### 1.1. Literature Review

#### 1.1.1. Proficiency and VLS use

Altan (2003) conducted a research study with 21 intermediate level EFL students and revealed that social strategies were employed by the intermediate level learners followed by cognitive, compensation, metacognitive, memory and affective strategies respectively. Another focus of the study was to find out whether the scores on the experimental exam were significantly effective in terms of different strategies. The results indicated that compensation strategies were used by high-achievers more than low achievers which meant that high-achievers used clues to predict novel vocabulary items in the context whereas the lower group needed more proficiency to do so.

Likewise, Hamzah et al. (2009) found out that determination strategies were preferred the most while social strategies were preferred the least. They also analysed the relationship between vocabulary size and VLS use, and only nine items were found to be significant (using physical action, talking to native speakers, taking notes, working on new words repeatedly, using bilingual dictionary, using technology, studying with friends, studying the pronunciation, repetition of vocabulary items, p. 45). These nine strategies were found to be enlarging the vocabulary.

Nacera (2010) explored vocabulary size and vocabulary learning strategies of 46 English major students and found that meta-cognitive strategies were used the most frequently. Besides, wider vocabulary suggested a tendency to use predictions from the context alike Altan's study (2003). However, interaction with native speakers, using a visual to recall a word, getting help from others were also distinguishable for higher and lower learners in that the first group favoured these more than the second group. It was also suggested that higher learners employed strategies that necessitated more diligence and attempt when compared to the lower learners.

Çelik and Toptaş (2010) surveyed 95 Turkish EFL learners who were enrolled in Ankara University School of Foreign languages about the frequency of the use of vocabulary learning strategies and the perceptions of these strategies by the learners. The study illustrated that elementary, pre-intermediate and intermediate level learners had almost equal mean scores for social strategies. The determination and metacognitive strategies, on the other hand, were not employed by the lowest group as much as pre-intermediate and intermediate level learners. Intermediate level learners preferred to use the cognitive strategies. As for the perceptions of the participants, it was revealed that they showed a mismatch between their perceptions in that they did not favour social strategies as much as they utilised these strategies. Instead, they perceived the metacognitive strategies as the most useful ones. The ratings of the participants also clearly showed that they did not employ the strategies very often which paved the way for suggesting a need for instruction on language learning strategies.

Tılfarlıoğlu and Bozgeyik's (2012) study with 252 EFL learners from four proficiency levels preferred determination strategies most frequently, and social strategies were the least preferred strategies. Memory strategies were found to be in positive correlation with the proficiency level while VLS preferences were not consistent with the proficiency level overall.

Nosratinia, et al. (2013) explored the correlation between learner autonomy and vocabulary learning strategies. The results illustrated that social strategies and memory strategies were the most salient indicators of learner autonomy.

Tok and Yığın (2014), in their descriptive study with 52 students who were of B2 level, revealed that social strategies were used most frequently followed by determination, cognitive, metacognitive and memory strategies respectively. Preference for interacting with Turkish natives had a percentage of 62 followed by 'asking the meaning of Turkish word to a friend or the instructor' (25.7 %). The highest percentage was for interacting with Turkish natives. As for cognitive strategies writing to revise had a percentage of 32.5 being

the most frequently used strategy. Making use of movies, songs and the internet were preferred most (95.5 %) regarding metacognitive strategies.

Biçer and Polatcan (2015) surveyed TÖMER students to explore the relationship between proficiency and VLS use with the survey prepared by Kocaman and Kızılkaya (2014). The least and most frequently used strategies found were cognitive (mean = 3.10) and metacognitive (mean = 3.56) respectively. Memory, compensation and social strategies yielded results with significant differences regarding proficiency whereas the other subgroups (metacognitive, cognitive and affective) did not. The highest proficiency group (C1) tended to use VLS less often than their counterparts (B1 and B2).

Bristi (2015) conducted a study with EFL learners, and the findings revealed that determination strategies were employed at the highest level by the participants. Cognitive strategies were found to be the least preferred strategy type. On the other hand, using affective strategies such as using movies and songs were specifically preferred at the highest level as an overall result and regardless of the proficiency level. Bristi also stated that no significant difference was found for the three different proficiency groups.

Baskın et al. (2017), in their study with 22 A1 TFL learners enrolled in TÖMER, noted that cognitive strategies were employed less often than the other strategies while the determination strategies such as prediction of unfamiliar words, employing dictionaries, word lists, vocabulary cards were used the most. The fact that the group was of the lowest proficiency was indicated as the reason for the employment of determination strategies more often.

**1.1.2. Gender and VLS use**

Kocaman (2015), in his experimental study, accompanying the computer-assisted vocabulary teaching and learning tools intended to explore the VLS use of secondary school EFL learners. He revealed a preference of metacognitive strategies over cognitive and compensatory strategies among sixth graders. Besides, a significant difference was found with compensation strategies use. As for gender, the only significant difference was discovered in the use of compensation strategies in favour of male participants.

Barut (2015) found that TFL learners employed compensation and social strategies more frequently than the other strategies while affective strategies were found to be used the least. As for gender, the overall results showed that female participants preferred to use strategies more often than their male counterparts (p. 69 - 70). The frequency of the use of strategies was also found to be higher for more proficient learners which meant that proficiency played a significant role in the preferences of vocabulary learning strategies.

Gu (2002) investigated gender, the area of academic study and VLS use of Chinese EFL learners and found that females used VLS more than males.

Green and Oxford (1995) explored 374 university students' proficiency and gender variables in terms of the preferences of VLS. They concluded that female and higher proficiency groups preferred to use VLS more. However, proficiency levels did not suggest a significant difference for VLS use.

Catalan (2003) questioned the gender differences of 581 Spanish-speaking participants who either learnt Basque or English regarding quantity of VLS and specific VLS and inferred that females tended to use quantitatively greater VLS. Using a bilingual dictionary, taking notes about an unknown word, predicting an unknown vocabulary item from the context were also found to be the first three most used strategies that were adopted by both females and males.

In their meta-analysis study, Nematollahi et al. (2017) scrutinized 30 experimental studies to explore the frequency and type of strategies used. Based on Schmitt's (2000) taxonomy, the most frequently employed strategy was found to be determination strategy respectively followed by cognitive, memory, meta-cognitive and social strategies. They concluded that direct strategies result in a better grasp of vocabulary along with the finding that the effectiveness of vocabulary learning strategies and different learning contexts, treatments, and research methods are interconnected.

Park (2000) investigated Korean EFL learners' (n=600) use of VLS with a questionnaire based on Schmitt (1997). The results were discussed in relation to informants' grades (from elementary to university), ages and gender. The results attested that Korean learners preferred to use diglot dictionaries (cognitive strategy), predicting the meaning of unfamiliar words from the context (memory strategy) and asking the meaning of words to

their friends (social strategy) most often to learn new vocabulary items. In terms of age variable, all four groups employed dictogloss dictionaries and predicting meaning from context most often. The results did not indicate a significance for gender groups. However, there was a subtle difference in males' and females' preferences in that males preferred to ask the meaning of an unknown vocabulary to the instructor while females desired to focus on the parts of an unknown vocabulary item to figure out the meaning.

### 1.2. Research Questions

1. What are the most frequently employed strategies overall?

2. Is there any significant difference in VLS preference between genders?

3. Does level of proficiency have a significant impact on the VLS preferences of the TFL learners?

## 2. Method

### 2.1. Participants & Setting

The study comprised 155 international students (100 Male, 52 Female, 3 unspecified gender) enrolled in TÖMER (Teaching Turkish as a Foreign Language Center) at Sakarya University, Turkey. The data were collected by convenience sampling method. The sample consisted of 108 A1, 19 A2 and 28 B2 level students who were graded according to the placement test given by TÖMER. Since the data were collected during the class hours, due to the available group sizes the number of the participants varied in each group.

### 2.2. Data collection and Instruments

The data were collected during the participants' regular classes in the fall term of the 2016-2017 academic year. This study instrumented a VLS questionnaire which was adopted from Kocaman (2015) to collect the data to identify students' Vocabulary Learning Strategies. The questionnaire consisted of 32 items measuring direct (memory, cognitive, compensation) and indirect (metacognitive, affective and social strategies) strategies. Upon negotiating with the administrators and the instructors, the questionnaire (see Appendix 1) was implemented in English, and only the students with adequate proficiency in English were requested to answer the questions. Firstly, the students ensured that they understood all items before marking their answers and those who had difficulty grasping the meaning of the items were excluded from the procedure. Both the instructors and the students were informed about the purpose of the study.

**Table 1.** Distribution of the items according to strategies

| | |
|---|---|
| Items 1, 2, 3, 4, 5, 6, 7 | Memory strategies |
| Items 8, 9, 11, 12, 13 | Cognitive strategies |
| Items 10, 15, 16 and 32 | Compensation strategies |
| Items 14, 17, 18, 19 | Metacognitive strategies |
| Items 20, 21, 22, 23, 24, 25 | Affective strategies |
| Items 26, 27, 28, 29, 30, 31 | Social strategies |

### 2.3. Data Analysis

The reliability was analysed, and Cronbach Alpha value was found to be .85, which was considered highly reliable. In order to decide on the appropriate statistical tests to analyse the data with respect to gender and proficiency, a test of normality was run.

## 3. Results

Kolmogorov-Smirnov tests indicated the normal distribution of the data for both factors ($p>0.05$). Hence, parametric tests were employed for further statistical analyses.

**Table 2.** Tests of Normality for Gender and Proficiency

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | GENDER | Statistic | df | p | Statistic | df | p |
| Sum3 | MALE | ,054 | 100 | ,200* | ,989 | 100 | ,612 |
| | FEMALE | ,112 | 52 | ,108 | ,973 | 52 | ,286 |

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | PROFICIENCY | Statistic | df | p | Statistic | df | p |
| Sum3 | A1 | ,069 | 108 | ,200* | ,977 | 108 | ,064 |
| | A2 | ,120 | 19 | ,200* | ,972 | 19 | ,809 |
| | B2 | ,161 | 28 | ,062 | ,959 | 28 | ,338 |

Research Q 1.

In order to find out the frequency of overall strategy use by all levels, descriptives were investigated, and the means indicated that Memory Strategies (A2>A1>B2) – Affective Strategies (A1>A2>B2) – Social Strategies (A1>A2>B2) had the highest means respectively (Table 3). Also, B2 level students were found to use the strategies the least.

**Table 3.** Means for overall strategy use

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Cognitive | 155 | 7,00 | 24,00 | 17,1373 | 3,65297 |
| Memory | 155 | 10,00 | 35,00 | 24,9419 | 4,41991 |
| Compensation | 155 | 5,00 | 20,00 | 14,6438 | 3,24858 |
| Metacognitive | 155 | 7,00 | 20,00 | 14,2856 | 2,84273 |
| Affective | 155 | 14,00 | 30,00 | 23,4223 | 3,40562 |
| Social | 155 | 10,00 | 30,00 | 20,7437 | 4,34449 |
| Valid N (listwise) | 155 | | | | |

Research Q 2.

With respect to gender, independent t-test was run, and although there was not a total significant value, and only use of compensation strategies differed significantly (,033<0,05) by gender and the means show that male group use compensation strategies more than females.

**Table 4.** Independent Samples t-test results for VLS according to gender

| | Gender | N | Mean | Std. Deviation | Std. Error Mean | | Mean Difference | p |
|---|---|---|---|---|---|---|---|---|
| Sum3 | Male | 100 | 116,9600 | 16,04176 | 1,60418 | Equal variances assumed | 3,78892 | ,150 |
| | Female | 52 | 113,170 | 13,85204 | 1,92093 | Equal variances not assumed | 3,78892 | ,133 |
| Cognitive | Male | 100 | 17,2938 | 3,60596 | ,36060 | Equal variances assumed | ,42143 | ,504 |
| | Female | 52 | 16,8724 | 3,81143 | ,52855 | Equal variances not assumed | ,42143 | ,512 |
| Memory | Male | 100 | 25,0700 | 4,46367 | ,44637 | Equal variances assumed | ,22385 | ,769 |
| | Female | 52 | 24,8462 | 4,43862 | ,61553 | Equal variances not assumed | ,22385 | ,769 |
| Compensation | Male | 100 | 15,0375 | 3,12345 | ,31234 | Equal variances assumed | 1,19159 | ,033 |
| | Female | 52 | 13,8459 | 3,43231 | ,47598 | Equal variances not assumed | 1,19159 | ,039 |
| Metacognitive | Male | 100 | 14,3458 | 2,93456 | ,29346 | Equal variances assumed | ,17872 | ,716 |
| | Female | 52 | 14,1670 | 2,73744 | ,37961 | Equal variances not assumed | ,17872 | ,710 |
| Affective | Male | 100 | 23,7032 | 3,19430 | ,31943 | Equal variances assumed | ,80940 | ,165 |
| | Female | 52 | 22,8938 | 3,75380 | ,52056 | Equal variances not assumed | ,80940 | ,188 |
| Social | Male | 100 | 21,1089 | 4,49527 | ,44953 | Equal variances assumed | ,98615 | ,188 |
| | Female | 52 | 20,1228 | 4,09239 | ,56751 | Equal variances not assumed | ,98615 | ,176 |

Research Q 3.

For the question whether the level of proficiency is determinant of VLS use, One-way ANOVA was run, but prior to that, homogeneity of variances test (Levene Test) was conducted to decide the appropriacy of ANOVA.

According to One-way ANOVA results, A1 - B2 levels differed regarding the use of Metacognitive, Social and Affective Strategies and there was also a significant difference between A2 - B2 levels regarding Memory Strategies. A1 level TFL students used Metacognitive, Social and Affective Strategies more than B2 learners did. In addition, A2 level students employed Memory strategies more frequently than B2 level students.

**Table 5.** Test of Homogeneity of Variances

| | Levene Statistic | df1 | df2 | p |
|---|---|---|---|---|
| Sum3 | ,774 | 2 | 152 | ,463 |
| Cognitive | ,842 | 2 | 152 | ,433 |
| Memory | ,086 | 2 | 152 | ,918 |
| Compensation | ,327 | 2 | 152 | ,722 |
| Metacognitive | ,755 | 2 | 152 | ,472 |
| Affective | 1,359 | 2 | 152 | ,260 |
| Social | ,994 | 2 | 152 | ,372 |

**Table 6.** One-way ANOVA results for differences among proficiency levels

| Proficiency Level | N | Mean | | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|
| A1 | 108 | 117,4056 | between groups | 2479,512 | 2 | 1239,756 | 5,636 | ,004 |
| A2 | 19 | 117,7189 | Within groups | 33436,439 | 152 | 219,977 | | |
| B2 | 28 | 107,0597 | total | 35915,951 | 154 | | | |
| Total | 155 | 115,5750 | | | | | | |

In order to determine by which levels the difference was generated, post-hoc (Scheffe) test was run, and the results illustrated that there was a significant difference ($p<0,05$) between A1 - B2 levels. No statistically significant scores were found for A1 and A2 in terms of strategy types employed.

**Table 7.** Post Hoc Scheffe test Results

| Dependent Variable | (I) PROFICIENCY | (J) PROFICIENCY | Mean Difference (I-J) | Std. Error | p |
|---|---|---|---|---|---|
| Sum3 | A1 | A2 | -,31333 | 3,68979 | ,996 |
| | | B2 | 10,34584* | 3,14533 | ,005 |
| | A2 | A1 | ,31333 | 3,68979 | ,996 |
| | | B2 | 10,65918 | 4,40840 | ,057 |
| | B2 | A1 | -10,34584* | 3,14533 | ,005 |
| | | A2 | -10,65918 | 4,40840 | ,057 |

**Table 8.** One-way ANOVA results- descriptives

| | | N | Mean |
|---|---|---|---|
| Memory | A1 | 108 | 25,2037 |
| | A2 | 19 | 26,0526 |
| | B2 | 28 | 23,1786 |
| | Total | 155 | 24,9419 |
| Metacognitive | A1 | 108 | 14,6070 |
| | A2 | 19 | 14,4200 |
| | B2 | 28 | 12,9545 |
| | Total | 155 | 14,2856 |
| Affective | A1 | 108 | 23,8231 |
| | A2 | 19 | 23,1211 |
| | B2 | 28 | 22,0808 |
| | Total | 155 | 23,4223 |
| Social | A1 | 108 | 21,1485 |
| | A2 | 19 | 21,6015 |
| | B2 | 28 | 18,6004 |
| | Total | 155 | 20,7437 |

According to the means, A1 and A2 proficiency groups demonstrated a greater tendency to use VLS more than B2 group.

## 4. Discussion

Baskın et al.'s (2017) findings depicted that cognitive strategies were the least preferred when compared to the other types of VLS; however, the current study revealed that TFL learners made use of memory strategies most. Overall results indicated that TFL learners employed metacognitive strategies, which promoted planning and organisation skills, at the lowest level.

The results of Biçer and Polatcan's study differed in that memory, compensation and social strategies had significant differences in terms of proficiency level (B1 (n=7), B2 (n=30), C1 (n=13)). C2 learners, in their study, were also found to be using VLS less than the lower groups as it was in our study. Also, Biçer and Polatcan claimed the fact that higher group showed less use of VLS was rooted in the assertiveness of highly proficient learners. However, the differences in the use of VLS might have been due to the different proficiency groups included in the studies. While Biçer and Polatcan compared B1, B2 and C2 learners, the current study did so by comparing A1, A2 and B2 learners.

Tok and Yığın (2014) found the memory strategies as the least frequently used ones by B2 learners and the current study revealed that the memory strategies had the highest scores of all. The results obtained from B2 learners were in line with the B2 sample in Tok and Yığın (2014) in terms of memory strategies. However, findings in our study posited that B2 learners showed a significantly lower scores in all types of strategies.

Metacognitive and determination strategies were used most frequently and this is also in contrast with our findings in that metacognitive strategies were preferred the least by our sample groups.

In contrast with Barut (2015), Gu (2002), Ehrman and Oxford (1989), Oxford and Nyikos (1989), Catalan (2003)'s studies, male participants of the current study used VLS more than females. However, the overall VLS use was not significant for the two groups. Only the compensation strategies revealed significant results, and males used compensation strategies more often than females. The use of technology (technological programs, games and videos) was of the compensation strategies (questionnaire items 10, 15, 16, 32). Although significantly different scores may have attribution to the individual characteristics, the results showed that gender played a significant role in the choice of VLS and it may be concluded that males were inclined to use technology while learning a second or foreign language. Similarly, Kocaman's (2015) study revealed that male participants employed compensation strategies (use of computer, use of the internet, use of videos and games) more than female participants.

## 5. Limitations

This study was conducted with only three levels of TÖMER students. The results could be different with a wider range of proficiency levels. The gap among the distribution of the participants according to proficiency levels and gender might have affected the results. Due to time and participant accessibility restrictions, triangulation in data collection could not be utilised. Also, the nationalities of the participants, which could be a rational variable in the present context, was not treated as a variable due to the unequal distribution of nationalities.

## 6. Suggestions

As Little and Kobayashi (2014) points out the need for an explicit VLS instruction for lower and higher proficiency level learners, TFL learners may be offered explicit instruction about VLS.

Specifically designed VLS instructions may be employed for TFL learners who are coming from diverse linguistic backgrounds. A focus on the strategies that were favoured by the participants may be an indicator for researchers to develop VLS instruction plans.

A wider number of TFL students who are studying at other universities in Turkey may be included in future studies. Due to the scarce literature about TFL students' VLS use, replications of the study might be informative when conducted with higher proficiency levels.

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