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An Examination of the Relationship Between Self-Control and Cyber Victimization in Adolescents[1]

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ABSTRACT

Purpose: Cyber bullying is a new phenomenon which adversely affects young people. Exposure to the cyber bullying can negatively affect the mental health. The aim of this study is to examine the predictive effect of self-control on cyber victimization in adolescents. **Research Methods**: The study group was composed of 353 Turkish secondary school students. The research data were collected using the Brief Self-Control Scale and Cyber Victimization Scale. To examine predictive relationships between self-control and cyber victimization, the descriptive relational model was used. In the study, the analysis of the data was made using the Pearson Correlation Coefficient and structural equation modelling. **Findings:** As a result of the study, significant relationships were determined in the negative direction, at low and moderate level between the impulsivity and self-discipline sub-dimensions of the self-control scale and cyber language victimization, hidden identities and cyber forgery sub-dimensions of the cyber victimization scale. Another result of the study was that the self-control latent variable (SC) covering the impulsivity and self-discipline sub-dimensions predicted negatively the cyber victimization latent variable (CV), which relates to cyber language victimization, hidden identity and cyber forgery sub-dimensions. **Implications for Research and Practice**: As a result of the study, it was found that self-control predicted cyber victimization in a negative way. The structural modelling analysis indicated that the model related to self-control's predicting cyber victimization was acceptable and the model could account for the relationships between the observed and the latent variables sufficiently. Counselors can place students in activities to improve their self-control skills.

[1] This study was presented at the II. International Eurasian Educational Research Congress (Hacettepe University & EJER, 08-10 June 2015).

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Introduction

The use of communication technologies has become an indispensable phenomenon for people. Internet use is becoming more widespread and has become essential part of life (Dogan. 2016; Eroglu, 2016). Information and communication technologies are developing quickly. At the beginning of the 21st century, adolescents began to use the Internet actively. Blogs, social networks and instant messaging have created a new world for young people (Antoniadou & Kokkinos, 2015). Developments and changes that create a positive impact on the lives of individuals can nonetheless lead to results that do not want conventional terms of individual and social. In this case, information and communication-context can be seen more clearly as a product of technological development (Ates & Guler, 2016). Especially when people use communication tools intensively, there can be a rapid change in their relationships in their daily lives.

Online participation does not only enable a person to reach information at his/her fingertips; it also offers such benefits as entertainment and the means to learn various social and emotional skills. For example, cyber environment provides a place for expressing emotions in a healthy way, treating others tolerantly and respectfully, critical thinking, decision making, self-control skill and learning (Berson, 2000). The cyber world provides young people with such opportunities as self-discovery, social support, playing games, communication with others and academic support (Tokunaga, 2010). Therefore, information and communication technologies can be said to provide a significant contribution in the life of young people.

If young people do not use the Internet in a positive way like discovering new things and relaxing, they will not establish positive interactions with others in cyberspace nor enhance developmental characteristics. A great majority of young people use computers and the Internet in a negative and harmful way like causing harm to others and exhibiting aggressive behaviors. The new form of online aggression and victimization is called cyber bullying (Mishna, Cook, Gadalla, Daciuk & Solomon, 2010). In other words young people can use communication technologies to harm others.

Cyber bullying behaviors can be seen in different forms in daily life. A cyber bully may establish communication with a victim by using a e-mail under a fake name or creating imaginary accounts on social media sites. At the same time, an individual might become the victim of cyber bullying while playing a game, at school, home or in his/her private quarters. Due to the use of modern technology, we may come across cyber bullying behaviors any time of day. A benefical therefore technology has made possible new form of bullying and may be abused (Paullet & Pinchot, 2014). In short, we can face cyber bullying behavior just about every where.

When examining the literature of different countries regarding the prevalence of cyber bullying, the author discovered numerous studies. Cyber bullying is commonly observed in the early adolescent and adolescent ages. For example, in a study carried out with secondary and high school students, nearly half the students had experienced cyber victimization and 34% of them been cyber bullies themselves

(Mishna et al., 2010). In another study, the rate of the students falling victim to cyber bullying was about 19% and that of the students being cyber bullies was about 17% (Heiman, Olenik-Shemesh & Eden, 2015). Jung et al., (2014) found that one of ten students did cyber bullying, while Felmlee and Faris (2016) determined that 5.8 % of the young people aged between 14-18 years old fell victim to cyber bullying. Ramsey, Dilalla and Mccrary (2015) found out that 5% of the young people aged between 18-22 years old were cyber victims. DePaolis and Williford (2014) determined that approximately 18% of middle school students were cyber victims. In summary, studies in the literature have shown that cyber bullying is increasingly a common.

Exposure to cyber bullying can negatively affect the psychology of individuals. Individuals being subjected to cyber bullying have low self-esteem, lack of concentration and suicidale thoughts (Bauman & Newman, 2013; Bonanno & Hymel, 2013). Studies have found a significant relationship between cyber bullying and emotional problems (Sjurso, Fandrem & Roland, 2016). It is reported that cyber bullied people experience excessive levels stress (Wright, 2015), sorrow, and desperation (Raskauskas & Stoltz, 2007; Wolak, Mitchell & Finkelhor, 2006); depression and emotional problems (Brown, Demaray & Secord, 2014). Research results show the mental health effects of exposure to cyber bullying.

Exposure to the cyber bullying can affect the school life and friendship relationships of adolescents. However, it is emphasized that in students subjected to cyber bullying display such problems as not wanting to go to school and fear of attending school (Raskauskas & Stoltz, 2007). Cyber bullying events arise generally from relationship problems in cyber environment such as jealousy, intolerance, and upsetting others (Akbulut & Erıstı, 2011). As a result, young people spend a lot of time on the Internet. A adverse situations in daily life can lead to cyber bullying behavior online.

In the study, self-control is one concept examined. Self-control is described as how an individual's regulates' and controls his/her feelings, thoughts and behaviors in order to establish good reationships with others (Baumeister, Bratlavsky, Muraven & Tice, 1998; Muraven, Tice & Baumeister, 1998). Gottfredson & Hirschi (1990) state that individuals with low self-control have such characteristics as impulsively and selfish behavior, taking pleasure in risk-taking a preference for physical activities instead of mental ones, and a preference for choosing simple tasks over complicated ones. For this reason, the behaviors of individuals with low self-control aim at short-term targets and are shaped according to impulsive pleasure-taking (Hirschi & Gottfredson, 1993). Family attitudes play an important role in the development of low self-control.

It is reported that low self-control affects victims both indirectly and directly. For victims, the possibility of encountering more frequent risky situations and encountering criminal behaviors of individuals with insufficient self-control have a direct impact. Making decisions about situations to reveal their faults affects individuals with low self-control as victims directly (Bossler & Holt, 2010). It was

reported that low self-control is related to the display of violent behaviors (Schreck, Stewart & Fisher, 2006), being a victim (Holtfreter, Reisig & Pratt, 2008), exhibition of reckless behaviors (Forde & Kennedy, 1997), risky life styles (Stewart, Elifson & Sterk 2004), commission of crimes (Schreck, Wright & Miller, 2002), positive emotions, learner engagement, academic achievement (King & Gaerlan, 2014). Ultimately, researchers reported problematic behavior caused by low self-control.

Purpose of The Study

Studies have revealed that cyber bullying as a by product of abusing information and communication technologies is a gradually increasing problem among children and young people. The advancing technology could make enhance this problem even worse. For this reason, studies on how to carry out preventive measures are increasing. It is projected that this study could make a contribution to preventive method. Finding the relationship between self-control and cyber victimization in adolescents would be provide an important resource for field specialists (i.e., psychological counselors, psychologists, social service specialists and school administrators) in prevention. In this direction, the purpose of this study is to examine the predictive effect of self-control on cyber victimization.

Method

Research Design

To examine predictive relationships between self-control and cyber victimization, the descriptive relational model was used in the study. The theoretical model developed in order to account for the relationship between adolescents' self-control and cyber victimization was tested.

Research Sample

The study group was composed of 353 students receiving education at five high schools in the city of Erzurum, Turkey in the 2014-2015 educational year. Two hundred and nine participants (59.2% of the total) were female and 144 (40.8%) were male. The grade break down of students was roughly equal: 26.6% were in 9th grade; 29.6% were in 10th grade; 31.2% were in 11th grade; and 13.6% were in 12th grade.

Research Instrument and Procedure

Brief self-control scale (BSCS). One of the data collection tools used in the study is the Brief Self-Control Scale. The scale was adapted into Turkish by Nebıoglu, Konuk, Akbaba, Eroglu (2012). The reliability coefficient for the entire scale was found to be. .83; for the dimension of impulsivity, it was .81; for the dimension of self-discipline, it was .87. The test-retest reliability for the whole of the scale was determined to be .88; for the dimension of impulsivity, .83; for the dimension of self-disciplin, .85.

Cyber victimization and bullying scale (CVBS). In order to determine the students' cyber bullying and cyber victimization behaviors, the CVBS developed by Cetın, Yaman and Peker (2011) was used. The scale is composed of two forms and the

dimensions of cyber language victimization/bullying (CLV/B hiding identity (HI) and cyber forgery (CF). There are 22 questions in the scale. The scale was evaluated via using five-point Likert type grading. Within the scope of this study, the cyber victimization form was used. The internal consistency of the CVS was found to be .89. The internal consistency coefficients were .86, .80 and .68 respectively for the CF, CLV and HI sub-dimensions of the scale; the test-retest reliability coefficients were .87, .80 and .69. The increase observed in the total score obtained for the CVS indicates an increase in the possibility of experiencing cyber bullying.

Data Analysis

Before analyzing the data of the study, for the multivariate data, in order to determine values which are likely to affect the normal distribution, the Mahalanobis distance values were calculated. As a result of this calculation procedure, scales belonging to four people were excluded from the data set. After this procedure, analyses were conducted of 353 pieces of data. The relationships between self-control and cyber victimization were examined via Pearson Product-Moment Correlation; the predictive effect of self-control on cyber victimization was examined using structural equation modelling. Shumacker and Lomax (2004) described structural equation modelling as a statistical approach revealing causal and mutual relationships between observed and latent variables to test a theoretical model. In the study, analyses of the data were made via using the LISREL 8.54 and SPSS 21.00 programs.

Results

The result of the analyse of the data obtained from the study, the relationship between adolescents' self-control and cyber victimization behaviors, the means and the standard deviation values are presented in Table 1.

Table 1.
Pearson Correlation Analysis Results Related to Relationships Between Self-Control and Cyber Victimization

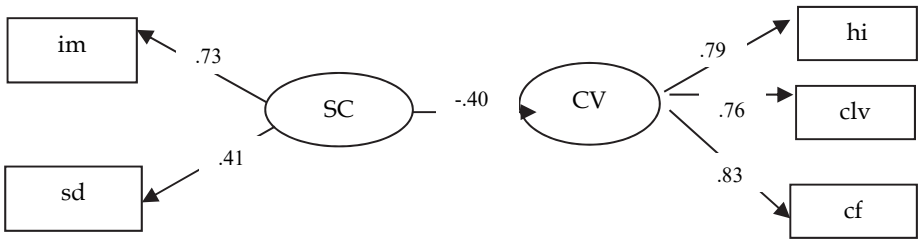
	Variables	1	2	3	4	5
1	Impulsivity					
2	Self-Discipline	.30*	1			
3	Cyber Language Victimization	-.33*	-.18*	1		
4	Hiding Identity	-.22*	-.11*	.58*	1	
5	Cyber Forgery	-.17*	-.11*	.66*	.65*	1
	$\overline{X}$	15.45	14.78	9.81	7.54	12.78
	Sd	4.15	3.00	4.07	3.37	4.65

*p<.05

When Table 1 is examined, significant negative relationships are observed at low and moderate levels between the impulsivity and self-discipline sub-dimensions on the self-control scale and the cyber language victimization, hidden identity and cyber forgery sub-dimensions of the cyber victimization scale. Moreover, it is observed that the sub-dimensions on the cyber victimization scale are significantly positively related with one another at a moderate level. Furthermore, a significant positive relationship between the impulsivity and self-discipline sub-dimensions of the self-control scale are found at a moderate level.

Structural Equation Modelling

Having determined the significant relationships between self-control and cyber victimization, the predictive effect of self-control on cyber victimization was tested via structural equation modelling. The latent variable of self-control (SC) was measured via the observed variables of impulsivity and self-discipline. The latent variable of cyber victimization (CV) was measured via the observed variables of cyber language victimization (clv), hiding identity (hi) and cyber forgery (cf). The findings related to the predictive effect of the latent variable of self-control (SC) on the latent variable of cyber victimization (CV) are shown in Figure 1.



$\chi 2$: 3.13, sd: 3, p: .37, RMSEA: .011

Figure 1. *Structural equation model between self-control and cyber victimization*

Figure 1 show the implicit variable of self-control (SC) covering impulsivity and self-discipline predicts negatively the implicit variable of cyber victimization covering the sub-dimensions of cyber language victimization, hiding identity and cyber forgery (β=-.40, t= -4.47). It was determined that all the paths shown in the model were significant ($\chi 2$/sd= 1.04, NFI= .99, CFI=.99, GFI =.98, AGFI= .98, SRMR= .014 ve RMSEA= .011; Byrne, 2010; Kline, 2011). This finding suggest that self-contol has a significant effect on being subjected to cyber bullying in adolescents. In other words, the obtained findings revealed that adolescents' increasing self-control levels decrease their chances of experiencing cyber victimization.

Coefficients of Determination Related to Structural Equation Model

The findings related to self-control's coefficients accounting for the variance in cyber victimization are given in Table 2.

Table 2.
Coefficients of Determination Related to Structural Equation Modelling

Accordance Parameter	Coefficient Value
1. Impulsivity	.53
2. Self-discipline	.17
3.Cyber language victimization	.62
4. Hiding identity	.57
5. Cyber forgery	.70

When Table 2 is examined, it can be observed that self-control (SC) accounts for 53% of the impulsivity variance and 17% of the self-discipline variance in the measurement model related to self-control. Moreover, in the measurement model related to cyber victimization, cyber victimization (CV) accounts for 62% of the variance in cyber language victimization, 57% of the variance in hiding identity and 70% of the variance in cyber forgery. It was determined that the self-control latent variable accounted for 18% of the variance in the cyber victimization latent variable.

Findings Related to Total and Indirect Effects in Structural Modelling

The total effects of the SC implicit variable on impulsivity and self-discipline and those of the CV latent variable on cyber language victimization, hiding identity and cyber forgery and the indirect effects of the SC latent variable on the observed variables of CV are shown in Table 3.

Table 3.
Total and Indirect Effects Determined In Relation To Structural Equation Modelling

	Total Effect		Indirect Effect
Observed Variables	Self-Control	Cyber Victimization	Self-Control
1. Impulsivity	.73		
2. Self-discipline	.41		
3. Cyber language victimization		.79	-1.30
4. Hiding identity		.76	-1.03
5. Cyber forgery		.83	-1.57

When the values given in Table 3 are examined, it is observed that the self-control latent variable (SC) directly affects the variables of impulsivity and self-discipline; the cyber victimization latent variable (CV) directly affects the variables of cyber language victimization, hiding identity and cyber forgery. Moreover, the observed variables of impulsivity and self-discipline indirectly affects the observed variables of the cyber victimization scale over the SC latent variable. In other words, the SC latent variable indirectly affect the indicative variables of the CV latent variable and it was found that this effect was not direct.

Discussion and Conclusion

Discussion

This study examined, the predictive effect of self-control, composed of the dimensions of impulsivity and self-discipline on adolescents' experiences of cyber victimization. The predictive effect of self-control on cyber victimization was tested with the structural equation modelling. As a result of testing the structural equation modelling, it was found that the self-control latent variable accounted for 18% of the cyber victimization latent variable and self-control predicted cyber victimization in a negative way. The findings revealed that if adolescents' self-control levels increased, the possibility of their experiencing cyber victimization decreased. This result is consistent with research findings indicating that low self-control increases cyber victimization (Bossler & Holt, 2010; Vazsonyi, Machackova, Sevcikova, Smahel & Cerna, 2012). In light of the findings obtained from the study, self-control appears to be a strong predictor of cyber victimization in adolescents; as self-control decreases, exposure to cyber bullying is likely to increase. One adolescents being cyber bullied their low self-control level. In other words, self-control is a negative risk factor in terms of cyber victimization.

Researchers have shown that the behavior of individuals with low self-control. Since individuals with low self-control make impulsive decisions, this may lead to them to involvement in criminal behaviors. Hence, their risk of being a victim increases (Higgins, Fell & Wilson, 2006; Higgins & Makin, 2004). As individuals with low self-control, they may display risky behaviors. Although these actions give pleasure to an individual for a short period of time, they may, at the same time, lead them to become victims and to encounter harmful software (Bossler & Holt, 2009). However, individuals may interact with people who they do not know in chat rooms and cyber environments and, as a result, be subject to harmful behaviors (Gilboa, 1996; Hinduja & Patchin, 2008). As a result, individuals with low self-control may show risky behavior in the virtual environment. This situation can lead to life cyber bullying.

Researchers indicate that individuals with low self-control have problems in contact with others. It is stated that individuals with low self-control have difficulty estabishing relationships with others and low empathy levels and social ties. At the same time, they may interpret other people's intentions incorrectly (Gottfredson & Hirschi, 1990). It is emphasized that people with difficulty evaluating other people's intentions in face-to-face interactions have an important disadvantage in on-line environments (Herring, 1999; Wall, 2001). As a result, these experiences may lead to decreasing social support and experiences of victimization. In this context, individuals with low self-control can easily be frustrated in the cyber environment.

Virtual environments provide opportunities for individuals to express themselves. This can lead to loss of self-control. Thoughtless or aggressive behaviors in the online environment may lead to victimization in the cyber environment. People who cannot cope with others in the online environment may use conflict-

prone and aggressive language when establishing communication (Gilboa, 1996; Herring, 1999). Individuals with low tolerance may harm others and exhibit more threatening behaviors in their online social interactions (Bossler & Holt, 2010). Individuals with low self-control are associated with peers that support the cyber crime (Higgins et al., 2006). As a result, people with low self-control of virtual environments are provided to describe themselves using the wrong conditions can lead to cyber victimization.

Researchers have reported that the reason they are victims of the personality traits of individuals with low self-control. It is reported that since individuals with low self-control exhibit risky behaviors and have characteristics increasing the possibility of their getting involved in crime such as impatience, insensitiveness and impulsivity that increase, the possibility of their getting involve in crime being a victim increases (Gottfredson & Hirschi, 1990). Moreover, individuals with low self-control may peers who tend to get involved in risky situations and commit crimes (Schreck et al., 2002). As a result, having low self-control can lead to cyber victimization.

Individuals with low self-control may be exposed to cyber bullying behavior in cyberspace. Young people with low self-control are more likely to be engaged in a risky lifestyle and subjected to other crimes (Bossler & Holt, 2010; Schreck et al., 2006). Since individuals with low self-control spend too much time online and share too much personal information (Holt, Bossler & May, 2012), they may be subjected to cyber bullying. Since individuals with low self-control often engage in risky behaviors in the online environment to get short-term pleasure, they may become victims (Bossler & Holt, 2010; Holt et al., 2012). Consequently, the personal characteristics of individuals with low self-control are contributing to their becoming victims of cyber bullying.

Conclusion

This study found that self-control predicted cyber victimization in a negative way. The structural modelling analysis indicated that the model related to self-control's prediciting cyber victimization was acceptable and the model could account for the relationships between the observed and the latent variables sufficiently. According to the research results, the adolescents' decreasing self-control related to impulsivity and lack of self-discipline, thus leading to their experiencing cyber victimization.

Recommendations

The findings of the study should be taken into account with the limitations. As a data collection tool, the self-control scale composed of two sub-dimensions, and the cyber victimization scale composed of three sub-dimensions, were used. Further studies could repeat the study using different scales related to self-control and cyber victimization. Hence, results of those studies could be compared and more detailed findings can be obtained. Another limitation of the study was its inclusion of

adolescent students aged between 14-18 years old. For this reason, the obtained results must be evaluated according to students in this age group. It is not possible to generalize the results of the study to other age groups. Replication of the study with students from different educational stages would increase the generalizability of the results. Counselors could then place students in activities to improve their self-control skills.

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Ergenlerde Öz-Kontrol İle Siber Mağduriyet Arasındaki İlişkinin İncelenmesi

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Özet

Problem Durumu: 21. yüzyılın başında ergenler interneti etkin bir şekilde kullanmaya başlamışlardır. Bloglar, sosyal ağlar ve anlık mesajlaşma gençler için yeni bir dünya oluşturmuştur. Bu yeni dünyaya katılımın kişiye parmaklarının ucunda bilgilere ulaşmalarının yanında eğlenme, çeşitli sosyal ve duygusal becerileri öğretme gibi yararları bulunmaktadır. Örneğin siber ortam sağlıklı şekilde duygularını ifade etmek, başkalarına hoşgörü ve saygı ile bakabilmek, eleştirisel düşünme, karar verme, kendini kontrol etme becerisi ve yeni şeyler öğrenme için bir mekan sağlamaktadır. Siber dünya gençlerin kendinin keşfetme, sosyal destek alma, oyun oynama, bilgiye ulaşma, başkalarıyla iletişim kurma ve akademik destek alma gibi benzersiz fırsatlar sunmaktadır. Gençlerin büyük çoğunluğu bilgisayarı ve interneti olumlu ve yararlı bir şekilde kullanmalarına rağmen başkalarına zarar vererek, saldırganlık davranışlar gösterme şeklinde de kullanabilmektedirler. Online saldırganlığın ve mağduriyetin yeni formu siber zorbalık olarak adlandırılmaktadır. Siber zorbalık elektronik metin aracılığıyla tekrarlanan bir şekilde kasıtlı olarak

başkalarına zarar verecek davranışlar olarak tanımlanmaktadır. Bir diğer ifade ile siber zorbalık bilişim ve iletişim teknolojilerinin bir kişi yada gruba hakaret etmek, iftira atmak ve alay etmek amacıyla kasıtlı ve tekraralanan agresif davranışlar olarak belirtilmektedir. Siber zorbalık teknolojik araçların olumsuz bir özelliği olarak görülmektedir.

Siber zorba, farklı bir e-posta kullanarak ya da sosyal medya sitelerinde hayali hesaplar oluşturarak mağdurla iletişim kurabilir. Aynı zamanda siber zorbalık oyun oynarken, okulda, evde ya da kişinin özel alanında bireyin karşısına çıkabilir. İnsanlar modern teknolojinin kullanımı ile birlikte 24 saat siber zorbalık davranışılarla karşılaşabilirler.

Araştırmanın Amacı: Araştırmalar bilişim ve iletişim teknolojilerinin kötüye kullanılması sonucunda oluşan siber mağduriyetin çocuklar ve gençler arasında giderek artan bir problem olduğunu ortaya koymaktadır. Özellikle teknolojinin gelişmesi bu sorunun giderek büyümesine yol açacağı düşünülmektedir. Dolayısıyla siber zorbalık davranışlara maruz kalmayı önlemeye ilişkin çalışmalarının nasıl olacağı yönünde araştırmalar hız kazanmaktadır. Bu çalışmanın da önleme çalışmalarına katkı sağlayacağı ön görülmektedir. Ergenlerde öz-kontrol ile siber mağduriyet arasındaki ilişkinin ortaya konulmasının müdahale çalışmaları için alan uzmanlarına (psikolojik danışmanlar, psikologlar, sosyal hizmet uzmanları ve okul yöneticileri) önemli bir kaynak sağlayacağı düşünülmektedir. Bu doğrultuda bu araştırmanın amacı öz-kontrolün siber mağduriyet üzerindeki yordayıcı etkisinin incelenmesidir.

Araştırmanın Yöntemi: Araştırmada öz-kontrol ve siber mağduriyet arasındaki yordayıcı ilişkileri incelemek için ilişkisel tarama modeli kullanılmıştır. Çalışmada ergenlerin öz-kontrolü ile siber mağduriyet arasındaki ilişkiyi açıklamaya yönelik geliştirilen teorik model test edilmektedir. Araştırmanın çalışma grubu 2014-2015 eğitim öğretim yılında Türkiye'deki Erzurum ilinde beş farklı ortaöğretim okulunda öğrenim gören 353 öğrenciden oluşmaktadır. Çalışma grubunun 209 (%59,2) tanesi kız, 144 (%40,8) tanesi ise erkektir. Öğrencilerin %26,6'sı 9.sınıfta, %29,6'sı 10. sınıfta, % 31.2'si, 11.sınıfta ve %13'6'sı 12. sınıfta öğrenim görmektedir. Araştırma verilerine ilişkin analiz yapılmadan önce çok değişkenli veriler için normallik dağılımını etkilemesi olası değerleri belirlemek için Mahalanobis uzaklık değerleri hesaplanmıştır. Bu hesaplama işlemi sonucunda 4 kişiye ait ölçekler veri setinden çıkarılmıştır. Bu işlemden sonra 353 veri ile analizler sürdürülmüştür. Araştırmada öz-kontrol ile siber mağduriyet arasındaki ilişkiler Pearson momentler çarpım korelasyonu ile; öz-kontrolün siber mağduriyet üzerindeki yordayıcı etkisi yapısal eşitlik modeli incelenmiştir. Araştırmada verilerin analizleri LISREL 8.54 ve SPSS 21.00 programları aracılığıyla yapılmıştır.

Araştırmanın Bulguları: Araştırmanın sonucunda öz-kontrol ölçeğinin alt boyutlar olan dürtüsellik ve öz-disiplinle siber mağduriyet ölçeğinin alt boyutları olan siber dilsel mağduriyet, kimliği gizleme ve siber sahtecilik arasında negatif yönde düşük ve orta düzeyde anlamlı ilişkilerin olduğu görülmektedir. Ayrıca siber mağduriyet ölçeğinin alt boyutlarının birbirleriyle orta düzeyde ve pozitif yönde anlamlı bir

ilişkinin olduğu gözlenmektedir. Bunun yanısıra öz-kontrol ölçeğinin dürtüsellik ve özdisiplin arasında pozitif yönde, orta düzeyde, anlamlı bir ilişkinin olduğu belirlenmiştir. Öz-kontrolün siber mağduriyet üzerindeki yordayıcı etkisi yapısal eşitlik modeli ile test edilmiştir. Yapısal eşitlik modeli analizi sonucunda dürtüsellik ve öz-disiplini kapsayan öz-kontrol örtük değişkeninin (OZK) siber dilsel mağduriyet, kimliği gizleme ve siber sahtecilik alt boyutlarını kapsayan siber mağduriyet örtük değişkenini (SM) negatif yönde yordadığı gözlenmektedir (β=-.40, t= -4.47). Modelde gösterilen tüm yolların anlamlı olduğu belirlenmiştir ($\chi 2/sd$= 1.04, NFI= .99, CFI=.99, GFI =.98, AGFI= .98, SRMR= .014 ve RMSEA= .011). Elde edilen bu bulgu öz-kontrolün ergenlerde siber zorbalığa maruz kalma üzerinde anlamlı bir etkisinin olduğu şeklinde değerlendirilebilir.

Araştırmanın Sonuçları ve Önerileri: Bu araştırmada dürtüsellik ve öz-disiplin boyutlarından oluşan öz-kontrolün ergenlerin siber mağduriyet yaşama üzerindeki yordayıcı etkisi incelenmiştir. Araştırma sonucunda öz-kontrol ile siber mağduriyet arasında anlamlı ilişkilerin olduğu görülmüştür. Araştırmanın diğer bir sonucunda öz-kontrol (OZK) örtük değişkeninin siber mağduriyet (SM) örtük değişkenini negatif yönde ve anlamlı bir düzeyde yordadığı belirlenmiştir. Ayrıca araştırmada OZK örtük değişkeninin siber dilsel mağduriyet, kimliği gizleme ve siber sahtecilik gözlenen değişkenleri üzerinde dolaylı etkilere sahip olduğu tespit edilmiştir. Analiz sonucunda, öz-kontrolün siber mağduriyetin % 18'ini açıkladığı saptanmıştır.

Çalışmanın bulguları, göz önünde bulundurulması gereken sınırlılıklar ile dikkate alınmalıdır. Bu çalışmada veri toplama aracı olarak iki alt boyuttan oluşan öz-kontrol ölçeği ve üç alt boyuttan oluşan siber mağduriyet ölçeği kullanılmıştır. Gelecekte yapılacak çalışmalarda öz-kontrol ve siber mağduriyet ile ilgili farklı ölçekler kullanılarak araştırma tekrarlanabilir. Böylece çalışmanın sonuçları karşılaştırılarak daha ayırt edici bulgulara ulaşılabilir. Araştırmanın diğer bir sınırlılığı ise çalışma grubunun 14-18 yaş arası öğrenim görmekte olan ergenlerle sınırlı olmasıdır. Bundan dolayı elde edilen sonuçların bu yaş grubundaki öğrencilere göre değerlendirilmesi gerekmektedir.

Anahtar Kelimeler: Lise öğrencileri, elektronik saldırganlık ve yapısal eşitlik modeli.

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The Relationship between Pre-service Teachers' Awareness Levels of Electromagnetic Pollution and other Environmental Problems

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ABSTRACT

Purpose: The purpose of this study is to find out the relationship between the awareness level of preservice science teachers' conscious use of technological devices, which cause electromagnetic pollution, and their awareness level of related environmental problems. **Research Methods**: In this study, a mixed design method was used. A relational screening model was used to collect quantitative data. The phenomenological method, which includes defining and interpreting individuals' perception and perspective related to a phenomenon, was used to collect qualitative data. While selecting participants, purposeful sampling was used. Seventy-six preservice science teachers took part in the quantitative part of this study in Ankara, Turkey. In the qualitative part of the study, seven female and eight male preservice teachers were chosen out of the seven-six on a volunteer basis. Three data collection tools were used. **Findings**: The findings obtained from the research show that there is no remarkable difference among preservice science teachers' awareness levels of electromagnetic pollution depending on the gender variable. Then, it was concluded that students who had taken environmental science courses had higher levels of awareness compared to those who had not. With another sub-problem, it was seen that there is no relationship between preservice teachers' awareness levels of conscious use of technological devices causing electromagnetic pollution and their awareness levels of environmental problems. **Implications for Research and Practice**: Preservice science teachers are less sensitive to electromagnetic pollution than other types of pollutions. Future studies could investigate why students think that they are less sensitive to electromagnetic pollution.

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Introduction

In this age, though developments in science and technology increase societal standards of living, they lead to destruction or changes in many things. Environmental issues includes overuse or misuse of natural resources; corruption caused by pollution in fundamental physical elements of nature such as water, air and soil; nature's loss of ability to dispose of wastes; and misuse of natural resources. Thus, there exists a corruption that is ecologically intolerable (Kislalioglu & Berkes, 2007; Yildiz, Sipahioglu & Yilmaz, 2008; Guven & İnce Aka, 2009). These problems, which could be considered as unimportant early on, go beyond being a single country's problem and threaten the world. Environmental problems arise from changes to the relationship between the natural environment and living beings. The elements that cause these changes are the use of fossil fuels, destruction of forests, and production and use of various chemical materials and agricultural activities on large fields (Turner, Kasperson, Meyer, Dow & Golding, 1991). People have used natural resources and not allowed them to renew themselves. They have harmed nature without considering themselves as a part of it and thus gave rise to many environmental problems (Caldarelli, 2004). Environmental problems are mostly considered to include water, air, noise or soil pollution by scientists (Arkis, 1992; Dogan, 1993; Tican, 1996; Page, 2000; Yilmaz, Morgil, Aktug & Gobekli, 2002; Solange & Trufen, 2004; Oznur, 2008; Sevinc, 2009; Bozkurt, 2011). However, as a natural result of living in a technological age, electromagnetism, which pollutes and impairs the quality of both the environment and our lives, can also be regarded as a kind of pollution. Electromagnetic pollution can be categorized as man-made and natural. Our world is surrounded by a statical electromagnetic area between 25-65μT (Feychting, Ahlbom & Kheifets, 2005). Natural electromagnetic pollution has been in the air as a part of natural world since the very beginning of life. Whereas this kind of pollution can be controlled by a conscious society, it can pose a great threat if necessary actions are not taken.

Unlike other kinds of pollution, electromagnetic pollution is invisible and its effects do not come into sight for a long time. For this reason, necessary precautions cannot be taken. On the other hand, man-made electromagnetic pollution is a result of technological devices. Primary technological devices which contribute electromagnetic pollution are radio and television transmitters, radiophones, microwave ovens, photocopiers, cell phones, wireless modems, hair dryers, laptops and radio stations (Altun, 2001; Demir, 2005; Balmori, 2006; Chakraborty, 2007; Erdogan, 2007; İnce, 2007; Moulton Howe, 2008; Uygunol & Durduran, 2008; Balmori, 2009; Uygunol & Durduran, 2009; Greenberg, 2010).

Although electromagnetic waves are not visible or easily perceptible, their effects can be detected. For this reason, damages of electromagnetic waves on people cannot be noticed easily. If electromagnetic pollution were like noise pollution, we could protect ourselves by leaving the environment or removing the item that makes the noise. However, when electromagnetic pollution is heavy in an atmosphere, it cannot be perceived by the five senses. That is why electromagnetic pollution can only be noticed when its effects appear on people's health. Electromagnetic pollution's effects

change according to the electromagnetic field's frequency, intensity, distance and, most importantly, duration (Ermol, 2008). Electromagnetic pollution has two kinds of effects on people's health. The first includes short-term effects such as tiredness, headache, eye burning, eye pain, weakness and dizziness. The latter, on the other hand, is a long-term effect (Sandstrom et al., 1998). In addition, when the literature was reviewed, it was noticed that electromagnetic pollution can have certain biological effects such as insomnia, feeling sleepy during the day, resentment and constant restlessness, which cause exclusion from society (Mann & Roschke, 1996; Borbely Huber, Graf, Fuchs, Gallmann & Achermann, 1999; Krause, Sillanmaki, Koivisto, Haggqvist, Saarela, Revonsuo, Laine & Hamalainen, 2000). The electromagnetic waves also effect molecules, chemical bonds, cells and the body protection mechanism of the human body (Graham, Cook, Cohen & Gerkovich, 1994; Kang Lee, Seo, Sung, Chung, Lee, Suh & Chi, 1997). Researchers have worked on the melatonin hormone because it is both a very important antioxidant and a cancer inhibitor. Moreover, it has a great impact on human psychology. The melatonin hormone is released through the pineal gland, which is a magnetic organ consisting of magnetic crystals in the center of the head. The pineal gland is very sensitive to magnetic energy and melatonin is released at night when the earth's magnetic field is active. However, the pineal gland's activity decreases if factors disturbing the balance between the human body and the magnetic field are in the air. These spoiling factors are chemical contaminators, communication frequencies and signals coming from electrical power transmitters (Bold, Toros & Sen 2003). Even though melatonin levels change from person to person, it is released at the highest level between 23.00 and 05.00 at night. It was ascertained that 20 minutes every day, five days a week and three weeks of exposure to 40 Hz electromagnetic field decreases the concentration of melatonin (Karasek, Woldanska-Okonska, Czernicki, Zylinska & Swietoslawski, 1998). Experiments on animals have also suggested that a low-intensity electromagnetic field has certain biological effects such as changing hormone and enzyme levels, inhibiting the movement of chemicals on tissues (Dincer, 2000; Bold, Toros & Sen, 2003; Taktak, Tiryakioglu & Yılmaz, 2005) and triggering cancer (GarajVrhovac, Fucic & Horvat, 1992; Moulder & Foster, 1995). Just the same, studies have shown that pregnant women who are exposed to electromagnetic field for long times have difficulty in giving birth (London et al., 1991) and that electromagnetic waves have adverse effects on growth and development (Ermol, 2008). Studies have shown that electromagnetic waves are more dangerous if exposure is long, but in low-doses than if they are short but in high-doses (Berman, Carter & House, 1982; Berman, Quinn & Zarro, 1991). Electromagnetic pollution has negative influences both on people and the natural environment. Open fields with high electromagnetic pollution affect bird populations badly. In Spain, antennas were located in the ''Compo Grande'' park, and its bird population decreased. Between 1997 and 2007, 3 species out of 14 left the region. In the same way, insects and bees were exposed to electromagnetic waves, which led to colonial immigration (Balmori, 2009). Most researchers have conducted studies on the adverse effects of electromagnetic pollution on people's health while emphasizing the necessary actions to be taken to protect themselves from

electromagnetic pollution (London, Thomas, Bowman, Sobel, Cheng & Peters, 1991; Durusoy, Hassoy, Karababa & Ozkurt, 2011; Sarigoz, Karakus & Irak, 2012; Kaya Gulagiz, Goz & Kavak, 2016). This means that it is very significant to make people aware of electromagnetic pollution, which is an environmental problem, especially in a technological age. From the literature review it is obvious that electromagnetic pollution has not yet been considered an environmental problem (Arkis, 1992; Dogan, 1993; Tican, 1996; Page, 2000; Yılmaz, Morgil, Aktug & Gobekli, 2002; Solange & Trufen, 2004; Oznur, 2008; Sevinc, 2009; Bozkurt, 2011). However, as a result of living in an age of technology, electromagnetic pollution is unfortunately one of the most important environmental problems we face. Within this context, the purpose of this study is to find out the relationship between the awareness level of preservice science teachers' conscious use of technological devices that cause electromagnetic pollution and their awareness level of environmental problems.

Sub-problems for the study are as follows:

1. Is there a remarkable difference between the awareness level of preservice science teachers' conscious use of technological devices and their awareness level of environmental problems depending on the gender variable?
2. Is there a remarkable difference between the awareness level of preservice science teachers' conscious use of technological devices that cause electromagnetic pollution and their awareness level of environmental problems depending on their taking an ''environmental science'' course?
3. What kind of a relationship is there between the awareness level of preservice science teachers' conscious use of technological devices that cause electromagnetic pollution and their level of awareness of environmental problems?
4. What do science teachers think about electromagnetic pollution?

Method

In this part of the article, the research model, data collection techniques used in the study, implementation stages of the study and the data analysis process will be explained.

Research Design

In this study, which aims to discover the relationship between the awareness level of preservice science teachers' conscious use of technological devices that cause electromagnetic pollution and their level of awareness for environmental problems, a mixed design method was used. In this method, both qualitative and quantitative data were collected and evaluated together to find an answer to the study's problem questions (Punch, 2005; Nagy & Biber, 2010). The advantage of a mixed design is that it helps researchers to understand the problem clearly because it uses quantitative and qualitative approaches at the same time (Creswell & Clark, 2007). This study was regulated according to a method enriched with mixed design types. First, quantitative data were collected, and then qualitative data were collected to support them. Relational screening model was used to collect quantitative data. In this model,

the existence and degree of two or more variables are attempted to be defined (Karasar, 2000). The phenomenological method, which includes defining and interpreting individuals' perception and perspective related to a phenomenon, was used to collect qualitative data (Yildirim & Simsek, 2008). An interview technique was used to define preservice teachers' individual perceptions. Interview is a kind of data collection tool to discover individuals' feelings and attitudes toward a case (Kus, 2003; Ekiz, 2009).

Research Sample

Seventy-six preservice science teachers, of whom 45 are female and 31 are male, took part in the quantitative part of this study. They studied at a state university in Ankara in the 2012–2013 spring term. While selecting participants, purposeful sampling was used, which helps to find individuals that serve the purpose of the study and who are easily accessible by researchers (Cohen, Manion & Morrison, 2007). In the qualitative part of the study, seven female and eight male preservice teachers were chosen out of the 76 on a volunteer basis.

Research Instrument and Procedure

Three data collection tools were used to find answers to problems and sub-problems of the study. As a first data collection tool, the Awareness Scale for use of certain technological devices that cause electromagnetic pollution, which had been developed by Koklukaya and Selvi (2015), was used. The scale is a 5-point Likert scale and consists of four parts: ''totally agree,'' ''agree,'' ''neither agree nor disagree,'' "disagree'' and ''totally disagree.'' The scale is composed of three dimensions and 24 items. The alpha reliability coefficient of the scale is .93. As a second data collection tool, the Awareness Scale for Environmental Problems, which had been developed by Guven and Aydogdu (2012), was used. The scale is a 3-point Likert scale and consists of three parts: ''yes,'' ''no idea'' and ''no.'' The scale is composed of 6 factors and 44 items. The alpha reliability coefficient of the scale is .90. Lastly, the semi-structured interview form, which was prepared by the researchers, is composed of four open-ended questions. Two science assistant professors gave their opinions while preparing the interview form. The questions are as follows:

1. Have you ever heard of electromagnetic pollution?
2. How does electromagnetic pollution appear?
3. Which electronic devices that cause electromagnetic pollution do you use most?
4. If you evaluate yourself about environmental problems and electromagnetic pollution, how many points do you give yourself from 1 to 10?

Data Analysis

In the data analysis part of the study, the SPSS 15 program was used. The Kolmogorov–Smirnov test was used to determine whether the quantitative data has normal distribution. Then, an independent t-test was used to find preservice science teachers' awareness levels of electromagnetic pollution depending on gender and taking ''environmental science'' course variables. Lastly, the Pearson correlation test

was used to find the relationship between preservice teachers' awareness levels of their use of devices that cause electromagnetic pollution and their awareness levels of environmental problems. In the qualitative data analysis, the content analysis method was used. Interviews with preservice teachers were recorded with their permission, and their expressions were not modified. Then, the recordings were posted on a computer and put in writing. Finally, the latter data were analyzed by using a content analysis method.

Results

Results Related to Quantitative Data

In this part, findings gathered from sub-problems of the study were presented as tables. Firstly, data were tested whether they have normal distribution or not to find which test to use. For this reason, normality test was applied. The results are shown on Table 1.

Table 1

Kolmogorov-Smirnov Test Results

	ASTEP	ASEI
Kolmogorov- Smirnov (Sig)	,069	,079

According to the results on Table-1, it can be seen that data have normal distribution. For that reason, parametric tests were decided to use (Buyukozturk, 2007).

Firstly, independent samples t-test was used for analysis of preservice teachers' scores for the sub-problem ''Is there a remarkable difference among preservice teachers' awareness level of using devices which cause electromagnetic pollution according to the gender variable?''

Table 2

Preservice Teachers' Awareness Level of Electromagnetic Pollution According to the Gender Variable

Gender	*n*	*M*	*Sd*	*df*	*t*	*p*
Female	45	93.15	9.32	74	0.73	.46
Male	31	91.48	10.41			

As it can be seen on Table-2, there isn't any remarkable difference among students' level of awareness of conscious use of technological devices according to the gender variable [$t(74) = 0.73$, $p>.05$].

Secondly, independent samples t-test was used for analysis of preservice teachers' scores for the sub-problem "Is there a remarkable difference among preservice teachers' awareness level of using devices which cause electromagnetic pollution according to taking environmental science course?"

Table 3

Preservice Teachers' Awareness Level of Electromagnetic Pollution According to Taking ''Environmental Science'' Course

Environmental course	N	M	Sd	df	t	p
Take course	38	94.89	8.01	74	2.22	.029
Not take course	38	90.05	10.78			

Scores of preservice teachers who took this course (M= 94.89, std. dev = 8.01) were higher than those who didn't (M= 90.05, std. dev. = 10.78). There is a remarkable difference between scores [t (74) = 2.22, p< .05].

Thirdly, Pearson correlation test was used to analyze teachers' scores for the sub problem "what kind of a relationship is there between preservice teachers' awareness level of conscious use of technological devices which cause electromagnetic pollution and other environmental problems?"

Table 4

Correlation Test Results

		Awareness Scale for Environmental Problems
Awareness Scale for use of some technological devices which causes electromagnetic Pollution	r	.003
	p	.978
	n	76

As it can be seen on Table-4, the correlation coefficient between preservice teachers' scores for their awareness level of conscious use of technological devices which cause electromagnetic pollution and other environmental problems is .003. This means that there isn't a remarkable relationship between preservice teachers' awareness level of conscious use of technological devices which cause electromagnetic pollution and their awareness level of other environmental problems (r= .003, p>.05).

Results Related to Qualitative Data

Lastly, researchers interviewed with preservice teachers to find an answer to the question '' What are the teachers' views on electromagnetic pollution?'' Students were asked some open-ended questions.

Firstly, preservice teachers were asked ''Have you ever heard of ''electromagnetic pollution'' concept before ?'' and 4 preservice teachers said ''no'' while 11 of them expressed that they had heard the concept before. Frequency differences of preservice teachers' answers were shown on Table-5.

Table 5

Preservice Teachers' Answers to the Question "Have You Ever Heard of Electromagnetic Pollution Concept Before?"

Have you ever heard of electromagnetic pollution?	Yes	No
	11	4

Then, preservice science teachers asked about how electromagnetic pollution appears. Their answers were on Table-6.

Table 6

Frequency and Percentage of Preservice Teachers' Answers to the Question ''How Does Electromagnetic Pollution Appear?''

	Code	Themes	Frequency
How does electromagnetic pollution appear?	Sun S_1,S_3,S_{14}, S_{12}	Naturally	4
	Moon S_1,S_3,S_{12}		3
	Planet S_{11},S_7,S_{12}		3
	Galaxy S_{12}		1
	Telephone, S_3, S_4,S_5, S_6, S_7, S_{15}, S_{14}	With technology	7
	Computer S_3, S_4,S_5, S_6		4
	Base station S_3, S_4		2
	Walkie talky S_3		1
	Microwave oven S_7		1
	Battery S_3		1

Students' answers to the question were ''it appears naturally'' and '' it is a result of technology''. Some of the teachers expressed that electromagnetic pollution develops out of the sun, moon, planets and galaxy. The others think that mobile phones, computers, radio stations, transmitters and batteries cause electromagnetic pollution. Following statements belong to the students:

S3: "*I have just heard of electromagnetic pollution. I have done some research on the internet. Electromagnetic waves are always with us because of the sun and the moon, but we increase it intentionally in our environment. We do it with radio stations, cell phones and computers, I guess. As technology develops we will have more difficulty, I think.*"

S4: "*In my view, electromagnetic pollution is a result of radio stations which we always see on TV. Apart from this, computers contribute it a lot.*"

Then, preservice teachers were asked which technological devices which cause electromagnetic pollution they use most. From most used to less used, students' answers were as following.

Table 7

Technological Devices Which Preservice Teachers Use Most

Devices which produce Electromagnetic pollution	Frequency
Mobile phone	13
Television	10
Notebook	8
Tablet computer	8
Wireless modem	8
Hair dryer	5
Microwave oven	4
Radio	3

As it can be seen on Table-7 students use mobile phones most. Television, notebook, tablet computer, wireless modem, hair dryer, microwave oven follow it. They use radio least.

S15: "*My cell phone is always with me expect the time I sleep. It is the most important one for me. My computer is also irreplaceable for me because I always do my homework or use social media.*"

S2: "*I love having a blow dry, so hair dryer is the one I use most. I don't use other devices so often except my cell phone.*"

Then, students were asked ''How many points do you give yourself from 1 to 10, when you evaluate yourself in terms of environmental problems and electromagnetic pollution?''. Their answers are on Table-8.

Table 8

Self-Evaluation of Preservice Teachers about Environmental Problems and Electromagnetic Pollution

Self-evaluation of electromagnetic pollution				Self-evaluation of environmental problems			
	Score	Preservice teachers	Frequency		Score	Preservice teachers	Frequency
	10	-	-		10	S_3	1
	9	S_3	1		9	S_4, S_{13}, S_{14}, S_{15}	4
	8	-	-		8	S_5, S_8, S_9, S_{10}	4
	7	-	-		7	S_1, S_2, S_6, S_7, S_{11}	5
	6	S_4,S_8,S_{12}	3		6	S_{12}	1
	5	S_1,S_5, S_{13}, S_{14}, S_{15}	5		5	-	-
	4	S_2,S_7, S_9, S_{10}, S_{11}	5		4	-	-
	3	S_6	1		3	-	-
	2	-	-		2	-	-
	1	-	-		1	-	-
Mean Score		*5*		*Mean Score*		*7.93*	

As it can be seen on Table-8, preservice science teachers think that they are more sensitive to environmental problems compared to electromagnetic pollution. Preservice science teachers' average score for environmental problems is 7.93 while their score for electromagnetic pollution is 5.

Discussion and Conclusion

The aim of this study is to find the relationship between awareness level of preservice science teachers' about conscious use of technological devices and their awareness level of environmental problems. When body of literature about electromagnetic pollution is reviewed it was seen that there are a lot of studies on it. First of all, there exist some studies on how electromagnetic pollution appears and in which part of life and to what extend electromagnetic waves exist on engineering field (Onal, 2005; Erdogan, 2007; Ince, 2007; Moulton Howe, 2008; Uygunol & Durduran, 2009). On the other hand, we can find studies on how electromagnetic pollution affects living organisms on healthcare field (GarajVrhovac, Fucic & Horvat, 1992; Moulder & Foster, 1995; Dincer, 2000; Bold, Toros & Sen, 2003; Saunders, 2003; Taktak, Tiryakioglu &Yilmaz, 2005; Aksoy, 2006; Vasistha & Garg, 2016; Shekoohi Shooli, Mortazavi, Jarideh, Nematollahii, Yousefi, Haghani, Mortazavi & Shojaei-fard, 2016). However, in educational field there are very few studies on electromagnetic pollution. In this study, first of all, it was seen that there isn't a remarkable difference among preservice teachers' awareness level of conscious use of technological devices which cause electromagnetic pollution depending on the gender variable. When we analyze Household Information Technologies Use Studies (2011), it is clear that at all age groups men use computer and internet more than women do Greengard (2008), on the other hand, researched why women use cell phones less than men do and he found that women think that they are not competent enough to use cell phones. Also Yalcin and Okur (2014) were determined electromagnetic field awareness development of participants who take part of an environmental education based on ecopedagogy. According to the researchers it is identified that the participants' awareness is developed throughout the education. Contrary to this study, Koklukaya (2013) confirmed in his research that girls use technological devices which cause electromagnetic pollution more consciously. Similarly, Kenar, Turgut and Gokalp (2014) found that female preservice teachers have higher awareness level of electromagnetic pollution compared to male preservice teachers. Then, taking ''environmental science'' course variable was examined and it was seen that preservice teacher who took this course had higher awareness level of conscious use of technological devices which cause electromagnetic pollution. Similarly, Denis and Genc (2007) stated that students who took this course had higher knowledge of environment compared to those who didn't. In the same way, it was determined that participants who took Environmental Science course have higher level of attitude and values for environment (Sahin, Cerrah, Saka & Sahin, 2004; Kilic, 2007; Yalcin & Okur, 2014; Aydin & Aykac, 2016). Nevertheless, other studies suggest that this variable didn't make a remarkable difference among participants (Denis & Genc, 2007; Ozdemir & Yapıcı, 2010). With the next sub-problem, it was found that there isn't a relationship

between preservice teachers' awareness level of conscious use of electromagnetic devices and their awareness level of environmental problems.

Lastly, it was ascertained that most of the students had heard of electromagnetic pollution before. Similarly, Koklukaya's study (2013) supports that most of the students in high school had heard of electromagnetic pollution while it points that they couldn't explain how electromagnetic pollution appears. Participants' age can be a variable in this case. Besides, it was seen that preservice teachers use cell phones most and radios least. Turkish Statistical Institute's data (2011) supports the result of the study. Moreover, when preservice teachers evaluate themselves in terms of environmental problems they gave more points them than they do for electromagnetic pollution. This may be the result of the fact that, unlike other types, electromagnetic pollution is invisible and its results don't appear for so long.

Conclusion

In this study which defines the relationship between Awareness Level of preservice science teachers' conscious use of technological devices and environmental problems seeks answer to four sub-problems. Firstly, it was stated that there isn't a remarkable difference among preservice science teachers' awareness level of conscious use of technological devices which cause electromagnetic pollution depending on the gender variable. Then, it was concluded that students who took environmental science course had higher level of awareness when compared to those who didn't. With another sub-problem it was seen that there isn't any relationship between preservice teachers' awareness level of conscious use of technological devices which cause electromagnetic pollution and their awareness level of environmental problems. Lastly, with the help of qualitative data it was seen that 11 preservice science teachers had heard of electromagnetic pollution while 4 of them hadn't. Besides, students think that electromagnetic pollution stems from natural reasons such as the sun, the moon etc. or technological reasons such as computers, mobile phones etc. Preservice teachers stated that in all technological devices which cause electromagnetic pollution they use mobile phones most and then, television, tablet computer, wireless modem, hair dryer, microwave and radio follow it. Lastly, preservice science teachers' average score for environmental problems is 7.93 while their score for electromagnetic pollution is 5. In the light of this study, new studies to find why students think that they are less sensitive to electromagnetic pollution.

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Öğretmen Adaylarının Elektromanyetik Kirlilik ve Diğer Çevre Sorunlarına Yönelik Farkındalık Düzeyleri Arasındaki İlişki

Atıf:

Koklukaya, A. N., Guven Yildirim, E. & Selvi, M. (2017). The relationship between pre-service teachers' awareness levels of electromagnetic pollution and other environmental problems. *Eurasian Journal of Educational Research*, 67, 17-35 http://dx.doi.org/10.14689/ejer.2017.67.2

Ozet

Problem Durumu: Çağımızda bilim ve teknolojinin sürekli gelişmesi; toplumun yaşam standartlarım arttırırken çevrede pek çok şeyin yok olmasına veya değişim geçirmesine neden olmaktadır. Bu tür değişimler çevre sorunlarını meydana getirmektedir. Teknoloji çağında yaşamamızın bir sonucu olarak elektromanyetik

kirlikte çevremizi ve sağlığımızı etkileyen onemli çevre sorunlarından birisi haline gelmiştir. Elektromanyetik dalgalar gozle gorülmez ve kolaylıkla hissedilmez fakat sonuçları saptanabilir. Bu sebeple elektromanyetik dalgaların insan sağlığına verdiği zararlar da ne yazık ki fark edilmemektedir. Elektromanyetik kirlilik denilen kavram orneğin gürültü kirliliği gibi olsaydı, kulağımızı rahatsız eden bir gürültü esnasında ya o ortamı terk ederek ya da gürültü kaynağını ortadan kaldırılarak bu kirlilikten korunmak mümkün olabilirdi. Ancak elektromanyetik kirliliğin bir ortamda fazla olduğunu algılayacak bir duyu maalesef yoktur. Bu sebeple elektromanyetik kirlilik, ancak insan sağlığı üzerindeki sonuçları ortaya çıktığında fark edilebilir. Elektromanyetik kirliliğin varlığı şiddeti mühendislik alanında yapılan çalışmalarla, canlılar üzerine olan etkileri ise tıp alanında yapılan çalışmalarla ortaya konulmuştur. Ancak alanyazın incelendiğinde toplumun elektromanyetik kirlilik üzerine farkındalık düzeyini inceleyen geliştiren çalışmaların az olduğu belirlenmiş, bu çalışma bu anlamda alanyazına katkı sağlayarak ileride toplumu şekillendirecek olan bireylerin yetişmesine katkı sağlayacak oğretmen adaylarının elektromanyetik kirlilik ve çevre sorunlarına yonelik farkındalık düzeyleri ile ilişkisini incelemektedir.

Araştırmanın Amacı: Bu çalışma ile fen bilgisi oğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri ile çevre sorunlarına yonelik farkındalık düzeyleri arasındaki ilişkinin belirlenmesi amaçlanmaktadır.

Araştırmanın Yontemi: Fen bilgisi oğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri ile çevre sorunlarına yonelik farkındalık düzeyleri arasındaki ilişkinin belirlenmesi amacıyla yapılan bu çalışmada karma desen kullanılmıştır. Bu araştırma karma desen türlerinden zenginleştirilmiş yonteme gore düzenlenmiştir. Oncelikle nicel veriler toplamış daha sonra nitel veriler toplanarak nicel verilerin desteklenmesi sağlanmıştır. Araştırmanın nicel verilerinin elde edilmesinde ilişkisel tarama modeli, nitel verilerin elde edilmesinde ise fenomenolojik yontem kullanılmıştır. Bu araştırmanın nicel bolümünde 2012-2013 eğitim oğretim yılında bahar doneminde Ankara ilinde bir devlet üniversitesinde oğrenim gormekte olan 45 kız 31 erkek olmak üzere 76 fen bilgisi oğretmen adayı yer almaktadır. Araştırmada veri toplama aracı olarak iki adet farkındalık olçeği ve gorüşme soruları kullanılmıştır. Araştırmanın nicel verileri SPSS programı ile analiz edilmiştir. Nicel verilerin analizinde, Kolmogorov-Smirnov testi, ilişkisiz orneklemler t- testi ve Pearson korelasyon testi kullanılmıştır. Nitel veriler ise içerik analizi yontemi ile analiz edilmiştir.

Araştırmanın Bulguları: İlk olarak, oğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri arasında cinsiyete gore istatistiksel olarak anlamlı bir fark çıkmamıştır [t (74)=0.73, p>.05]. Daha sonra "Çevre Bilimi" dersini alan oğretmen adaylarının elektromanyetik kirliliğe sebep olan bazı teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri "Çevre Bilimi" dersini almayan oğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri ile karşılaştırılmıştır. Dersi alan oğretmen adaylarının

farkındalık düzeyleri dersi almayan öğretmen adaylarından daha yüksek bulunmuştur [t (74)= 2.22, p< .05]. Daha sonra fen bilgisi öğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalıkları ile çevre sorunlarına yonelik farkındalıkları arasında bir ilişki olmadığı tespit edilmiştir (r= .003, p>.05). Nitel bulgular da ise, öğretmen adaylarının büyük bir kısmının elektromanyetik kirlilik kavramını daha once duydukları belirlenmiştir. Öğretmen adaylarının bir kısmı, elektromanyetik kirliliğin güneş, ay, gezegenler ve galaksiden kaynaklı olarak var olduğunu diğer bir kısmı ise, bilgisayar, baz istasyonu, telsizler ve pillerden kaynaklı olarak var olduğunu belirtmişlerdir. Öğretmen adayları elektromanyetik kirliliğe sebep olan teknolojik cihazlardan en fazla cep telefonlarını kullandıkları daha sonra sırasıyla, televizyon, dizüstü bilgisayar, tablet bilgisayar, kablosuz modem, saç kurutma makinası, mikrodalga fırın kullandıklarını belirtmişlerdir. Son olarak öğretmen adaylarının elektromanyetik kirliliğe ilişkin olarak kendilerini daha az duyarlı olarak nitelendirdikleri belirlenirken, çevre sorunlarına yonelik olarak kendilerini daha duyarlı olarak nitelendirdikleri ortaya çıkmıştır.

Araştırmanın Sonuçları ve Oneriler: Fen bilgisi öğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri ile çevre sorunlarına yonelik farkındalık düzeyleri arasındaki ilişkinin belirlendiği bu çalışmada dort alt probleme cevap aranmıştır. İlk olarak fen bilgisi öğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri arasında cinsiyet değişkenine gore anlamlı bir fak olmadığı sonucuna ulaşılmıştır. Daha sonra "çevre bilimi" dersini alan fen bilgisi öğretmen adaylarının elektromanyetik kirliliğe sebep olan teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeylerinin dersi almayanlara gore daha yüksek olduğu belirlenmiştir. Bir sonraki alt problemle fen bilgisi öğretmen adaylarının elektromanyetik kirliliğe sebep olan bazı teknolojik cihazların bilinçli kullanımına ilişkin farkındalık düzeyleri ile çevre sorunlarına yonelik farkındalık düzeyleri arasında bir ilişki olmadığı tespit edilmiştir. Son olarak nitel verilerle fen bilgisi öğretmen adaylarının 11'inin elektromanyetik kirlilik kavramını daha onceden duyduğu 4'ünün ise duymadığı sonucuna ulaşılmıştır. Bununla birlikte öğretmen adaylarının elektromanyetik kirliliğin doğal(güneş, ay…) ve teknoloji (bilgisayar, telefon…) ile olmak üzere iki şekilde oluştuğunu düşündükleri belirlenmiştir. Öğretmen adayları elektromanyetik kirlilik oluşturan cihazlardan en sık cep telefonu olmak üzere sırasıyla televizyon, dizüstü bilgisayar, tablet bilgisayar, kablosuz modem, saç kurutma makinası, mikrodalga fırın ve radyoyu kullandıklarını belirtmişlerdir. Son olarak çevre sorunlarına yonelik öğretmen adaylarının oz değerlendirme puan ortalamalarının 7,93 olduğu ancak elektromanyetik kirliliğe ilişkin öğretmen adaylarının oz değerlendirme puan ortalamalarının 5 olduğu sonucuna ulaşılmıştır.

Anahtar Sozcükler: Farkındalık olçeği, elektromanyetik sorunlar, çevre kirliliği, teknoloji.

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Examining Epistemological Beliefs of Teacher Candidates According to Various Variables

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ABSTRACT

Purpose: Epistemological beliefs of teachers are important factors on their perceptions of subject area and their classroom practices. This research aims to define epistemological beliefs of teacher candidates and investigates whether or not epistemological beliefs change according to teacher candidates' gender, fields of study, year of study, and academic success. **Research Methods**: This is a descriptive study that tries to find a relationship between teacher candidates' epistemological beliefs and their academic success, gender, department, and year of study. Schommer's Epistemological Beliefs Questionnaire (EBQ) was applied to 564 teacher candidates from a public university. The Independent Sample t-test was applied to determine the relationship between epistemological beliefs with gender and grade level. In order to define if teacher candidates' epistemological beliefs change depending on the registered program, a One-Way ANOVA for Independent Sample was used. Pearson correlation coefficients were calculated to determine the relation between epistemological beliefs and success. **Findings**: The results showed differences between female and male teacher candidates in all three factors of the epistemological beliefs questionnaire. Significant correlation was found between two factors of epistemological beliefs (belief that learning depends on effort and belief that learning depends on talent) and academic success at .01 levels. **Implications for Research and Practice**: The descriptive analysis of the present study showed that teacher candidates' epistemological beliefs change according to gender, field of study, and year of study, and is correlated with academic success. There is a need for experimental studies on how the epistemological beliefs of teachers reflect in classroom practices.

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Introduction

The epistemological beliefs of teachers are important factors in their perceptions of subject area and their classroom practices. Therefore, teachers' epistemological beliefs are an important variable in their teaching-learning process. Naive epistemological belief refers to a belief in certain and concrete knowledge and constant learning ability. In contrast, sophisticated epistemological belief refers to a belief in questionable knowledge, which could be improved by the learner. According to Akyildiz (1989), teacher effectiveness is strongly associated with teacher questioning, guidance, and responses to student questions during the teaching-learning process. In this framework, defining the epistemological beliefs of teachers is an important factor for constructing effective teaching-learning processes and improving teaching.

In the literature there are various definitions of epistemological beliefs and the term "epistemology" comes from the Greek word "epistémé". Epistémé refers to correct, scientific, and necessary knowledge in Ancient Greek philosophy (Topdemir, 2008). Simply, it has a meaning that consists of the philosophy of knowledge or how we understand and know knowledge. Epistemological beliefs, which result from the cognitive evaluation of an individual, shape his/her attitude toward knowledge. According to Perry (1981), epistemological beliefs are those that the individual has on what knowledge is, how it is acquired, and what criteria determine knowledge.

Studies on epistemological beliefs started in the last quarter of the 20th century. Perry's 1970 study on the meaning of educational experiences constructed the epistemological development theory (Hofer & Pintrich, 1997). Since Perry's first study there have been six types of studies in the literature:

1. Studies on improving Perry's developmental scheme.
2. Studies on developing simpler instruments to assess epistemological development.
3. Studies on gender differences in knowing/acquiring knowledge.
4. Studies on the effects of epistemological awareness on thinking and reasoning processes.
5. Studies on finding sub-dimensions of epistemological beliefs.
6. Studies on relationships between epistemological beliefs with other cognitive and motivational processes.

Posner, Strike, Hewson, and Gertzog (1982) claimed that epistemological willingness is the underlying factor of knowledge acquisition. In that manner, it would be hard to change epistemological beliefs as main belief. Recent studies in this field indicate that students' epistemological beliefs influence their motivation, consciousness, and academic performance (Bruning, Schraw, & Ronnig 1995; Hofer & Pintrich, 1997).

There are many studies on defining epistemological beliefs. The results of Belenky et al.'s (1986) studies with 135 women showed that epistemological beliefs

are developed in five steps: silence, received knowing, subjective knowing, procedural knowing, and constructed knowing. In the silence phase, individuals believe that knowledge is concrete and categorical and can be transferred by authorities. In the phase of received knowing, one can be a passive receiver of knowledge. In this phase individuals do not rely on their own abilities and want to ask questions of their authorities. In the third phase, subjective knowing, knowledge is subjective and one relies less on authorities' knowledge. In the procedural knowing phase, individuals consciously use systematic thinking processes instead of just relying on content. By using this process people give meaning to world, and here content is different than something that must be remembered. In the final phase, constructed knowing, procedural knowing and subjective knowing are integrated. People in this phase can more easily manage uncertain situations and realize that knowledge changes continuously.

Magolda (1994) underlined different phases for the development of epistemological beliefs and developed an instrument named the "Measure of Epistemological Reflections", with asking open-ended questions to 100 high school students during seven years (as cited in Brownlee, 2003). According to Mogolda's epistemological classification, beliefs about knowing can be grouped into four dimensions: concrete (refer to received knowing), transitional (refer to subjective knowing), independent (refer to procedural knowing), and contextual (refer to constructed knowing). Magolda also studied the gender differences in each dimension. These are relational and objective forms of knowing. Relational forms of knowing, with flexible, open, relational, and responsive are used more by women. In contrast, the objective/non-subjective way of knowing is related to logical and algorithmic processes, which results in discrimination and abstraction.

Although there are numerous studies on epistemological beliefs, Schommer (1990) tried to compose a systematic structure to define epistemological beliefs by putting Perry's (1970) and Dweck's and Leggett's (1988) studies together. Schommer (1990) suggested that an epistemological belief system has five independent dimensions. Schommer (1990) studied the effects of epistemological beliefs on cognition and academic performance and tried to compose an analytical structure for epistemological beliefs. In the beginning, Schommer (1990) conceptualized epistemological beliefs theoretically in five dimensions: structure, certainty of knowledge, source of knowledge, speed of learning processes, and direction of learning processes (Hofer & Pintrich, 1997). Later, as a result of validity studies on these five dimensions she composed epistemological beliefs in four independent dimensions: simple knowledge, certain knowledge, quick learning, and innate ability. Simple knowledge refers to beliefs about the structure of knowledge. This dimension is interested in whether individuals believe cumulative knowledge with a simple structure or relational knowledge with a complex structure. The certain knowledge dimension defines whether an individual believes certain and stable knowledge or contextual knowledge including temporary right/wrong. The quick learning dimension includes beliefs about the speed of the learning process. This dimension refers to an individual's belief about learning time and if it must be immediate, take time, or never be achieved. The innate ability dimension indicates people's belief in learning process control and refers to beliefs about learning ability and its structure as innate or developed with education and experience (Deryakulu, 2004).

Epistemological Beliefs and Training of Teachers

One sub-dimension of teachers' values is their belief in the structure of knowledge (epistemological belief) (Pajares, 1992). Epistemological belief has had an important place in recent studies. McGee and others (2000) stated that there has been an increase in the importance of epistemological belief studies due to the rise in the use of constructivist learning models in K12 classrooms.

Brownlee (2003) conducted a longitudinal study with 11 teachers. A curriculum was applied in a course during an elementary school teaching certificate program in order to improve the epistemological beliefs of teacher candidates. This curriculum was applied for a year, during which the candidates could execute their own epistemological beliefs. Three interviews were conducted, one before the program, one immediately after the program finished, and another three years after the participants started teaching. During these 30-70 minute long interviews, the change in epistemological belief and the way they constructed knowledge was observed. At the end of the study, the findings related to epistemological beliefs were placed into four categories: constructivist beliefs, mixed beliefs, subjective beliefs, and received beliefs. Participants with constructivist beliefs had personal truths supported with proof. Those with mixed beliefs stated that individuals could receive or construct knowledge. Persons with subjective beliefs stated that individuals created their own truths by instinct, without any need for proof. Finally, individuals with received beliefs accepted concrete truth as it is.

There have been studies to determine if epistemological beliefs differed depending on people's field of work (Feldman & Newcomb, 1969; Paulsen & Wellsi, 1998; Eren, 2007; Ozdemir & Koksal, 2014; Kazu & Erten, 2015; Terzi et al., 2015; Arslantas, 2016). The studies conducted showed that the more expertise learners have in their field, the more complex (sophisticated) epistemological beliefs they have (Belenky et al., 1986; Kitchemer & King, 1981). These reseaches also showed that epistemological beliefs are influenced by factors such as gender, age, and the educational background of family. Additionally, contextual factors in early ages, such as family and school, are found to be influential on epistemological beliefs (Schommer, 1993).

McGee et al. (2000) carried out a four-week program that aimed to improve the epistemological beliefs of teachers, and determined the teachers' epistemological beliefs before and after the program, using Schommer's Epistemological Beliefs Questionnaire. In addition, they also reviewed the teachers' level of attainment using pre-test and post-test forms. In the research, 41 teachers enrolled in a master's program were given computer training in accordance with a constructivist environment over four weeks. At the end of the study, the teachers' epistemological belief significantly differed in three sub-dimensions of the instrument. The t-test results of the participating teachers showed significant improvement in simple knowledge, quick learning, and certain knowledge sub-dimensions.

Studies in epistemological beliefs show that individuals' beliefs relating to the nature of knowledge are an important factor in their understanding, questioning, interpreting, and determination in completing difficult academic tasks. For instance, if students think that knowledge consists of isolated pieces then it makes difficult for

them to understand subjects such as mathematics, medicine, and psychology (Schommer & Hutter, 2002). Teachers' epistemological beliefs can also influence their perspective of their own fields, thus influencing classroom practices. In this study, the epistemological beliefs of teacher candidates are determined and the relations between epistemological beliefs with gender, program of study, grade level, and academic success are investigated.

Method

Research Design

This is a descriptive study. In descriptive studies participants' beliefs or characteristics (knowledge, attitudes, interest, etc.) are described and correlational relations among variables can be studied (Buyukozturk, Kilic-Cakmak, Akgun, Karadeniz, & Demirel, 2013). In this framework, the study investigated the relationship between teacher candidates' epistemological beliefs and their academic success, gender, department, and the year of study.

Participants

The participants of this study included 564 teacher candidates from a public university. Of the participants, 354 were female (62.8%) and 210 male (37.2%), who were from four different teacher training programs (preschool teaching, primary school teaching, social science teaching, mathematics teaching). They filled the Turkish form of Schommer's Epistemological Beliefs Questionnaire. 43.4% of the participants were first grade students (n= 245), while 56.6% were (n= 319) fourth graders.

Research Instrument and Procedure

Schommer's Epistemological Beliefs Questionnaire (1990) was used in the study. The Epistemological Beliefs Questionnaire has a four dimensions or factors structure: knowledge is simple, knowledge is certain, learning occurs instantly, and the ability to learn is innate. Deryakulu and Buyukozturk (2002) adapted the Epistemological Beliefs Questionnaire (EBQ) into Turkish, and conducted its validity and reliability studies. In their study, conducted with 595 college students, it was noted that the questionnaire showed a three-factored structure as opposed to the common four-factored structure. The factors' names in this new form were: the belief that learning depends on effort, the belief that learning depends on talent, and the belief there is only one truth. Cronbach Alpha internal consistency coefficients were .83 for the first factor, .62 for the second factor, .59 for the third factor, and .71 for the entire questionnaire. The repeated factor analysis and reliability studies conducted by Deryakulu and Büyüköztürk in 2005 with 626 college students confirmed the three-factor structure; however, the number of items were reduced to 34. After a confirmatory factor analysis study, it was observed that the 24th item showed an inconsistency with its factor, so it was removed from the questionnaire and the number of items was reduced to 34. In this last study, the Cronbach Alpha internal consistency value was found as .84 for the first factor, .69 for the second factor, .64 for the third factor, and .81 for the entire questionnaire.

The questionnaire measures individuals' beliefs under these three sub-dimensions or factors in two extremes: sophisticated and naive. Individuals with naive epistemological beliefs believe that knowledge is certain, concrete, and in a structure that separates knowledge with bold lines. In this same group, it is believed that the learning process is fast and the talent for learning is constant. Individuals with sophisticated epistemological belief claim that knowledge is in a complex, uncertain structure and can be improved by reasoning. A low score from this questionnaire indicates a sophisticated epistemological belief and a high score indicates a naive epistemological belief.

Data Analysis

Independent samples t-test was applied to determine the gender and grade differences in epistemological beliefs. In order to define if teacher candidates' epistemological beliefs changed depending on registered program, one-way ANOVA for an independent sample was used. A correlation was calculated to determine the relation between epistemological beliefs and success.

Results

Differences in Epistemological Beliefs According to Gender

Independent samples t-test was applied to determine the difference in the epistemological belief of teacher candidates depending on their genders. The results of the independent samples t-test are presented in Table 1.

Table 1.

Comparison of Scores from the Epistemological Belief Questionnaire According to Teacher Candidates' Genders

Belief	*Gender*	*n*	*M*	*S*	*sd*	*t*	*p*
Learning Depends on Effort (Factor 1)	Female	354	31.13	6.10	562	2.08	.038
	Male	210	32.27	6.54			
Learning Depends on Talent (Factor 2)	Female	354	15.59	4.59	562	5.00	.000
	Male	210	17.84	8.02			
There is Only One Correct Knowledge (Factor 3)	Female	354	26.32	5.68	562	3.03	.003
	Male	210	27.74	4.87			

According to Table 1, the scores of teacher candidates differed significantly in all belief factors as "learning depends on effort" (t_{562}=2.08, p<.05), "learning depends on talent" (t_{562}=5.00, p<.05), and "there is only one correct knowledge" (t_{562}=3.03, p<.05). Female students had more sophisticated belief in that "learning depends on talent" (M_{female}=31.13) than male students (M_{male}=32.27). Similarly, female students had more sophisticated belief in that "learning depends on effort" (M_{female}=15.59) than male students (M_{male}=17.84). Lastly, male students had more naive belief in that "there is

only one correct knowledge" (M_{male}=27.74) than female students (M_{female}=26.32). In sum, female teacher candidates had more sophisticated beliefs than males for all three factors of the epistemological beliefs.

Differences in Epistemological Beliefs According to Teacher Candidates' Department

One-way ANOVA was applied in order to determine whether teacher candidates' epistemological beliefs showed significant differences depending on the program or department in which they were enrolled. One-way ANOVA results are given in Table 2.

Table 2.

Comparison of Scores from the Epistemological Belief Questionnaire According to Teacher Candidates' Department

Belief	*Dept.**	*n*	*M*	*S*	*sd*	*F*	*P*	*Significant Difference (Dunnett C Test)*
Learning Depends on Effort (Factor 1)	PT	181	30.19	6.28				
	EMT	173	33.75	6.28				
	PST	125	31.49	6.67				
	SST	85	30.08	5.95	563	12.14	.000	2-1, 2-3 and 2-4
Learning Depends on Talent (Factor 2)	PT	181	16.29	4.87				
	EMT	173	17.06	4.56				
	PST	125	15.94	6.38				
	SST	85	16.15	5.66	563	1.30	.273	
There is Only One Correct Knowledge (Factor 3)	PT	181	26.41	5.89				
	EMT	173	26.99	4.96				
	PST	125	27.21	5.21				
	SST	85	27.00	5.69	563	.64	.590	

*1:PT: Pre-School Teaching, 2:EMT: Elementary Mathematics Teaching, 3:PST: Primary School Teaching, 4:SST: Social Sciences Teaching.

As seen in Table 2, the scores of teacher candidates belief that "learning depends on effort" ($F_{(563)}$=12.14, p<.05) differed according to their department or programs. To determine the source of this difference, the Bonferroni test, which is used when variances are the same, was calculated. According to the results, the epistemological belief of elementary mathematics teaching students (M_{EMT}=33.75) were significantly more naive in the factor "learning depends on effort" than those studying pre-school teaching (M_{PST}=30.19), social sciences teaching (M_{SST}=30.08), and primary school teaching (M_{FT}=31.49) programs. There was not any significant difference in the other two factors of the questionnaire, "learning depends on talent" ($F_{(563)}$=1.30, p>.05) and

"there is only one correct knowledge" ($F_{(563)}$ =.64, p>.05), according to teacher candidates' programs of study.

Differences in Epistemological Beliefs According to Grade Level

Independent samples t-test was applied to determine if there was a difference in teacher candidates' epistemological belief according to their grade levels. The results of the independent samples t-test are presented in Table 3.

Table 3.

Comparison of Scores from the Epistemological Belief Questionnaire Depending on Teacher Candidates' Grade Levels

Belief	*Class*	*n*	*M*	*S*	*sd*	*t*	*p*
Learning Depends on Effort (Factor 1)	First Grade	245	30.88	6.01	562	2.22	.026
	Fourth Grade	319	32.07	6.45			
Learning Depends on Talent (Factor 2)	First Grade	245	16,42	4,80	562	.06	.949
	Fourth Grade	319	16,45	5,63			
There is Only One Correct Knowledge (Factor 3)	First Grade	245	28.49	5.27	562	6.52	.000
	Fourth Grade	319	25.59	5.22			

According to Table 3, teacher candidates' epistemological beliefs in learning depends on effort dimension and differed significantly depending on their grade level (t_{562}=2.22, p<.05). Fourth grade students had a naive belief in "learning depends on effort" (M_4=32.07) than first grade students (M_1=30.88). Table 3 also shows that, in the "there is only one correct knowledge" dimension, teacher candidates' belief differed significantly depending on their grade levels (t_{562}=6.52, p<.05). First grade students had more a naive belief (M_1=28.49) than fourth grade students (M_4=25.59). In the table, the scores of teacher candidates' epistemological beliefs did not differ significantly in "learning depends on talent" (t_{562}=.06, p>.05) factor according to their grade level.

The Relation between Epistemological Belief and Success

In order to determine the direction and degree of the relations between students' success and their scores from the sub-factors of the questionnaire, Pearson Correlation Coefficients between variables was calculated. Since a low score from the questionnaire indicates sophisticated epistemological belief, negative relationship must be interpreted as a positive relationship, indicating that students who had higher academic success had more sophisticated epistemological belief and students having low academic success had naive epistemological belief.

As a result of the analysis, a negative, low-level significant relation was found between students' academic grades and the scores from the "belief that learning depends on effort" (r=-.232, p<0.01), and the "belief that learning depends on talent"

(r=-.174, p<0.01). In other words, students who had more sophisticated epistemological beliefs in these two factors had higher academic grades. Besides that, no significant relation was found between students' academic grades and the "belief in that there is only one correct knowledge" (p>.05).

Discussion and Conclusion

This study found that female students had more sophisticated epistemological beliefs in all three sub-dimensions. This result is similar to other studies in the literature (Deryakulu &Buyukozturk, 2005;). Result showed that female students had more sophisticated epistemological belief in "learning depends on effort and talent" than male students. Male students had a stronger belief in "there is only one correct knowledge" compared to female students.

When the areas of study were evaluated, it was observed that elementary mathematics teaching program students (who come from the scientific branch of high schools) had more naive epistemological belief in "learning depends on effort" compared to social science teaching students (who come from the verbal branch of high schools) and primary school teaching and pre-school teaching program students (who come from the branch that holds equal weight between science and social science). In other words, while teacher candidates enrolled in pre-school teaching, primary school teaching and social science teaching programs believed that "learning depends on effort" and "learning can be improved", the ones enrolled in the elementary mathematics teaching program believed it is a talent gained at birth. This result was consistent with similar studies in the literature (Jehng, Johnson, & Anderson, 1993; Enman & Lupart, 2000; Deryakulu & Buyukozturk, 2005; Arslantas, 2016). These studies showed that students who are studying in fields related to social sciences have a more sophisticated epistemological belief than those studying in fields related to sciences.

Regarding grade level differences in epistemological beliefs, student beliefs changed in the "learning depends on effort" and "there is only one correct knowledge" factors. First graders have a stronger belief in "learning depends on effort" compared to fourth graders. Alternatively, fourth grade students have a stronger belief in "there is only one correct knowledge". Perry (1968, as cited in Schommer, Crouse & Rhodes, 1992) and Eren's (2007) studies' results confirm this research's findings. Perry found that students start university with the belief that knowledge is certain, simple, and in the hands of an authority; but in the end they start to think knowledge is complex and temporary (Schommer et al., 1992). Eren (2007) found that university students show differences in the "learning depends on effort" and "there is only one correct knowledge" dimensions, depending on their grade levels. His study indicated that first year students had a stronger belief in "learning depends on effort" and "there is only one correct knowledge" compared to higher grade students.

The results also showed a relation between epistemological belief and academic success. Students with sophisticated belief in "learning depends on effort" and "learning depends on talent" have higher academic success. A similar study was

conducted by Schommer in 1993. Schommer examined the relation between epistemological belief and academic success in high school students. In the results of this study, a significant relation was found between the four dimensions between Schommer's original questionnaire and academic success. Schommer's study found that learners with a high IQ level and low tendency to the "quick learning" dimension have a higher academic success rate. It was also found that the "quick learning" dimension was a significant factor in explaining success. Dweck and Legget (1998) stated that if a person believes in an innate ability in learning then they feel desperation in solving complex academic tasks. In contrast, if students believe that learning ability can be improved then he/she makes a bigger effort, tries different study strategies, or presents a determined approach to accomplish difficult tasks. Arslantas (2016) also found a relationship between one sub-dimension of the scale (belief of learning depending on talent) with teacher candidates' Grade Point Averages.

The epistemological beliefs of teachers affect their classroom practices. Therefore, it is considered important to determine the epistemological beliefs of teacher candidates. In this descriptive study, teacher candidates' epistemological beliefs are investigated according to their genders, grade levels, programs, and academic successes. There is a need for experimental studies that test how the epistemological beliefs of teachers are reflected in classroom practices. Longitudinal studies would also show change in the epistemological beliefs of teacher candidates during their training period.

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Öğretmen Adaylarının Epistemolojik İnançlarının Çeşitli Değişkenler Açısından İncelenmesi

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Özet

Problem Durumu: Bireyler açısından merkezi önemde olan zihinsel yapıları davranışların, tutumların, değerlerin ve inançların belirleyicisi konumundadır. Bireyler, zihinsel değerlendirmelerinin sonucu olarak kendi dünyalarını inşa etmektedirler ve bireylerin zihinsel değerlendirmeleri yaşam biçimi üzerinde belirleyici etkiye sahiptir. Formal bir eğitim sürecinde yeni davranışlar kazanırken oluşan/oluşturulan zihinsel yapı bireylerin,bilgiye ilişkin değerlendirmelerinde, nesnel ölçütlere yakınlığının veya uzaklığının belirleyicisi olacaktır. Diğer bir ifadeyle bireylerin zihinsel değerlendirmelerinin sonucu oluşturdukları bilgiye ve bilimsel süreçlere dair inançları, onların olay ve olguları açıklarken başvurdukları karar kaynaklarını, nesnel veya öznel ölçütlere göre değerlendirmelerinde davranışlarının yönünü belirleyecektir. Dolayısıyla zihinsel bir değerlendirme

sürecinin ürünü olan bilginin felsefesi veya bizim bilgiyi nasıl anladığımızı ve bildiğimizi içeren bir anlama sahip olan epistemoloji ve buna dair inançlar, bireylerin bilgiye ve bilimsel süreçlere ilişkin yaklaşımlarında belirleyici konumdadır. Epistemolojik inançlara ilişkin yapılan araştırmalar bireylerin bilginin doğasına ilişkin inançlarının bilgiyi anlamaları, sorgulamaları, yorumlamalarında ve zor akademik görevleri tamamlama kararlılıklarında önemli bir faktör olduğunu göstermektedir. Bu çerçevede epistemolojik inançlar konusu öğretim sürecine ilişkin son yıllarda yapılan araştırmalarda önemli bir yere sahiptir. Öğretmenlerin epistemolojik inançları onların konu alanlarına bakış açılarını ve sınıf içi uygulamalarını etkilemektedir. Bu çalışmanın problemi, öğretmen adaylarının öğretmenlik mesleği değerlerinden biri olan bilgiye ilişkin inançlarının (epistemolojik inanç) belirlenmesidir.

Araştırmanın Amacı: Bu araştırmanın amacı, öğretmen adaylarının öğretmenlik mesleği değerlerinden biri olan bilgiye ilişkin inançlarının (epistemolojik inanç) çeşitli değişkenlerle ilişkisinin incelenmesidir. Bu genel amaç çerçevesinde öğretmen adaylarının Schommer'ın Epistemolojik İnanç Ölçeği'nin alt faktörlerinden aldıkları puanların cinsiyete, program türlerine, sınıf düzeylerine göre anlamlı düzeyde farklılaşıp farklılaşmadığına bakılmıştır. Ayrıca öğretmen adaylarının Schommer'ın Epistemolojik İnanç Ölçeği'nin alt faktörlerinden aldıkları puanlar ile akademik başarıları arasında ilişki olup olmadığı da araştırılmıştır.

Araştırmanın Yöntemi: Bu araştırma öğretmen adaylarının Epistemolojik İnanç Ölçeği'nden aldıkları puanların çeşitli değişkenlerle ilişkisinin belirlenmesini amaçlayan betimsel bir araştırmadır. Veri toplama aracı olarak Schommer tarafından geliştirilen ve Türkçeye uyarlamasının, geçerlik ve güvenirlik çalışmalarının Deryakulu ve Büyüköztürk (2002) tarafından yapıldığı Epistemolojik İnançlar Ölçeği (EİÖ) kullanılmıştır. Ölçek *Öğrenmenin Çabaya Bağlı Olduğuna İnanç, Öğrenmenin Yeteneğe Bağlı Olduğuna İnanç, Tek Bir Doğrunun Var Olduğuna İnanç* olarak üç boyuttan oluşmaktadır. Epistemolojik İnanç Ölçeği, bireylerin bu üç alt boyuttaki inançlarını gelişmiş (sophisticated) ve gelişmemiş (naive) olarak iki uçta ölçmektedir.Ölçekten alınan düşük puan gelişmiş epistemolojik inancı, yüksek puan gelişmemiş epistemolojik inancı göstermektedir. Araştırmanın çalışma grubunu, Cumhuriyet Üniversitesi Eğitim Fakültesi'nde öğretmenlik programlarına devam eden, dört farklı programda birinci ve dördüncü sınıfta öğrenim gören, 564 öğretmen adayı oluşturmaktadır. Bu çerçevede araştırma Okulöncesi Öğretmenliği, İlköğretim Matematik Öğretmenliği, Sınıf Öğretmenliği, Sosyal Bilgiler Öğretmenliği birinci ve dördüncü sınıf programlarında öğrenim gören öğrenciler üzerinde yapılmıştır. Öğrencilerin %43,4'ü (n= 245) birinci sınıfta, % 56,6'sı (n= 319) dördüncü sınıfta öğrenim görmektedir. Çalışma grubunun %62,8'i kız (n= 354), %37,2'si (n= 210) erkektir. Öğretmen adaylarının cinsiyetlerine ve sınıf düzeylerine göre epistemolojik inançlarındaki farklılığı belirlemek için ilişkisiz örneklemler *t*-testi uygulanmıştır. Devam edilen programa göre farklılıkların belirlenebilmesi için İlişkisiz Örneklemler için tek faktörlü ANOVA kullanılmıştır. Epistemolojik inanç ile başarı arasındaki ilişkiyi belirlemek için Pearson korelasyon analizi yapılmıştır.

Araştırmanın Bulguları: Öğretmen adaylarının Epistemolojik İnanç Ölçeği'nin üç alt boyutundan aldıkları puanlar cinsiyete göre anlamlı bir fark göstermektedir.

Araştırma kız öğrencilerin erkek öğrencilere göre ölçeğin üç alt faktörüne ilişkin daha gelişmiş epistemolojik inançlara sahip olduğunu göstermiştir. Öğretmen adaylarının Epistemolojik İnanç Ölçeği'nin birinci faktöründen aldıkları puanlar öğrenim gördükleri bölüme göre anlamlı fark göstermektedir. Epistemolojik inançlar ölçeğinin birinci faktörü olan "öğrenmenin çabaya bağlı olduğuna inanç" konusunda Sosyal Bilgiler, Okulöncesi ve Sınıf öğretmenliği programlarındaki öğrencilerin İlköğretim Matematik Öğretmenliği programındaki öğrencilere göre daha gelişmiş epistemolojik inanca sahip olduğu görülmektedir. Öğretmen adaylarının Epistemolojik İnanç Ölçeği'nin "öğrenmenin çabaya bağlı olduğuna inanç" faktöründen aldıkları puanlar sınıf düzeyine göre anlamlı fark göstermektedir. Birinci sınıf öğrencilerinin dördüncü sınıf öğrencilerine göre daha gelişmiş epistemolojik inanca sahip olduğu görülmüştür. Birinci sınıf öğrencilerinin öğrenmenin çabaya bağlı olduğuna dair inançları dördüncü sınıf öğrencilerinden daha yüksektir. Diğer taraftan "tek bir doğrunun var olduğuna inanç" konusunda dördüncü sınıf öğrencilerinin daha yüksek düzeyde bir epistemolojik inanca sahip oldukları görülmüştür. Araştırma sonuçları epistemolojik inanç ile başarı arasında da ilişki olduğunu göstermiştir. Öğrenmenin çabaya bağlı olduğuna ve yeteneğe bağlı olduğuna ilişkin gelişmiş epistemolojik inanca sahip öğrencilerin akademik başarılarının da yüksek olduğu görülmüştür. Bunun yanında, öğrencilerin akademik başarı notları ile "tek bir doğrunun var olduğuna inanç" faktöründen aldıkları puanlar arasında anlamlı bir ilişki bulunmamaktadır ($p>.05$).

Araştırmanın Sonuçları ve Önerileri: Tarama modelindeki bu araştırmada, öğretmen adaylarının cinsiyetleri, öğrenim gördükleri sınıf düzeyi, programları ve başarı düzeyleri ile epistemolojik inançları arasındaki ilişki incelenmiştir. Epistemolojik inançların bireylerin bilginin doğasına ilişkin inançları olduğu düşünüldüğünde öğretmenin sınıf içi uygulamalarını etkileyecek önemli bir değişken olduğu varsayılmaktadır. Bu nedenle öğretmen adaylarının epistemolojik inançlarını belirlemek eğitim-öğretim ortamları açısından önemli görülmektedir. Araştırma bulguları, incelenen tüm değişkenler açısından da epistemolojik inançların farklılaştığını ortaya koymaktadır. Epistemolojik inançların öğretmenlerin sınıf içi uygulamalarına yansımasının test edildiği deneysel çalışmalara ve öğretmen adaylarının yetiştirilmesi sürecinde epistemolojik inançlarındaki değişimin gözlemlendiği uzun sureli çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Epistemoloji, epistemolojik inançlar ölçeği, öğretim, öğretmen eğitimi.

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A Study on Basic Process Skills of Turkish Primary School Students[1]

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ABSTRACT

Purpose: The purpose of this study was to find out primary school students' basic process skills (BPSs) in terms of select variables. In addition, this study aims to investigate the relationship between BPSs and academic achievement. **Research Methods**: The study had a survey design and was conducted with 1272 primary school students. The study data were obtained from the "Test of Basic Process Skills—BAPS." BAPS was originally developed by Padilla, Cronin and Twiest (1985) and adapted to Turkish by Aydogdu and Karakus (2015). **Findings:** The results indicated that the BAPS scores of primary school students are not at a satisfactory level. Moreover, results indicated that the BAPS scores of primary school students were higher among the upper grades than the lower grade levels. Other results indicated that the BAPS scores of primary school students were higher among students coming from better socio-economic levels than those with low level socio-economic backgrounds. Furthermore, the BAPS scores of primary school students were higher among primary school students in urban areas than those living in rural areas. Finally, the results indicated that a positively significant relationship was found between primary school students' basic process skills and achievement in science courses. **Implications for Research and Practice**: Teachers have the great responsibility to develop the BPSs of students. The socio-economic levels of students must be taken into account during in-class activities that are the focus of BPSs. The results suggest that the more BPSs primary school students acquire, the more academically successful they will be.

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Introduction

Students must know how to access information. In order to do so, they are asked to use their science process skills (SPSs) (Taconis, Ferguson-Hessler & Broekkamp, 2000). Therefore, it is essential for them to gain the required level of SPSs (Aydogdu, 2015). The acquisition of SPSs is one of the most important aims of science teaching (Bybee & Deboer, 1993). Some studies analyzed the SPS levels of primary school students in Turkey in accordance with certain variables (Aydogdu, 2006; Dokme & Aydinli, 2009; Hazir & Turkmen, 2008; Tan & Temiz, 2003). However, such studies are few and need to be increased.

The ability to use SPSs for everyday problems is important for individuals living in a rapidly developing society. Individuals with SPSs have the ability to make a major contribution to the improvement of society. Zeitoun and Hajo (2015) state that using SPSs is an important indicator for problem-solving ability. Rillero (1998) emphasizes that individuals who cannot use SPSs will have difficulty succeeding in daily life as the development at SPSs enables students to gain the skills necessary to solve everyday problems (Kazeni, 2005). Thus, SPSs used in science teaching are important for primary school students.

SPSs are defined as the tools that students use to investigate the world around them and to construct science concepts (Ostlund, 1992). SPSs make learning permanent and make it possible for them to use the skills in daily life. Instruction of SPSs also promotes positive attitudes toward science among students (Bilgin, 2006). Students with such skills comprehend how to conduct a scientific study and may solve the problems they face using the scientific method (Cepni & Cil, 2009:46). Therefore, it is vital to offer the students a proper environment in which to acquire these skills. For this reason, science teachers must understand how to teach SPSs.

SPSs are handled in two categories in the related literature. These categories are basic and integrated process skills (Chiappetta & Koballa, 2002; Germann, 1994; Martin, 2003; Saat, 2004). Generally, basic process skills (BPSs) can be acquired beginning in the preschool period (Ergin, Sahin-Pekmez & Ongel-Erdal, 2005:7). BPSs consist of observing, classifying, communicating, measuring, using space/time relationships, using figures, inferring and predicting (Germann, Aram & Burke, 1996; Padilla, 1990). The definitions and examples given below are related to the BPS subthemes (Table 1).

Table 1

Definitions and Examples of the BPS Subthemes

BPS subtheme	*Definition and examples*
Observation	Abruscato (2000:40) defines observation as the use of senses to gain information or data about objects and events. Observation is one of the most significant SPSs (Martin, 2003:66) because much research begins with observations.
Classification	Events or objects can be classified based on their characteristics (Martin, 2003:74). Ostlund (1992) defines classification as categorization of objects or events based on a schema. One of the most important features of the classification process is that it facilitates easier understanding of events classified (Akdeniz, 2006:116).
Communication	Communication is defined as a way or ways of better knowing the views of others (Martin, 2003:86). Communication includes both verbal and written modes of reporting information (Ostlund, 1992). Scientists report their information through written and verbal communication as well as diagrams, maps, graphics, math formulas and visuals (Abruscato, 2000:43).
Measurement	Ostund (1992) defines measurement as a comparison to standard and nonstandard units. Without measurement, no conclusion can be reached (Ergin et al., 2005:49). The skill of measurement requires not only the skill to properly use measurement tools, but also the skill to make calculations with these tools (Abruscato, 2000:42).
Using space/ time relationships	The skill of using space/time relationships is based on the ability to define and make distinctions about direction, space arrangements, movement, speed, symmetry and change (Abruscato, 2000:40). Scientific activities significantly improve the use of space and time relationships.
Using figures	Numbers are needed for manipulating measurements and organizing and categorizing objects. The time allocated for activities is mostly dependent on the use of numbers. Children should recognize the fact that the ability to use numbers is a BPS (Abruscato, 2000:41) and must use numbers in answering problems in science (Tan & Temiz, 2003).
Inference	Abruscato (2000:44) defines making inferences as the use of reasoning in shaping the conclusions resulted from observations. The only rule for making inferences is being rational (Ramig, Bailer, & Ramsey, 1995). Martin (2003:114) argued that making inferences is the best prediction of why something occurs. However, such predictions should be based on evidence.
Prediction	Padilla (1990) defines prediction as stating the outcome of a future event based on observations. Predictions should be based on observations; otherwise, they would be just interpretations. Correct predictions may result in careful observations and valuable measurements (Abruscato, 2000:43). At this step, teachers may ask students such questions as: "If…, then what occurs?" Such questions require answers (Martin, 2003:106).

BPSs are the basis for integrated process skills (Padilla, 1990; Rambuda & Fraser, 2004). Therefore, it is necessary to study at which level primary school students can acquire these skills. By analyzing studies conducted in Turkey, it can be seen that there are very few studies (Arslan, 1995; Hazir & Turkmen, 2008) on the BPS levels of primary school students. Therefore, studies on the BPS levels of primary school students are necessary.

The literature states that primary school students need to improve their BPSs and that those who fail to do so will have problems in their future lives. It is especially important to determine the BPS levels of primary school students. Consequently, the aim of this study is to examine the BPSs of primary school students in terms of certain variables (gender, grade level, residential area and socio-economic status of school environments). In addition, this study aims to investigate the relationship between BPSs and academic achievement of primary school students in science courses.

Method

Research Design

This quantitative study was carried out as a survey, which possesses three basic characteristics: (1) the collection of data (2) from a sample (3) by asking questions, in order to describe its aspects (Fraenkel & Wallen, 2006).

Research Instruments and Procedures

"Test of Basic Process Skills—BAPS," which was developed by Padilla, Cronin and Twiest (1985) for primary students and adapted to Turkish by Aydogdu and Karakus (2015), was used as the data collection instrument. To ensure language validity, forward and backward translations of the original scale of the BAPS were done, and its convergent validity was calculated as 0.92 (Aydogdu & Karakus, 2015). The original version of BAPS consists of 36 multiple choice items, i.e. observation, inference, prediction, measurement, communication and classification (each of six questions). After excluding five items below the criterion level, the reliability for the Turkish version of the BAPS with the remaining 31 items was (KR–20) 0.83. BAPS is composed of two parts. The first part is composed of information determining students' demographic features. The second part is composed of 31 multiple choice items. Students were given 40 minutes to answer the BAPS.

Research Sample

The study population consisted of 1272 primary school students in the Aegean region of Turkey. The participants were selected through stratified sampling. Stratified sampling involves dividing the population into homogeneous groups, wherein each group contains subjects with similar characteristics (Cohen, Manion, & Morrison, 2007). All participants voluntarily participated in this study. Demographic characteristics of participants are presented in more detail in Table 2.

Table 2
Demographic Characteristics of Participants

Variables					**N**	**%**
Gender	Male				625	49
	Female				647	51
	Total				1272	100
Grade	3				472	37
	4				352	28
	5				448	35
	Total				1272	100
		Socio-economic status of school environment				
		Low	Middle	High		
Residential area	Village (16 villages)	312*	-	-	312	25
	Town (16 towns)	-	308*	-	308	24
	District (16 schools from 8 districts)	110	104	102	316	25
	City (16 schools from city center)	114	112	110	336	26
	Total	536	524	212	1272	100

* All schools in the villages are assumed to have low socio-economic school environments, and all schools in the towns are assumed to have middle socio-economic school environments.

Data Analysis

The SPSS packet program was used for the analysis of data gained after the applications. Data analysis was done with a one-way MANOVA procedure. Prior to the MANOVA analysis, the normality tests were conducted and the distribution of all variables were found to be normal.

Results

This study examined in detail primary school students' BPSs regarding six subthemes (observation, classification, measurement, prediction, inference and communication). Furthermore, this study examined the BPS levels of primary school students in terms of some variables (gender, grade level, residential area and achievement in science course) with a one-way MANOVA procedure. The scores that primary students obtained from BAPS are presented in Table 3.

Table 3

Scores that Primary School Students Obtained from BAPS

Test	6 Subthemes	*N*	*Max. Score*	*M*	*Success percentage*	*SD*
BAPS	Observation	1272	5	3.11	62%	1.46
	Classification	1272	5	3.27	65%	1.30
	Measurement	1272	5	2.67	53%	1.30
	Prediction	1272	6	4.18	69%	1.46
	Inference	1272	5	2.00	40%	1.10
	Communication	1272	5	3.01	60%	1.48
	Total	1272	31	18.26	58%	6.03

In Table 3, it is seen that primary students gained the highest success percentage in "prediction" (69%), and the list goes down with "classification" (65%), "observation" (62%), "communication" (60%), "measurement" (53%) and "inference" (40%). It is clearly seen from these results that the success rates of BPSs among primary students are not at a satisfactory level. In particular, the "inference" skills of primary students are low. The results of the one-way MANOVA test performed to determine whether there was a difference between the BAPS scores of primary students according to their gender are presented in Table 4.

Table 4

The Results of the One-Way MANOVA Test on Whether There Was a Difference between the BAPS Scores of Primary Students according to Their Gender

Effect		*Value*	*F*	*Hypothesis df*	*Error df*	*P*	η^2
Gender	Wilks' Lambda	0.995	0.858	7	1264	0.539	0.005

As seen Table 4, there was no significant difference between the BAPS scores of primary students according to their gender [Wilks Lambda (ʌ) = 0.995, F(7, 1264)=0.858, p=0.539, η2=0.005]. A one-way MANOVA analysis for the BAPS scores of primary students according to their gender is presented in Table 5.

Table 5
A One-Way MANOVA Analysis for the BAPS Scores of Primary Students according to Their Gender

BAPS	Gender	*n*	*M*	*SD*	*df*	*F*	*p*	η^2
Observation	Female	647	3.18	1.46	1270	2.542	0.111	0.002
	Male	625	3.04	1.47				
Classification	Female	647	3.32	1.29	1270	2.327	0.127	0.002
	Male	625	3.21	1.31				
Measurement	Female	647	2.70	1.28	1270	0.477	0.490	0.000
	Male	625	2.64	1.32				
Prediction	Female	647	4.25	1.40	1270	3.506	0.061	0.003
	Male	625	4.10	1.52				
Inference	Female	647	2.00	1.09	1270	0.006	0.938	0.000
	Male	625	2.00	1.11				
Communication	Female	647	3.04	1.45	1270	0.334	0.563	0.000
	Male	625	2.99	1.51				
Total	Female	647	18.50	5.84	1270	2.09	0.149	0.002
	Male	625	18.01	6.22				

As seen in Table 5, there was no significant difference between the BAPS scores of primary students according to their gender. However, it was found that female primary students had higher BPSs, but these differences were not statistically significant in any of the groups. The results of the one-way MANOVA test on whether there was a difference between the BAPS scores of primary students according to their grade level are presented in Table 6.

Table 6

The Results of the One-Way MANOVA Test on Whether There Was a Difference between the BAPS Scores of Primary Students according to Their Grade Level

Effect		*Value*	*F*	*Hypothesis df*	*Error df*	*p*	η^2
Grade level	Wilks' Lambda	0.949	4.826	14	2526	0.000*	0.026

*p<0.05

As seen in Table 6, there was a significant difference between BAPS scores of primary students according to their grade level [Wilks Lambda (ʌ) = 0.949, F(14, 2526)=4.826, p=0.000, η2=0.026]. A one-way MANOVA analysis for the BAPS scores of primary students according to their grade level are presented in Table 7.

Table 7

A One-Way MANOVA Analysis for the BAPS Scores of Primary Students according to Their Grade Level

BAPS	Grade	N	M	SD	df	F	p	η^2	Sig.
Obser.	3	472	2.92	1.46	1269	8.720	.000*	.014	5-3
	4	352	3.11	1.43					
	5	448	3.32	1.47					
Classi.	3	472	3.04	1.30	1269	19.557	.000*	.030	5-3
	4	352	3.21	1.27					5-4
	5	448	3.56	1.26					
Measu.	3	472	2.40	1.29	1269	23.406	.000*	.036	5-3
	4	352	2.64	1.27					5-4
	5	448	2.98	1.27					4-3
Predict.	3	472	4.00	1.42	1269	6.222	.002*	.010	5-3
	4	352	4.21	1.43					
	5	448	4.34	1.52					
Inferen.	3	472	1.88	1.08	1269	6.161	.002*	.010	5-3
	4	352	1.99	1.10					
	5	448	2.13	1.11					
Comm.	3	472	2.75	1.49	1269	16.921	.000*	.026	5-3
	4	352	2.99	1.46					5-4
	5	448	3.31	1.44					4-3
Total	3	472	17.00	5.70	1269	23.113	.000*	.035	5-3
	4	352	18.17	5.88					5-4
	5	448	19.66	6.21					4-3

As seen Table 7, there was a significant difference between the six subthemes (observation, classification, measurement, prediction, inference and communication) in the BAPS of primary students according to their grade level. The results of the one-way MANOVA test on whether there was a difference between the BAPS scores of primary students according to their residential area are presented in Table 8.

Table 8

The Results of the One-Way MANOVA Test for the BAPS Scores of Primary Students according to Their Residential Area

Effect		Value	F	Hypothesis df	Error df	p	η^2
Residential area	Wilks' Lambda	0.941	3.691	21	3624	0.000*	0.020

*p<0.05

As seen in Table 8, there was a significant difference between the BAPS scores of primary students according to their residential area [Wilks Lambda (λ) = 0.941, F(21, 3624)=3.837, p=0.000, η2=0.020]. A one-way MANOVA analysis for the BAPS scores of primary students according to their residential areas are presented in Table 9.

Table 9
A One-Way MANOVA Analysis for BAPS Scores of Primary Students according to Their Residential Area

BAPS	Resident. area	*n*	*M*	*SD*	*df*	*F*	*p*	η^2	*Sig.*
Obser	1.Village	312	2.77	1.44	1268	10.213	.000*	.024	3-1 4-1.
	2.Town	308	3.02	1.49					
	3.District	316	3.31	1.41					
	4.City C..	336	3.32	1.46					
Class	1.Village	312	3.11	1.37	1268	4.353	.005*	.010	4-1. 4-2
	2.Town	308	3.19	1.31					
	3.District	316	3.30	1.24					
	4.City C..	336	3.46	1.26					
Meas	1.Village	312	2.43	1.35	1268	5.445	.001*	.013	2-1 3-1 4-1
	2.Town	308	2.70	1.33					
	3.District	316	2.70	1.26					
	4.City C..	336	2.83	1.24					
Predi	1.Village	312	4.09	1.47	1268	5.228	.001*	.012	4-2
	2.Town	308	4.01	1.57					
	3.District	316	4.25	1.39					
	4.City C..	336	4.34	1.41					
Infer	1.Village	312	1.78	1.07	1268	3.308	.020*	.008	2-1 3-1 4-1
	2.Town	308	2.06	1.13					
	3.District	316	2.08	1.07					
	4.City C..	336	2.06	1.11					
Com	1.Village	312	2.80	1.47	1268	11.082	.000*	.026	3-1 4-1 3-2 4-2
	2.Town	308	2.75	1.51					
	3.District	316	3.14	1.44					
	4.City C..	336	3.32	1.43					
Total	1.Village	312	17.00	5.87	1268	9.924	.000*	.023	3-1 4-1 4-2
	2.Town	308	17.77	6.40					
	3.District	316	18.81	5.70					
	4.City C..	336	19.35	5.91					

As seen in Table 9, there was a significant difference between the six subthemes in the BAPS of primary students according to their residential area. In terms of residential areas, there were significant differences in the BAPS scores, with higher scores among primary students in the city center or a district than in a village or town.

The results of the one-way MANOVA test on whether there was a difference between the BAPS scores of primary students according to the socio-economic status of school environments are presented in Table 10.

Table 10
The Results of the One-Way MANOVA Test for the BAPS Scores of Primary Students according to the Socio-Economic Status of School Environments

Effect		Value	*F*	*Hypothesis df*	*Error df*	*p*	η^2
Socio-economic status	Wilks' Lambda	0.945	5.143	14.000	2524.000	0.000	0.028

As seen in Table 10, there was a significant difference between the BAPS scores of primary students according to the socio-economic status of school environments [Wilks Lambda (ʌ) = 0.945, F(14, 2524)=5.143, p=0.000, η2=0.028].

A one-way MANOVA analysis for the BAPS scores of primary students according to their socio-economic school environment are presented in Table 11.

Table 11
A One-Way MANOVA Analysis for the BAPS Scores of Primary Students according to Their Socio-Economic School Environment

BAPS	Socio econ.	N	M	SD	Df	F	p	η^2	Differ.
Obser	1.Low	536	2.82	1.50	1269	21.886	0.000*	0.033	3-2. 3-1 2-1
	2.Middle	524	3.23	1.39					
	3.High	212	3.54	1.40					
Class	1.Low	536	3.08	1.40	1269	10.574	0.000*	0.016	3-2 3-1 2-1
	2.Middle	524	3.36	1.23					
	3.High	212	3.51	1.12					
Meas	1.Low	536	2.45	1.35	1269	13.198	0.000*	0.020	3-1 2-1
	2.Middle	524	2.83	1.26					
	3.High	212	2.83	1.19					
Predi	1.Low	536	3.95	1.56	1269	12.321	0.000*	0.019	3-1 2-1
	2.Middle	524	4.29	1.42					
	3.High	212	4.47	1.23					
Infer	1.Low	536	1.78	1.10	1269	20.339	0.000*	0.031	2-1 3-1
	2.Middle	524	2.09	1.08					
	3.High	212	2.30	1.05					
Com	1.Low	536	2.81	1.50	1269	9.061	0.000*	0.014	2-1 3-1
	2.Middle	524	3.12	1.48					
	3.High	212	3.24	1.37					
Total	1.Low	536	16.92	6.29	1269	25.509	0.000*	0.039	2-1 3-1
	2.Middle	524	18.96	5.73					
	3.High	212	19.91	5.41					

*p<0.05

As seen in Table 11, there was a significant difference between the six subthemes (observation, classification, measurement, prediction, inference and communication) in the BAPS of primary students according to their socio-economic school environment. These differences in BAPS scores were higher among primary school students from better socio-economic school environments compared with the students from low-level socio-economic school environments.

The relationship between primary students' BPSs and their achievement in the course are presented in Table 12.

Table 12
Relationship between Primary Students BPSs and Their Achievement in the Course

		Academic achievement in science course
BPSs	Pearson correlation	0.598**
	Sig. (2-tailed)	0.000
	N	1272

**p<0.01

The coefficient of correlation in Table 8 shows that there exists a positive and significant relationship (r = .598) between BPSs and Academic Achievement in the science course.

Discussion and Conclusion

The results of the study showed that the BPSs of primary school students are not at a satisfactory level. In particular, the BPS subcategory of "inference" (40 %) among primary school students is at a low level. Similarly, in a study done by Ozturk, Tezel and Acat (2010), it was found that the inference skills (31%) of 7th-grade students are too low. Furthermore, a study done by Rabacal (2016), found that the inference skills (39%) of biology students were low. In addition, a study done by Chabalengula, Mumba and Mbewe (2012), found that pre-service teachers' conceptual understanding of inference skills (25%) were too low. TIMSS-1999, TIMSS-2007 and TIMSS-2011 results indicate that in Turkey primary students' knowledge of SPSs is low (NCES, 1999; 2007; 2011). Similar findings were observed in some studies of primary students' knowledge of SPSs in Turkey (Aydogdu, 2006; Dokme & Aydinli, 2009; Hazir & Turkmen, 2008; Saban, 2015; Senturk, 2012; Tan & Temiz, 2003). Teachers have a great responsibility to develop the BPSs of primary school students. For this reason, teachers should develop students' BPSs by requiring the active use of these skills in the classroom. Furthermore, course contents should be organized with the aim of improving the BPSs of primary school students.

The results of the study revealed that there was no significant difference between the BAPS scores of primary school students according to their gender. Yet it was found that female primary school students had higher BPSs; however, these differences were not statistically significant in any of the groups. In some studies, it was reported that there was no significant difference between the SPS scores of primary school students according to their gender (Arslan, 1995; Hazir & Turkmen, 2008; Ong, Ramiah, Ruthven, Salleh, Yusuff & Mokhsein, 2015; Rabacal, 2016; Senturk, 2012). Similar findings were observed in other studies of elementary school students (Aydogdu, 2006; Ozturk, 2008). Nonetheless, in studies of secondary school students, results showed that there was a significant difference favoring female students according to their gender (Dokme & Aydinli, 2009; Zeidan & Jayosi, 2015; Zorlu, Zorlu & Sezek, 2013). It is seen in the studies conducted on BPSs that gender has an impact on some of the studies and not on others. According to a recent study, gender does not have an impact on BPSs. The reason for that is that female students who have a particular ability in BPSs might also have a strong ability in self-regulation.

The results of the study revealed that there was a significant difference between the BPSs of primary school students according to their grade level. In terms of grade level, significant differences in the BPS scores showed higher scores in the 5th grade than in the 3rd and 4th grades, and higher scores in the 4th grade than in the 3rd grade. In a study done by Arslan (1995), it was found that significant differences in SPSs showed higher scores in 5th grade students compared to 4th grade students.

Similarly, in a study done by Ong et al. (2015), it is found that significant differences in BPSs showed higher scores among 6th-grade students than among 4th-grade students. Furthermore, in a study done by Ozgelen (2012), it was found that significant differences in SPSs showed higher scores among 7th-grade students than 6th-grade students. Ozgelen (2012) stated that SPSs are related to cognitive development. These significant differences in the current study can be explained by primary school students' cognitive development levels according to Piagetian theory. Piaget claimed a positive correlation between children's mental capacity and their grade level.

Other results revealed that there was a significant difference between the BPSs of primary school students according to their residential area. These differences in BPSs showed higher scores in primary school students in urban areas than in rural areas. In a study done by Mohamad and Ong (2013) it was found that those primary students' BPSs in urban areas were significantly higher than students in the rural regions. Similarly, in a study done by Ong et al. (2015), it was found that urban students' achievements were significantly higher than rural students when it came to the acquisition of BPSs. Furthermore, in another study done by Raj and Devi (2014), it was found that significant differences in SPSs showed higher scores among high school students in urban areas compared to those in rural areas. But, in a study done by Zeidan and Jayosi (2015), it was found that there were significant differences in SPSs showing higher scores among secondary school students in villages than those in city centers. Consequently, these studies indicated that residential area is an effective variable on students' SPSs. In the present study, the reason for the low percentage in the BPSs of students living in rural areas might be their socio-economic level. As is known, the socio-economic level of students in rural areas in Turkey is lower.

Furthermore, the results in the current study revealed that there was a significant difference between the BPSs of primary school students according to the socio-economic status of school environments. These differences in BPSs showed higher scores among primary school students from better socio-economic school environments than students from low-level socio-economic school environments. Some researchers indicated that students from better socio-economic school environments have significantly higher SPS capacity than students from low-level socio-economic school environments (Hazir & Turkmen, 2008; Saracoglu, Boyuk & Tanik, 2012). Hereafter, the socio-economic levels of students must be taken into account during in-class activities focus on BPSs.

Finally, the results indicated that a positively significant relationship (r=0.598) was found between primary school students' BPSs and their achievement in the science course. Some researchers found that there were positive and significant correlations between students' SPSs and their academic achievement (Aydogdu, 2006; German, 1994; Ozturk, 2008; Sittirug, 1997). Guevara (2015) reported that the acquisition of SPSs can have a profound impact on student success in science classes. Overall, the results suggest that the more BPSs primary school students acquire, the more academically successful they will be. Therefore, we can conclude that having a

high-level BPS/socio-economic background has a significant effect on acquiring knowledge. Consequently, primary school students need assistance in acquiring BPSs. Furthermore, they must be provided with an opportunity to use these skills in a teaching and learning environment.

Based on all these results, the reason why the BPSs of primary students are not at a satisfactory level might be examined in a further study. In addition, any variables that may have an impact on the development of BPSs might be studied. The reason behind the higher BPS scores of female primary students should also be analyzed in a more detailed way in a further study. The BPS levels of primary students regarding both grade level and residential area should be studied further and in more detail. The effect on acquiring academic achievement from BPSs should be analyzed in more detail in a further study. Studies analyzing the BPSs of primary school students might be more deeply studied through larger sample groups and different data-gathering tools (observation, interview, survey, etc.). In future studies, materials might be prepared for instructors about how to prepare activities to improve the BPSs of students as well as how to effectively use their BPSs in a class environment.

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3., 4. ve 5. Sınıf Öğrencilerinin Temel Becerileri Üzerine Bir Çalışma

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Özet

Problem durumu: Bilimsel süreç becerileri, öğrenmenin kalıcı ve yaşamda kullanılır olmasını sağlar. Bilimsel süreç becerilerini kazanan öğrenciler bilimsel bir araştırmanın nasıl yapıldığını anlar ve karşılaştıkları sorunları bilimsel yöntemler kullanarak çözebilirler. Bu nedenle, öğrencilere bilimsel süreç becerilerini kazandıracak ortamların sunulması son derece önemlidir. Temel beceriler üst düzey becerilerin temelini oluşturmaktadır. Başka bir ifadeyle; temel becerilerin öğrenilmesi üst düzey bilimsel süreç becerilerinin geliştirilmesi için ön koşuldur. Bu nedenle, temel becerilerin öğrencilere kazandırılması son derece önemlidir. Bu becerilerin ilköğretim öğrencilerine hangi düzeyde kazandırıldığı ve bu beceriler üzerinde hangi değişkenlerin etkili olduğu, araştırılması gereken konular arasında yer alır.

Araştırmanın Amacı: Bu çalışmanın amacı, 3., 4. ve 5. sınıf öğrencilerinin temel beceri düzeylerini belirlemek ve bu beceri düzeylerini öğrencilerin cinsiyetine, sınıf düzeyine, yaşadıkları yere ve okulun bulunduğu sosyo-ekonomik çevreye göre incelemektir. Ayrıca, öğrencilerin temel beceri düzeyleri ile fene yönelik başarı puanları arasındaki ilişkiyi belirlemektir.

Araştırmanın Yöntemi: Çalışma tarama modeline göre tasarlanmıştır. Çalışmaya 3., 4., ve 5. sınıf düzeyinden toplam 1272 ilköğretim öğrencisi katılmıştır. Çalışmaya katılan öğrencilerin demografik özellikleri incelendiğinde, 3.sınıftan 472 öğrenci, 4. sınıftan 352 öğrenci ve 5. sınıftan 448 öğrenci olmak üzere toplamda 625 erkek ve 647 kız öğrenciden oluştuğu görülmektedir. Ayrıca, çalışmaya katılan öğrencilerin, 16 farklı

köyde yer alan 16 okuldan 312 öğrenci, 16 farklı kasabada yer alan 16 farklı okuldan 308 öğrenci, 6 farklı ilçede yer alan 16 farklı okuldan 318 öğrenci ve şehir merkezinde yer alan 16 farklı okuldan 336 öğrenci olacak şekilde dağılması sağlanmıştır. Buradaki amaç, öğrencilerin temel beceri puanları üzerinde kırsal ve merkezin etkisini daha net görebilmek içindir. Ayrıca, öğrencilerin örnekleme seçiminde okulların bulunduğu sosyo-ekonomik düzeyin az, orta ve yüksek şeklinde çeşitli düzeylerde olmasına dikkat edilmiştir. Çalışmada veri toplama aracı olarak "Temel Beceri Ölçeği (Test of Basic Process Skills-BAPS)" kullanılmıştır. Temel Beceri Ölçeği, Padilla, Cronin ve Twiest (1985) tarafından geliştirilmiş ve Türkçeye Aydoğdu ve Karakuş (2015) tarafından uyarlanmıştır. Temel Beceri Ölçeği, gözlem, sınıflama, çıkarım yapma, ölçme, tahmin ve iletişim kurma becerilerinin her birine yönelik altışar sorudan ve toplamda 31 sorudan oluşan çoktan seçmeli bir ölçektir. Aydoğdu ve Karakuş (2015) Temel Beceri Ölçeğinin uyarlanması çalışmasında, dil geçerliği için öncelikle ölçeği uzmanlar tarafından Türkçeye çevrildiğini belirtmişlerdir. Araştırmacılar, üç uzman çevirisinin ortak noktaları dikkate alarak ortaya çıkan Türkçe taslak ölçekte yer alan maddelerin bir dil uzmanı tarafından tekrar İngilizceye çevrildiğini belirtmişlerdir. Sonuç olarak araştırmacılar ölçeğin orijinali ile İngilizceye tekrar çevrilmiş halini karşılaştırılarak ölçeğe son halini verilmişlerdir. Araştırmacılar, ölçeğin orijinali ile İngilizceye tekrar çevrilmiş hali arasındaki uyuşum yüzdesinin 0.92 olduğunu belirtmişlerdir. Araştırmacılar, temel beceri ölçeğinin başlangıçta 36 maddeden oluştuğunu geçerlik ve güvenirlik analizleri sonucunda 31 maddeye düştüğünü belirtmişlerdir. 31 maddelik temel beceri ölçeğinin beşi gözlem, beşi sınıflama, beşi ölçme, altısı tahmin, beşi çıkarım yapma ve beşi iletişim yapma olmak üzere dağılmıştır. 31 maddelik temel beceri ölçeğinin KR-20 değeri 0.83 olarak hesaplanmıştır.

Araştırmanın Bulguları: Araştırma bulguları, ilköğretim öğrencilerinin temel beceri düzeylerinin istenen düzeyde olmadığını göstermiştir. Ayrıca bulgular, ilköğretim öğrencilerinin temel becerilerinin cinsiyetlerine göre anlamlı farklılaşmadığını ancak kız öğrencilerin daha yüksek aritmetik ortalamalara sahip olduğunu göstermiştir. Bir diğer bulgu ise, ilköğretim öğrencilerinin temel becerilerinin sınıf düzeylerine göre anlamlı farklılaştığıdır. Bu anlamlı farklılıkların ise genelde üst sınıflar lehine olduğu görülmüştür. Bunların yanı sıra, elde edilen bulgular incelendiğinde daha üst düzey sosyo-ekonomik okul çevresinden gelen öğrencilerinin düşük sosyo-ekonomik okul çevresinden gelen öğrencilere göre istatistiksel olarak anlamlı olacak şekilde daha yüksek temel beceri düzeylerine sahip oldukları görülmüştür. Bir diğer bulguda ise, merkezdeki öğrencilerin kırsaldaki öğrencilere göre istatistiksel olarak anlamlı olacak şekilde yüksek temel beceri puanlarına sahip olduklarını göstermiştir. Bunlara ilaveten, ilköğretim öğrencilerinin temel beceri düzeyleri ile fene yönelik akademik başarı puanları arasında orta düzey pozitif bir ilişkinin ($r = 0.598$) olduğu belirlenmiştir.

Araştırmanın Sonuçları ve Önerileri: Araştırma sonuçlarına göre, ilköğretim öğrencilerinin temel beceri düzeylerinin istenen düzeyde olmadığı görülmüştür. İlkokul öğrencilerinin temel becerilerini istenen düzeye getirebilmede öğretmenlerin büyük rolü vardır. Bu anlamda öğretmenlere daha fazla görev düşmektedir. Ayrıca

elde edilen sonuçlardan, ilköğretim öğrencilerinin temel becerilerinin cinsiyetlerine göre anlamlı farklılaşmadığını ancak kız öğrencilerin daha yüksek aritmetik ortalamalara sahip olduğu görülmüştür. Bir diğer sonuç ise, ilköğretim öğrencilerinin temel becerilerinin sınıf düzeylerine göre anlamlı farklılaştığıdır. Bu anlamlı farklılıkların ise genelde üst sınıflar lehine olduğu görülmüştür. Bu anlamlı farklılıklar ise öğrencilerin bilişsel gelişimden kaynaklanmış olabilir. Bunların yanı sıra, elde edilen sonuçlar incelendiğinde daha üst düzey sosyo-ekonomik okul çevresinden gelen öğrencilerinin düşük sosyo-ekonomik okul çevresinden gelen öğrencilere göre istatistiksel olarak anlamlı olacak şekilde daha yüksek temel beceri düzeylerine sahip oldukları görülmüştür. Bu durumda özellikle düşük sosyo-ekonomik düzeydeki okulların özellikle öğrencilerin temel becerilerini geliştirecek şekilde daha çok desteklenmesi gerektiği düşünülmektedir. Bir diğer sonuç ise, merkezdeki öğrencilerin kırsaldaki öğrencilere göre istatistiksel olarak anlamlı olacak şekilde yüksek temel beceri puanlarına sahip olmalarıdır. Bu sonuca dayalı olarak özellikle kırsaldaki okulların fizik durumlarının (fen laboratuvarı, ders araç-gereçleri vb.) daha iyi desteklenmesi sağlanabilir. Bunlara ilaveten, ilköğretim öğrencilerinin temel beceri düzeyleri ile fene yönelik akademik başarı puanları arasında orta düzey pozitif bir ilişkinin ($r = 0.598$) olduğu belirlenmiştir. Bu sonuçlara dayalı olarak ilköğretim öğrencileri ne kadar çok temel beceri düzeyine sahip olurlarsa o kadar fene yönelik olarak akademik başarılarının artacağı söylenebilir.

Anahtar Sözcükler: ilköğretim öğrencileri, fen bilimleri dersi, bilimsel süreç becerileri, fene yönelik akademik başarı.

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Evaluation of the Level of Students with Visual Impairments in Turkey in Terms of the Concepts of Mobility Prerequisites (Body Plane/Traffic)

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ABSTRACT

Purpose: Visually impaired people are weak in terms of their learning words and concepts by hearing them and their experience of the world with their bodies. In addition to developing a standardized assessment tool in the Development of Orientation and Mobility Skill Assessment Tool (OMSAT/YOBDA) for Visually Impaired Students Project, supported by TUBITAK, the purpose of this study was to determine to what extent visually impaired students throughout the country had the prerequisite concepts (body plane/traffic) they needed in order to use their orientation and mobility skills. **Research Methods**: The study is a descriptive-level survey study which aims to present the existing situation. A total of 402 visually impaired students from 16 schools for the visually impaired (n=320) and among the inclusion students in the immediate surroundings (n=82) studying during the 2015–2016 academic year participated in our research. The implementers personally worked with the visually impaired students and made markings for the OMSAT. The data were entered in the system. **Findings:** At the end of the study, it was concluded that the levels of mastery of the traffic concepts required for orientation and mobility were very low among students studying at schools for the visually impaired as well as in mainstream contexts, and that their performance levels regarding concepts related to body planes were relatively higher. **Implications for Research and Practice:** It is assumed that the research results will form a basis for preparing IEPs, improving teaching programs, and conducting other field research on this subject.

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Introduction

There are three basic restrictions in the experiences of visually impaired students. The first restriction is the control over the environment in one's relationship with it. The second restriction is mobility. The third restriction is the limitation of concepts and their varieties. Visually impaired students' performance of orientation and mobility skills depends on whether they have mastered these concepts. Therefore, it is vital to determine their performance in regard to concepts related to orientation and mobility skills.

Concepts are one of the most important structures that help people interpret the world and integrate with the environment during their lifetime. Concepts, in addition to their broad meaning, express the words or phrases that people use in order to interpret themselves and their environment (Koksal, 2006). Concept development includes the views of the individual regarding himself/herself, other people, objects and the environment. People use thousands of concepts to distinguish and to communicate during the day (Jonassen, 2006). Concept development is an infinite process that lasts a lifetime, and it is different for each child based on physical and environmental factors.

Audio-visual clues are very important as the source of stimuli for the concept development of all children. Sighted children are interested in observing, researching and discovering their environment (Ceylan, Gozun Kahraman & Ulker, 2015). Therefore, it is possible for them to gain various concepts as a result of their observations and research. Concepts begin to be created through the senses. While the senses are independent from each other at the beginning (infancy), they start to make sense by being organized, correlated with one another and compared to previous experiences (Sucuoglu, Buyukozturk & Unsal, 2008). Eyesight has an integrative role that gains a broad meaning to different information separately provided by each sense (Harley, Truan & Sanford, 1997). Hence, eyesight, which involves various elements and functions, is a sense that plays an important role in cognitive, emotional and motor development (Aki & Sag, 2016). Visual impairment introduces many developmental problems.

Visually impaired children are developmentally disadvantaged as they have to rely on their senses other than eyesight. The lack of visual stimulus negatively affects various (physical, cognitive and language) developmental areas in children (Tuncer, 2004). Usually, there may be delays in their concept development (Budd, 1998). Concept development is an important tool for the overall development of sighted or visually impaired children in addition to efficient teaching and learning (Olayi & Ewa, 2014). Visually impaired children need to learn how to integrate their sensory impressions by touching, smelling, tasting and using their remaining eyesight (Harley et al., 1997). Early concept development in visually impaired children underlies their subsequent developments.

Visually impaired people are low in terms of learning words and concepts by hearing them and experiencing the world with their bodies. The hypothesis that visually impaired children are incapable of concept development is supported by a

few older studies by Hill and Balsch (1980). In these studies, Garry and Accarelli (1960) stated that the visually impaired had difficulty in understanding and using spatial concepts, Hapeman (1967) stated that they had less tangible data regarding their surroundings, Kephart, Kephart and Schwarz (1974) stated that children comprehended the concepts in bits as a result of their way of processing the data regarding themselves and their environment, and Hartlage (1968) stated that there was a significant difference between the performances of blind and sighted children regarding questions about spatial concepts (Hill & Blasch, 1980). Correct and functional concept development is an important milestone for mobility.

Orientation and mobility without eyesight require certain basic concepts to be learned. Basic concepts related to orientation and mobility are physical awareness that includes body diagram, body concept, body image, the body plane and its sections, right-left sides, directions, spatial position, shape, size, and environmental (corner, street, etc.) concepts (Pogrund et al., 1998). Other concepts are needed for distance and time, following a sequence of fixed objects, moving against the moving objects, and efficient mobility (Olayi & Ewa, 2014). Information regarding the environment and spatial concepts are the main factor behind orientation and mobility for visually impaired people (Budd & LaGrow, 2000). Learning the concepts is required for understanding the structure of the objects and using them as a clue or cue. For example, a student who understands the concept of a door and has counting skills will be able to find the door of the cafeteria, which is the fifth one, by counting the doors.

One of the important prerequisite concepts for a visually impaired person to have mobility is the bodily concept. The concept of body image includes information about the body parts, the relative positions of the body and how much space it takes up. Body image makes it easier for the child to perceive the body plane and to understand simple spatial concepts (opposite, next to, between). If the student has an inadequate body image, he/she will have problems with understanding the world surrounding him/her (Altunay, 2003). After mastering the concept of body image, it is necessary to develop a functional use of the bodily right/left concepts. A visually impaired child cannot see how things around him/her move when he/she moves or turns (Ozyurek, 1995). It is necessary to help the student learn the relativity of the positions, in other words, how the things change their positions when he/she moves so that the child can utilize his/her surroundings in a safe and fast way.

It is not enough for visually impaired people to only learn the bodily concepts in order to have an efficient orientation and mobility. Environmental concepts like traffic concepts are vital to safely utilize the surroundings. When people move, they may encounter risky situations, such as crossing the street, where the possibility of death or injury is high. Crossing the street is easily learned through the visual systems. In visual impairment, this becomes difficult (Geruschat, Hassan, Turano, Quigley & Congdon, 2006). It is reported that the number of accidents in Turkey between 2010 and 2012 is 3,631,763 (Trafik kazalari ve sonuclari/Traffic accidents and their consequences, n.d.). There is no data regarding the accidents that visually impaired people have. People usually feel that they are not safe in traffic and avoid

the situations that they sense as dangerous. These results regarding limited accessibility are not only valid for the traffic environment, but also for other environments outside the home (Magnusson & Rassmus-Grohn, 2005). This leads to the dependency of people on others when moving around.

Visually impaired people have to be in traffic without depending on other people during their lifetime. That he/she can go to school and work, visit his/her neighbors or friends and engage in social activities depends on whether he/she has the traffic concepts along the route. Traffic concepts are crossroads, pavement, pedestrian crossing, subway, overpass, traffic light, road, etc. In order to include people with reduced mobility in the traffic system, it is necessary to inform users about all the facilities surrounding them and to provide accessibility (Periša, Peraković & Šarić, 2014). It is crucial for visually impaired people to have these traffic concepts at first, so that they can get this information and have access. In a study by Wright (2010), the participants were evaluated in terms of whether they had the travel concepts related to crossing the street, such as right, left and position concepts. It was observed that verbal clues and guided applications for crossing the street were effective in visually impaired children. There are studies conducted for developing environmental concepts in visually impaired people and maintaining their safety in traffic. In a study by Budd and LaGrow (2000), a three-dimensional interactive model was used to teach environmental concepts to four visually impaired children aged between 7 and 11. The model was considered efficient in teaching these concepts. For visually impaired pedestrians, crossing the street in uncontrolled traffic is a very significant problem. Visually impaired pedestrians have to use their sense of hearing in order to identify the spacings and approaching vehicles. In a study conducted by Emerson and Sauerburger (2008) on 17 visually impaired females and six visually impaired males aged between 24 and 67, their performance of sensing the approaching vehicles in uncontrolled traffic was evaluated. In the interviews conducted by Altunay Arslantekin and Ekinci (2014) on four visually impaired undergraduates in our country, it was stated that they did not have any traffic education. One of the students said, "We were told to use the curbsides, not to walk on the road, and to keep our walking stick in contact with the curbside all the time; we were not provided with applied training in traffic lights." Furthermore, they stated that they were not provided with any training regarding the encountered objects/concepts. It is observed that systematic activities for teaching traffic concepts are not available in our country.

A structured presentation is required in order to help visually impaired people properly develop these concepts. As disabled students have problems with gaining some concepts through their observations and experiences, the teaching of concepts has become an important element of the special education curriculum (Prater, 1993). In the literature, there are various scientifically proven studies on concept teaching in Turkey. In Turkey, these studies for mentally handicapped students mostly cover the staggered methods of Merill and Tennyson as well as the natural language method of Gagné. The researches that compare the teaching of color and shape concepts to mentally retarded students through the Gagné model of natural language (Kircaali-

Iftar, Birkan & Uysal, 1998) as well as the efficiency of the Gagné model and the Merrill and Tennyson models (Guzel Ozmen & Unal, 2008) can serve as examples of these studies. The studies conducted with visually impaired students on concept evaluation and teaching are quite few in number. It was discovered by Horzum (2016) that visually impaired students often used the concept images and misused the triangle definitions, and in a research by Altunay Arslantekin and Sener Akin (2017), it was discovered that teaching based on the Direct Instruction Model was effective in helping students gain and maintain their knowledge of geometric figures.

Mobility experts must help visually impaired students master these concepts as well as sighted people do. Before proceeding with the teaching of the concepts, evaluations must be conducted to reveal the concept development levels of visually impaired individuals (Hill & Blasch, 1980). In Turkey, there are no countrywide data that present the conceptual performance levels of students and that can be used in scientific publications. Assessing the existing concept levels is crucial in order to develop supportive activities and programs. The purpose of this study is to determine the level of the prerequisite concepts (body plane and traffic) that visually impaired students throughout the country need to master in order to utilize their orientation and mobility skills. The study is the first and most comprehensive research on this subject conducted with tactile visually impaired students.

Method

The "Development of Orientation and Mobility Skill Assessment Tool (OMSAT) for Visually Impaired Students" Project was conducted between 2014 and 2016. The project team consisted of one project coordinator, one special education instructor, one ergotherapy instructor, and one instructor from an assessment and evaluation department. Furthermore, five research assistants and two teachers (graduate students) for the visually impaired worked on the project.

During the process of developing the assessment tool, the purpose of the scale, the properties to be surveyed and the items of the tool were written. An item pool consisting of 84 people including non-governmental organization members, teachers and academics was formed. The relevance of the items for surveying purpose and their comprehensibility in terms of language were analyzed by three education and three assessment and evaluation specialists, one project coordinator, three researchers, one special education research assistant and one assessment and evaluation research assistant. In accordance with the pre-pilot study, some changes were made to the assessment tool, and a pilot study was conducted. Validity and reliability analyses were conducted based on the norm sample data in the subscales of orientation and mobility skills of the assessment tool. The purpose of the prerequisite skills and concepts sections of the OMSAT is to determine the existing performance levels of students. Scoring total points in these sections is not the aim.

Research Design

The purpose of the study is to determine the performance levels of visually impaired students for performing body plane and traffic concepts. The study is a

descriptive-level survey that aims to present the existing situation. Studies that aim to collect data in order to determine the specific features of a group are called survey studies (Buyukozturk, Kilic Cakmak, Aygun, Karadeniz & Demirel, 2012).

Research Sample

A total of 402 visually impaired students from 16 schools for the visually impaired (n=320) and among the inclusion students in the immediate surroundings (n=82) studying during the 2015–2016 academic year participated in our research. Of these students, 183 were female and 219 were male. The required permissions for the students to participate in the research were obtained from the Ministry of National Education. Moreover, the school principals were informed about the research, and their written approval was obtained. The data were collected by the research assistant in the special education department. The sections of the OMSAT where body plane concepts and traffic concepts were evaluated were applied in an empty room.

Research Instrument and Procedure

The OMSAT was developed with the "Development of Orientation and Mobility Skill Assessment Tool for Visually Impaired Students" Project no. 113K557 supported by TUBITAK (Scientific and Technological Research Council of Turkey). The OMSAT is a standard assessment tool that can objectively evaluate the performance levels of students in terms of their orientation and mobility skills. At the beginning of the OMSAT, there is a student data sheet. The first section consists of questions that aim to identify the visually impaired students' past experiences regarding their orientation and mobility skills. In the second section, the prerequisite skills are defined, and in the third section, the prerequisite concepts are defined. In the fourth section, the basic mobility skills (following the wall/object by hand, guided walking skills and walking stick skills) are included. The fifth section consists of items related to orientation skills. The sixth section is related to mobility on routes. Finally, the seventh section consists of items regarding the students' use of mobility skills in interior/exterior arrangements.

There is an explanation about implementation at the beginning of the third section. In that section, there are columns for behaviors/instructions, a "+/-" area for marking and a "remarks" area for descriptions of the concept performance of the students. Furthermore, as different environments were used in the study, the environment was specified next to the remarks column for the ease of implementation.

The implementers conducted a one-to-one study according to the name list of the tactile students. The instructions in the OMSAT were provided, and markings were performed. The steps properly carried out by the students were marked as "+", and the steps incorrectly carried out or not carried out by the students were marked as "-" under the +/- column opposite the respective step of the assessment tool. The true/false answers of the student were reacted neutrally.

Validity and Reliability

For the validity, the assessment tool's (instrument's) relevance to the study's purpose was reviewed by three experts. Application booklets were prepared so that the assessment tool could be used in the same way by all implementers. Project coordinator provided the implementers with training. In order to collect the interrater reliability data (20% of the students), two research assistants marked the OMSET independently. The interrater reliability data were found to be 100%.

Data Analysis

In the research, the assessments regarding the tactile students' mastery of the prerequisite (body plane and traffic) concepts were reviewed. Data was analyzed with SPSS and descriptive statistics regarding prerequisite concepts of students were determined. After the data input of the research was completed, the assessments tools were secured in a cabinet in the room of the project coordinator.

Results

In the research, the visually impaired students' percentage of implementing body plane and traffic concepts was reviewed. Body plane concepts were approached in three sections as body planes, position relationships based on the body and relativity of the positions. The students' percentage of implementing body plane concepts is given in Table 1.

Table 1
The Frequency and Percentage Distribution of Implementing Body Plane Concepts

Body Plane Concepts	***Yes***		***No***	
Body Planes (Sides, Front, Back)	***f***	***%***	***f***	***%***
1. Showing right side	374	93.0	28	7.0
2. Showing left side	375	93.3	27	6.7
3. Showing front	390	97.0	12	3.0
4. Showing back	391	97.3	11	2.7
Position Relationships Based on Body	***f***	***%***	***f***	***%***
5. Telling the object to the front	379	94.3	23	5.7
6. Telling the object on the right	354	88.1	48	11.9
7. Telling the object on the left	355	88.3	47	11.7
8. Telling the object to the back	373	92.8	29	7.2
Relativity of the Positions	***f***	***%***	***f***	***%***
9. Telling the object to the front when the position is changed	307	76.4	95	23.6
10. Telling the object on the right when the position is changed	287	71.4	115	28.6
11. Telling the object on the left when the position is changed	274	68.2	128	31.8
12. Telling the object to the back when the position is changed	291	72.4	111	27.6

Looking at the percentage of implemented body plane concepts in Table 1, it is observed that the rate varies between 93% and 97.3%. It is seen that the students have mostly mastered the right, left, front, and back concepts. Looking at the data related to the position relationships based on the body, it is observed that it varies between 88.1% and 94.3%. It can be stated that their level of telling the objects to the front, on the right, on the left and to the back is high. It is seen that their percentage of implementation regarding the relativity of the positions varies between 68.2% and 76.4%. As a result of the findings, it is observed that although the visually impaired students have mastered the concepts of body surface and position relationships among body plane concepts, their level of mastery regarding the relativity of positions (marking the object to the front, on the right, on the left, to the back when the position changes) is relatively lower.

The levels of the students regarding traffic concepts consist of three steps. These include marking the crossroad and the road and a question about where to cross safely. The visually impaired students' frequency and percentage distribution of implementing the traffic concepts is given in Table 2.

Table 2

The Frequency and Percentage Distribution of Marking the Traffic Concepts

	Yes		***No***	
Traffic Concepts	***f***	**%**	***f***	**%**
1. Marking the crossroad on the model	71	17.7	331	82.3
2. Marking the one-way/two-way road	62	15.4	340	84.6
3. Telling where to walk across the street safely in traffic (pedestrian crossing, overpass, subway)	143	35.6	259	64.4

As is seen in Table 2, looking at the students' percentage of marking the traffic concepts, it is observed that their success varies between 15.4% and 35.6%. While 17.7% of the students marked the crossroad, 62% marked the one-way/two-way road and 35.6% of them identified where to walk across the street safely in traffic. Looking at the data, it is observed that the visually impaired students' percentage of marking the traffic concepts that they need to use in their daily life and to walk across the road safely is very low.

Discussion and Conclusion

Concept development is an important tool for overall development and efficient teaching in students. A sighted person directly collects sensory information about a distant object and processes this information rapidly (Hill & Blasch, 1980). Visually impaired people cannot collect information about the objects that they cannot touch; therefore, they may have problems with concepts.

Social environment restricts the occurrence of various concepts in visually impaired children. These restrictions may arise from the excessive protective attitude of the family and teacher. This attitude will prevent students from obtaining new concepts and experiencing other stimuli (Olayi & Ewa, 2014). However, the more concepts the students know, the easier and quicker they can learn other new concepts (Pendarvis & Howley, 1988). Inadequate concept development in children causes them to have difficulties in interacting and learning what is going on in their immediate surroundings.

A factor that helps visually impaired people utilize their surroundings efficiently is concepts. A student without concepts will not be able to identify the position of things and will have problems moving along a described road and identifying his/her position when changing direction. In a preliminary study by Wright (2010), it was determined whether students had mastered the concepts of walking across the street and traveling. As traffic concepts such as crossroad, one-way/two-way road, etc. are visual, the lack of such activities will affect the students' interpretation and use of traffic.

Teachers must have the ability to understand how visual impairment affects the development of concepts and how problems arise. Hill and Blasch (1980) and Zebehazy, Zimmerman and Fox (2005) emphasize that the mobility expert needs to know the assessment tools and determine the person's level of concept development for the purpose of beginning to teach at a suitable level. In the study by Altunay Arslantekin (2015) that reviewed students' mobility skills, it was determined that the students did not have some environmental concepts. The studies support our research results.

In Turkey, there are no countrywide data that present the conceptual performance levels of students and that can be used in scientific publications. The OMSAT is the first study to present the existing performance of visually impaired students in terms of concepts. Teaching methods that will contribute to the development of the prerequisite concepts, which are crucial for the orientation and mobility of visually impaired students, are needed. In the curriculum, there are some objectives related to academic skills, but there are not any objectives related to the teaching of such concepts. On the other hand, the concepts that need to be taught were included in the Orientation and Mobility Teachers' National Occupational Standard published in the official gazette (Gorme Engelliler Yonelim ve Bagimsiz Hareket Egitmeni (Seviye 5) Ulusal Meslek Standardi/National Occupational Standard of the Orientation and Mobility Teachers' for the Visually Impaired [Level 5], 2013). The project coordinator contacted the Ministry of National Education and informed the heads of the department of MNE about the existing performance levels of the studied visually impaired students. Preparatory work for a program that supports the mobility of students will start with the partnership between Gazi University and MNE, and concept teaching study will be included as well.

Recommendations

The research results will constitute a basis for various studies to be conducted. The assessment tool within the study can be used for the Individualized Education Plans (IEP) of the students in mainstream classrooms, at the schools for the visually impaired, and at Counseling and Research Centers (CRC). The research was limited to primary school and secondary school students as well as to prerequisite concepts of mobility. In future research, assessment tools that will measure the preschoolers', high school students' and undergraduates' mastery of concepts can be developed, and their performance levels can be determined. Especially when visually impaired people get older, they need to use more concepts to safely move around. After determining the students' performance levels in the concepts, studies on the efficiency of teaching methods addressing these concepts can be conducted.

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Türkiye'deki Görme Engelli Öğrencilerin Bağımsız Hareket Önkoşul Kavramlarındaki (Beden Düzlemi/Trafik) Düzeylerinin Değerlendirilmesi

Atıf:

Altunay Arslantekin, B. (2017). Evaluation of the level of the visual ımpaired students in Turkey in terms of the concepts of mobility prerequisite (body plane/traffic). *Eurasian Journal of Educational Research*, 67, 71-85 http://dx.doi.org/10.14689/ejer.2017.67.5

Özet

Problem Durumu: Kavramlar, insanların yaşamları boyunca dünyayı anlamlandırabilmesini ve çevresiyle bütünleşmesini sağlayan en önemli yapılardandır. İnsanlar gün içinde kavramların binlercesini ayırt etme ve iletişimde kullanır (Jonassen, 2006). Kavram gelişimi, yaşam boyunca devam eden sonsuz bir süreçtir ve fiziksel, çevresel faktörlere bağlı olarak her çocukta farklı şekilde gelişir. Görsel uyarıcı yokluğu, çocukların çeşitli gelişim alanlarını (bedensel, bilişsel ve dil gelişimi) olumsuz yönde etkilediği için (Tuncer, 2004), görme engelli çocukların kavram gelişiminde genellikle gecikmeler yaşanabilir (Budd, 1998). Görme yetersizliği olan çocukların kavram gelişiminde problem yaşadığı, Hill ve Balsch tarafından (1980) belirtilen çalışmalarla da desteklenmektedir.

Kavramlar, yönelim ve bağımsız hareket için son derece önemli kilometre taşlarıdır. Görme yetersizliği olan kişilerin yönelim ve bağımsız hareketle ilişkili, sahip olması gereken temel kavramlar; beden şeması, beden kavramı ve beden imajını içeren bedensel farkındalık, beden düzlemi ve bölümleri, sağ-sol taraflar (yanlar), yönler, uzaysal (pozisyon, şekil, büyüklük vb.) ve çevresel (köşe, cadde vb.) kavramlardır (Pogrund ve diğ., 1998). Beden imgesi kavramı; beden bölümleri, bedenin göreceli pozisyonları ve ne kadar yer kapladığına yönelik bilgileri içermektedir. Beden imgesi, çocuğun vücut düzlemini algılamasını, basit uzaysal kavramları (karşısında, yanında, arasında) anlamasını kolaylaştırmaktadır. Öğrenci yetersiz bir beden imgesine sahipse, kendi çevresini oluşturan dünyayı anlamakta güçlük yaşayacaktır (Altunay, 2003). Beden imgesi kavramından sonra, bedeniyle gerçekleştireceği sağ/sol kavramlarının fonksiyonel kullanımını geliştirmek gerekmektedir. Görme yetersizliği olan çocuk çevresindeki eşyaların, kendisi hareket ettiği ya da döndüğü zaman nasıl yer değiştirdiğini göremez (Özyürek, 1995). Çevresindeki uyaranları güvenli ve hızlı şekilde kullanabilmesi için pozisyonların göreceliliği kavramının öğrenciye kazandırılması son derece önemlidir.

Trafik kavramları gibi çevresel kavramlar da, çevrenin güvenli şekilde kullanılabilmesinde önemli bir rol oynar. Görme yetersizliği olan kişiler hareket ederken cadde geçme gibi ölüm ya da yaralanma ihtimalinin yüksek olduğu riskli durumlarla karşılaşabilir. Cadde geçme bilgisi en çok görsel sistemler yoluyla kolayca elde edilir. Görme yetersizliği olduğu zaman güçlükler artar (Geruschat,

Hassan, Turano, Quigley ve Congdon, 2006). Bu nedenle trafik kavramlarının öğretilmesi ve güvenli geçiş için trafikte uygulamaların yapılması son derece önemlidir. Fakat Ülkemizde Altunay Arslantekin ve Ekinci tarafından (2014) çalışmada, görme yetersizliği olan üniversite öğrencilerinin öğrenim hayatları boyunca trafik kavramları ve trafiğin kullanımına yönelik öğretim yapılmadığı belirlenmiştir.

Ülkemizde yönelim ve bağımsız hareket için öğretilmesi gereken önkoşul kavramlarla ilgili öğrencilerin performans düzeylerini ortaya koyan herhangi bir çalışma bulunmamaktadır. Araştırmayla, öğrencilerin var olan kavram düzeylerinin ortaya koyulmasının, bu kavramlara yönelik öğretim uygulamalarının gerçekleştirilmesini sağlayabileceği düşünülmektedir.

Araştırmanın Amacı: TÜBİTAK tarafından desteklenen, "Görme Engelli Öğrenciler İçin Yönelim ve Bağımsız Hareket Becerileri Değerlendirme Aracının Geliştirilmesi Projesi'nde (YÖBDA)" standardize edilmiş değerlendirme aracı geliştirilmesi sürecinde, Türkiye'deki görme yetersizliğinden etkilenmiş öğrencilerin yönelim ve bağımsız hareket becerilerini kullanabilmeleri için sahip olmaları gereken ön koşul kavramlara (beden düzlemi ve trafik kavramları) ne ölçüde sahip olduklarının da belirlenmesi amaçlanmıştır.

Araştırmanın Yöntemi: Araştırmanın örneklemini, 2015-2016 öğretim yılında öğrenim gören, toplam 16 görme engelliler okulu (n=320) ve yakın bölgelerdeki kaynaştırma öğrencilerinden (n= 82), toplam 402 dokunsal öğrenci oluşturmuştur. Bu öğrencilerin 183'ü kız, 219'ü erkektir. Öğrencilerin araştırmaya katılmaları için gereken izinler, Milli Eğitim Bakanlığı'ndan alınmıştır. Ayrıca okul müdürleri araştırma hakkında bilgilendirilmiş ve yazılı onayları alınmıştır. Çalışma, var olan durumunu ortaya koymaya çalışan betimsel düzeyde tarama çalışmasıdır. Uygulamacılar, dokunsal öğrenci isim listesine göre, birebir olarak çalışma yapmıştır. YÖBDA'daki yönergeler verilmiş ve işaretlemeler yapılmıştır. Öğrencilerin uygun şekilde gerçekleştirdiği basamaklar, değerlendirme aracının ilgili basamağının karşısındaki, +/- sütununun altına "+", öğrencinin uygun gerçekleştiremediği ya da hatalı yaptığı basamaklar, "-" olarak işaretlenmiştir. Öğrencinin doğru/yanlış tepkilerine nötr kalınmıştır. Araştırmada dokunsal olan öğrencilerin ön koşul kavramları (beden düzlemi ve trafik kavramları) gerçekleştirmelerine yönelik değerlendirmeler incelenmiştir. Çalışmadan elde edilen sonuçların frekans ve yüzdeleri belirlenmiştir. Değerlendirme aracı uygulanmadan önce, üç uzman tarafından aracın amaca uygunluğu değerlendirilmiştir. Değerlendirme aracının bütün uygulamacılar tarafından güvenilir şekilde uygulanabilmesi için, uygulama kitapçıkları hazırlanmış ve Proje koordinatörü tarafından bursiyerlere eğitim verilmiştir. Değerlendirmeciler arası güvenirlik verilerinin toplanması için, iki araştırma görevlisi, öğrencilerin %20'si için YÖBDA'yı bağımsız olarak işaretlemiştir. Değerlendirmeciler arası güvenirlik verileri %100 olarak bulunmuştur.

Araştırmanın Bulguları: Araştırmada görme yetersizliği olan öğrencilerin beden düzlemiyle ilişkili ve trafik kavramlarını gerçekleştirme yüzdeleri incelenmiştir. Beden yüzeyleriyle ilgili kavramları gerçekleştirme yüzdeleri incelendiğinde, %93 ile

%97.3 arasında değiştiği görülmektedir. Öğrencilerin, sağ, sol, ön, arka kavramlarına büyük ölçüde sahip oldukları görülmektedir. Bedenine göre pozisyon ilişkilerine yönelik veriler incelendiğinde, %88.1 ile %94.3 arasında değiştiği görülmektedir. Önünde, sağında, solunda, arkasında olan nesneleri söyleme düzeylerinin yüksek olduğu söylenebilir. Pozisyonların göreceliliği ile ilgili olarak gerçekleştirme yüzdelerinin ise, %68.2 ile %76.4 arasında olduğu görülmektedir. Elde edilen bulgular sonucunda, görme yetersizliği olan öğrencilerin beden düzlemiyle ilgili kavramlardan, beden yüzeyi ve pozisyon ilişkilerine yönelik kavramlara sahipken, pozisyonların göreceliliği (yönü değiştirildiğinde önünde-sağında-solunda-arkasında olan nesneyi etiketleme) düzeylerinin görece daha düşük olduğu görülmektedir. Öğrencilerin trafik kavramlarını etiketleme yüzdeleri incelendiğinde, %15.4 ile %35.6 arasında değiştiği görülmektedir. Öğrencilerden %17.7'si kavşağı etiketlerken, %62'si tek yönlü-çift yönlü yolu etiketlemiş, %35.6'sı ise trafikte güvenli şekilde karşıdan karşıya geçebilmek için nereden geçmesi gerektiğini söylemiştir. Veriler incelendiğinde, görme yetersizliği olan öğrencilerin karşıdan karşıya geçerken güvenli şekilde geçebilmesi için sahip olması gereken trafik kavramlarını etiketleme yüzdelerinin oldukça düşük olduğu görülmektedir.

Araştırmanın Sonuçları ve Önerileri: Ülkemizde öğrencilerin yönelim ve bağımsız hareketle ilgili kavramlarla ilgili performans düzeylerini ortaya koyan, Türkiye çapında uygulanmış ve bilimsel yayınlarda kullanılabilecek herhangi bir veri bulunmamaktadır. Araştırma, dokunsal görme engelli öğrencilerle gerçekleştirilen, bu konudaki ilk ve en geniş kapsamlı çalışmadır. Araştırma sonucunda, görme engelliler okullarında ve kaynaştırmada öğrenim gören öğrencilerin yönelim ve bağımsız hareket için gerekli olduğu belirlenen trafik kavramlarındaki düzeylerinin çok düşük, beden düzlemleriyle ilgili kavramları gerçekleştirme düzeylerinin görece daha yüksek olduğu belirlenmiştir. Öğrencilerin beden düzlemleriyle ilişkili kavramları gerçekleştirme düzeylerinin görece daha yüksek olmasının, bebeklik döneminden itibaren özbakım, günlük yaşam becerileri ve öğretim etkinlikleri sırasında beden kavramlarının kullanılmasıyla açıklanabilir. Kavşak, tek yönlü- çift yönlü yol gibi trafik kavramları görsel unsurlara dayalıdır. Bu nedenle kavramların görme engelli kişilere kazandırılması için, dokunsal materyallerle yapılacak öğretimlere ihtiyaç vardır. Araştırma sonucunun, öğretim programlarının geliştirilmesine ve bu konuda alanda yapılacak diğer araştırmalara zemin hazırlayacağı düşünülmektedir. Araştırma ilk, ortaokul düzeyindeki çocuklarla ve bağımsız hareket önkoşul kavramlarıyla sınırlıdır. İleriki araştırmalarda okul öncesi, lise ve üniversite düzeylerindeki kişilerin yönelim ve bağımsız hareket önkoşul kavramlarındaki performanslarını ortaya koyacak çalışmalar yapılabilir. Ayrıca farklı yaş gruplarındaki öğrencilerle, önkoşul kavramlara yönelik öğretim etkinlikleri gerçekleştirileceği düşünülmektedir.

Anahtar Sözcükler: Yönelim ve bağımsız hareket, değerlendirme aracı, trafik kavramları, beden düzlemi kavramları.

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Occupational Socialization Processes of Classroom Teachers

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ABSTRACT

Purpose: Occupational socialization is a process by which individuals internalize occupational culture. The aim of the present study was to ascertain the views and perceptions of classroom teachers regarding the efficiency of occupational socialization periods and the level of their occupational socialization, and to describe the same by sex and seniority variables. **Research Methods**: The sample of the study was comprised on 608 classroom teachers in service in Ankara province. The "Occupational Socialization Period Efficiency Scale" and "Occupational Socialization Level Scale" were developed by the researcher as data collection tools.

Findings: The classroom teachers perceived the pre-service period as "mostly" efficient, and said period was perceived as the most efficient compared to the other occupational socialization periods. It was found that the classroom teachers with regard to the level of occupational socialization had high levels of perception. It was found as a result of multiple regression analysis that the induction period had no significant effect on the occupational socialization levels of the teachers. **Implications for Research and Practice**: The pre-service period was considered the most effective occupational socialization period by the classroom teachers. It was seen that classroom teachers had higher perception rates with respect to occupational socialization levels, and that female teachers had higher positive perception rates concerning occupational socialization levels compared to male teachers. The reasons of intersexual professional perception differences should be studied and precautions should be taken via activities at the faculty education level.

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Introduction

Efficient performance of the teaching profession requires a successful occupational socialization process. Occupational socialization is a process by which individuals internalize occupational culture. This process is, at the same time, important for acquisition of occupational skills and values.

Occupational socialization has been defined similarly by different authors: Moore (1970) defined occupational socialization as a process by which a member of a qualified occupation internalizes typical occupational attributes and norms, acquires necessary knowledge, skills, and occupational identity collectively. Cohen (1981) referred to socialization as a process in which the value and norms of a given occupation group are incorporated into individual behaviors and self; the individual adopts the behavioral patterns of the members of the occupation, abandoning the social patterns dominant in the culture. Burgaz, Kocak, and Buyukgoze (2013) defined occupational socialization as a process in which the individual conceives the technicalities of an occupation by adaptation to the occupation and becomes a part of the required change and development by making such an adaptation permanent. Harichandan and Pandya (2012), on the other hand, defined occupational socialization as a process by which the individual learns the roles and responsibilities with respect to his or her duty. Therefore, based on the above-stated definitions, occupational socialization can be briefly defined as coalescence with an occupation and accepting the values, norms, and behaviors as adopted by the members of said occupation as prioritized, and maintaining change and development in line with occupational requirements.

Teachers undergo a long pre- and post-service occupational socialization process. Lacey (1988) described the occupational socialization process of teachers as becoming members to the occupation of teaching, and internalizing occupational roles about teaching. After commencement of service, teachers must acquire new skills in addition to their previous education and accept the values and norms of the school. Teachers learn the current social construct of the school, consolidate issues related to education, and participate in application and sharing activities due to occupational socialization (Kartal, 2009). Nevertheless, such in-service knowledge, skills, and values constitute only a part of the occupational socialization process of teachers.

Schempp and Graber (1992) described the four periods of occupational socialization of teachers as pre-training period, pre-service period, field experiences period, and induction.

The pre-training socialization period covers the period before commencement of university education. This period starts before one becomes a teacher or even enters into a higher education program (Lawson 1983a, 1983b; Lortie, 1975). Most of the teacher candidates start to establish social expectations with regard to teaching and clarify their attitudes towards teaching once they are included in state school systems. These attitudes may involve dreaming about becoming a teacher or deciding not to be a teacher at all. Furthermore, parents, siblings, and other people important in the life of the individuals may affect the perception of the candidates

and their beliefs about the teaching profession (Schempp & Graber, 1992). This period affects the direction of the attitudes and values towards the occupation.

The pre-service socialization period is a process that starts when teachers are involved in a higher education program. When a student decides to become a teacher, the first step towards formal preparation is to be selected for a teacher education program and ultimately enroll. These individuals are expected to ensure the adaptation targeted by the program after their involvement in such programs (Schempp & Graber, 1992). In this period, university departments and faculty staff influence the professional perspective of the teacher candidates.

The field experiences period is composed of training applications during university education. This period provides preliminary work of the process towards becoming a teacher (Yesilyurt & Semerci, 2011), and the candidates acquire the genuine experiences about the activities of a teacher. Teachers are introduced to professional life and culture. Traditionally, it is believed that the most important aspect of field experiences is the lecturing activities (Dodds, 1989). Knowledge and experience for the teaching profession as acquired in this period influence the occupational socialization of teacher candidates during the induction period.

Teachers at the induction period start to acquire skills and habits that will form the foundation of their future success. Development of a positive perspective towards the teaching profession and work environment is dependent upon the social interaction with colleagues and school environment, and especially with the school administrators (Ekinci, 2010). Communication with colleagues and support of colleagues is especially important for the occupational socialization process to proceed more conveniently and effectively.

The occupational socialization process is not limited to the formal education period. This process involves in-service training, pre-service training, and school and family experiences prior to pre-service training (Ozbek, 2012). A substantial part of occupational socialization takes place before a structured training and could be both formal and informal (Pooley, 1972).

Tastekin (2014) emphasized that adapting to a new organization or environment is not achieved in the short term and, thus, a part of the occupational socialization process should be completed before induction. Kartal (2009) expressed in a study titled "Occupational socialization of newly inducted teachers" that many young teachers experienced contradictions after induction, since the pre-service training (university education) was theoretical; additionally, the audit and administrative organs failed to provide necessary support and perform guidance duties, and even led to frustration. In other words, the teaching education provided in university and the candidate education during the induction period were not supplementary regarding occupational socialization of teachers, if said periods were considered as a whole.

While successful occupational socialization of teacher candidates has a positive impact on work commitment, adaptation, and success, an unsuccessful occupational

socialization process has the opposite effect. Consequently, success of occupational socialization process is not only important for the teacher, but also for the educational institution and students.

Purpose of the Study:

Purpose of the study is to determine the perception of classroom teachers with respect to the efficiency of their occupational socialization periods and occupational socialization levels, and to describe the views and perceptions by sex and seniority variables.

Answers to the following questions were sought in accordance with the general purpose provided above:

1. How are the perceptions of classroom teachers regarding the efficiency of their occupational socialization period?
2. Do the perceptions of classroom teachers regarding the efficiency of their occupational socialization periods vary by sex and seniority variables?
3. How are the perceptions of classroom teachers regarding the level of their occupational socialization?
4. Do the perceptions of classroom teachers regarding the level of their occupation socialization vary by sex and seniority variables?
5. Do the perceptions of classroom teachers regarding the efficiency of their occupational socialization period constitute a significant predictor for their occupational socialization levels?

Method

Research Design

A survey model was used in the research. The research population consisted of 16,418 classroom teachers serving at 698 states primary school residing in Ankara province during the 2013-2014 educational year.

Research Sample

The sample of the research consisted of 608 teachers determined by a layered sampling method. Each town of Ankara province was considered to be a layer in the study, and the number of teachers in each town was projected to the research sample pro rata its ratio to the total.

Research Instrument and Procedure

The “Occupational Socialization Period Efficiency Scale” and the “Occupational Socialization Level Scale” were developed as data collection tools by the researcher. "Occupational Socialization Period Efficiency Scale" includes 15 items and 4

dimensions. Even after the 15th item rotation, it appeared to be loaded in three factors and was removed from the scale. Because the CFI, NFI and IFI compliance indices are greater than 0.90, the four-factor model has been fit to the data. Confirmatory factor analysis results provide full compliance with four subscale models. "Occupational Socialization Level Scale" includes 10 items and 3 dimensions. Items 1 and 8 were subtracted from the scale because the factor loads were below 0.30. The CFI, NFI, GFI, and IFI compliance indices were found to be greater than 0.80, thus fitting into the three factor model. As a result of the factor analysis, " Occupational Socialization Period Efficiency Scale" 14 items and four dimensions; "Occupational Socialization Level Scale" was 8 items and three dimensional structure. Cronbach's Alpha reliability coefficients for the "Occupational Socialization Period Efficiency Scale" and the "Occupational Socialization Level Scale" were computed as 0.869 and 0.75, respectively. Five-point Likert type scales were used, in which phrases were numbered from 1 to 5.

Data Analysis

Mean and standard deviation values were computed to determine the perceptions of the classroom teachers about the efficiency of their occupational socialization periods and occupational socialization levels. During the analyses, parametric tests, such as t-tests and ANOVA, were used in the case of normal distribution. The meaningful difference between the groups in the meaningful ANOVA analysis results was examined by the Tukey test. Significant t-test and ANOVA results were interpreted taking into account the effect size (η^2). Non-parametric tests, such as the Mann Whitney U and Kruskal Wallis tests, were use where there was no normal distribution for the subdomains of the "Occupational Socialization Period Efficiency Scale" and the "Occupational Socialization Level Scale." Benforroni correction was used to determine which groups were significant differences in the Kruskal Wallis analysis. The effect size was calculated using the $Z/\sqrt{N}$ formula for the analysis results that have significance in the nonparametric tests and interpreted according to Cohen's effect size criterion (0.1-small effect, 0.3-medium effect, 0.5 large effect).

Results

The first sub-problem of the research was "How are the perceptions of classroom teachers regarding the efficiency of their occupational socialization period?" Findings for the perception of the classroom teachers regarding the efficiency of their occupational socialization periods were provided in Table 1.

Table 1

Arithmetic Mean and Standard Deviation Levels Regarding the Perception Levels of Classroom Teachers Regarding the Efficiency of Their Occupational Socialization Periods

Dimension	*n*	*M*	*S*
Pre-training	608	3.47	0.91
Pre-service	608	3.58	0.87
Field experiences	607	3.32	0.99
Induction	608	3.18	0.80
General	608	3.35	0.68

A review of Table 1 revealed that, with respect to the efficiency of the occupational socialization periods, the classroom teachers perceived the pre-service period as mostly efficient (M=3.58), which was perceived as the most efficient period compared to the other occupational socialization periods. This finding suggested that the faculty education period was the most efficient period in occupational socialization of the classroom teachers, whereas, the least important period for occupational socialization was the induction period (M=3,18).

The second sub-problem of the research was, "Do the perceptions of classroom teachers regarding the efficiency of their occupation socialization periods vary by sex and seniority variables?" First, the normality of the distribution was checked in order to determine whether the perception of classroom teachers with regards to the efficiency of their occupational socialization period varied by sex and seniority variables. Since the normality assumption was met for the pre-training, pre-service, and field experiences periods, a parametric test, i.e., t-test, was applied, the results of which are provided in Table 2. Nevertheless, since the normality assumption was not met for the induction subdomain, the Mann Whitney U test was applied, the results of which are presented in Table 3.

Table 2

t-Test Results on the Perception of Classroom Teachers Regarding the Efficiency of Their Occupational Socialization Period by Sex

Domain	Sex	n	M	S	t	P
Pre-training	Female	406	3.45	0.91	0.773	0.440
	Male	202	3.51	0.92		
Pre-service	Female	406	3.59	0.87	0.290	0.772
	Male	202	3.57	0.88		
Field Experiences	Female	405	3.30	0.97	0.843	0.399
	Male	202	3.37	1.03		

The t-test results on whether the perception of classroom teachers with respect to the efficiency of their occupational socialization varied by sex are provided in Table 2. According to the table, there was no significant difference between the pre-training, pre-service, and field experiences subdomains in the perception of the teachers with regards to the efficiency of occupational socialization periods ($p>0.05$). Therefore, it could be concluded that the sex variable was not associated with any significant effect on the perceptions with respect to the efficiency of socialization in pre-training, pre-service, and field experiences periods.

Table 3
U-Test Results on the Perception of Classroom Teachers Regarding the Efficiency of Their Occupational Socialization Periods by Sex

Domain	*Sex*	*n*	*Mean Rank*	*Rank Sum*	*Z*	*P*
Induction	Female	406	291.91	118517.00	-2.513	0.012*
	Male	202	329.80	66619.00		

*p <0.05

Table 3 revealed that there was a significant difference in the perception of classroom teachers as regards the efficiency of occupational socialization during the induction period by sex (p<0.05). Mean ranks suggested that such a difference was in favor of the male teachers. In other words, male teachers perceived the induction period as more efficient for occupational socialization compared to female teachers. As the classroom teachers' occupational socialization process differed according to the sex, the effect size value was examined and it was determined that there was a small effect as -0.10.

Normality of the distribution was tested first in order to see whether the perception of the classroom teachers as regards the efficiency of the occupational socialization periods varied by seniority. Since the normality assumption was met in the pre-training, pre-service, and field experiences subdomains were met, a parametric test, i.e., ANOVA, was applied, the results of which are presented in Table 4. However, since the normality assumption was not met in the induction subdomain, the Kruskal Wallis non-parametric test was used, the results of which are presented in Table 5.

Table 4
ANOVA Results on the Comparison of Classroom Teachers' Perception as Regards the Efficiency of the Occupational Socialization Periods by Professional Seniority

Domain	Professional Seniority	n	M	S	F	p	Difference (Tukey)
Pre-training	(1) 5 years and below	46	3.54	0.69	2.732	0.028*	2-5
	(2) 6-10 years	98	3.29	0.92			
	(3) 11-15 years	116	3.89	0.88			
	(4) 16-20 years	127	3.41	0.97			
	(5) 21 years and above	221	3.61	0.91			
Pre-service	(1) 5 years and below	46	3.69	0.65	1.061	0.375	
	(2) 6-10 years	98	3.55	0.85			
	(3) 11-15 years	116	3.65	0.95			
	(4) 16-20 years	127	3.46	0.88			
	(5) 21 years and above	221	3.60	0.88			
Field	(1) 5 years and below	46	3.00	0.89	6.05	0.000	1-5

Experiences	(2) 6-10 years	98	3.07	0.99	5	*	2-5
	(3) 11-15 years	116	3.21	1.03			3-5
	(4) 16-20 years	127	3.37	1.02			
	(5) 21 years and above	220	3.54	0.93			

*p <0.05

Table 4 suggested that there was a significant difference in the perception of classroom teachers as regards the efficiency of their occupational socialization for the pre-training and field experiences periods by professional seniority (p<0.05). The Tukey test from the binary comparison tests was used to determine which groups were significantly different. Upon binary comparisons, it was found that there was a significant difference between the scale scores for perception regarding the efficiency of occupational socialization of those with professional seniority of 21 years and above and the rest. Accordingly, it was possible to conclude that the level of perception with respect to the efficiency of socialization in pre-training and field experiences periods increased as the professional seniority of the teachers increased. In other words, the teachers with professional seniority of 21 years and above disagreed with the general opinion that the pre-service period was the most efficient period in the socialization process. When the effect size values were examined, the seniority variable explained $\%2(\eta^2 = 0{,}02)$ of the variance in the socialization process in the pre-training period; $4\%(\eta^2 = 0{,}04)$ of the variance in the socialization process in the field experience.

Table 5

Comparison of Perceptions of Classroom Teachers Regarding the Efficiency of the Occupational Socialization Periods, by Professional Seniority, Kruskal Wallis Test Result

Domain	*Professional Seniority*	*n*	*Mean Rank*	*Sd*	*X*	*p*	*Difference (Mann Whitney U)*	*difference test p*
Induction	(1) 5 years and below	46	297.91	4	18.490	0.001*	2-3	0.004**
							2-4	0.001**
	(2) 6-10 years	98	237.70				2-5	0.000**
	(3) 11-15 years	116	307.63					
	(4) 16-20 years	127	317.98					
	(5) 21 years and above	221	326.10					

*p <0.05; **p<0.005

Table 5 provided that there was a significant difference between the professional seniority of classroom teachers and their perception regarding the efficiency of the

occupational socialization in the induction period ($p<0.05$). The Mann Whitney U test was used to determine between which groups (seniority levels) such a difference occurred. The Bonferroni adjustment technique was used for the purpose of the aforementioned comparison. Upon binary comparisons, it was found that there was a significant difference between the scale scores for perception, as regards the efficiency of occupational socialization in the induction period, of those with professional seniority of 6-10 years and those with 11-15 years, 16-20 years, and 21 years and above. Accordingly, it was possible to conclude that the level of perception as regards the efficiency of socialization in the induction period increased as the professional seniority of the teachers increased. In other words, the teachers with professional seniority of 21 years and above disagreed with the general opinion that the pre-service period was the most efficient period in the socialization process. As the socialization process in the induction period of the classroom teachers differed according to the seniority, the effect size value was examined and found to be a great effect as 0.75.

The third sub-problem of the research was "How are the perceptions of classroom teachers regarding the level of their occupational socialization?" Findings for the perception levels of classroom teachers as regards their occupational socialization levels are provided in Table 6.

Table 6

Arithmetic Mean and Standard Deviation Values for the Perception of Classroom Teachers Regarding Their Occupational Socialization Levels

Domain	*n*	*M*	*S*
Satisfactory	608	4.20	0.57
Moderately Satisfactory	608	4.08	0.61
Unsatisfactory	608	3.98	0.65
General	608	4.06	0.49

A review of the perception levels of the teachers enrolled in the study with respect to occupational socialization levels, as provided in Table 6, showed that the satisfactory perception was "always," (M=4.20), and moderately satisfactory and unsatisfactory perception was "mostly" (M=4.08-3.98). In general, teachers' perception of satisfaction with regards to occupational socialization levels was "mostly" (M=4.06). These data suggested that the level of perception of classroom teachers concerning the occupational socialization levels was high.

The fourth sub-problem of the study was, "Do the perceptions of classroom teachers regarding the level of their occupation socialization vary by sex and seniority variables?" Normality of the distribution was tested first in order to see whether the perception of the classroom teachers with respect to occupational socialization levels significantly varied by sex. The Mann Whitney U test was used

since there was no normal distribution, the results of which are presented in Table 7. Whenever any samples exceeded 20, approximately normal distributed Z statistics were used.

Table 7

U-Test Results on the Perception of Classroom Teachers Regarding the Occupational Socialization Levels by Sex

Gender	*N*	*Mean Rank*	*Rank Sum*	*Z*	*p*
Female	406	316.12	128344.50	-2.32	0.02*
Male	202	281.15	56791.50		

** p<0.05*

The Mann Whitney U test results on whether the perception of classroom teachers regarding the occupational socialization levels varied by sex were presented in Table 7. The table suggested that there was a significant difference between the perceptions of classroom teachers with respect to occupational socialization levels by sex ($Z=-2.32$; $p<0.05$). Taking into consideration the mean ranks, such a difference was in favor of the female teachers. In other words, the perception female teachers exhibited towards the perception regarding occupational socialization levels was more positive compared to the male teachers. As the level of occupational socialization of class teachers differed by sex, the effect size value was examined and it was determined that there was a small effect as -0.09.

Normality of the distribution was tested first in order to see whether the perception of the classroom teachers concerning the occupational socialization levels significantly varied by professional seniority. The Kruskal Wallis non-parametric test was used since the normality assumption was not met in the subdomains, the results of which are presented in Table 8.

Table 8

Comparison of Classroom Teachers' Perception Regarding Occupational Socialization Levels by Professional Seniority, Kruskal Wallis Test Result

Domain	*Professional Seniority (Years)*	*n*	*Mean Rank*	*df*	*X square*	*p*	*Difference (Mann Whitney U)*	*difference p*
Satisfactory	(1) 0-5	46	328.27					
	(2) 6-10	98	280.47					
	(3) 11-15	116	299.76	4	3.754	0.440		---
	(4) 16-20	127	301.96					
	(5) 21 +	221	314.15					
Moderately Satisfa.	(1) 0-5	46	217.52				1-4	0.000**
	(2) 6-10	98	271.21	4	24.015	0.000*	1-5	0.000**
	(3) 11-15	116	295.75				2-5	0.004**

	(4) 16-20	127	324.75					
	(5) 21 +	221	330.32					
Unsatisfactory	(1) 0-5	46	329.54	4	6.637	0.156	---	
	(2) 6-10	98	311.45					
	(3) 11-15	116	318.94					
	(4) 16-20	127	317.70					
	(5) 21 +	221	281.04					

* p<0.05; **p<0.005

Table 8 provided that there was a significant difference in the moderately satisfactory domain between the perceptions of the classroom teachers regarding the occupational socialization level by professional seniority (p<0.05). The Mann Whitney U test was used to determine between which groups (seniority levels) such a difference occurred. The Bonferroni adjustment technique was used for the purpose of the aforementioned comparison. Upon binary comparisons, it was found that there was a significant difference between the scale scores for perception, with respect to the occupational socialization level, of those with professional seniority of 0-5 years and those with 16-20 years and 21 years and above, as well as between those with 6-10 years of seniority and 21 years and above seniority. It was especially noted that the teachers with seniority of 21 years and above had a moderately satisfactory perception with regards to occupational socialization levels. As it was observed that there was a difference in middle level proficiency dimension of the level of occupational socialization according to seniority, the effect size value was examined and found to be a great effect as 0.97.

The fifth sub-problem of the research was, "Do the perceptions of classroom teachers regarding the efficiency of their occupational socialization period constitute a significant predictor for their occupational socialization levels?" The findings are presented in Table 9.

Table 9

Multiple Regression Results on Whether the Efficiency of Their Occupational Socialization Period Constituted a Significant Predictor for Their Occupational Socialization Levels

Variables	Unstandardized Coefficients		Unstandardized Coefficients		
	B	STD. Error	β	t	p
Fixed	2.993	0.101		29.601	0.000*
Pre-training socialization	0.082	0.031	0.128	2.656	0.008*
Pre-service socialization	0.052	0.024	0.107	2.145	0.032*
Socialization during Field Experiences	0.153	0.022	0.282	6.925	0.000*
Socialization during Induction	0.023	0.025	0.041	0.907	0.365

R=0.419 R2=0.175 Adjusted R2=0.170 F=32.072 p=0.000 Durbin Watson statistics=1.735 *p<0.05

Perceptions of classroom teachers with respect to the efficiency of their occupational socialization period predicted their occupational socialization levels significantly at a ratio of 17%. The multiple regression coefficient was 0.419, which revealed a moderate association between the pre-training, pre-service, field experiences socialization periods and occupational socialization levels. The regression model was significant (F=32.072, p=0.000). In other words, the model based on occupational socialization level as the dependent variable and socialization during pre-training, pre-service, field experiences, and induction periods as independent variables as assumed to have predicted the dependent variable was valid.

A separate review of the periods provided that the first three periods significantly predicted the occupational socialization levels of teachers ($p<0.05$), where the induction period was not associated with any significant effect on the occupational socialization levels of teachers ($p>0.05$).

Discussion and Conclusion

The perception level of classroom teachers as regards the efficiency of occupational socialization periods was "mostly" for the pre-service period, which was the highest compared to the other occupational socialization periods. This result supported the opinion by Hoy and Wolfolk (1990) that "teacher candidates

developed their emotions, attitudes, and ideal opinions towards the occupation mostly during the faculty education process." Furthermore, the results were also in line with the statement that "occupational socialization process of teachers mostly occur during the pre-service (university) period," as suggested by Kartal (2007) in a study titled "Organizational socialization in education."

A significant difference was found in the classroom teachers' perception as regards the efficiency of the induction period in occupational socialization by the sex variable, which suggested that male teachers had a higher perception with respect to the efficiency of the induction period compared to the female teachers. This result did not support the suggestion by Waugaman and Lohrer (2000) that age and sex had no fixed effect on the occupational socialization processes of teachers. This can be explained by the cultural differences of the societies in which the studies have been conducted.

The perception of classroom teachers with seniority of 21 years and above with respect to the efficiency of pre-training, field experiences, and induction periods was higher compared to the other seniority groups. This results supported the suggestion by Demirbolat (2011) in "Bureaucratic Socialization Levels of Teachers" that "the tendency of teachers with seniority of 21 years and above to act in line with institutional values and rules was higher than that of the teachers with less seniority."

The classroom teacher generally had higher perceptions with regards to occupational socialization levels, which was supported by certain studies in the literature. Classroom teachers generally consider themselves professionally adequate (Yasar et al., 2006; Aydin et al., 2010). A review of the association between their perception concerning occupational socialization levels and sex revealed that there was a significant difference in favor of female teachers. This result supported the findings of the study by Shinyashiki et al. (2006), "Professional socialization: Students becoming nurses." The similarity of the results should be noted taking into consideration, especially the fact that both professions are identified with females. Furthermore, Karp, Williamson, and Shifflett (1994) suggested in their study, which grouped the factors affecting occupational socialization and stated that progress in career steps was associated with the sex factor (Karp, Williamson, & Shifflett, 1994, as cited in Thomas & Anderson, 2006).

There was a significant difference in the moderately satisfactory domain of the perceptions of teachers with respect to their occupational socialization levels by professional seniority. It was noted especially that teachers with seniority of 21 years and above perceived their occupational socialization levels at moderate level. This result can be explained by the fact that teachers with seniority of 21 years and above had a delayed encounter with computer technologies.

This result seemed to be in discordance with the suggestion in "Organizational socialization levels of primary school administrators and teachers" by Kartal (2003) that "teachers with less superiority socialize by less commitment compared to the others." The foregoing discordance can be explained by the 12-year interval between the two studies and the changes experienced within said interval.

As a result of the multiple regression analysis, it was seen that the induction period had no significant effect on the occupational socialization levels of the teachers. The second sub-problem of the research sought an answer to whether there was a significant difference between the perception as regards of the efficiency of the occupational socialization periods by sex. Accordingly, it was seen that male teachers had a higher perception of efficiency with respect to the induction period compared to female teachers. This result suggested that female teachers began socialization earlier, prior to the induction period, and that male teachers began to socialize only during the compulsory process when they faced the profession alone.

The pre-service period is considered to be the most effective occupational socialization period by the classroom teachers. However, it was seen that the male teachers had a far higher perception of efficiency in the induction period compared to the female teachers. Moreover, the perception of efficiency of teachers with seniority of 21 years and above for the pre-service, field experiences, and induction periods was higher than that of the other seniority groups.

It was seen that classroom teachers had higher perception rates with respect to occupational socialization levels, and that female teachers had higher positive perception rates as regards the occupational socialization levels compared to male teachers. There was a significant difference in the moderately satisfactory domain between the professional seniority of classroom teachers and their perception as regards occupational socialization. It was noted, however, that the teachers with seniority of 21 years and above particularly perceived occupational socialization levels as moderately satisfactory.

As a result of the multiple regression analysis, it was seen that the induction period had no significant effect on the occupational socialization levels of the classroom teachers. Nevertheless, in the second sub-problem of the research, it was seen that male teachers had a more positive perception with respect to the efficiency of the induction period compared to female teachers.

As the teacher group with seniority of 21 years and above was at a moderate level, contrary to expectations, periodical requirement analyses should be conducted with all teachers, and in-service training programs should be introduced pursuant to the results of the said analyses. In particular, the fact that the perception of the male teachers with respect to occupational socialization levels was lower compared to that of the female teachers, and that they perceived the induction period, i.e., the last

phase of the occupational socialization period, as the most effective period of the occupational socialization process suggested that male teachers began the socialization process quite late and in a compulsory period, and that a discriminative sexual perception with regards to the profession influences male teachers. The reasons behind intersexual professional perception differences should be studied and precautions should be taken via activities at the faculty education level.

Further research may be conducted through interviews with classroom teachers, in other words, by employing a qualitative research method. As such, the perception of teachers towards the profession and occupational socialization could be investigated in more detail. Views with respect to the efficiency of occupational socialization periods could be investigated in a comparative study involving in different branches and different school types.

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Sınıf Öğretmenlerinin Mesleki Sosyalleşme Süreçleri

Atıf:

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Özet

Problem Durumu: Öğretmenlerin mesleği etkili bir şekilde yapabilmeleri başarılı bir mesleki sosyalleşme sürecini öncelikli kılmaktadır. Mesleki sosyalleşme, bireyin meslek kültürünü içselleştirdiği bir süreçtir. Aynı zamanda bu süreç, mesleki beceri ve değerlerin de edinilmesi bakımından önemlidir. Bu çalışmada eğitim öncesi dönem, hizmet öncesi dönem, alan deneyimleri dönemi ve işe başlama dönemi olmak üzere dört mesleki sosyalleşme dönemi üzerinde durulmakta ve sınıf öğretmenlerinin bu dönemlerin etkililiğine ve mesleki sosyalleşme düzeylerine yönelik algıları tespit edilmek istenmektedir.

Araştırmanın Amacı: Araştırmanın amacı, sınıf öğretmenlerinin mesleki sosyalleşme dönemlerinin etkililiğine ve mesleki sosyalleşme düzeylerine yönelik algılarını tespit etmek, cinsiyet ve kıdem değişkenine göre görüş ve algıları betimlemektir.

Yukarıda verilen genel amaç doğrultusunda aşağıdaki sorulara cevap aranmıştır:

1. Sınıf öğretmenlerinin mesleki sosyalleşme dönemlerinin etkililiğine yönelik algıları nasıldır?
2. Sınıf öğretmenlerinin mesleki sosyalleşme dönemlerinin etkililiğine yönelik algıları cinsiyet ve kıdem değişkenlerine göre farklılaşmakta mıdır?

3. Sınıf öğretmenlerinin mesleki sosyalleşme düzeylerine yönelik algıları nasıldır?

4. Sınıf öğretmenlerinin mesleki sosyalleşme düzeylerine yönelik algıları cinsiyet ve kıdem değişkenlerine göre farklılaşmakta mıdır?

5. Sınıf öğretmenlerinin mesleki sosyalleşme dönemlerinin etkililiğine yönelik algıları, mesleki sosyalleşme düzeylerinin anlamlı bir yordayıcısı mıdır?

Araştırmanın Yöntemi: Araştırma tarama modelindedir. Araştırmanın evrenini; 2013-2014 eğitim-öğretim yılında Ankara ili sınırları içerisinde yer alan 698 resmi ilkokulda görev yapan toplam 16418 sınıf öğretmeni oluşturmaktadır. Araştırmanın örneklemi, tabakalı örnekleme yöntemi ile belirlenen 608 sınıf öğretmeninden oluşmaktadır. Araştırmada, Ankara'ya bağlı ilçelerin her biri, bir tabaka olarak düşünülmüş ve her bir ilçede yer alan öğretmen sayısı, toplam içindeki oranına göre araştırma örneklemine yansıtılmıştır.

Veri toplama aracı olarak araştırmacı tarafından 'Mesleki Sosyalleşme Dönemi Etkililik Ölçeği' ve 'Mesleki Sosyalleşme Düzeyi Ölçeği' geliştirilmiştir. Mesleki Sosyalleşme Dönemi Etkililik Ölçeğinin Cronbach Alpha güvenirlik katsayısı 0,869, Mesleki Sosyalleşme Düzeyi Ölçeğinin ise 0,75 olarak hesaplanmıştır.

Sınıf öğretmenlerinin mesleki sosyalleşme dönemlerinin etkililiğine ve mesleki sosyalleşme düzeylerine yönelik algılarını belirlemede ortalama ve standart sapma değerleri hesaplanmıştır. Yapılan analizlerde 'Mesleki Sosyalleşme Dönemi Etkililik Ölçeği' ve 'Mesleki Sosyalleşme Düzeyi' ölçeklerine ait alt boyutlarda normal dağılımın görüldüğü durumlarda parametrik testlerden t-testi ve ANOVA, normal dağılımın görülmediği durumlarda ise non-parametrik testlerden Mann Whitney U ve Kruskal Wallis testleri kullanılmıştır.

Araştırmanın Bulguları: Sınıf öğretmenlerinin mesleki sosyalleşme dönemlerinin etkililiğine yönelik algı düzeyleri hizmet öncesi dönem için 'çoğu zaman' düzeyinde olup diğer mesleki sosyalleşme dönemlerine göre en etkili algılanan dönemdir. Sınıf öğretmenlerinin işe başlama döneminde sosyalleşme aşamasının etkililiğine yönelik algıları ile cinsiyet değişkeni arasında anlamlı farklılık tespit edilmiştir. Fark erkek öğretmenlerin işe başlama döneminin etkililiğine yönelik algılarının kadın öğretmenlere göre daha yüksek olduğunu göstermektedir. Kıdemi 21 yıl ve üzeri olan sınıf öğretmenlerinin eğitim öncesi, alan deneyimleri ve işe başlama dönemlerinin etkililiği ile ilgili algıları da diğer kıdem gruplarına göre daha yüksek bulunmuştur. Sınıf öğretmenlerinin genel olarak mesleki sosyalleşme düzeylerine yönelik algıları yüksek düzeyde bulunmuştur. Sınıf öğretmenlerinin mesleki sosyalleşme düzeyleri ile ilgili algılarının cinsiyetle ilişkisi incelendiğinde anlamlı farklılık olduğu ve bu farkın kadın öğretmenler lehine olduğu görülmüştür. Sınıf öğretmenlerinin mesleki kıdemi ile mesleki sosyalleşme düzeylerine yönelik algıları arasında orta düzeyde yeterlilik boyutunda anlamlı farklılık görülmüştür. Çoklu regresyon analizi sonucuna göre ise,

işe başlama döneminin sınıf öğretmenlerinin mesleki sosyalleşme düzeyleri üzerinde anlamlı bir etkiye sahip olmadığı görülmüştür.

Araştırmanın Sonuçları ve Önerileri: Hizmet öncesi dönem, sınıf öğretmenleri tarafından en etkili mesleki sosyalleşme dönemi olarak algılanmaktadır. Ancak işe başlama döneminin etkililiğine yönelik erkek öğretmen algılarının kadın öğretmen algılarına göre daha yüksek düzeyde olduğu görülmüştür. Kıdemi 21 yıl ve üzeri olan sınıf öğretmenlerinin eğitim öncesi, alan deneyimleri ve işe başlama dönemlerinin etkililiği ile ilgili algıları da diğer kıdem gruplarına göre daha yüksek düzeyde bulunmuştur. Sınıf öğretmenlerinin mesleki sosyalleşme düzeyleri ile ilgili algılarının yüksek düzeyde olduğu ve kadın öğretmenlerin erkek öğretmenlere göre mesleki sosyalleşme düzeylerine yönelik algılarının daha olumlu olduğu görülmüştür. Sınıf öğretmenlerinin mesleki kıdemi ile mesleki sosyalleşme düzeylerine yönelik algıları arasında orta düzeyde yeterlilik boyutunda anlamlı farklılık görülmüştür. Çoklu regresyon analizi sonucuna göre ise, işe başlama döneminin sınıf öğretmenlerinin mesleki sosyalleşme düzeyleri üzerinde anlamlı bir etkiye sahip olmadığı görülmüştür. Fakat araştırmanın ikinci alt probleminde erkek öğretmenlerin işe başlama döneminin etkililiğine yönelik algılarının kadın öğretmenlere göre daha yüksek olduğu görülmüştü.

Kıdemi 21 yıl ve üzeri olan öğretmen grubunun mesleki sosyalleşme düzeylerinin beklenenin tersine orta derecede bulunma nedenleri araştırılmalı, belli periyotlarda tüm öğretmenlerle ihtiyaç analiz çalışmaları yapılmalı ve sonuçlar doğrultusunda hizmet içi eğitim programları düzenlenmelidir. Özellikle erkek öğretmenlerin mesleki sosyalleşme düzey algılarının kadın öğretmenlere göre daha düşük düzeyde olması ve mesleki sosyalleşme dönemlerinin son aşaması olan işe başlama dönemini mesleki sosyalleşme sürecinin en etkili dönemi olarak algılamaları, erkek öğretmenlerin sosyalleşme sürecine oldukça geç ve zorunlu bir dönemde başlıyor olduklarını ve öğretmenlik mesleği ile ilgili ayrımcı bir cinsiyet algısının erkek öğretmenler üzerindeki etki gücünü düşündürmektedir. Cinsiyetler arası meslekle ilgili algı farklılığının nedenlerinin araştırılması ve fakülte eğitimi düzeyinde çalışmalarla önlemlerin alınması önerilebilir.

Anahtar Kelimeler: Öğretmen eğitimi, mesleki sosyalleşme dönemleri.

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The Relationship between Pre-Service Music Teachers' Self-efficacy Belief in Musical Instrument Performance and Personality Traits

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ABSTRACT

Purpose: Strong self-efficacy bring achievement in ınstrument education as in other disciplines. Achievement will increase the quality of instrument education, and it will be reflected in the professional lives of pre-service teachers and their students. This suggests that research on self-efficacy belief in musical instrument performance is necessary. Researchers have determined that people's individual traits influence their performance. Personality covers an individual's entire set of biological and psychological, hereditary and acquired abilities, motivation, emotions, desires, habits and all behaviors. For these reasons, personality traits were selected as the second variable of this study. The purpose of this study is to determine the correlation between pre-service music teachers' self-efficacy belief in their musical instrument performance and their personality traits. **Research Methods**: For this study, the researcher cooperated with 250 pre-service music teachers. The study used the correlative survey method. The research data was collected using the Hacettepe Personality Inventory and the Musical Instrument Performance Self-efficacy Belief Scale. Correlation analysis was performed to determine the relationship between pre-service music teachers' musical instrument self-efficacy belief and their personality traits. **Findings:** The research results indicate a low correlation between pre-service music teachers' self-efficacy belief in musical instrument performance and their personality traits. **Implications for Research and Practice**: In this study, the correlation between pre-service music teachers' self-efficacy belief in their musical instrument performance and their personality traits was determined. It can be suggested that other researchers determine other variables that may affect pre-service music teachers' musical instrument performance self-efficacy belief.

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Introduction

In Turkey, pre-service music teachers are trained in faculties of education at universities. The predominant part of pre-service music teachers' curricula is composed of field education. Instrument training is the main focus of field education. This is because an instrument is the basic material of a music teacher. Pre-service teachers who are virtuoso players of their instruments will have fulfilling careers, and they will in turn raise even more people who are interested in art by inspiring their students to want to be like them. As Ucan (1996) says, people who are interested in art will be sensitive to their environment and society, able to satisfy and develop their aesthetic needs, fulfil their desire for artistic interpretation and express themselves. In other words, people with an interest in art will be intellectual and sophisticated. A society of intellectual and sophisticated individuals will develop. Considering this social reflection, it can be argued that improving the quality of instrument education in the training of pre-service music teachers is a pivotal issue. In the process of improving the quality of instrument education in pre-service music teachers' training, the problems encountered and their causes should be identified. Performance is the primary factor that should be examined in an analysis of the problems encountered in instrument education, since performance is the main reflection of self-improvement and self-knowledge in music education, as it is in other fields of pedagogy.It is the sole concrete indicator of the process. Sezer (2005) describes performance as, "individuals' way of expressing what they can do with their existing knowledge."

A review of the relevant literature indicates a holistic perspective on performance. There are two expressions for it in the foreign literature: "music performance" (Gabrielsson, 2003; Kenny, Fortune and Ackermann, 2013; Wrigley and Emmerson, 2013; Lamont, 2012; Hewitt, 2011), and"musical performance" (McCormick and McPherson, 2003; Preti and Welch, 2013; Ryan, 2004; Mills, 2003; Delagu and Belardinelli, 2003). On the other hand, studies in this field written in Turkish are limited (Ozevin Tokinan, 2013). The researcher used the term "music performance" since it is also the term used in the relevant resources. Music performance can be described as, "a person's or group's consciously displaying music for an audience" (Sloboda, 1985:67). Again, a holistic perspective is dominant in music literature. However, performance-based fields of music education have specific branches such as instrument education and vocal training. Each of these fields consists of different psychological and cognitive dynamics in themselves. Furthermore, they can be performed individually or as a group.When they are performed individually or as a group, their psychological, physiological and cognitive elements growmore diverse.Hence, a general approach to music performance might not be sufficient for music research directed toward professionals. The studies in the literature indicate that some researchers have noted this fact and performed studies of specific musical fields such as solo vocal performance (Howard, 2012), piano performance (Wapnick et al., 2009) and cello performance (Hong, 2003). Another remarkable point about the literature is that there are a large number of studies on music performance. This is an indicator of the

subject's popularity and its importance. Gabrielsson's (2003) study suggests that research on music performance can be classified into these topics: planning, deciphering, improvising, feedback, motor skills, performance models, measuring performance, physical factors, psychological and sociological factors and performance evaluation. However, Gabrielsson also states that the majority of these studies focus on performance measurement, and that there are also a considerable number of studies of motor skills. This might be due to the fact that music performance includes a variety of capabilities: motor skills, coordination, attention, memory, aesthetic sense and interpretation, so researchers are focused on these points. Studies of psychological factors are also very common in music performance research. This indicates that the quality of a performance results from the experience level of the performer and having enough preparation for the performance, along with psychological factors such as sense of self, self-efficacy belief and performance anxiety (Papageorgi et al., 2011). In the literature, there are many studies of performance anxiety (Allen, 2013; Thomas and Nettelbeck, 2014). However, it is notable that there are few studies on the correlation between the sense of self, self-efficacy and performance (McCormick and McPherson, 2003), although self-efficacy is one of the basic motivational structures of individuals' actions. As Bandura (1986; 391) states, self-efficacy belief is a "person's main judgements about their capacities to carry out the actions required to perform and organize these actions." As in other disciplines, there are many studies of self-efficacy belief in the musical field (Ozmentes, 2014; Afacan, 2008). This may be due to the fact that music researchers noticed the positive effects of self-efficacy in education. As Bandura (1993) says, individuals with a weak self-efficacy belief cannot fully focus on the teaching process. They do not have much desire to learn. They neither want nor try overcome the problems they encounter. People with strong self-efficacy belief try more and work harder to achieve their goals than people with weak self-efficacy belief (Schunk, 1989). Individuals with strong self-efficacy belief try harder because of the positive correlation between self-efficacy and motivation, according to the research of Schunk (1995) and Yusuf (2011). The positive correlation of self-efficacy concept with motivation brings about achievement. Therefore, strong self-efficacy belief, together with motivation, will lead to achievement in instrument education as in other disciplines. Achievement will increase the quality of instrument education, and it will be reflected in the professional lives of pre-service teachers and their students. In other words, qualified pre-service music teachers will be satisfied with their professional lives, increasing the number of people who are interested in art by creating a driving force in their students, and thus serving the development of society. This indicates that research on self-efficacy belief in instrument performance is necessary. Researchers have determined that people's motivation, excitement, level of anxiety, thoughts and belief—in other words, individual traits—influence their performance (Stacho et al., 2013; Zijl and Slobada, 2011). The concept of personality includes most of these traits. Yelboga (2006) says that personality covers an individual's entire set of biological and psychological, hereditary and acquired abilities, motivation, emotions, desires, habits and all behaviors. For these reasons, personality traits were selected as the second variable in this study. The purpose of

this study is to determine the correlation between pre-service music teachers' self-efficacy belief regarding their musical instrument performance and their personality traits. The study is significant because it will contribute to the enhancement of instrument education in pre-service music teacher education and the creation of brand new methods, approaches and measurements.

Method

Research Design

The correlative survey method was used in this study. Karasar (2002: 81) says correlative survey models are research models aimed at determining the existence of a simultaneous change between two or more variables and the levels of such change.

Research Sample

For this study, the researcher cooperated with 250 pre-service music teachers enrolled in the first, second, third and fourth years in Adnan Menderes University and Balikesir University's Faculty of Educational Sciences in their Music Education Programs during the 2013-2014 academic year in Turkey. The population of the study includes students enrolled in the faculty of educational sciences in their music education programs in Turkey. The sample group of the study consisted of students enrolled in Adnan Menderes University and Balikesir University's Faculty of Educational Sciences in their Music Education Programs.The simple random sampling technique was used to determine the sample group of the study. The principle of "the sample size between 30 and 500 is enough," which is widely accepted by scholars, was taken into account (Altunışık, Coşkun, Bayraktaroğlu and Yıldırım, 2012). Of the pre-service teachers participating in this study, 60% were male and 40% were female. Of them, 22.8% were enrolled in their first year, 20.8% in their second year, 28.8% in their third year and 27.6% in their fourth.

Research Instrument and Procedure

The Hacettepe Personality Inventory. This study used the "Hacettepe Personality Inventory" developed by Ozguven (1992) to determine the personality traits of pre-service music teachers. The Hacettepe Personality Inventory was created by improving upon the pilot version prepared in 1976, and through further revision in 1978. The inventory was revised for the second time in 1982, when it took on its current form. The scale consists of eight sub-scales: four for "personal adaptation" and four for "social adaptation." The sub-dimensions of personal adaptation are: "Self-realization," "Emotional Determination," "Neurotic Tendencies," and "Psychotic Symptoms." The sub-dimensions of social adaptation are: "Family Relationships," Social Relationships," Social Norms," and "Antisocial Tendencies." The entire scale includes 168 items. Each sub-dimension consists of20 items. Eight additional items are used to provide clues about the validity of the responses. The items solicit "Yes" or "No" responses, and the scale is scored with "1" point given for each correct answer and "0" points for each incorrect answer. So, the maximum score of the scale is 160 points, and the minimum score is 0 points. The maximum score of the sub-

dimensions of the scale is 20 points, and the minimum score is 0 points. The height of the score indicates being "healthy" or "adaptable." The scores on the scale are interpreted using the percentages determined by Ozguven. Validity tests were performed by Ozguven (1976-1982), using the distributed practice method on a variety of groups. The lowest reliability coefficients were found in the social norms sub-dimension (58), and the highest were the reliability scores of the entire scale (92). The average reliability score was 82.

The Musical Instrument Performance Self-efficacy Belief Scale. This study used the "Musical Instrument Performance Self-efficacy Belief Scale" developed by the researcher to measure the musical instrument performance self-efficacy belief levels of pre-service music teachers. The scale was prepared using a 5-point Likert type scale, consisting of three sub-dimensions, which are "Self-efficacy," "Self-inefficacy," and "Psychological indicators." The entire scale's Cronbach's Alpha coefficient is .72. The Cronbach's Alpha coefficients for the sub-dimensions of the scale are: .74 for "Self-efficacy,".76 for "Self-inefficacy," and 61 for "Psychological indicators." On the scale, 1="disagree" and 5="strongly agree." The scale consists of 20 items, so the maximum score is 100 points, and the minimum score is 20 points. The "Self-efficacy " sub-dimension consists of 10 items. "Self-inefficacy" has 5 items, and "Psychological indicators" consists of 5 items. The maximum score on the sub-dimension "Self-efficacy" is 50 points, and the minimum score on this sub-dimension is 10 points. The maximum score on "Self-inefficacy" is 25 points, and the minimum is 5 points. The maximum score on "Psychological indicators" is 25 points, and the minimum is 5 points. The points for some items onthe scale were calculated in reverse.

Data Analysis

The study demonstrates the arithmetic average and standard deviation as the descriptive statistics of pre-service music teachers' scores regarding their personality traits and self-efficacy belief in their instrument performance. A correlation analysis was performed to determine the correlation between self-efficacy belief in instrument performance and personality traits. The reliability level was found to be .05.

Results

Findings Regarding the Descriptive Statistics

Table 1 shows the findings related to the descriptive statistics from the "Musical Instrument Performance Self-efficacy Belief Scale" and the "Hacettepe Personality Inventory."

Table 1
Descriptive Statistics Results for Hacettepe Personality Inventory and Musical Instrument Performance Self-efficacy Scale (N=250)

		Minimum	*Maximum*	*M*	*SD*	*Skewness*	*Kurtosis*
Hacettepe Personality Inventory Scale Sub-scales	Self-realization	1. 0	14. 00	*8. 20*	*2.87*	-. 347	-. 356
	Emotional Determination	2. 00	18. 00	*10.94*	*3. 28*	-. 157	-. 439
	Neurotic Tendencies	1. 00	19. 00	*11.04*	*3. 50*	-. 268	. 030
	Psychotic Symptoms	2. 00	18. 00	*11.13*	*3. 17*	-. 149	. 105
	Personal Adaptation	11. 00	64. 00	*41.32*	*10. 22*	-. 343	. 311
	Family Relationships	.00	16. 00	7. 74	3. 81	.032	-. 748
	Social Relationships	.00	16. 00	7. 65	3. 38	-.106	-. 642
	Social Norms	2. 00	16. 00	8. 95	2. 68	.032	-. 167
	Antisocial Tendency	2. 00	17. 00	9. 61	3. 09	-.190	-. 387
	Social Adaptation	8. 00	54. 00	33.96	9. 04	-. 443	-. 235
	General Personality Traits	27. 00	113. 00	75.28	16.61	-.566	. 224
Musical Instrument Performance Self-efficacy Belief Sub-Scale	Self-efficacy	10. 00	50. 00	30.38	8. 11	-. 138	-. 0215
	Self-inefficacy	5. 00	25. 00	16.80	4. 43	-. 215	-. 434
	Psychological Indicators	5. 00	25. 00	14.51	3. 86	. 216	-. 054
	Musical Instrument Performance Self-efficacy Belief	23, 00	97. 00	61.70	12.82	-. 112	. 572

As Table 1 shows, the highest average on the sub-scales of the "Musical Instrument Performance Self-efficacy Belief Scale" was on the "Self-efficacy" sub-dimension (*M*=30.38), and the lowest average was on the "Psychological Indicators" sub-dimension (*M*= 14.51). On the "Hacettepe Personality Inventory," the highest average was on the "Psychotic Symptoms" sub-dimension (*M*=11.13), and the lowest was on the "Family Relationships" sub-dimension (*M*=7.74).

Findings of the Correlation Analysis

Table 2 shows the findings of the correlation analysis of the "Musical Instrument Performance Self-efficacy Belief Scale" and the "Hacettepe Personality Inventory." According to Buyukozturk (2006), in the correlation analysis, correlation coefficient between 0.00 and 0.30 is regarded as a low-level correlation. Between 0.30 and 0.70 is considered a medium-level correlation, and between 0.70 and 1.00 is regarded as a high-level correlation.

As Table 2 shows, there was a low correlation between the "Musical Instrument Performance Self-efficacy Belief Scale" and the "Hacettepe Personal Inventory." The highest correlation among the sub-dimensions of the " Musical Instrument Performance Self-efficacy Belief Scale" was between the "Musical instrument performance self-efficacy belief " and "Self-efficacy " (r=.846; p<.01). The highest correlation among the sub-dimensions of the "Hacettepe Personality Inventory" was between "General personality traits" and "Personal adaptation" (r=.879; p<.01). The highest correlations between "Musical Instrument Performance Self-efficacy Belief Scale" and "Hacettepe Personal Inventory" were between "Psychological indicators" and "Neurotic Tendencies" (r=-.240; p<.01) ; "Psychological indicators" and "Personal adaptation" (r=-.223; p<.01) ; "Self-inefficacy" and "General personality traits" (r=-.196; p<.01); "Self-inefficacy"and "Social adaptation" (r=-.184; p<.01); "Self-inefficacy" and "Self-realization" (r=-.181; p<.01); "Psychological indicators" and "Emotional determination" (r=-.174; p<.01); "Self-inefficacy" and "Family relationships" (r=-.171; p<.01); "Psychological indicators" and "General personality traits" sub-dimensions (r=.-163; p<.01).

Discussion and Conclusion

This study aims to determine the correlation between pre-service music teachers' musical instrument performance self-efficacy belief and their personality traits. The research results indicate that there is a low correlation between pre-service music teachers' instrument performance self-efficacy belief and their personality traits. In the relevant literature, there are no studies similar to this one; however, Schyns and Collani (2010) found a positive and significant correlation between self-efficacy belief and personality traits in their study on the correlations between self-efficacy, personality traits and organizational variables. Thoms, Moore and Scott (1998) did research on the correlation between self-efficacy and personality traits in autonomous study groups. They found that self-efficacy and personality traits are related. These studies support the outcome of this study. A high level of performance on an instrument will bring about self-efficacy belief, motivation and achievement. This will cause pre-service music teachers to increase their professionalism, find professional satisfaction, inspire their students and increase the numbers of people who are interested in art; thus, serving for the development of the society.

Table 2

Correlations for the Sub-dimensions of the Instrument Performance Self-efficacy Belief Scale and the Hacettepe Personality Inventory Scale

	1- General Personal Traits	2	3	4	5	6	7	8	9	10	11	12	13	14
2-Self-realization	,738**													
3-Emotional Determination	,664**	, 371**												
4- Neurotic Tendencies	,701**	, 347**	,660**											
5- Psychotic Symptoms	,703**	, 402**	,609**	,628**										
6- Personal Adaptation	,879**	, 644**	, 840**	, 847**	, 834**									
7- Family Relationships	,628**	,464**	,173**	,286**	,193**	, 344**								
8- Social Relationships	,533**	,488**	,106	,116	,163**	,261**	,326**							
9- Social Norms	,423**	,320**	, 017	,030	,092	,134*	,264**	,314**						
10- Antisocial Tendency	,738**	,452**	,443**	,460**	,524**	,590**	,416**	,230**	, 289**					
11- Social Adaptation	,843**	,628**	,269**	,330**	,349**	,484**	,764**	,684**	,625**	,689*				
12- Musical Instrument Performance Self-efficacy Belief	-,163**	-, 171**	-, 088	-,142*	-, 098	-, 155*	-, 088	-, 104	-, 069	-, 082	-, 124 *			
13- Self-efficacy	-,073	-, 107	-, 010	-, 037	-, 025	-, 054	-, 039	-, 056	-, 051	-, 058	-, 073	, 846**		
14- Self-inefficacy	-, 196**,	-, 181**	-, 085	-, 133*	-, 102	-, 156*	-, 171 **	-, 137*	-, 113	-, 078	-, 184**	,466 **	, 812 **	
15- Psychological Indicators	-, 163**	-, 131*	-,174 **	-, 240 **	-, 155 *	-, 223 **	-, 011	-, 066	-, 010	-, 059	-, 047	-, 588**	, 145*	, 560**

**p<.01;*p<.05

For the aforementioned reasons, the other psychological and musical factors in instrument performance and self-efficacy belief need to be researched. According to the results, educators can develop the necessary measurements and take the required precautions for negative situations in education process. Researchers could also study the other factors —both affective and psychological—that contribute to the instrumental training of pre-service music teachers. Regarding the outcomes of this research, certain measurements could be developed for use in the aptitude tests used for entrance into music departments and for choosing an instrument. It is known that students who have not received education in any of the instruments taught as majors in music departments determine their principal instrument after joining the department. However, only their physical appropriateness is taken into account. There is no psychological or affective evaluation. There is a need for the tests that will determine which instrument suits students psychologically and emotionally. This type of research might contribute to the development of these measurements. Accordingly, these approaches could contribute to enhancing the quality of instrument education.

Another outcome indicated in the Findings section of the study is that the highest correlations between the scores of pre-service teachers on the "Musical Instrument Performance Self-efficacy Belief Scale" and the "Hacettepe Personal Inventory" were: (r=-.240; p<.01) between “Psychological indicators” and “Neurotic tendencies;” (r=-.223; p<.01) between “Psychological indicators” and “Personal adaptation;” (r=-.196; p<.01) between “Self-inefficacy” and “General personality traits;” (r=-. 184; p<.01) between “Self-inefficay” and “Social adaptation;” (r=-.181; p<.01) between “Self-inefficacy” and “Self-realization;” (r=-.174; p<.01) between “Psychological indicators” and “Emotional determination;” (r=-.171; p<.01) between “Self-inefficacy” and “Family relationships;” (r=.-163; p<.01) between “Psychological indicators” and “General personality traits.” The negative correlation between "Psychological indicators" and "Neurotic tendencies" may be due to the perfectionist attitude of people with neurotic tendencies. Perfectionism characterizes individuals who set excessively high standards for themselves and for the others (Holender, 1965). Hamachek (1978) discussed two kinds of perfectionism: normal and neurotic. Kottman (2000) claimed that positive perfectionists are not intensely worried about reaching high standards, and they are not discouraged when they fail to reach their goals. However, negative perfectionists are extremely worried and feel devastated when they can not reach perfection. The sub-dimension "Psychological indicators" on the musical instrument performance self-efficacy belief scale consists of these items: "I get very excited during my performance since I am afraid to fail," "I am afraid of making small mistakes during my performance," "I feel nervous and tense before a performance," "I immediately get intimidated when I encounter a negative situation during my performance" and "I make a comparison between my instrumental performance with others at my level of ability." It is obvious that the items in the "Psychological indicators" sub-dimension relate to worries, anxieties and being demotivated. This context makes it evident that the contents of the "Psychological indicators" and "Neurotic tendencies" sub-dimensions match. Pre-service teachers with low scores on the "Neurotic tendencies" sub-dimension are

negative perfectionists. Yondem (2012) did a qualitative study with 17 music majors entitled, "Physical, Behavioral and Cognitive Features of Perceived Performance Anxiety." He explained the pre-performance anxiety of students with certain personality traits, e.g., excitability, insecurity and pessimism. These findings are consistent with Smith and Rickard's (2004) findings, which correlate performance anxiety and continuous anxiety or neuroticism. On the other hand, Yondem (2012) determined in his study that negative thinking, fear of not being appreciated and perfectionism are the thought contents of musicians who define their anxiety levels as high. This study determined that perfectionism is more rare than other thoughts. In another study, Yondem (2007) found that there was no significant correlation between music majors' anxiety and their perfectionist thoughts. These results contradict the argument that pre-service teachers who obtain low scores on the "Neurotic tendencies" sub-dimension are negative perfectionists. Depending on these results, researchers could perform studies to determine which neurotic tendencies are related to psychological indicators such as anxiety or excitement. Sumi and Kanda (2002) did not find a correlation between neurotic perfectionism and anxiety in their study of 138 Japanese students. This situation raises the question: "Does the correlation between neurotic perfectionism and anxiety vary depending on culture, gender and field?" A review of the relevant literature does not indicate any findings on this subject. Researchers should find answers to this question. The correlation between "Personal adaptation" and "Psychological indicators" become clear when the features of "Personal adaptation" sub-dimension are analysed. "Personal adaptation" consists of these sub-dimensions: "Self-realization," "Emotional determination", "Neurotic tendencies" and "Psychotic symptoms." The "Self-realization" score is correlated with these traits of self-realizing people: self-confidence, being aware of their abilities, being able to take decisions on their own, being able to express things that they are sure to be true, feeling that they are accepted and not useless. The "Emotional determination" score is correlated with these traits: self-confidence, rarely getting upset, not being offensive, and the "Psychotic symptoms" score is associated with being offensive and extremely emotional (Ozguven, 1992). If an individual obtains high scores on these traits, it indicates that the individual has a healthy personality. People who are healthy in terms of the traits in question get low scores on the "Psychological indicators" sub-dimension of the Musical Instrument Performance Self-efficacy Belief Scale. This may be due to the fact that individuals with healthy personalities feel less excitement and anxiety. Dundar, Yapici and Topcu (2008) performed a survey of university students' exam anxiety and personality traits. They determined that there was a negative correlation between "General personality traits" scores and exam anxiety. The studies by Dundar, Yapici and Topcu (2008) support the outcomes of this research. Another outcome of the study is that there is a negative correlation between the score obtained on the entire "Hacettepe Personality Inventory" and "Self -inefficacy ". This might be a result of the fact that people who are healthy personalities are more likely to be successful due to their self-confidence. Otacioglu (2008) performed a study with 92 pre-service music teachers entitled, "A comparison of Pre-service Music Teachers' Problem Solving Abilities and Self-confidence Levels with Their Achievements on Instruments." This

study supports the correlation between self-confidence and success. The correlation between "Self-inefficacy " and "Social adaptation" may be due to the fact that people who have antisocial tendencies in their family and social relationships— the sub-dimensions of "Social adaptation"—are less likely to be successful since they are hard, full of anger, wanting to hurt others and be aggressive. The other correlations in this research are between "Self-inefficacy " and "Self-realisation," and between "Psychological indicators" and "Emotional determination." Self-realising individuals are also self-confident. Since they trust themselves, they are likely to achieve their goals and be successful. Emotionally determined people are also self-confident, not offensive and rarely get upset. These traits may help emotionally-determined individuals to avoid excitement or anxiety during their instrumental performances. The study also found a negative correlation between "Self-inefficacy" and "Family relationships." This proves that healthy family relationships influence individuals' self-efficacy beliefs in instrument education as in other fields. This outcome of the study is consistent with the research of Ikiz and Yoruk (2013). Ikiz and Yoruk (2013) found that pre-service teachers' self-efficacy belief levels increased as their family relationships improved. Lian and Linn's (2010) opinions are the same. Another outcome of the study is that there is a positive correlation between the "Psychological indicators" and "General personality traits" sub-dimensions. This may be due to the self-confidence and social adaptation of emotionally-determined individuals. It is possible that emotionally-determined and socially adaptable individuals do not feel excitement or anxiety during their instrumental performance. These research outcomes require a focus on self-confidence and anxiety. Researchers could study the factors that influence their self-confidence and the correlation between their personality traits and anxiety levels.

This study also found that the highest average score among the sub-dimensions of "Musical Instrument Performance Self-efficacy Belief Scale" was M=30.38 on the "Self-efficacy" sub-dimension. The lowest was M=14.51 on the "Psychological indicators" sub-dimension. The highest average score among the sub-dimensions of "Hacettepe Personality Inventory" was M= 11.13 on the "Psychotic symptoms" sub-dimension. The lowest average score was M=7.74 on the "Family Relationships" sub-dimension. These results point to the fact that a majority of pre-service music teachers regard themselves as efficacious in their instrumental performance. However, they have a low average in terms of family relationships. As Ozguven (1992) states, a university student is neither a child nor an adult. University students are going through difficulties in their transition to adulthood and are supposed to find an identity, adapt to the rules of society and reach social maturity. In the social adaptation process, groups of friends are also very important, as the family becomes less influential and the individual's value systems become more influential in governing behavior. Moreover, most parents in our country failed to attain the same education level as their children, and so they lose some of their power to influence them. Thus, children become more influential in family decisions. This can cause family disagreements. A review of the relevant literature does not indicate any surveys supporting this case. Researchers could study the family relationships of university students and the factors affecting these relationships.

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Müzik Öğretmeni Adaylarının Çalgı Performansı Özyeterlik İnançları ve Kişilik Özellikleri Arasındaki İlişki

Atıf:

Girgin, D. (2017). The relationship between pre-service teachers self-efficacy belief in musical ınstrument performance and personality traits. *Eurasian Journal of Educational Research*, 67, 107-123, http://dx.doi.org/10.14689/ejer.2017.67.7

Özet

Problem Durumu: Özyeterlik inancı düşük olan bireyler, öğretim sürecine kendilerini tam olarak vermezler, öğrenme istekleri azdır, zorluklarla karşılaştıklarında yüzleşmek istemezler ve bu durumun üstesinden gelmek için çaba sarf etmezler. Özyeterlik inancı yüksek olanlar ise bir işi başarmada özyeterlik inancı düşük olanlara göre daha çok çaba göstermekte ve daha uzun süreli çalışmaktadırlar. Özyeterlik algısı yüsek olan bireylerin düşük olanlara göre daha çok çaba göstermelerinin nedenine gelindiğinde bu durum, özyeterlik ve motivasyon arasındaki pozitif ilişki olarak açıklanabilir. Özyeterlik kavramının motivasyonla olan bu pozitif ilişkisi beraberinde başarıyı getirmektedir. Dolayısıyla diğer disiplinlerde olduğu gibi çalgı eğitiminde de yüksek bir özyeterlik inancı motivasyonla beraber başarıyı getirecektir. Başarı çalgı eğitiminde niteliği artıracak, dolaylı olarak öğretmen adaylarının meslek yaşamlarına ve öğrencilerine yansıyacaktır. Bir başka ifadeyle nitelikli müzik öğretmeni adayları meslek yaşamlarında doyuma ulaşacak, öğrencilerinde itici güç oluşturarak sanatla

ilgilenen bireylerin artmasına öncülük ederek toplumların kalkınmasına hizmet edeceklerdir. Söz edilen nedenlerle müzik öğretmeni adaylarının çalgı performansı özyeterlik inancını etkileyen faktörlerle ilgili araştırmaların yapılması önemlidir. Araştırmacılarca da belirlendiği gibi insanların güdüleri, heyecanları, kaygı düzeyleri ve düşünce ve inançları diğer bir deyişle bireysel özellikleri performansları üzerinde etkilidir. Kişilik, bu özelliklerin bir çoğunu bünyesinde barındırmaktadır. Kişilik, bireyin biyolojik ve psikolojik, kalıtsal ve edinilmiş bütün yeteneklerini, güdülerini, duygularını, isteklerini, alışkanlıklarını ve bütün davranışlarını içine alır. Söz edilen nedenlerle kişilik özellikleri araştırmanın diğer değişkeni olarak belirlenmiştir.

Araştırmanın Amacı: Bu çalışmada müzik öğretmeni adaylarının çalgı performansı özyeterlik inançlarının kişilik özellikleri ile ilişkili olup olmadığının ortaya konması amaçlanmıştır.

*Araştırmanın Yöntemi:*İlişkisel tarama modelindeki bu araştırma, 2013-2014 eğitim-öğretim yılında, Adnan Menderes Üniversitesi ve Balıkesir Üniversitesi Eğitim Fakültesi Müzik Eğitimi Anabilim Dalları'nda öğrenim gören ve araştırmaya gönüllü olarak katılım gösteren 1., 2., 3., ve 4. sınıflarda eğitim gören 250 müzik öğretmeni adayı ile gerçekleştirilmiştir. Araştırmanın evrenini Türkiye'de eğitim fakültelerine bağlı bütün müzik eğitimi bölümleri öğrencileri oluşturmaktadır. Örneklemini ise Adnan Menderes Universitesi ve Balikesir Universitesi müzik öğretmenliği bölümlerindeki öğrenciler oluşturmaktadır. Araştırmanın örneklemi belirlenirken basit tesadüfi örnekleme tekniği kullanılmıştır. Araştırmaya katılan öğretmenlerin % 60' ı erkek, % 40'ı kadındır. Ayrıca araştırmaya katılan öğretmenlerin % 22, 8'i 1. sınıf, % 20, 8'i 2. sınıf, % 28, 8'i 3. sınıf, % 27, 6'sı 4. sınıf öğrencisidir. Araştırmada veri toplama aracı olarak Çalgı Performansı Özyeterlik İnancı Ölçeği ve Hacettepe Kişilik Envanteri kullanılmıştır. Araştırmada müzik öğretmeni adaylarının kişilik özelliklerini belirlemek amacıyla Özgüven (1992) tarafından geliştirilmiş olan "Hacettepe Kişilik Envanteri " kullanılmıştır. Ölçek "Kişisel uyum" için dört ve "Sosyal uyum" için de dört olmak üzere sekiz alt ölçekten oluşmuştur. Kişsel uyuma ait alt boyutlar; "Kendini gerçekleştirme", "Duygusal kararlılık", "Nevrotik eğilimler", "Psikotik belirtiler" , sosyal uyuma ait alt boyutlar ise; "Aile ilişkileri", "Sosyal ilişkiler", "Sosyal normlar", "Antisosyal eğilimler" olarak adlandırılmıştır. Ölçeğin tamamı 168 maddeden oluşmaktadır. Alt boyutlar 20 maddeden oluşmaktadır. 8 madde cevaplandırmanın geçerliği hakkında ipucu vermesi amacıyla kullanılmaktadır. Ölçek evet-hayır şeklinde yanıtlanmaktadır. Ölçeğin değerlendirilmesi cevap anahtarına göre yapılmaktadır. Ölçekte her doğru cevap için 1, yanlış cevap için ise 0 puan verilmektedir. Dolayısıyla ölçeğin tamamından en yüksek 160, en düşük 0 puan alınabilmektedir. Ölçeğin alt boyutlarından en yüksek 20, en düşük 0 puan alınabilmektedir. Puanların yüksek oluşu "sağlıklı" veya "uyumlu" oluşu ifade etmektedir. Ölçekten alınan puanlar Özgüven tarafından belirlenmiş yüzdelik değerlere göre yorumlanmaktadır. Ölçeğin Özgüven (1976-1982) tarafından, çeşitli gruplar üzerinde aralıklı tekrar yöntemi ile güvenirlik çalışmaları yapılmıştır. Ortalama güvenirlik .82' dir. Araştırmada müzik öğretmeni adaylarının çalgı performansı özyeterlik inanç düzeylerini ölçmek amacıyla araştırmacı tarafından geliştirilmiş olan "Çalgı Performansı Özyeterlik İnancı Ölçeği" kullanılmıştır. Beşli likert tipinde hazırlanmış olan ölçek "Kendini yeterli görme" ,

"Kendini yetersiz görme" ve "Psikolojik göstergeler" olmak üzere üç alt boyuttan oluşmaktadır. Ölçeğin bütünü için Cronbach Alpha değeri .72' dir. Ölçeğin alt boyutlarının Cronbach Alpha değerleri; "kendini yeterli görme" .74, "kendini yetersiz görme" .76, "psikolojik göstergeler" . 61' dir. Ölçekte, 1= "hiç katılmıyorum", 5= tamamen katılıyorum olarak belirlenmiştir. Ölçek 20 maddeden oluşmaktadır. Dolayısıyla ölçeğin tamamından en yüksek 100, en düşük 20 puan alınabilmektedir. Ölçeğin alt boyutlarından kendini yeterli görme boyutu 10 , kendini yetersiz görme 5, psikolojik göstergeler 5 maddeden oluşmaktadır. Kendini yeterli görme boyutundan en yüksek 50, en düşük 10; kendini yetersiz görme boyutundan en yüksek 25 en düşük 5; psikolojik göstergeler boyutundan en yüksek 25 en düşük 5 puan alınabilmektedir. Ölçekte ters puanlanan maddelerde bulunmaktadır. Ölçeğin tamamından ve alt boyutlarından alınacak yüksek puan müzik öğretmeni adaylarının bireysel çalgılarına yönelik çalgı performansı özyeterlik inançlarının yüksek düzeyde olduğunu göstermektedir. Öğretmen adaylarının, çalgı performansı özyeterlik inançları ve kişilik özellikleri arasındaki ilişkinin belirlenmesinde korelasyon analizinden yararlanılmıştır.

Araştırmanın Bulguları: Araştırma bulgularına göre " Çalgı Performansı Özyeterlik İnancı Ölçeği" nin alt boyutlarının ortalamalarında en yüksek ortalama (M=30.38) ile " Kendini yeterli görme" alt boyutunda, en düşük ortalama (M=14.51) ile " Psikolojik göstergeler" alt boyutundadır. "Hacettepe Kişilik Envanteri" nin alt boyutlarının ortalamalarında ise en yüksek ortalama (M= 11.13) ile "Psikotik belirtiler" alt boyutunda, en düşük ortalama (M= 7. 74) ile "Aile ilişkileri" alt boyutundadır. Yine araştırma bulgularına göre, "Çalgı Performansı Özyeterlik İnancı Ölçeği" ve "Hacettepe Kişilik Envanteri" arasında düşük düzeyde bir korelasyon vardır . "Çalgı Performansı Özyeterlik İnancı Ölçeği" ile alt boyutları arasında en yüksek korelasyon (r=.846; p<.01) ile "Genel çalgı performansı özyeterlik inancı" ve "Kendini yeterli görme" arasındadır. "Hacettepe Kişilik Envanteri" ile alt boyutları arasındaki ilişkide en yüksek korelasyon (r=.879; p<.01) ile "Genel kişilik özellikleri" ve "Kişisel uyum" arasındadır. Çalgı Performansı Özyeterlik İnancı Ölçeği" ile "Hacettepe Kişilik Envanteri" puanları arasında en yüksek korelasyonlar (r=-.240; p<.01) ile "Psikolojik göstergeler" ve " Nevrotik eğilimler"; (r=-.223; p<.01) ile "Psikolojik göstergeler" ve "Kişisel uyum"; (r=-.196; p<.01) ile "Kendini yetersiz görme" ve "Genel kişilik özellikleri"; (r=-. 184; p<.01) ile "Kendini yetersiz görme" ve "Sosyal uyum"; (r=-.181; p<.01) ile "Kendini yetersiz görme" ve "Kendini gerçekleştirme"; (r=-.174; p<.01) ile "Psikolojik göstergeler" ve "Duygusal kararlılık"; (r=-.171; p<.01) ile "Kendini yetersiz görme" ve "Aile ilişkileri" ; (r=.-163; p<.01) ile "Psikolojik göstergeler" ve "Genel kişilik özellikleri" boyutları arasındadır.

Araştırmanın Sonuçları ve Önerileri: Bu araştırmada öğretmen adaylarının çalgı performansı özyeterlik inançları ile kişilik özellikleri arasındaki ilişki incelenmiştir. Araştırmada müzik öğretmeni adaylarının çalgı performansı özyeterlik inançları ile kişilik özellikleri arasında düşük düzeyde bir korelasyon çıkmıştır.Diğer araştırmacılarca çalgı performansı özyeterlik inancını etkileyen diğer değişkenlerin neler olduğu belirlenebilir.

Anahtar Kelimeler: Öğretmen eğitimi, müzik eğitimi, çalgı eğitimi, müzik psikolojisi.

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An Investigation of Maternal Emotion Socialization Behaviors, Children's Self-Perceptions, and Social Problem-Solving Skills

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ABSTRACT

Purpose: The present study aims to investigate maternal emotion socialization, children's self-perception, and social problem-solving skills. In addition, this study describes the association between the levels of children's self-perception and social problem-solving skills. **Research Methods**: This is a quantitative study adopting a relational research design. The study group consists of 109 children aged 5--6 years, attending preschool in Kirklareli city center in the 2014--2015 school year, and their mothers. "The Coping with Children's Negative Emotions Scale (CCNES),"; "Demoulin Self Perception Test for Children,"; "Wally Social Problem-Solving Test (WSPST)," and a Personal Information Form were used to collect data. The collected data were analyzed through the SPSS 20.0 package program. **Findings**: The results of the current study demonstrated that there was a positive and high association between the total scores of children's self-perception and social problem-solving skills. As a result of the study, it was concluded that mothers' supportive and unsupportive reactions could not statistically explain their children's self-perception level and social problem-solving skills. **Implications for Research and Practice**: The results suggest that children's solving problems with their peers or with the individuals in their immediate environment by developing adequate strategies enables them to adopt a positive attitude about their self-perception. In addition, further studies on the process of children's emotion socialization can contribute to the relevant literature by investigating variables such as children's disposition, cultural traits, the social context in which they live, and socio-economic status of their family.

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Introduction

Recently, the term socialization, which includes acquisition of moral norms, behaviors, attitudes, values, roles, and symbols ensuring the continuity of cultures and societies, has also come to cover the emotions, which is described as "emotion socialization". Emotion socialization behaviors are not addressed completely separately from child-raising behaviors. Parents' emotion socialization behaviors are defined as parents' reactions to their children's emotions and the dialogue they engage in when their children experience negative emotions (Altan, Yagmurlu & Altan, 2010; Corapci, 2012; Eisenberg et al., 1998; Yagmurlu & Yavuz, 2013). In the literature, the emotion socialization process is mostly considered as emotional socialization behaviors.

Emotion socialization behaviors are discussed as the process by which children are taught when and how to express their emotions, causes of emotions, and the consequences that emotional reactions may have (Eisenberg, Cumberland & Spinrad, 1998; Southam-Gerow, 2014). Over the course of this process, when socializing their children's emotions, parents aim to regulate their children's emotions in a socio-culturally proper manner. Mothers produce supportive and unsupportive reactions to their children during the process of emotion socialization. Mothers' supportive reactions (reactions that are problem-focused, encouraging the expression of emotion, or emotion-focused) to their children's negative emotions have a positive impact, whereas unsupportive reactions (punitive and minimization reactions, or distress in parents) have a negative impact on children's emotional status and social competence (Eisenberg et al.,1998; McElwain, Halberstadt & Volling, 2007; Guven & Erden, 2013). One of the most important contributions to the child's social development is positive self-perception.

Studies investigating maternal emotion socialization have shown that there is a positive relationship between mothers' supportive emotional reactions and children's social competence (Blair et al., 2014; Eisenberg, Fabes & Murphy, 1996; Fabes et al., 2001; McElwain et al., 2007; Garner et al., 2008; Root & Stifter, 2010, Secer & Karabulut, 2016). Also, in the literature, children's positive social behaviors and positive self-perceptions are addressed as significant indicators of their social competence.

The development of the self is a dynamic process, which is shaped by the way individuals perceive themselves and their interactions with others in their immediate environment. Parents play a crucial role in a child's positive self-perception. Mothers' specific features, such as having strong communication skills, addressing situations positively, discussing negative emotions with their children and producing solutions have a key role on children's personality traits. The relationships that parents establish with their children, children's interpersonal relationships and interactions with others have a profound impact on children's developing a negative or a positive self-perception (Kagitcibasi, 2010; Gungor, 2011; Berk, 2013). Children who have positive self perception are also socially successful.

On the other hand, social problem-solving, which is essential for children's social development, refers to a cognitive, behavioral, and emotional process in which individuals evaluate effective solution options and choose the best alternative to handle difficult situations they encounter in their daily lives (Nezu, D'Zurilla & Nezu, 2012). Social problem-solving skills, that are applied to find the most effective solution; involve particular steps. These steps include determining a difficulty in a social environment and identifying the problem, producing alternative solutions to the problem by brainstorming, evaluating the possible outcomes of these alternatives, going over the solution alternatives and choosing the best one, implementing the best solution, reviewing how the solution is achieved, and carrying out a final assessment (Forgan, 2003; Elias & Tobias, 2005). When children follow these steps appropriately, they can solve the problems they face, be accepted by others, and reach the end of this process with useful experiences (Berk, 2013). It is also stressed that children's ability to deal with their negative emotions has great importance during an effective social problem-solving process. This is because the process also involves emotions. Children's emotions can generate positive behaviors and be constructive for the problem-solving process, as they can also cause aggressive behaviors and may be dysfunctional in this process (Cekici & Gucray, 2012). Parents producing supportive reactions to their children's negative emotions promote both the social and emotional development of their children.

Children need to have positive, well-regulated, and calm emotions to handle social problems that involve interaction with their peers and building friendships or other relationships with them in early childhood, during which children begin to participate in the social environment. Moreover, it is suggested that positive parental emotion socialization contributes to such competence in children, while negative emotion socialization is associated with children's social adaptation problems (Dowling, 2008; Zahn-Waxler, 2010; Berk, 2013). This is because emotionally healthy children build positive relationships more easily with their peers and with adults and they hold positive self-views.

As a result, parents' reactions to their children when they experience negative emotions, such as fear, worry, anxiety, and sadness, how parents interpret their children's emotions, the appropriateness of parents' reactions to these emotions, the level of parents' sensitivity or negligence towards their children's emotions affect children's development. Even though a number of studies have been conducted on emotion all socialization behaviors, researchers have just started to carry out such studies in Turkey, and there have been no studies discussing both children's self-perceptions and social problem-solving skills (Atay, 2009; Yagmurlu & Altan, 2010; Kilic, 2012; Altan et al., 2013; Guven & Erden, 2013; Okur & Corapcı, 2016). In addition, the present study is important as it investigates this subject in preschool children in Turkey, contributes to the literature, and enlightens other researchers for future studies. In this regard, the problem of this current study consists of maternal emotion socialization behaviors and 5--6 year--old children's self-perceptions and social problem-solving skills. In accordance with this objective, answers were sought for the following questions:

1. Do mothers' supportive and unsupportive emotion socialization behaviors vary by;
   a) children's gender?
   b) mothers' education level?

2. To what extent can mothers' supportive and unsupportive emotion socialization behaviors explain;
   a) children's self-perception levels?
   b) children's social problem solving skills?

3. Is there an association between children's self-perceptions and social problem solving skills?

Method

Research Design

This is a quantitative research study using a relational screening model and examines maternal emotion socialization behaviors, 5-6 year-old preschool children's self-perception levels, and their social problem solving skills (Buyukozturk et al., 2013).

Research Sample

The study group was composed of 109 children (47 girls, 62 boys, aged 5-6 years) who attended a preschool in Kirklareli city center during the 2014-2015 school year and their mothers. Convenience sampling was used as a non-random sampling method for creating the study group. As the study group consisted of children who were available, accessible, and willing to participate in the study, convenience sampling was used as a non-random sampling method (Creswell, 2014). Of all children included in the study, 43.2% (n=47) were girls and 56.8% (n=62) were boys. According to the distribution of the mothers' education level, it was reported that 21.1% (n=23) graduated from elementary school or less, 10.1% (n=11) graduated from middle school, 39.4% (n=43) graduated from high school, and 29.4% (n=32) graduated from the university.

Research Instrumentations and Procedures

In this current study, data was collected by using the "Coping with Children's Negative Emotions Scale (CCNES),"; "Demoulin Self Perception Test for Children,"; and "Wally Social Problem-Solving Test (WSPST)". In order to conduct the study, written permission was obtained from the Kırklareli Provincial Directorate of National Education, from the school administration, and from parents/guardians of participating children. These children were also asked for permission to ensure a voluntary participation. The scales used to collect data from the children were applied to each child individually, separate from the group and in a quiet and convenient place in their school. The "Coping with Children's Negative Emotions Scale, on the other hand, was applied when the mothers came to school to pick up their children. The mothers were provided with necessary information in advance about how to fill out these scales. A brief explanation on data collection tools was also given.

The Coping with Children's Negative Emotions Scale (CCNES). The Coping with Children's Negative Emotions Scale, which was developed by Fabes, Eisenberg and Bernzweig (1990) to measure parents' behaviors when dealing with their children's negative emotions, consisted of 12 scenarios involving different emotions that children experience, such as anger, fear, sadness, anxiety, shame, and disappointment. Six types of reactions were established according to the scenarios. This scale was adapted to Turkish by Ölçek, Yağmurlu and Altan (2010) and its internal consistency was determined by Cronbach's alpha coefficient. These internal consistency coefficients ranged between .54 and .88 (Altan et al., 2013; Yağmurlu & Altan, 2010).

The Demoulin Self Concept Test. The Demoulin Self Concept Test, an assessment instrument providing a systematic and comparable analysis of children's individual self-concept, was developed by Donal Demoulin between 1995-1998. Turasli (2014) adapted the Demoulin Self Concept Test to Turkish and also carried out validity and reliability studies. This scale was adapted to Turkish with 29 items in total, 14 for self-efficacy and 15 for self-esteem. The maximum reliability was achieved (0.88) by Cronbach's alpha and Spearman methods, whereas the Guttman method produced the minimum reliability (0.88). The test-retest reliability coefficient was found significant at levels of .607 and .01.

Wally Social Problem-Solving Test (WSPST). The Wally Social Problem-Solving Test was developed by combining Spivak and Shure's (1985) Preschool Problem-Solving Test and Rubin and Krasnor's (1986) Child Social Problem-Solving Test to measure children's social problem-solving skills both qualitatively and quantitatively. In this scale, peer problems (peer relations) and adult problems (object acquisition) were addressed as sub-scales (Dereli, 2008). Validity and reliability studies of the Turkish version of the Wally Social Problem-Solving Test were conducted by Yilmaz and Tepeli (2013). The items' internal consistency reliability was calculated by using the KR 20 method and the reliability coefficient was found to be .79. Another indicator of the test's reliability was that it was analyzed with the test-retest reliability method. The scores between two scales were assessed by the pearson product moment correlation coefficient and the correlation between two measurements was detected as .96.

Personal information form. This form, created to determine the children's demographic characteristics, is composed of questions on the children's age, gender, and their mothers' education level.

Data Analysis

In this study, the collected data were analyzed through the SPSS 20.0 package program. When analyzing the differences in mothers' supportive and unsupportive emotional reactions by different variables, Kolmogorov-Smirnova and Shapiro-Wilk tests were performed to assess the homogeneity of distribution. Because the variables were not normally distributed, Mann-Whitney U and Kruskal Wallis-H tests were performed during an assessment of differences between the groups. In categorical variables, gender status was analyzed by t-test as it had only two categories. Multiple regression analysis was performed to determine to what extent mothers' supportive and unsupportive emotional reactions explained their children's self-perception

levels and social problem-solving skills. On the other hand, the pearson product moment correlation coefficient analysis was carried out to find the associations between children's self-perception levels and social problem-solving skills (Buyukozturk et al., 2013).

Results

An unrelated t-test and Mann-Whitney U test were conducted to determine whether maternal emotion socialization behaviors varied by child's gender. The results are presented in Table 1.

Table 1

Unrelated T-Test of Mothers' Supportive and Unsupportive Emotion Socialization Behaviors by Children's Gender and the Results of the Mann-Whitney U-Test

Mothers' Supportive Reactions

Gender	***n***	***M***	***S***	***sd***	***t***	***p***
Female	47	143.50	13.207	106	-1.133	0.260
Male	62	146.58	14.513			

Mothers' Unsupportive Reactions

Gender	*n*	*Mean Ranks*	*Total Ranks*	*U*	*p*
Female	47	57.16	2629.50	1303.50	.446
Male	62	52.52	3256.50		

*p<0.05

According to Table 1, it was found that mothers' supportive *[t(106)= -1.133, p>0.05]* and unsupportive reactions to their children's negative emotions did not show any significant difference by children's gender *[U=1303.50, p>0.05].*

The results of the Kruskal Wallis H test which was performed to analyse whether maternal emotion socialization behaviors varied by mothers' education level are demonstrated in Table 2.

Table 2

Kruskal Wallis H- Test's Results of Maternal Emotion Socialization Behaviors According to Mothers' Education Level

	Education Level	***n***	***Mean Ranks***	***sd***	***X²***	***p***
Mothers' Supportive Reactions	Elementary School or less	23	49.13	3	1.04	.790
	Middle School	11	56.95			
	High School	43	57.13			
	University	32	55.69			
Mothers' Unsupportive Reactions	Elementary School or less	23	65.89	3	4.99	.172
	Middle School	11	49.82			
	High School	43	56.23			
	University	32	47.30			

*p<0.05

Table 2 shows that mothers' supportive *[X^2 (sd=3, n=109)= 1.04, p>0.05]* and unsupportive reactions to their children's negative emotions do not show any difference by the level of education *[X^2 (sd=3, n=109)= 4.99, p>0.05].*

A multiple regression analysis was carried out to determine to what extent mothers' supportive and unsupportive emotional reactions indicated their children's self-perception levels and the results are demonstrated in Table 3.

Table 3

A Multiple Regression Analysis of Children's Self-Perception Levels According to Mothers' Supportive and Unsupportive Reactions to Children's Negative Emotions

Variables	*B*	*β*	*t*	*p*	*Binary r*	*Partial r*
Mothers' Supportive Reactions	-.020	-.038	-.396	.693	-.039	-.038
Mothers' Unsupportive Reactions	-.075	-.148	-1.546	.125	-.149	-.148
Constant	79.887		9.882	.000		
R= 0.153 R2 = 0.023						
F (2.106) = 1.277 p= 0.283						

As seen from Table 3, mothers' supportive and unsupportive emotional reactions cannot explain their children's self-perception levels in a statistically significant manner. In addition, correlations showed that there was no statistical relationship between mothers' supportive/unsupportive emotional reactions and their children's self-perception scores *(p>0.05).*

A multiple regression analysis was performed to determine to what extent mothers' supportive and unsupportive emotional reactions explained their children's social problem-solving skills and the results are presented in Table 4.

Table 4

A Multiple Regression Analysis of Children's Social Problem-Solving Skills According to Mothers' Supportive and Unsupportive Reactions to Children's Negative Emotions

Variables	*B*	*β*	*t*	*p*	*Binary r*	*Partial r*
Mothers' Supportive Reactions	.003	.019	.196	.845	.018	.019
Mothers' Unsupportive Reactions	-.015	-.099	-1.021	.310	-.099	-.099
Constant	11.502					
R= 0.100 R^2 = 0.010						
F (2.106) = 539 p= 0.585						

Table 4 demonstrates that mothers' supportive and unsupportive emotional reactions cannot offer a statistically significant explanation for their children's social problem-solving skills. Moreover, correlations showed no statistical relationship between mothers' supportive/unsupportive emotional reactions and their children's total social problem-solving skill scores and sub-scale scores *(p>0.05).*

As the variables showed normal distribution, correlations between the variables were analyzed with the pearson product moment correlation coefficient to find an association of children's self-esteem, self-efficacy and total self-perception scores with their social problem-solving skills and sub-scales (peer-related and adult-related social problem-solving skills). The results of the analysis are shown in Table 5.

Table 5

Pearson Product Moment Correlation Coefficient Analysis of the Relationship of Children's Total Social Problem Solving Skill Scores and Its Sub-Scales with Their Total Self-Perception Scores and Its Sub-Scales

	Self-Efficacy Scores	Self-Esteem Scores	Peer-related Social Problem-Solving	Adult-related Social Problem-Solving	Total Social Problem-Solving Scores	Total Self-Perception Scores
Self-Efficacy Scores	1	*				
Self-Esteem Scores	.744**	1				
Peer-related social problem-solving	.611**	.616**	1			
Adult-related social problem-solving	.395**	.467**	.375**	1		
Total Social Problem-Solving Scores	.635**	.667**	.935**	.680**	1	
Total Self-Perception Scores	.943**	.924**	.657**	.459**	.695**	1

*p<0.05

Table 5 shows that there is a positive and high relationship between children's total self-perception scores and social problem-solving skills *(p<0.05).* Also, correlations between variables indicate a moderate, positive, and statistically significant relationship of children's self-efficacy and self-esteem with their peer-related and adult-related social problem-solving skills *(p<0.05).*

Discussion and Conclusion

This part discusses the findings of the current study and presents the results and recommendations. The first finding of the study revealed that mothers' supportive and unsupportive reactions to their children's negative emotions showed no significant difference by children's gender. In view of this finding, it can be suggested that children's gender has no impact on maternal emotion socialization behaviors. Studies conducted by Fabes et al. (2001) and McElwain et al. (2007) concluded that mothers' supportive emotional reactions did not show a significant difference according to children's gender. Another study by Kilic (2012) and Yagmurlu and Altan (2010) investigating emotion socialization behaviors of preschoolers' mothers also found that maternal emotion socialization behaviors did not differ by children's gender. These results share similarity with the finding mentioned above. In addition, this research indicates that mothers' supportive and unsupportive reactions to their children's negative emotions do not show a significant difference by their education level. Kilic (2012) found that maternal emotion socialization behaviors showed no difference by mothers' education level. On the other hand, a study carried out by Atay (2009) to investigate emotion socialization behaviors in Turkish culture, concluded that there was no association between demographic variables, such as mothers' education level, income level of the family, and any one set of emotion socialization reactions. In view of these results, it can be suggested that mothers' education level has no effect on maternal emotion socialization behaviors.

Another result of the present study found that mothers' supportive and unsupportive emotional reactions did not represent their children's self-perception levels. This is similar to what Eisenberg, Liew and Piada (2001) found in their studies, concluding that no significant relationship existed between mothers' emotion expression patterns and their children's self-regulations. In the literature, findings related to parental emotion socialization behaviors and children's social and emotional features have been obtained from correlational studies that do not allow for drawing conclusions based on reasons (Corapci, 2012). Keller, Voelker and Yovsi (2005) underline that socio-emotional development should be considered together with the environment a child lives in, and that sociocultural norms and values shape parental behaviors, the child's self-concept development, and socio-emotional skills. In the literature, it is suggested that the process of emotion socialization varies by culture and environment. The fact that this study found no significant relationship between mothers' supportive/unsupportive reactions and children's self-perception scores might be due to excluding the variables "culture" and "environment" that children lived in (Altan vd., 2013; Eisenberg et al., 1998; Fabes et al., 2001; Guven & Erden, 2013).

The current study also revealed that mothers' supportive and unsupportive emotional reactions could not explain their children's social problem-solving skills in a significant manner. Garner et al. (2008) and McElwain et al. (2007) found a positive and significant relationship between mothers' supportive reactions to their children's

emotions and children's positive social behaviors. Furthermore, relevant studies also suggest that there is a positive association between mothers' unsupportive reactions to their children and children's problem behaviors towards their peers (Blair et al., 2014; Fabes et al., 2001; Garner et al., 2008; Root & Stifter, 2010). The fact that this study found no significant relationship between mothers' supportive/unsupportive reactions and children's social problem-solving skills might result from its excluding one variable, children's temperament, which affects parental emotion socialization behaviors and is considered an important factor in this process. This is supported by an argument presented by Zahn-Waxler (2010); suggesting that the reason children are easygoing in their social relationships and display positive social behaviors may be due to other positive personality traits, such as having an easy temperament, rather than a positive emotion socialization process.

In this study, it was also determined that there was a significant relationship between children's self-perceptions and social problem-solving skills. A study performed by Hamarta (2009) found a positive and significant association between children's social problem-solving skills and high level of self-perception. Kumru, Sayil & Yagmurlu, (2011) conclude that a child's self-perception indicates positive peer management and positive social behaviors, rather than maternal emotion socialization goals. These studies mentioned above support the result of this research. D'Zurilla, Cahng & Sanna (2003) also suggest that there is a significant relationship between aggression, social problem-solving skills, and self-esteem, that low self-esteem affects the process of finding effective methods to deal with problems, and that individuals' positive approach to the problem is associated with their self-efficacy.

To conclude, the present study shows that there is a statistically significant association between children's social problem-solving skills and their self-perceptions, and that social problem-solving skills are essential for children to build healthy relationships in their social lives. In this respect, by following effective strategies, children's ability to solve problems with their peers or with other people in their immediate environment may enable them to develop a positive self-perception. Additionally, this study found no quantitative relationship between maternal emotion socialization behaviors, children's self-perceptions and social problem-solving skills. This result proves that understanding the effect of emotion socialization behaviors fully can only be possible with comprehensive studies that measure parents' and children's reactions multiple times, investigate the changes takinge place over time, and determine who influences whom and how. In light of these results, educators in preschools can organize family activities that create an opportunity for parents to discuss negative emotions with their children and to explain expression patterns of negative emotions with informative techniques, which enable them to be positive models for their children. In addition, future studies on the process of emotion socialization can contribute to the literature by examining the variables, such as children's temperament, social context and the culture in which they live, and the socio-economic structure of the family.

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Annelerin Duygu Sosyalleştirme Davranışları ile Çocukların Benlik Algısı ve Sosyal Problem Çözme Becerilerinin İncelenmesi

Atıf:

Ozkan, H.K., & Aksoy, A. B. (2017). An investigation of maternal emotion socialization behaviors, children's self-perceptions, and social problem-solving skills**.** *Eurasian Journal of Educational Research*, 67, 125-139 http://dx.doi.org/10.14689/ejer.2017.67.8

Özet

Problem Durumu: Duygu sosyalleştirme davranışları çocuk yetiştirme davranışlarından ayrı olmamakla beraber çocukların olumsuz duygular yaşadıkları durumlarda, anne ve babaların çocuklarının duygularına verdikleri tepkiler ve kurdukları iletişim olarak tanımlanmaktadır. Korku, kaygı, endişe ve üzüntü gibi olumsuz duygular yaşanılan anlarda anne-babaların çocuklarının duygularını nasıl anlamlandırdıkları, tepkilerinin uygunluğu, duygularına duyarlıkları ve ihmalleri çocukların gelişimini etkilemektedir. Duygu sosyalleştirme sürecinde anneler çocuklarına destekleyici ve destekleyici olmayan tepkiler gösterirler. Annelerin çocuklarının olumsuz duyguları karşısında gösterdikleri destekleyici tepkilerinin (probleme odaklı, duygu ifadesini cesaretlendirici, duygu odaklı tepkiler) çocuğun duygusal durumu ve sosyal yeterlilikleri üzerinde olumlu etkileri, destekleyici olmayan tepkilerinin (cezalandırıcı, küçümseyici tepkiler, ebeveynde sıkıntı) olumsuz etkileri vardır. Alan yazını incelendiğinde, çocuğun olumlu sosyal davranışlarının ve olumlu benlik algısının sosyal yeterliliğin önemli göstergeleri olarak ele alındığı ve çocuklarının sosyalleşme sürecinde annelerin sosyal dedektif görevi yaptığı belirtilmektedir. Çocukların benlik algıları ve sosyal problem çözme becerilerinin sosyal gelişimleri ile bağlantılı olduğu düşünüldüğünde, annelerin duygu sosyalleştirme davranışları ile ilişkilerinin belirlenme gerekliliği ortaya çıkmaktadır.

Araştırmanın Amacı: Araştırmada, annelerin duygu sosyalleştirme davranışları ile çocukların benlik algısı ve sosyal problem çözme becerilerinin incelenmesi amaçlanmıştır. Ayrıca araştırmada; çocukların benlik algısı düzeyleri ile sosyal problem çözme beceri düzeyleri arasındaki ilişki betimlenmiştir.

Araştırmanın Yöntemi: Bu araştırma, nicel modelde olup ilişkisel desende tasarlanmış bir çalışmadır. Araştırmanın çalışma grubunu, Kırklareli il merkezinde 2014-2015 eğitim-öğretim yılında okul öncesi eğitim kurumuna devam eden beş-altı yaş grubu 47'si kız 62'si erkek olmak üzere 109 çocuk ve anneleri oluşturmaktadır. Veri toplama aracı olarak "Çocukların Olumsuz Duygularıyla Baş Etme Ölçeği (ÇODBEÖ)", "Demoulin Çocuklar için Benlik Algısı Testi", "Wally Sosyal Problem Çözme Testi (WSPÇT)" ve Kişisel Bilgi Formu kullanılmıştır. Elde edilen veriler SPSS 20.0 istatistik paket programı kullanılarak analiz edilmiştir. Annelerin destekleyici ve destekleyici olmayan duygu tepkilerinin çocukların cinsiyetine ve annelerin öğrenim durumuna göre farklılığı incelenirken normallik testi sonucuna göre ilişkisiz t-Testi,

Mann Whitney U Testi ve Kruskal Wallis H-Testi kullanılmıştır. Çocukların benlik algıları düzeyini ve sosyal problem çözme becerilerini annelerinin destekleyici ve destekleyici olmayan duygu tepkilerinin ne derece açıkladığını belirlemek üzere çoklu regresyon analizi kullanılmıştır. Çocukların benlik algısı düzeyleri ve sosyal problem çözme becerileri arasındaki ilişkileri belirlemek için Pearson Momentler Çarpımı Korelasyon Katsayısı analizi yapılmıştır.

Araştırmanın Bulguları: Araştırma sonucunda, çocukların benlik algısı toplam puanları ile sosyal problem çözme beceri toplam puanları arasında pozitif yönde yüksek düzeye yakın bir ilişki bulunmuştur. Ayrıca değişkenler arası ilişkilere bakıldığında, çocukların hem akranlara hem de yetişkinlere yönelik sosyal problem çözme beceri puanları ile öz saygı ve öz yeterlilik puanları arasında pozitif yönde, orta düzeyde, istatistiksel olarak anlamlı ilişkiler olduğu tespit edilmiştir. Araştırma sonucunda, annelerinin destekleyici olan ve destekleyici olmayan duygu tepkilerinin istatistiksel olarak çocukların benlik algısını ve sosyal problem çözme becerilerini açıklayamadığı bulgusuna ulaşılmıştır. Annelerin çocuklarının olumsuz duygulara yönelik destekleyici olan ve olmayan tepkilerinin ise öğrenim durumlarına ve çocuklarının cinsiyetine göre anlamlı bir farklılık göstermediği bulunmuştur.

Araştırmanın Sonuç ve Önerileri: Araştırma sonucunda, annelerin destekleyici ve destekleyici olmayan duygu tepkileri ile çocukların sosyal problem çözme ve benlik puanları arasında istatistiksel olarak anlamlı derecede farklılık görülmezken, çocukların sosyal problem çözme ve benlik puanları arasında istatistiksel olarak anlamlı derecede ilişki bulunmuştur. Araştırmadan elde edilen sonuçlar doğrultusunda, çocukların arkadaşlarıyla ya da çevrelerinde kendisine yakın bireylerle yaşadıkları problemleri uygun stratejiler kullanarak çözümlemeleri, benlik algılarına yönelik olumlu tutum geliştirmelerini sağlar. Bu çalışma nicel modelde yürütüldüğü için gelecekte daha kapsamlı bilgilere ulaşmak amacıyla nitel ve nicel yöntemlerin bir arada alındığı çalışmalar planlanabilir. Bununla birlikte, duygu sosyalleştirme süreci ile ilgili yapılacak çalışmalarda çocuğun mizacı, içinde yaşadığı sosyal bağlam, kültürel özellikler ve ailenin sosyo-ekonomik yapısı gibi değişkenlerin de incelenmesi alan yazına katkı sağlayabilir.

Anahtar Kelimeler: Duygu sosyalleştirme, benlik, okul öncesi dönem, sosyal gelişim.

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Examining Graduate Dissertations in the Field of Critical Thinking: A Case from Turkey[1]

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content analysis

ABSTRACT

Purpose: The aim of this study is to conduct content analyses of graduate dissertations about critical thinking skills in the field of educational sciences in Turkey and to document general trends in dissertations. **Research Methods**: This study is constructed using qualitative research methods and techniques. A document review was used to gather data in the study. One hundred eighty-six dissertations, available from the National Dissertations Center in the Higher Education Council, have been analyzed in terms of various variables. **Findings:** Depending on the gathered data, it is clear that critical thinking has been studied since 1999 and a majority of the dissertations have been written for a master's degree. It is also revealed that descriptive research has been more favored than experimental research. Studies have been primarily conducted through quantitative data gathering methods. The dissertations have mainly been written by undergraduate students using primarily data collection tools consisting of scales. **Implications for Research and Practice**: This study reveals which theses were studied in Turkey mostly in terms of research methods, sample/study group characteristics, data collection tools, and subject areas concerning critical thinking. Therefore, new research about critical thinking should focus on experimental designs and in-depth analyses of critical thinking through qualitative methods.

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Introduction

Thinking is one of the most significant features of mankind and an inherent part of our daily lives. Complex problems which we encounter throughout our lives necessitate higher order thinking skills. One such skill, critical thinking, is vital to adapt to a complex world. It is a strategy for active and systematic questioning and problem solving and enables us to understand, evaluate and investigate facts, to solve existing problems and to make a particular decision. Levy (2010) has pointed out some principles of critical thinking skills, such as realizing relations among ideas, comprehending poorly-stated ideas, reasoning, understanding guidance through expressions and being objective and open-minded.

Critical thinking has three dimensions, comprising analytic evaluating and creative components. Critical thinkers analyze thoughts in order to evaluate, and they evaluate them in order to improve (Paul & Elder, 2006). It is a way of thinking through analyzing, evaluating and reconstructing matter, content or a problem. It is a process in which an individual guides, disciplines, observes and corrects his own thinking. Briefly, critical thinking is self-directed, self-disciplined, self-monitored and self-regulated thinking (Paul & Elder, 2002). While plausibility, clarity, depth, and intentionality are the main features of critical thinking; analyzing, interpretation, inference, self-confidence, problem solving, decision making, and effective communication emerge as the required skills (Ennis, 1989; Facione, 1990; McKnown, 1997; Halpern, 2002; Paul & Elder, 2006; Fisher, 2007; Nosich, 2012). Critical thinkers accept that it is not the only true way to understand an argument (Mayer & Goodchild, 1990). People who use critical thinking skills effectively try to truly understand situations and demonstrate them clearly; they also consider different opinions while doing so. They have the skills to explain an opinion with its bases, ask appropriate questions and evaluate it; and to make logical interferences and to create assumptions on dissertation bases. Moreover, they create all dissertations fast, efficiently, responsively and in a convincing manner (Ennis, 2011). The definition by Ennis (2011) contains the most important characteristics of critical thinking. According to Browne & Keeley (2010), it is necessary for critical thinker to possess values such as autonomy, curiosity, and lowliness in addition to respecting others' thoughts.

The ability to think critically has been identified as one of the most important competencies of the 21st century (Voogt & Roblin, 2012). Especially in recent years, studies on critical thinking have increased (e.g., the research of Cakmak & Civelek (2013), Emir (2013), Gedik (2013), Kucuk & Uzun (2013), Turan, Aydin, & Ugulu (2013), Alkin-Sahin, Tunca & Ulubey (2014), Børhaug (2014), Condon & Valverde (2014), Demir & Kaya (2015), Kocak, Kurtlu, Ulas & Epcacan (2015), Kucukali & Akbas (2015), Sahin, Cakmak & Hacimustafaoglu (2015), Atabaki, Keshtiaray & Yarmohammadian (2015), Cai & Sankaran (2015), Gupta, Burke, Mehta & Greenbowe (2015), Aybek & Aslan (2016), Tekin, Aslan, & Yagiz (2016), Ulger (2016), etc.).

It is important to analyze dissertations to provide guidance to new research. Determining how broad critical thinking skills are dealt with and how thoroughly

they need to be studied is significant for further research to progress cumulatively. Analyzing the scientific dissertations in a field of study will provide information about how deep and extensive it is and reveals a general view of the field in question. Trends and findings of studies in the field of education play a significant role in guiding researchers who want to carry out study on related fields. This study, designed in the light of the needs mentioned, has been conducted in order to systematically examine the graduate dissertations concerning critical thinking skills in educational sciences and present a general overview of the scientific studies, such as graduate dissertations, about critical thinking skills in Turkey. Given the trend of dissertations conducted on critical thinking skills, this study, therefore, contributes to the literature. A literature review shows that there are not any studies regarding analysis of graduate dissertations on critical thinking skills. It is believed that the results of this study will help new researchers to extend the scope of the academic studies which they will do in the future and to make relevant decisions.

Sub-problems of the research are defined as follows. Concerning graduate dissertations on critical thinking in educational sciences, how are they distributed in terms of:

1. Years and levels
2. Research methods (designs)
3. Data collection methods
4. Characteristics of samples
5. Data collection tools
6. Distribution of studies carried out in an experimental method
   A. In terms of experimental designs
   B. In terms of subject areas/courses in which research is conducted

Method

Research Design

This study has been constructed using qualitative research methods and techniques. Qualitative research provides conclusions to be presented based on codes and categories by reading data one after the other (Merriam, 1998, p.58). Document review was used to gather data in the study. Document review includes the analysis of written materials comprising information about cases to be studied (Yildirim & Simsek, 2011).

Research Sample

The dissertations analyzed in this study are limited to those accessible as full PDF files or abstracts through the National Dissertations Center in Higher Education Council since March 1, 2015. For that reason, no sampling method has been used in this study. Two hundred thirteen registered dissertations have been accessed through the Council by scanning the key term "critical thinking."One hundred fifty-three dissertations were at a Master's degree level and sixty of them were doctoral theses. In addition, 173 of the dissertations were fully accessible whereas 40

dissertations were restricted. The information needed for the restricted dissertations was supplied by means of abstracts through the National Dissertations Center. Of all the papers analyzed, 191 were written in Turkish and 22 were written in English. Of the 213 dissertations, 80 were from the Educational Sciences Institute, 13 from the Institute of Science, 16 from the Health Institute and 104 from the Institute of Social Sciences. After a general overview, 27 of the dissertations were omitted due to methodological differences and the lack of a clear basis for the information needed; thus, content analysis was carried out with 186 dissertations.

Research Instruments and Procedures

In order to analyze graduate dissertations concerning critical thinking skills in terms of specific variables, a thesis analysis form, developed by the researchers, was used as the data collection tool. This form consists of sections for release years, levels, research methods, data collection methods, characteristics of sample/study group, data collection tools, designs used for experimental studies and subject areas/courses in which the research was performed. In addition, in order to separately analyze the dissertations using descriptive and experimental models, categories were formed by determining features and sizes of the dissertations using two distinctive methods. Afterwards, each thesis was analyzed by coding with this form and the data was saved.

Validity and Reliability

For internal validity of this research, conceptual framework was used as a guide in the process of preparing data collecting tools and collecting data. In order to increase external validity, which is related to generalizability of the results, it was briefly explained how data were collected and which methods were followed in the data analysis process for all information related to how the research was conducted. Concerning internal reliability, research questions were stated obviously and presented as consistent with other steps of the research. Additionally, analysis was examined independently by two researchers and comparisons of results of analysis were done for reliability of data analysis. As a result of comparisons, it was determined which analysis results were close and a consensus was reached regarding categories and sub-categories. Necessary arrangements were completed for external reliability in regard to data collecting tools and data obtained and findings from the results of the data collection were determined by expert opinions.

Data Analysis

Content analysis was used to analyze the collected data. Content analysis is defined as a general title for some text analysis that includes comparisons, contrasts, and categorization of data in order to test the given hypothesis. Raw materials for content analysis could be any documents or communication media (Gall, Gall & Borg, 2007). In other words, content analysis is a kind of scanning conducted to reveal some features of a particular text, book, or document by digitizing those features.

In this process, digitizing scales must be developed in advance (Karasar, 2009). Dissertations classified by the researchers were discussed in the group and conflicts

about the classifications were resolved in order to increase the reliability of the data. Data collected with thesis classification forms have been saved in a database. Data from this database was then analyzed with SPSS 16.0 and the results were presented descriptively after being transformed into frequency and percentage tables.

Results

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Release Years and Levels

First of all, in this research graduate dissertations concerning critical thinking were analyzed in terms of their release year and level. The results showed that graduate dissertations included Master's and Ph.D. dissertations, and the release years spanned the period from 1999 to 2014. Table 1 shows the descriptive statistics about Master's and Ph.D. dissertations concerning critical thinking in terms of their release years.

Table 1

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Years and Levels

Level	Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Master's	f	1	0	1	3	2	2	6	3	6	12	18	17	21	15	15	9	131
	%	0.5	0	0.5	1.6	1.1	1.1	3.2	1.6	3.2	6.5	9.7	9.1	11.3	8.1	8.1	4.8	70.4
Ph.D.	f	0	0	2	0	0	2	2	4	7	3	4	4	7	5	10	5	55
	%	0	0	1.1	0	0	1.1	1.1	2.2	3.8	1.6	2.2	2.2	3.8	2.7	5.4	2.7	29.6
Total	f	1	0	3	3	2	4	8	7	13	15	22	21	28	20	25	14	186
	%	0.5	0	1.6	1.6	1.1	2.2	4.3	3.8	7.0	8.1	11.8	11.3	15.1	10.8	13.4	7.5	100

As Table 1 indicates, the fewest number of dissertations were in 1999 (f=1) and the greatest number of dissertations were in 2011 (f=28). It is seen in the table that from the year 1999 to 2014, the number of dissertations about critical thinking gradually increased, whereas in 2014, the number dropped to 14. However, this decrease is thought to be caused by a delay in transferring dissertations to the digital platform. Thus, considering the distribution of studies in terms of years, it can be said that there is an ongoing interest for researchers in critical thinking. In addition, out of a total number of 186 dissertations, 131 were for master's degrees (70.4%) and 55 were for doctoral degrees (29.6%). This indicates that more doctoral studies are conducted on the topic of critical thinking.

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Research Methods

The dissertations analyzed in this study are generally classified descriptive and experimental categories in terms of research methods. One scale development study is presented separately, as it could not be classified in either category. The distribution of graduate dissertations concerning critical thinking in terms of research methods is given in Table 2.

Table 2

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Research Methods

Research Method	f	%
Descriptive	109	58.6
Experimental	76	40.9
Scale Development	1	0.5
Total	186	100

Table 2 indicates that 109 studies (58.6%) were conducted using a descriptive method while 76 studies (40.9%) used an experimental method. There is one dissertation that used scale development concerning critical thinking. It is apparent that the number of descriptive studies is much greater than the other methods.

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Data Collection Methods

The methods of the studies analyzed are categorized in different ways. Dissertation studies are analyzed in three categories in terms of data collection, namely qualitative method (observation, interview and document review), quantitative methods (some statistical techniques applied), and mixed methods (both qualitative and quantitative). Distribution of graduate dissertations concerning critical thinking in terms of data collection methods is given in Table 3.

Table 3

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Data Collection Methods

Data Collection Method	f	%
Quantitative	123	66.1
Qualitative	11	5.9
Mixed	51	27.4
Unspecified	1	0.5
Total	186	100

Table 3 indicates that 123 studies (66.1%) used a quantitative data collection technique, 11 studies (5.9%) used a qualitative data collection technique, and 51 studies (27.4%) used a mixed method in which both qualitative and quantitative methods are taken into consideration. In one study the data collection method was

unspecified. Quantitative data collection methods provide research with the opportunity to reach more generalizable but more superficial data, whereas qualitative data has low generalizability but presents deeper data. In the dissertations analyzed in this study, it is clear that quantitative data was preferred. This is followed by the dissertations in which a mixed method was used and the number of studies with qualitative method was relatively small. This indicates that more studies carried out with qualitative or mixed methods are needed.

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Sample Characteristics

Descriptive and experimental studies were analyzed in terms of sample/study group characteristics. The results of this analysis show that the research related to critical thinking was carried out with varying participants. Distribution of participants as the sample group of graduate dissertations concerning critical thinking is given in Table 4.

Table 4

Distribution of Graduate Dissertation Concerning Critical Thinking in Terms of Sample Characteristics

Participants		*Descriptive*		*Experimental*		*Total*	
		f	%	**f**	%	**f**	%
University Students	Teacher candidates	28	25.7	21	27.6	49	26.3
	Students of other faculties	9	8.3	6	7.9	15	8.1
Primary school students (1st, 2nd, 3rd, 4th grades)		6	5.5	21	27.6	27	14.5
Secondary school students (5th , 6th, 7th, and 8th grades)		15	13.8	17	22.4	32	17.2
Teachers		26	23.9	1	1.3	27	14.5
High school Students		10	9.2	10	13.2	21	11.3
Administrators		2	1.8	0	0	2	1.1
Various		6	5.5	0	0	6	3.2
Lecturers		1	0.9	0	0	1	0.5
*Others		6	5.5	0	0	6	3.2
Total		109	100	76	100	185**	100

*6 studies are under "others" category as they are document review studies.

**1 study is excluded as it was a scale development study.

As Table 4 demonstrates, the studies generally consisted of university students (34.4%) and primary/secondary school students (31.7%). In addition, after a close look, 49 of the university students (26.3%) were teacher candidates and the remaining 15 studies (8.1%) deal with students from other faculties. It is surprising that there were relatively few studies with administrators (1.1%), important participants in the education process, and lecturers (0.6%). It can be said that

researchers preferred to work with university students because the sample is easy to access. In six of the studies mentioned, data have been gathered from various participant categories, such as students at different grades, teachers and students, lecturers and university students. It is thought that gathering data from various sample groups will enrich study results. Six other studies in the research had no participants since they were document analyses.

When samples from descriptive and experimental studies are examined in detail, it is clear that studies with teacher candidates outnumbered other studies. Teachers were preferred in descriptive studies and primary school students were preferred in experimental studies. In addition, there seems to be only one study with teachers in experimental studies, but there are no studies with administrators or lecturers.

Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Data Collection Tools

When data collection tools used in dissertations concerning critical thinking are examined, it is seen that more than one tool could be used in a single study and scales are mostly used (f=147) as data gathering tools in dissertations. Interview forms (f=32) and document review (f=20) are the most commonly preferred data collection tools after scales. It is also revealed that some previously-developed scales to assess critical thinking skills were selected in the dissertations. Scales for critical thinking used in the dissertations (f=147) were thoroughly examined and the results are presented in Table 5.

Table 5
Distribution of Graduate Dissertations Concerning Critical Thinking in Terms of Scales Applied

Scale Applied	f
California Critical Thinking Disposition Inventory (Facione, Facione & Giancarlo, 1998)	52
Cornell Critical Thinking Test (Ennis & Millman, 1985)	28
Watson- Glaser Critical Thinking Appraisals (1937)	18
Critical Thinking Scale (Demir, 2006)	7
The Ennis-Weir Critical Thinking Essay Test (Ennis & Weir, 1985)	3
Critical Thinking Scale (Semerci, 2000)	2
Holistic Critical Thinking Scoring Rubric (Facione & Facione, 1994)	2
Critical Thinking Tendency Scale (Ricketts & Rudd, 2005)	1
Critical Thinking Skills Scale (Ozdemir, 2005)	1
Critical Thinking Scale (Derelioglu, 2004)	1
Others	32
Total	147

Table 5 reveals that the scale developed by Facione, Facione and Giancarlo (1998) and adapted to Turkish by some researchers was more frequently used (f=52) than other scales in the studies about critical thinking. The Cornell Critical Thinking Test

(f=28) and Watson-Glaser Critical Thinking Appraisals (f=19) were also adapted to Turkish by the researchers and are the most preferred scales to profound critical thinking competency. The Critical Thinking Scale by Demir (2006) in the Turkish language (f=7) was also used by various researchers. Finally, scales developed and used by researchers for their own studies are classified under the "others" category.

Distribution of Graduate Dissertations with Experimental Methods

Distribution in terms of experimental designs used. Some types of experimental designs such as pretest-posttest control group experimental designs, are stronger or have higher scientific value than others, such as one-group experimental designs (Karasar, 2009). Therefore, dissertations were examined in terms of experimental designs. The distribution of experimental dissertations concerning critical thinking in terms of their designs is given in Table 6.

Table 6

Distribution of Experimental Dissertations Concerning Critical Thinking in Terms of Experimental Designs Used

Experimental Design	*f*	*%*
Pretest-Posttest Control Group Experimental Design	64	84.2
The One-Group Pretest-Posttest Quasi-Experimental	3	3.9
The One-Group Repeated Measures Design	1	1.3
Unspecified	8	10.5
Total	76	100

Table 6 indicates that experimental dissertations are generally conducted using a pretest-posttest control group experimental design (f=64). Although there are different types of experimental designs in the literature, the dissertations analyzed in this research focused generally on three types of experimental designs. Also the designs of experimental dissertations were not clearly explained.

Distribution in terms of fields or subjects in which research is conducted. Experimental dissertations are analyzed according to the subject areas in which they are conducted and the sample from which they are carried out. Results reveal that experimental studies were carried out with university students in their courses of English (2), Classroom Management (2), Science History (1), Principles and Methods of Teaching (2), Plant Physiology (1), General Physics Lab (1), General Biology (1), Science Lab Applications (1), Physics (1), General Biology Lab (1), Infectious Diseases and Clinical Microbiology (1), Development and Learning (1), Assessment and Evaluation (2), Teaching Technologies and Material Development (1). The findings prove that experimental studies are generally carried out with students from departments of education. In the studies with primary and secondary school students, it is clear that there are studies conducted mostly in Social Science (12) and Science (11) classes, with other studies in Information Technologies (1), English (1), Social Studies (2), Turkish (5), Computer Programming (1) and Math (4) classes. In studies with high school students, there is not a particular subject, but rather there are experimental studies in Biology (2), Chemistry (2), Physics (1), Analytical

Geometry (1), English (1), and Geography of Turkey(1) classes. In addition, it was also revealed that some specific classes, outside the curriculum, were arranged to develop critical thinking for teachers, university, and high school students, and then experimental studies were carried out. In four studies, it is not clear what class the study was conducted in.

Discussion and Conclusion

In this study, a total number of 186 graduate dissertations in the National Dissertations Center in Higher Education Council have been analyzed. It is confirmed that there has been an ongoing interest in studies concerning critical thinking since the first study in 1999 (e.g., the research of Akbiyik (2002), Irfaner (2002), Ay (2005), Guzel (2005), Aybek (2006), Karadeniz (2006), Erus (2007), Unal (2007), Kalkan (2008), Zayif (2008), Sahin (2009), Yoldas (2009), Celik (2010), Demirhan (2010), Ozensoy (2011), Dilek-Eren (2011), Ayaz (2012), Turan (2012), Cam-Aktas (2013), Selcuk (2013), Turan (2014), Topuz (2014), etc.). The analysis has revealed that the Master's dissertations about critical thinking outnumber the doctoral theses and the maximum number of studies conducted was in the year 2011.

It is also seen that descriptive studies are preferred over experimental studies when studies about critical thinking are concerned. Similarly, Arik & Turkmen (2009), Erdem (2011), Fazliogullari & Kurul (2012), Gomleksiz & Bozpolat (2013), Kucukoglu & Ozan (2013), Hazir Bikmaz, Aksoy, Tatar & Atak Altinyuzuk (2013), Ozan & Kose (2014), Kurt & Erdogan (2015), Koc (2015), and Kozikoglu & Senemoglu (2015) point out that descriptive method and quantitative data collection method are primarily used in studies. As for data collection methods, studies with quantitative data collection methods are mostly preferred followed by studies with a mixed method and there are a small number of studies that use the qualitative method. Fazliogullari & Kurul (2012) also emphasized that theses done in the field of educational science had a positivist paradigm. Arik & Turkmen (2009) indicated in their study that studies with qualitative method are not favored since they require a longer time to conduct. In this regard, it can be said that researchers opt for quantitative studies, which are concluded in a relatively short time compared to qualitative method.

It is clear that scales as data collection tools stand out as quantitative method is mainly favored in critical thinking studies. Therefore, it is thought that more studies with qualitative and mixed methods in which data collection tools, such as interviews and observations, are used to collect detailed information about critical thinking. In order to obtain detailed information about critical thinking, Kurt & Erdogan (2015), in their research about the studies in curriculum evaluation in Turkey, Selcuk & Palanci (2014), in their analytical research about the studies published in *Education and Science*, Goktas et al. (2012), and Fazliogullari & Kurul (2012) in their research about the studies in educational sciences in Turkey, have concluded that quantitative studies are published more and scales such as attitude, perception and personality tests, and surveys are used more than other kinds of data collection tools. Gomleksiz & Bozpolat (2013) indicated in their research that scales

and surveys are mainly used in the studies they have analyzed. The main reason why scales and surveys are mostly preferred in studies concerning critical thinking may be that they can reach more people and it is more economical to gather data with dissertation tools in terms of time and cost. However Sert, Kurtoglu, Akinci, & Seferoglu (2012) stated that collecting reliable and realistic data should be focused prior to collecting more data in the research. Sozbilir & Kutu (2008) also expressed that using multiple methods and data collecting tools will positively affect the validity and reliability of results of research. Within this scope, it can be expressed that using various measurement tools and qualitative and quantitative data collecting methods together in the research enable researchers to determine more powerful information in terms of validity and reliability.

Critical thinking studies involve mostly university students. Within dissertation studies, the ones with pre-service teachers are predominant, whereas there are not sufficient numbers of studies with students from other schools. It is also note worthy that the number of studies with administrators and lecturers are scarce. Similarly, in many studies analyzing educational research conducted in Turkey, the participants are mainly university students (Arik & Turkmen, 2009; Fazliogullari & Kurul, 2012; Selcuk & Palanci, 2014; Ozan & Kose, 2014). Also Goktas, et al. (2012), Hazir Bikmaz, et al. (2013), and Selcuk & Palanci (2014) have concluded in their studies that research at an undergraduate level is mostly conducted with students from the faculty of education. Therefore, the findings in this study show parallelism with the findings of the studies in literature.

In the dissertations concerning critical thinking it is clear that scales are mainly preferred as data collection tools and the California Critical Thinking Disposition Inventory, which has been adapted in Turkish, is primarily used. Similarly Aybek, Aslan, Dincer, & Coskun-Arisoy (2015) pointed out that the California Critical Thinking Disposition Inventory was mostly used in order to determine the critical thinking skills of preservice teachers. The Cornell Critical Thinking Test and the Watson-Glaser Critical Thinking Appraisals are among the scales mostly chosen to reveal critical thinking competence. The Critical Thinking Tendency Scale was developed for university and high school students (Aybek & Celik, 2007). It has a higher reliability coefficient (Emir, 2013) and researchers prefer to study mostly with university students, which might account for the reason why this scale is widely used.

It was determined that studies conducted using an experimental method are generally designed with a pretest-posttest control group experimental design like the studies of Kutlu and Schreglmann (2011) and Turan, Aydin, and Ugulu (2013). In studies with experimental methods, it was observed that significant results are generally obtained in favor of the experimental group. In addition, the findings about which sample group is studied in which course/class revealed that the studies are carried out in large fields of study. While the studies in primary and secondary schools concentrate on social science and science classes, there is not a piling-up in any particular field of study in other samples. In this regard, it is thought that

experimental studies of critical thinking levels in other fields of study rather than social Science and science in primary and secondary schools will enrich the literature.

In conclusion, this study provides information about the tendencies in graduate dissertations regarding researchers' focuses concerning critical thinking in Turkey. In other words, this study is informative for who intend to study critical thinking skills in the field of educational sciences. It revealed which dissertations were studied in Turkey most in terms of research designs, data gathering methods, sample/study group characteristics, data collection tools, experimental patterns used for applied studies and subjects in which research is performed concerning critical thinking. In this study in which 186 dissertations were analyzed, it is seen that the number of dissertations about critical thinking has gradually increased since the first dissertation was done in 1999, reaching a maximum number of dissertations done in 2011. Additionally, the descriptive method has been widely preferred compared to the experimental method and qualitative research. The dissertations examined generally were carried out with university students. Also, scales were mostly used as data gathering tools and the California Critical Thinking Disposition Inventory, which is adapted in Turkish, is primarily used in dissertations. Additionally, the studies conducted using an experimental method are generally designed with a pretest-posttest control group, and significant results of these studies are generally obtained in favor of the experimental group.

New researchers may examine this thinking skill using different methods, samples, designs, or different data collection tools. In other words, new research about critical thinking should focus on experimental designs, in-depth analysis of critical thinking through the qualitative method, other university students rather than pre-service teachers, and other graders rather than university students. Also, analyzing the articles published and dissertations written abroad, comparing the results of national and international studies, and conducting similar studies about other thinking skills can contribute to literature and further studies.

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Eleştirel Düşünme Becerileri Konusunda Yapılan Lisansüstü Tezlerin İncelenmesi: Türkiye Örneği

Atıf:

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Özet

Problem Durumu: Düşünme insanoğlunun en önemli özelliklerinden biri ve günlük hayatımızın ayrılmaz bir parçasıdır. Eleştirel düşünme olayları anlamak, değerlendirmek, incelemek, var olan bir problemi çözmek için veya bir konuda karar vermek için gerçekleştirilen aktif ve sistematik bir sorgulama ve problem çözme stratejisidir. Özellikle son yıllarda Türkiye'de eleştirel düşünmeye ilişkin araştırmalar artış göstermiştir. Bu araştırmaların analiz edilerek yeni yapılacak araştırmalara yol göstermesi önemli görülmektedir. Eleştirel düşünme becerilerinin sıklıkla hangi boyutlarıyla ele alındığının, hangi boyutlar bakımından incelenmeye ihtiyaç duyulduğunun ortaya konulması araştırmaların birikimli ilerlemesi bakımından oldukça önemlidir. Bunun yanı sıra bir alanla ilgili yapılmış bilimsel tezlerin analiz edilmesi, o konunun derinliği ve yaygınlığı hakkında bilgiler verebilir ve incelenen alanın genel görünümünü ortaya çıkarabilir.

Araştırmanın Amacı: Bu çalışmanın amacı eleştirel düşünme becerileri ile ilgili olarak Türkiye'de eğitim bilimleri alanında yapılmış olan lisansüstü tezlerin içerik analizini yapmak ve tezlerdeki genel eğilimleri belirlemektir.

Araştırmanın Yöntemi: Çalışma nitel araştırma yöntem ve teknikleri kullanılarak yapılandırılmıştır. Verilerin toplanmasında doküman incelemesi yönteminden yararlanılmıştır. Araştırmada YÖK Ulusal Tez Merkezi'de bulunan 186 tez yayın yılı, düzeyi, araştırma yöntemi, veri toplama yöntemi, örneklem özellikleri,

kullanılan veri toplama araçları, deneysel çalışmalar için kullanılan deney deseni ve uygulamanın yapıldığı dersler boyutlarında analiz edilmiştir.

Araştırmanın Bulguları: Elde edilen verilere dayalı olarak, eleştirel düşünmenin 1999 yılından itibaren çalışılmaya başlandığı ve konuyla ilgili tezlerin önemli bir bölümünün yüksek lisans düzeyinde yapıldığı ve betimsel araştırmaların deneysel araştırmalara göre daha çok tercih edildiği görülmüştür. Yapılan tezlerde nicel veri toplama yöntemiyle yürütülen çalışmaların tercih edildiği; bunu karma yöntemin takip ettiği ve nitel yöntemde yapılan çalışmaların oranının düşük olduğu ortaya konmuştur. Tezlerde daha çok üniversite öğrencileriyle çalışıldığı ve veri toplama aracı olarak sıklıkla ölçeklerin kullanıldığı saptanmıştır. Bunlar arasında "Kaliforniya Eleştirel Düşünme Eğilimleri Ölçeği" en sık kullanılan ölçektir. Deneysel yöntemle yapılan çalışmaların genellikle kontrol gruplu ön test-son test deneysel desene göre tasarlanmış olduğu ve bu tür çalışmaların çoğunlukla Sosyal Bilgiler ve Fen Bilimleri derslerinde yürütüldüğü belirlenmiştir.

Araştırmanın Sonuçları ve Önerileri: Bu araştırmada eleştirel düşünme becerileri ile ilgili olarak YÖK Ulusal Tez Tarama Merkezindeki toplam 186 lisansüstü düzeyde tez incelenmiştir. 1999 yılında yapılan ilk çalışmadan günümüze kadar eleştirel düşünme ile ilgili çalışmalara olan ilginin sürdüğü, konunun en fazla 2011 yılında çalışıldığı saptanmıştır. Yapılan incelemelerde eleştirel düşünme ile ilgili olarak yüksek lisans tezlerinin doktora tezlerine göre sayıca daha fazla olduğu ve betimsel araştırmaların deneysel araştırmalara göre daha çok tercih edildiği belirlenmiştir. Veri toplama yöntemi bakımından ise daha çok nicel veri toplama yöntemiyle yürütülen çalışmaların tercih edildiği; bunu karma yöntemin takip ettiği ve nitel yöntemde yapılan çalışmaların oranının düşük olduğu ortaya konmuştur. Eleştirel düşünme ile ilgili çalışmalarda nicel araştırmaların daha fazla tercih edilmesine bağlı olarak veri toplama araçlarında ölçeklerin ön plana çıktığı görülmektedir. Bu bağlamda eleştirel düşünme konusuna ilişkin daha derinlemesine bilgilerin edinilebilmesi amacıyla görüşme, gözlem gibi veri toplama yöntemlerinin kullanıldığı daha fazla sayıda nitel ve karma araştırmaya ihtiyaç olduğu düşünülmektedir. Eleştirel düşünme ile ilgili çalışmalarda ölçek ve anketlerin daha çok tercih edilmesinin temel nedeni olarak, bu araçların daha çok kişiye ulaşabilme olanağı tanıması ve bu araçlarla veri toplama sürecinin zaman ve maliyet açısından daha ekonomik olması gösterilebilir. İncelenen tezlerde çalışma grubunun/örneklemin çoğunlukla üniversite öğrencilerinden oluştuğu görülmüştür. Bunlar arasında da öğretmen adayları ile yapılan çalışmalara ağırlık verildiği gözlenmiştir. Ayrıca yönetici ve öğretim elemanları ile de oldukça az sayıda araştırma yürütülmüş olması dikkat çekici bulunmuştur. Benzer şekilde Türkiye'de gerçekleşen eğitim araştırmalarının incelendiği birçok çalışmada da örneklemin/katılımcıların çoğunlukla üniversite öğrencilerinden oluştuğu görülmektedir. Eleştirel düşünme ile ilgili olarak yapılan tezlerde veri toplama aracı olarak daha çok ölçeklerin tercih edildiği ve ağırlıklı olarak Türkçeye uyarlaması yapılan "Kaliforniya Eleştirel Düşünme Eğilimleri Ölçeği"'nin kullanıldığı görülmektedir. "Cornell Eleştirel Düşünme Ölçeği"i ve "Watson-Glaser Eleştirel Akıl Yürütme Gücü Testi" de eleştirel düşünme gücünü ortaya koymak amacıyla sıklıkla

tercih edilen ölçeklerdir. Deneysel yöntemle yapılan çalışmaların genellikle kontrol gruplu ön test-son test deneysel desene göre tasarlandığı saptanmıştır. Deneysel yöntemle yapılan araştırmalarda genellikle deney grubu lehine anlamlı sonuçlar elde edildiği gözlenmiştir. Ayrıca araştırmaların seçilen örneklem gruplarıyla hangi derslerde/konu alanlarında yürütüldüklerine ilişkin elde edilen bulgular, çalışmaların çok çeşitli konu alanlarında yapıldığını göstermiştir. İlköğretim birinci ve ikinci kademede yapılan araştırmalar en çok Sosyal Bilgiler ve Fen Bilimleri derslerinde yoğunlaşırken, diğer örneklem gruplarında özel olarak bir konu alanında yığılma olmadığı görülmektedir. Bu bakımdan ilköğretim düzeyinde yürütülecek çalışmalarda, Sosyal Bilgiler ve Fen Bilimleri dışındaki derslerde çalışılmasının ilgili alan yazına zenginlik katacağı düşünülmektedir. Eleştirel düşünme becerilerinin karşılaştığı olayları sorgulayan ve problemleri rahatlıkla çözebilen bireyler yetiştirme konusundaki önemi, bu konuda yapılacak çalışmaların değerini daha da arttırmaktadır. Bu çalışma, eleştirel düşünme ile ilgili yöntem, örneklem ve konu alanı açısından az çalışılmış araştırmalara yönelik bilgi vermektedir. Bu bakımında yeni araştırmacılara ışık tutacağı düşünülmektedir. Yeni yapılacak araştırmalarda, eleştirel düşünme becerileri ile ilgili yayımlanmış makalelerin ve yurt dışında yapılmış tezlerin incelenmesinin, yurt içi ve yurt dışında yapılmış araştırma sonuçlarının karşılaştırılmasının ve benzeri çalışmaların diğer düşünme becerileri ile ilgili yapılmasının alan yazına katkı sağlayacağı düşünülmektedir.

Anahtar Kelimeler: Üst düzey düşünme becerileri, yüksek lisans tezi, doktora tezi, doküman incelemesi, içerik analizi.

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Analysis of the Misconceptions of 7th Grade Students on Polygons and Specific Quadrilaterals[1]

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ABSTRACT

Purpose: This study will find out student misconceptions about geometrical figures, particularly polygons and quadrilaterals. Thus, it will offer insights into teaching these concepts. The objective of this study, the question of "What are the misconceptions of seventh grade students on polygons and quadrilaterals?" constitutes the problem sentence of the research. **Research Methods**: The study was conducted in five different schools in Gaziantep, and the data consist of 229 students who are in the seventh grade. In the quantitative part, descriptive statistics, t-tests and one-way ANOVA tests were applied by using SPSS 17.0 software. **Findings:** The results indicate that students display various misconceptions about polygons and special quadrilaterals. When the students were asked to draw squares, rectangles, trapezoids and equilateral quadrangles, almost all the participants drew prototype figures. It was discovered that, as the level of academic success increased, the risk of misconception decreased in return. **Implications for Research and Practice**: In the research, students displayed certain misconceptions when questions about the concept of diagonals were presented. Furthermore, in diagnostic test results, the outcome that the intermediate-level students had more misconceptions compared to low-level students might be because the low-level students left more questions blank. By means of conducting qualitative studies, it is possible to determine the thoughts that cause misconceptions. In the lesson content, permanent formula and prototype figures should be avoided. Instead, lessons should be imparted in the manner that reflects actuality and that expresses the core of the perceived subject.

[1]This study was compiled by the thesis study of Mustafa ÖZKAN, called "Analysis of the Misconceptions of 7th Grade Students on Polygons and Specific Quadrilaterals" published by the Faculty of Social Sciences of Cukurova University.

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Introduction

Geometry is a field of mathematics which is encountered by almost every individual during their educational life. This scientific field, an inseparable part of curricula, gives us information about how the students should reason spatial concepts. Considering the origin of word, geometry comes from Greek, and it is regarded as a scientific field which analyzes the sizes and forms of objects. However, various technological advancements and academic studies show parallelism in furtherance of the era; thus, this definition is not adequate. A more general definition that belongs to German Mathematician Klein (1849-1925), and has been adopted by most mathematicians, is as below:

> *"When 'S' is a set, and 'G' is a group consisted of the transformations that turn 'S' into 'G'; analysis of the features of 'S' set that remain unchanged (invariant) under the transformations which are the elements of G, is called as geometry.* (Kaya, 2005, 11)."

This statement by Klein can be explained based on his definition, "the study of the features of space that remain invariant under the transformations of a given group" (Tuluk, 2014). This definition might be interpreted as it expresses geometry by a group of transformations by uniting it around an algebraic definition, and these transformations are created with the help of the points, which are not geometrical concepts. One of the principles and standards of National Council of Teachers of Mathematics (NCTM) (2000) concerning school mathematics is geometry. Geometry is also present in the origin of spatial intelligence that helps to deeply analyze and interpret events that are occurring around us. In this context, correcting mistakes in geometry learning is of vital importance, especially in terms of developing studentthinking systems. This scientific field plays an effective role in the development of conceptual and intellectual skills by making progress in association with the figures and their features. Hizarci, Kaplan, İpek and Isik (2004) consider geometry as an independent scientific field that brings a view to the individual, makes thinking easier, and fosters the ability to come to a solution by visualizing figures.

Problem Status

Through associating and transferring concepts to operations,permanent learning will result. This knowledge will also increase problem-solving skills. In general, there are three main factors in solving a problem: mistakes, errors, and misconceptions. Misconceptions are conceptual errors that occur systematically (Oliver, 1986). Among these three factors, the most dangerous is undoubtedly misconceptions, as they are both systematic and permanent. In addition, they are obstacles that stand before further learning.

In order to discover the reasons behind these misconceptions and correct them,various studies worldwide have been executed. While focusing on specific quadrilaterals, De Villiers (1994) and Turnuklu & Aktas (2013)pointed out that, in order to find a solution for these misconceptions, it was crucial to provide explanations by means of a hierarchal classification method. Okazaki & Fujita (2008) and Fujita (2012) expressed that prototype samples may cause misconceptions. In addition, Ubuz and Ustun (2003) concluded that, depending on academic success,

students used the samples that they were given first. It was observed that students had difficulties with respect to the semantic relations of words and figures (Robert, 1995), and that they fell into misconceptions because they were not able to establish conceptual relationships, even when using analogies (Fonseca & Cunha, 2011). In studies carried out about concave and convex polygons (Ward, 2004; Lipovec, 2009), geometrical objects (Incikabi& Kilic, 2013), parallelograms and trapezoids (Aktas& Aktas, 2012), misconceptions about geometry were analyzed. In a study Cutugnol & Spagnolo (2002) executed about the concept of a triangle, they explained the necessity of frequently acquainting the students with such concepts in daily life. On the other hand, Edward and Ward (2004) pointed out that figures should be provided systematically during lessons. Elements of polygons are also among subjects that have been investigated (Heinze, 2002; Sandt & Nieuwouldt,2003; Gutierrez, Pegg & Lawrie, 2004; Picreign, 2007).

When analyzing the literature, one can see that the concepts of angles, triangles, and quadrilaterals have been widely analyzed. Furthermore, geometrical figures such as trapezoids, squares, rectangles, and parallelograms have also been analyzed separately or in groups. However, in a hierarchal figure, the concept of polygons and specific quadrilaterals are not taken into great consideration. This study will find out the misconceptions students have towards geometrical figures, particularly polygons and quadrilaterals. Thus, it will offer an insight into teaching these concepts.

The objective of this study, the question of "What are the misconceptions of 7th grade students on polygons and quadrilaterals?" constitutes the problem sentence of the research. In order to realize the objective of this study, the answers for sub-problems below have been investigated.

1. What are the misconceptions of 7th grade students on polygons (concave and convex, diagonals, and angles)?
2. What are the misconceptions of 7th grade students on specific quadrilaterals (main characteristics, parallelism, height, and area)?
3. Is there a significant difference among the misconceptions of students, according to academic success?

The Importance of Research

In order to provide effective learning, teachers must reinforce the mathematical relations that the students possess. In this respect, each concept has a separate significance, as the clarity and diversity of concepts playa great role in enabling meaningful learning for students. (Fidan, 1996; 192). Otherwise, in an educational climate in which conceptual mistakes and errors are not corrected, effective learning might not be realized. If these mistakes are not discovered and corrected, we might encounter these as permanent failures in the system. Therefore, teachers must determine such mistakes and misconceptions and remove the situations that might constitute an impediment for further learning. At the same time, when teachers notice what kind of difficulties with which the students are struggling, they can find

opportunities to analyze both their own teaching methods-techniques and the process itself. Thus, research might help teachers in the further teaching process.

A result analysis of the examinations held in accordance with world standards reveal that Turkish students are not successful, on average,in the field of geometry. In all subjects, Turkey is below the world average. The country also has the lowest averages in subjects such as geometrical figures and measures, as mathematics is the most problematic field for Turkey. This situation requires a review of mathematics curricula, particularly of geometry dimensions and geometry teaching (Yucel, Karadag and Turan, 2013; 31).

Although there are geometrical acquisitions in each stage of primary education, the stage in which polygons and quadrilaterals are a primary focusis the seventh grade. At this level, besides their main characteristics, the perimeter, domain, and problems of polygons and specific quadrilaterals are also available. In other words, basic information about polygonsis provided at this stage.

This research will determine whether concepts related to geometry education included in the mathematics curriculum of 7th grade studentshave been learned. Thus, misconceptions of students will be discovered, and a substructure for the necessary measures will be set up. It is expected that findings will guide teachers, subject experts, academics, and program development specialists on the issue of mathematics and concept teaching.

Method

Research Design

This research is a study of descriptive survey model that was carried out in order to determine the misconceptions of 7th grade students on polygons and specific quadrilaterals during the education term of 2013-2014.

Research Sample

Numerical distribution of the report card scores of the students participating in the research is given in Table 1.

Table 1
Numerical Distribution of Academic Success Rate of Students (Report card scores for mathematics)

Score Received	*Number of People (n)*	*Number of People (%)*
1	12	5.2
2	37	16.2
3	87	38
4	50	21.8
5	43	18.8

In Table 1, numerical distribution of the academic success rate of students is given. While the report card score for 38% of the participants was a three, it was one for 5.2% of the students.

Research Instrument and Procedure

The data of this research was collected by means of a "Diagnostic Test" (See. Supplement 1). While preparing the diagnostic test, learning fields, sub-learning fields, and acquisitions about "Polygons and Quadrilaterals" included in the 2013-2014 seventh-grade mathematics course book were analyzed. A table of specifications was created basing upon these acquisitions. The distribution was created in the manner that it would be completely in parallel with the steps of the table of specifications. In this direction, concepts acquired and possible mistakes were determined. In order to prevent complications, and due to confidentiality, a coding system, i.e., K1, K2, K3…K229, was applied on the diagnostic test answered by the students, taking the order of application into consideration. As a result of the diagnosis, mistakes that students might have made are given in Supplement 2. (See. Supplement 2).

Validity and Reliability

In the analysis of quantitative data, descriptive statistics, t-tests and one-sided ANOVA tests were applied by means of SPSS 17.0. In addition, in order to determine the mistake types and misconceptions, a descriptive analysis was carried out by using the relevant literature (Ubuz,1999; Akuysal, 2007; Aktas ve Aktas, 2012; Karatas, O.Kose, & Costu, 2003). The ordering was carried out through the misconceptions exhibited towards the analysis of questions, and the items were inserted into the diagnostic test, accordingly.

While classifying the academic success of students, their math score was based on the report card from the first term. Depending on the score on the report card, coding was applied aslow, for the students withscores of 1 and 2 (L); intermediate, for the students withscores of 3 (I); and high, for the students withscores of 4 and 5.

In order to increase the reliability of research, the data obtained from Diagnostic Test were analyzed by another specialist in the field of mathematics. As a result of a calculation using the Consensus formula (Consensus + Dissensus) X 100 suggested by Miles andHuberman (1994), consent rate among the coders was determined as 92.

Results

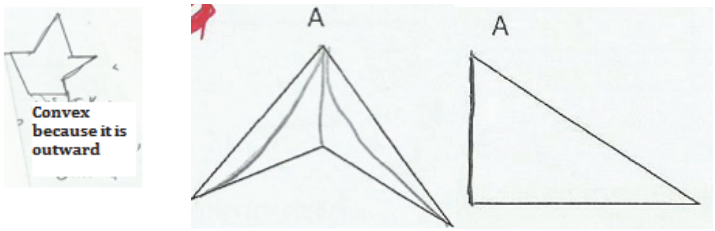
Findings Related to the First Sub-goal

Percentage values and frequencies related to the answers given by the seventh-grade students to the questions on the concepts of concave, convex, diagonal, edge, perimeter, and angle in polygons, and the percentage values and frequencies of student misconceptions are given in Table 2. From this point of view, an answer was sought out for this question "What are the misconceptions of 7th grade students on the polygons (concave and convex, diagonal, and angle)?".

Table 2
Misconceptions and Descriptive Statistical Results of the Answers Given by the Students on Polygons (Concave, Convex, Diagonal and Angle)

Question	*Correct*		*Wrong*		*Blank*		*Misconception*		*Concepts*
	f	%	*f*	%	*f*	%	*f*	%	
1	188	82.1	33	14.4	8	3.5	33	14.4	Concave Convex
							77	33.6	Diagonal
							51	22.3	Drawing A Single Diagonal
2	130	56.8	87	38	12	5.2			
							42	18.3	Diagonal in A Triangle
							6	2.6	Edge
3	86	37.6	137	59.3	6	2.6	138	60.3	Total
5.3.	63	27.5	143	62.4	23	10	143	62.4	Diagonal
4	42	18.3	70	30.6	117	51.1	70	30.6	The Number of Total Triangles Constituted by a Polygon
6.1.	129	56.3	19	8.3	81	35.4	19	8.3	
7.4.	119	52	64	27.9	46	20.1	64	27.9	
19.1	42	18.3	61	26.6	126	55	62	27.1	
7.1.	172	75.1	25	10.9	32	14	25	10.9	Perimeter
5.1.	137	59.8	72	31.4	20	8.7	73	31.9	Interior Angle
6.2.	102	44.5	51	22.3	76	33.2	51	22.3	
7.2.	105	45.9	75	32.8	49	21.4	75	32.8	Interior Angle
17	41	17.9	44	19.2	144	62.9	44	19.2	
5.2.	117	51.1	75	32.8	37	16.2	74	32.3	Exterior Angle
6.3.	138	60.3	17	7.4	74	32.3	17	7.4	
7.3.	109	47.6	65	28.4	54	23.6	67	29.3	
18	73	31.9	40	17.5	116	50.7	40	17.5	

In Table 2, the distributions of the answers given by the students on the relevant questions are shown. Furthermore, percentages and frequencies of the misconceptions of students about polygons and specific quadrilaterals are given. The students had misconceptions on the concepts of concave and convex (14.4%), diagonal (33.6%), total diagonal (60.3%), the number of triangles created in one polygon (27.1%), perimeter (10.9%), interior angle (22.3%), and exterior angle (17.5%). The examples of students' misconceptions are given in Figure 1.



(K133) (K5) (K132)

Figure 1. *Examples of Misconception on the Concepts of Concave-Convex and Diagonal*

In Figure 1, the student with code no. K5 limited the expression of convex with only stepping out. The student with code no. K132 was asked to draw the diagonals of a given figure, and the student tried to create a diagonal by evaluating the concept of edge differently. The same student made a drawing that accepted that the diagonals were located only in the interior part of the polygonal region. In addition to these, the student with code no.K133 confused the concepts of diagonal and edge, and tried to create a diagonal in a triangle.

In Table 2, when looking at four questions, Question4, Question6.1, Question7.4, and Question19.1, that are related to each other, students were asked to determine and describe the total number of triangles created by a diagonal in a polygon. In the fourth question, when asked what (n-2) stands for in the formula of $(n-2).180^{o}$, 51.1% of the students left it blank and 30.6% fell into misconceptions. The students with misconceptions expressed the statement of (n-2) algebraically.

Findings Related to the Second Sub-goal

Regarding the second sub-goal of this study, the results of the diagnostic test for the question of "What are the misconceptions of 7th grade students on the specific quadrilaterals (main characteristics, parallelism, height and area)?" are indicated in Table 3.

Table 3
Misconceptions and Descriptive Statistic Results of the Answers given by 7th Grade Students to the Question on Specific Quadrilaterals

Question	*Correct*		*Wrong*		*Blank*		*Misconception*		*Concepts*
	f	%	*f*	%	*f*	%	*f*	%	
8.1	196	85.6	21	9.2	12	5.2	19	8.3	Square
21	112	48.9	26	11.4	91	39.7	25	10.9	
9	29	12.7	159	69.4	41	17.9	159	69.4	Square (Area)
11.1	193	84.3	9	3.9	27	11.8	9	3.9	Square (Parallelism)
20.4	80	34.9	78	34.1	71	31	78	34.1	
8.2	179	78.2	38	16.6	12	5.2	37	12.6	Rectangle
10.1	192	83.8	5	2.2	32	14	5	2.2	
10.2	187	81.7	8	3.5	34	14.8	8	3.5	
10.3	174	76	16	7	39	17	16	7	Rectangle (Parallelism)
11.3	198	86.5	6	2.6	25	10.9	6	2.6	
20.3	100	43.7	60	26.2	69	30.1	60	26.2	
10.4	174	76	14	6.1	41	17.9	14	6.1	Rectangle (Diagonal)
8.3	160	69.9	56	24.5	13	5.7	55	24	Trapezoid
11.2	145	63.3	51	22.3	33	14.4	51	22.3	Trapezoid (Parallelism)
20.2	113	49.3	47	20.5	69	30.1	47	20.5	
14	32	14	80	34.9	117	51.1	80	34.9	Trapezoid (Area)
15.2	133	58.1	30	13.1	66	28.8	30	13.1	Trapezoid (Height)
16	85	37.1	35	15.3	109	47.6	35	15.3	
8.4	170	74.2	49	21.4	10	4.4	49	21.4	Parallelogram
12.2	23	10	143	62.4	63	27.5	143	62.4	Parallelogram (Height)
15.1	133	58.1	31	13.5	65	28.4	31	13.5	
20.1	138	60.3	20	8.7	71	31	20	8.7	Parallelogram (Parallelism)
20.5	149	65.1	11	4.8	69	30.1	11	4.8	
12.1	65	28.4	89	38.9	75	32.8	89	38.9	Parallelogram (Area)
8.5	186	81.2	25	10.9	18	7.9	24	10.5	Equilateral Quadrangle
15.3	59	25.8	99	43.2	71	31	99	43.2	Equilateral Quadrangle Height
11.4	155	67.7	34	14.8	40	17.5	34	14.8	Equilateral Quadrangle (Parallelism)
13	40	17.5	80	34.9	109	47.6	80	34.9	Equilateral
22	43	18.8	72	31.4	114	49.8	71	31	Quadrangle (Area)

When Table 3 is analyzed, it can be observed that the subject on which the misconception was lowest is specific quadrilateral rectangles. On average, 8.6% of the students exhibited misconceptions towards the subject of rectangles. The specific

rectangle on which the misconception was highest is the equilateral quadrangle. On average, 26.8% of the students exhibited misconceptions about the equilateral quadrangle. Student misconceptions about the subject of squares, parallelograms, and trapezoids are given in Table 3.

Regarding Table 3, examples of student misconceptions are expressed below.

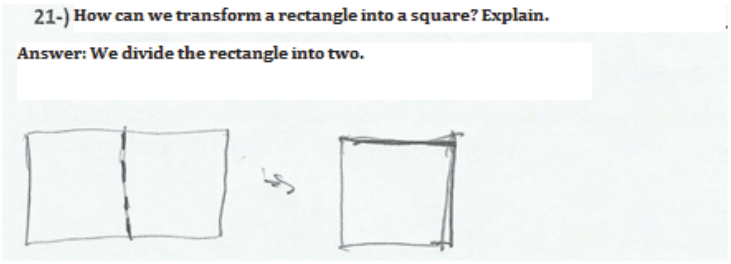
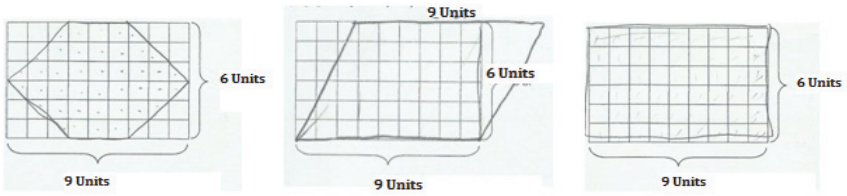


Figure 2. *Misconception example related to the concept of squares*(K163)

The 21th question was addressed to the students for the determination of a conceptual error about the main characteristics of squares. The misconception of the student with code no.K163 was tha the/she regarded the square as a half rectangle, depending on the figure.

When Table 3 is analyzed, it can be seen that the students expressed misconceptions on the ninth question. For the ninth question, the students were asked to answer, "*Which one is the regular polygon with the largest area that can be drawn into the figure below? Calculate the area of this polygon.*" In other words, the students were asked to draw a regular polygon with the largest area, inside the unit squares, within the specified domain. As a result, 69.4% of the students exhibited misconceptionson the ninth question. In Figure 3, geometrical figures drawn by the students with code numbers K25, K83 and K199 regarding the ninth question are expressed.



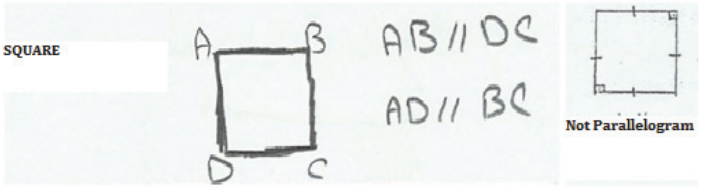
(K25) (K83) (K199)

Figure 3. *Misconception example related to the concept of area in squares*

When Figure 3 is analyzed, it can be observed that the students tried to create different figures. Furthermore, the students were not able to insert the expression of "regular" into the figure, and that they tried to expand the area by increasing the number of edges of the polygon. In Figure 3, the student with code no. K25 drew a

hexagon, the student with code no. K83 drew a parallelogram, and the student with code no.K199 drew a rectangle.

In Table 3, it is indicated that students displayed misconceptions regarding parallelism in squares. In Question11, students were asked to describe and draw figures that have parallel edges. Overall, 3.9% of the students expressed misconceptions on the concept of parallelism in squares. In Question20.4, the students were given ready figures and were asked to describe which were parallels; 34.1% of the students expressed misconceptions. In Figure 4, the answers provided by the student with code no. K53 to Question 11.1 and Question20.4 are given.

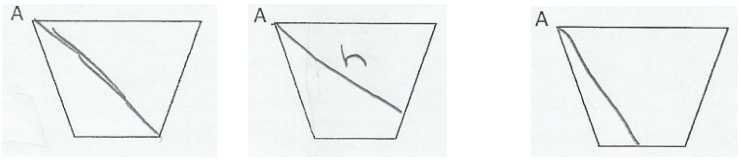


(Question 11.1) (Question 20.4)

Figure 4. *Sample answer regarding the concept of parallelism in squares*

In Figure 4, the answers given by the student with code no.K53 to Question11.1 and Question20.4are indicated. When the student was asked to draw a square in Question11.1, he drew it correctly and expressed the parallelism accurately. However, in Figure 4, it is indicated that the same student failed to expressed the parallelism of a square given in Question20.4. In other words, the student knew the definition, but applied it incorrectly.

When Table 3 is analyzed, it can be seen that 13.1% of the students exhibited misconceptions regarding height in trapezoids. In Question15.2, students were given a trapezoid figüre and asked to draw the height that is required for the area, from a constant a point. In Figure 5, the answers of the students with code numbers K112, K133 K180 and K194are given.



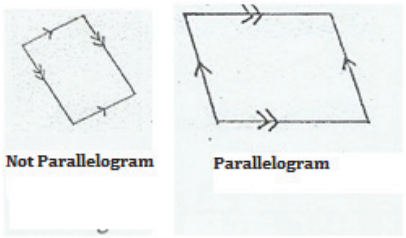
(K112) (K180) (K194)

Figure 5. *Misconception example regarding the concept of height in trapezoid*

In Figure 5, different answers given to Question15.2 by the students with code numbers K112, K180 and K194 are indicated. The student with code no.K112 drew the height as a diagonal. The student with code no.K180 lowered the height to a different edge. The student with code no.K194 expressed misconceptions on the

place that he/she took down the height, even though the edge of height he/she drew was correct.

In Table 3, 8.7% of the students fell into misconception on Question20.1, and 4.8% of the students on Question 20.5 when they were asked about the concept of parallelism in parallelograms. The answers given to Question 20.1 and Question 20.5 by the student with code no. K31 regarding differently placed parallelograms are indicated in Figure 6.

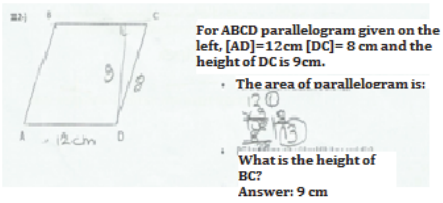


(Question20.1) (Question20.5)

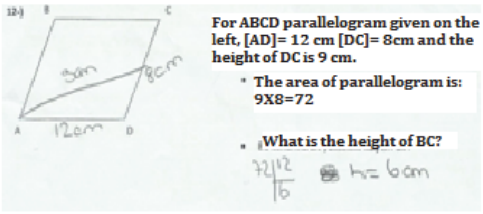
Figure 6. *Sample answer regarding the concept of parallelism in parallelograms*

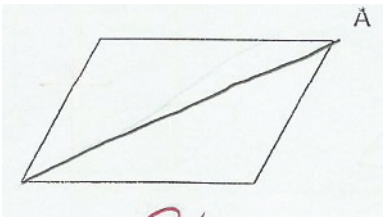
Two parallelograms, as seen in Figure 6, were provided to the students. The placement of the figure in Question20.1was different than the placement in Question20.5. The student with code no. K31 answered Question 20.1 as "it is not a parallelogram," and answered Question 20.5 as "it is a parallelogram." Here, it can be observed that the student does not understand parallelograms conceptually.

When Table 3 is analyzed, 62.4% of the students exhibited misconceptions on Question12.2, and 13.5% exhibited misconceptions on Question15.1. In Question12.2, the concept of height was given within the problem, and students were asked to calculate the area. Students who displayed misconceptions were not able to lower the height to an edge in this question. Similarly, in Question 15.1, a ready parallelogram figure and a constant A point were given. The students were asked to draw the heights that belong to the A side. In Table 3, when the analyses of Question12.1 were taken into consideration regarding the concept of area in parallelograms, it was observed that 38.9% of the students displayed misconceptions. Below in Figure 7, the answers given by the students with code numbers K86, K180, and K133 are provided. In Figure 10, the answers given by the students with code numbers K5 and K46 are indicated.



(K86)



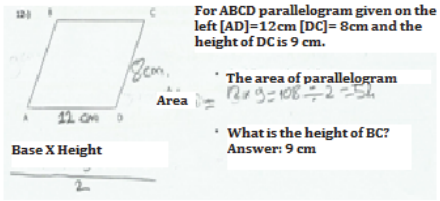


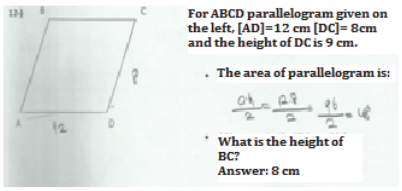
(K180) **(K133)**

(Question15.1)

Figure 7. *Misconception example regarding the concept of height in parallelograms*

In Figure 7, the student with code no.K86, knew the concept of area, but displayed misconceptions regarding the edge to which the height belongs. The student with code no.K180 lowered the height to the correct edge. However, the student did not apply the height that he/she took down from the A side on the IDCI line, but used this height in the interior part of the parallelogram. In Question15.1, it can be seen that when the student with code no.K133 was asked to draw a height for a constant A point in a parallelogram, he/she drew the concept of height as a diagonal.





(K5) (K46)

Figure 8. *Misconception example regarding the concept of area in parallelograms*

The misconception of students with code numbers K5 and K46 regarding the concept of area is given in Figure 8. The student took the half of base and height and calculated the area accordingly. Moreover, while the student with code no.K5 used the concept of height, the student with code no.K46 did not use this concept and, instead, multiplied the edge with anotherand took its half.

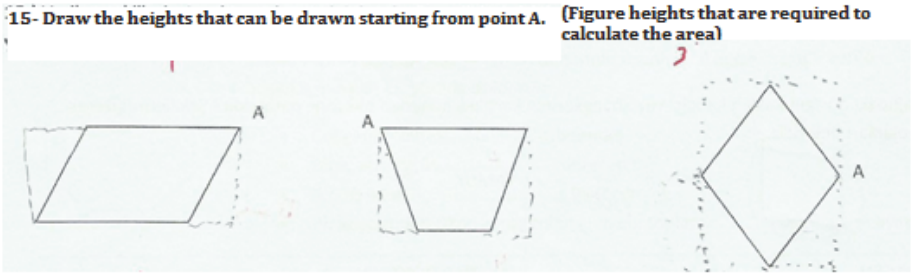


Figure 9. *Sample answer of the student with code no.K70 regarding the concept of height*

In Figure 9, the student with code no.K70 combined the figures and created a rectangle in order to calculate the height of these three geometrical figures. In the operation of finding the height, creating a rectangle will give correct results for parallelograms and trapezoids. Contrary to these to figures, it was expressed as a misconception in the equilateral quadrangle.

Findings related to third sub-goal

In order to analyze whether there was a significant difference between academic success levels and misconceptions of the students, the question, "Is there a significant difference among the misconceptions of students according to academic success?" was asked as the fourth sub-goal, and the relevant results are given in Tables 4 and 5.

Table 4

Descriptive Statistic Results of Academic Success Rates

Academic Success Status	*n*	*M*	*SS*
Low (L)	49	2.11	1.15
Intermediate (I)	87	2.34	1.28
High (H)	93	1.55	0.09

In order to determine whether there was a significant difference between academic success and misconceptions of the students with different academic success levels, a one-sided variance analysis was carried out, with a significance level of $p \leq 0.01$. According to the results of this variance analysis, the average of low academic success levels (N= 49) was determined to be 2.11; the average of intermediate academic success levels (N=87) was determined to be 2.34, and the average of high academic success levels (N=93) was determined as 1.55.

Table 5

Variance Analysis Results of the Misconception in Accordance with Academic Success Rates

Source of Variance	*Sum of Squares*	*sd*	*Mean Squares*	*F*	*P*	*Significant Difference*
Inter-group	28.749	2	14.374	11.371	.000	L-H, I-H
Intra-group	285.684	226	1.264			
Total	314.432	228				

According to Table 5, there is a significant difference between academic success and misconceptions. $F(2, 226)=11.37$, $p<.01$. The results of Tukey's multiple comparison test point out that, as success in mathematics increases, the risk of misconception decreases. In other words, the students included in the high grouphad fewer misconceptions when compared to the students in the low and intermediate groups.

Discussion and Conclusion

Various students displayed misconceptions when questions about the concept of diagonals were addressed to them. In particular, when they were asked to draw diagonals located inside a polygon, most of the students created wrong or incomplete drawings. Similarly, in the qualitative research Owens (2005) carried out, he found out that the students expressed difficulties in creating diagonals. Accordingly, diagonals that needed to be drawn on an edge were usually ended after one or two diagonal(s).

In addition, in relation to the concept of diagonals, it was found out that the students confused the concept of diagonals with the concepts of edge or height. The students believed that the presence of a diagonal was inside a triangle, and searched for a diagonal inside the triangle in the questions asked. Similarly, when the literature is analyzed, findings that are in parallel with these results have been found (Sandt and Nieuwouldt, 2003; Gutierrez, Pegg and Lawrie,2004; Pickreign, 2007; Basisik, 2010). However, in a study Basisik (2010) carried out, he reached the conclusion that students believed the diagonals were not constituted by the lines that combine the consecutive edges. The reason for this might be explained asthe study was at the fifth grade level, or the students' oral skills were not entirely developed.

The participant students were asked what (n-2) stood for in the formula of $(n-2).180^0$. However, the students displayed misconceptions on the concept of a triangle constituted by diagonals coming out of an edge inside the polygon (30.6%). Similarly, as expressed by King and Schattschneider (1997), drawing a relevant object when revealing an invisible relationindicates a significant potential (Tutak, 2008). It can be said that the students were not able to use this potential, and their visualization skills were not entirely developed.

Concerning polygons, the students displayed misconceptions partially on the concepts of concave and convex (14.4%). When looking at the diagnostic test, it was observed that the students either confused the concept due to the origin of the word, or they misperceived the concepts of concave and convex. This is because the students had a basis on incurvating or indenting. Similar to this result, Lipovec (2009) also analyzed the definition of concave and convex polygons. Even though the reasons behind misconceptions were not the focus of this work, it was discovered that the students confused the concepts of concave and convex.

We revealed misconceptions in rectangles (26.2%) and squares (34.1%) on the concept of parallelism. First, the students were asked to draw a square and rectangle.Then, they were asked about the parallelism of the opposing edges. In

general, prototype figures were drawn. Even though most of the students expressed the concept of parallelism in these figures drawn parallel to the raw line, they did not mention parallelism in a given figure. This outcome shows parallelism along with the findings of Fujita and Jones (2007). However, Van Hiele pointed out that students at the fifth-grade level did not express a misconception of this kind (Brumbaugh&Rock, 2006). However, as this study was carried out on seventh grade students, it can be said that they have not yet reached that level. There is a presence of misconceptions. Hershkowitz (1990) revealed that students had a tendency to make generalizations. Similarly, Turnuklu and Berkun (2013) observed thatstudents believed that squares and rectangles were not parallel because their edges were not inclined. Another misconception was that students expressed a rectangle as a figure constituted by the combination of two squares, or by two short and two long edges, making four in total. In parallel with these findings, similar studies were carried out by Heinze (2002), Ubuz and Ustun (2004), Akuysal (2007), Pickreign (2007), Okazaki and Fujita (2007), Basisik (2010), and Berkun (2011).

According to the research results, the students had misconceptions about the concept of trapezoids. One such misconception is the status of being parallel. In relation to this feature, the students could draw the prototype figures they were given, but they were not able to show parallelism, or showed it incorrectly. In a similar study carried out by Dogan et al. (2012), they discovered that students knew basic trapezoid figures in general, but they also called a figure a trapezoid that did not have parallel edges. In another study, Nakahara (1995) reached the conclusion that the students were unable to establish the connection between parallelogram and trapezoid.

In addition, while the students stated that the expression of height should be included in the formula to calculate the area of the trapezoid,in another question that required an operation, they were not able to express the height. Here, the students found it easier to express themselves through the figures drawn in parallel with the top and lower base row. However, when a question that included a rotation was asked to the students, that they had misconceptions when creating a figure, expressing the height and, accordingly, perceiving the parallelograms. In parallel with these findings, similar studies in the literature have been carried out by Fujita and Jones (2007), Okazaki and Fujita (2007), Basisik (2010), Berkun (2011), Dogan et al.(2012), and Turnuklu, Gundogdu-Alayli and Akkas and Akkas (2013). There might be many reasons for misconceptions regarding trapezoids. The reason behind misconceptions on this subject might be that the students think of the word "trapezoid" as an object that does not have certain rules in daily use. Furthermore, in a study carried out by Turnuklu, Gundogdu-Alayli and Akkas (2013), they expressed that the semiotic structure of the word of trapezoid might be a research subject. In the studies carried out by Dickson, Brown and Gibson (1984), they realized that the presence of the same features is not mentioned in a different stance of a given figure. Moreover, in a study carried out by Schafer and Atebe (2008), they observed that teaching geometrical figures with vague terminology caused some misconceptions. As it can be understood from here, different stances and states of trapezoids might cause misconceptions.

Concerning equilateral quadrangles, student misconceptions were discovered. Most students matched the equilateral quadrangle with only the feature of being "equilateral" on all the edges. Accordingly, there are misconceptions stemmed from this. Among these misconceptions, the feature of being parallel is neglected. Basisik (2010) also reached similar results. Students displayed misconceptions especially when they were asked about different formats of equilateral quadrangle. In a study carried out by Pickreign (2007) along with candidate teachers, participants focused on seeing the equilateral quadrangle as a lateral figure. In this study, a square figure was rotated. It was evaluated as a way of perception that the candidate teachers called this newly created figure anequilateral quadrangle.

When the relationship between misconceptions and academic success was analyzed, it was observed that the students with high math scores had displayed fewer misconceptions than the students with intermediate and low success. A similar study that was executed in light of the information obtained from the personal details section of the diagnostic testwas conducted by Ubuz (1999), who expressed that there may have been a parallel increase with the students' level of geometry knowledge.

In diagnostic test results, the outcome that the intermediate-level students had more misconceptions compared to low-level students might be because the low-level students left more questions blank. As the conclusion that there was a misconception was taken under evaluation in terms of the mistakes, the questions that were left blank were not considered as misconceptions. Furthermore, the tendency of the intermediate-level students to answer the questions was more than that of the low-level students, which increases the risk of making mistakes.

Students misperceived the concept of diagonals in polygons, and accordingly, they mostly confused diagonals with edges. In addition, misconceptions were discovered in determining the number of total diagonals. The students had misconceptions on the concept of a triangle constituted by diagonals coming out of an edge inside the polygon. Moreover, various students left the questions on this subject blank.

The students were unable to realize that the polygon that had the largest area which could be placed into a certain domain was a square. When the students were asked to draw squares, rectangles, trapezoids, and equilateral quadrangles, almost all the participants drew prototype figures. In addition to this, although they showed the parallel edges correctly for the squares and rectangles, they exhibited misconceptions on the concept of parallelism for trapezoids and equilateral quadrangles. Furthermore, students had misconceptions that figures such as rectangles, squares, and trapezoid were not parallelograms. In addition, as the level of academic success increased, the risk of misconception decreased in return.

This study was carried out at the seventh grade level. In other studies, it is possible to analyze the presence-absence of misconception on polygons and specific quadrilaterals at different educational stages. By means of conducting qualitative studies, it is possible to find out the thoughts that cause misconceptions. Moreover,

by conducting comparative studies, the way misconceptions affect further learning can be examined.

In the lesson content, permanent formula and prototype figures should be avoided. Instead, the lesson should be taught in the manner that reflects actuality and that expresses the core of the perceived subject. It is important that curricula and source books are prepared in this direction. Furthermore, teachers can be recommended to request students to construct classification practices about polygons. Aside from certain prototypes, when different stances of the same figure are taught, learning will be more permanent for the students.

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7. Sınıf Öğrencilerinin Çokgenlerde Ve Özel Dörtgenlerde Yaptıkları Kavram Yanılgılarının İncelenmesi

Atıf:

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Özet

Problem Durumu: Kavramların işlemlerle ilişkilendirilmesi ve aktarım sağlanılması sonucunda kalıcı öğrenmeler olacaktır. Bu da beraberinde problem çözme becerilerini arttıracaktır. Genel olarak da bir problemi çözmede üç temel faktör vardır. Hata, yanılgı ve yanlış kavramlar. Yanlış kavramlar, sistematik olarak ortaya çıkan kavram hatalarıdır (Oliver, 1986). Bir diğer ifadeyle kavram yanılgılarıdır. Bu üç faktör içerisinde en tehlikeli olanı elbette ki kavram yanılgılarıdır. Çünkü kavram yanılgıları hem sistematik hem de kalıcıdır. Ayrıca sonraki öğrenmelerin önündeki bir settir.

Kavram yanılgılarının tespiti, nedenleri ve giderilmesi için hem ulusal hem de uluslar arası birçok çalışma yapılmıştır. De Villiers (1994) ve Türnüklü & Aktaş

(2013) yaptıkları çalışmalarda özel dörtgenler üzerinde durmuş ve bu yanılgıların çözümü için hiyerarşik bir sınıflama yöntemleriyle anlatım yapma gerekliliğini ortaya koymuşlardır. Okazaki & Fujita (2008) ve Fujita (2012), prototip örneklerin kavram yanılgısı oluşturduğunu ifade etmişlerdir. Bunun yanı sıra; Ubuz ve Üstün (2003) de yaptıkları çalışmada akademik başarıyı temel almak suretiyle, öğrencilerin ilk verilen örnekleri kullandıkları sonucuna ulaşmıştır. Öğrencilerin kelimelerin anlamsal ilişkilere ve şekil görüntülerine takıldıkları (Robert, 1995) ve analoji yapmalarına rağmen kavramsal ilişkiyi kuramadıkları (Fonseca & Cunha, 2011) için kavram yanılgısı yaptıkları görülmüştür. Elbette ki genel manada bu çalışmaların yanı sıra özele inilerek yapılan çalışmalar da mevcuttur. Konkav ve konveks çokgenler (Ward, 2004 ve Lipovec, 2009), geometrik cisimler (İncikabı &Kılıç, 2013), paralelkenar ve yamuk (Aktaş & Aktaş, 2012) gibi çalışmalarda geometride yapılan kavram yanılgıları araştırılmıştır. Cutugnol & Spagnolo (2002), üçgen kavramı üzerine yaptıkları çalışmada öğrencilerin günlük hayatta kavramlarla sıkça karşılaştırılması gerektiğini belirtmiştir. Aksine Edward ve Ward (2004) ise; sistematik olarak şekillerin ders içerisinde verilmesi gerektiği vurgusunu yapmaktadır. Çokgenlerin elemanları da (Heinze, 2002; Sandt & Nieuwouldt,2003; Gutierrez, Pegg & Lawrie, 2004; Picreign, 2007) yine araştırılan konular arasındadır.

Araştırmanın Amacı: Literatür incelendiğinde, açı, üçgen ve dörtgen kavramlarının çokça incelendiği görülmektedir. Bunun yanı sıra yamuk, kare, dikdörtgen ve paralelkenar gibi geometrik şekillerin ayrı ayrı veya gruplar halinde incelendiği de mevcuttur. Ancak hiyerarşik bir şekilde çokgen kavramı ve özel dörtgenler bütüncül olarak ele alınmamıştır. Bu çalışma geometrik şekiller üzerinde özellikle de çokgenlerde ve özel dörtgenlerde öğrencilerin yapmış oldukları kavram yanılgıları tespit edilerek, bu kavramların öğretilmesine ışık tutacaktır.

Bu çalışmanın amacı "7. sınıf öğrencilerinin çokgenler ve özel dörtgenler ile ilgili kavram yanılgıları nelerdir?" sorusu, araştırmanın problem cümlesini oluşturmaktadır. Bu çalışmanın amacını gerçekleştirebilmek için aşağıdaki alt problemlere yanıt aranmaktadır.

1. 7. Sınıf öğrencilerinin çokgenlerle ilgili (iç bükey ve dış bükey, köşegen ve açı) kavram yanılgıları nelerdir?
2. 7. Sınıf öğrencilerinin özel dörtgenlerle ilgili (temel özellikleri, paralellik, yükseklik ve alan) kavram yanılgıları nelerdir?

Akademik başarıya göre öğrencilerin kavram yanılgıları arasında anlamlı bir farklılık var mıdır?

Araştırmanın Yöntemi: Bu araştırma 2013-2014 öğretim döneminde yedinci sınıf öğrencilerinin çokgenler ve özel dörtgenler ile ilgili kavram yanılgılarını belirlemek amacıyla yapılan bir çalışmadır. Bu amaç doğrultusunda nicel veriler kullanılmıştır. Bu araştırmanın evrenini Gaziantep ilinde bulunan öğrenciler oluşturmaktadır. Çalışma evreni oluşturulurken oranlı küme örnekleme yöntemi seçilmiştir. Oranlı küme örneklemi yapmak için, evren, önce araştırma bulguları açısından önemli farklılıklar getirebileceği düşünülen alt evrenlere ayrılmıştır. Böylelikle aynı türden

gelebilecek bulgular şansa bırakılmamıştır. Bu şekilde evrenin, daha temsili olduğu ifade edilebilir. Gaziantep'te bulunan farklı sosyo-ekonomik düzeyde bulunan toplam beş okuldaki 229 adet 7.sınıf öğrencileriyle gerçekleşmiştir. Nicel verilerin analizinde betimsel istatistikler, t testi ve tek yönlü ANOVA testi SPSS 17.0 paket programıyla uygulanmıştır. Ayrıca hata türlerinin ve kavram yanılgılarının belirlenmesi, ilgili literatürden yararlanılarak betimsel analiz uygulanmıştır. Araştırmanın güvenirliğini artırmak için Teşhis Testi'den elde edilen veriler matematik eğitimi alanında bir başka uzman tarafından da analiz edilmiştir. Kodlayıcılar arasındaki uyuşma oranı .92 olarak hesaplanmıştır.

Araştırmanın Bulguları: Öğrencilerin; iç bükey ve dış bükey, köşegen, toplam köşegen, bir çokgen içerisinde oluşan üçgen sayısı, çevre, iç açı ve dış açı kavramlarında farklı oranlarla yanılgıya düştükleri görülmektedir. Öğrencilerden bir çokgende bir köşegenin oluşturduğu toplam üçgen sayısını belirlemeleri ve betimlemeleri istenmektedir. Bu bilginin tespiti için $(n-2).180^{o}$ formülündeki (n-2) 'nin ne anlama geldiği sorulduğunda, öğrencilerin %51.1'i boş bırakmış ve %30.6'sında da kavram yanılgısı yapmıştır. Genel olarak en az kavram yanılgısının yapıldığı özel dörtgen de dikdörtgendir. Eşkenar dörtgen ve paralelkenarda yükseklik kavramı verilmiş ve alan hesaplanması istenmiştir. Kavram yanılgısı yapan öğrenciler, bu soruda yüksekliği, ait olduğu kenara indirememişlerdir. $F(2, 226)=11.37$, $p<.01$. Tukey çoklu karşılaştırma testi sonuçları, Matematik başarısı arttıkça kavram yanılgısına düşme oranının azaldığını ortaya koymaktadır. Bir başka ifadeyle; akademik başarısı yüksek grupta bulunan öğrencilerin, orta ve düşük grupta bulunan öğrencilerden daha az kavram yanılgısına düştüğü görülmektedir.

Araştırmanın Sonuçları ve Önerileri: Araştırmada, köşegen kavramı ile ilgili sorulara cevap alındığında öğrencilerin bazı kavram yanılgılarının olduğu görülmüştür. Ayrıca, teşhis testi sonuçlarında, orta seviye öğrencilerin düşük seviyedeki öğrencilere kıyasla daha fazla yanılgıya sahip oldukları sonucu, düşük seviyedeki öğrencilerin daha fazla soruyu boş bırakması neden olabilir. Çünkü kavram yanılgılarının tespiti için cevaplanan sorular değerlendirilmeye alınmış ancak boş bırakılan sorular hatalar bağlamında değerlendirilmemiştir.

Bu çalışma yedinci sınıf düzeyinde gerçekleştirilmiştir. Diğer çalışmalarda, farklı eğitim kademelerinde çokgenler ve özel dörtgenlerde kavram yanılgısının olma-olmama ve neden olduğu durumları incelenebilir. Nitel çalışmalar yapılmak suretiyle, yanılgıya sebebiyet veren düşünceler tespit edilebilir. Ayrıca karşılaştırmalı çalışmalar yapılarak; kavram yanılgılarının sonraki öğrenmeleri nasıl etkilediği araştırılabilir. Öğretmenlere hiyerarşik anlatımı ve öğrencilerine çokgenler arasındaki sınıflama çalışmaları yapmaları önerilebilir. Belirli prototiplerden başka; aynı şeklin farklı duruşları, öğrencilere gösterildiğinde öğrenmenin daha kalıcı olacağı düşünülmektedir.

Anahtar Kelimeler: Kavram yanılgısı, özel dörtgenler, çokgenler, akademik başarı, geometri.

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The Factors Contribute to Career Adaptability of High-School Students[1]

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general self-efficacy
multisample structural equation modeling

ABSTRACT

Purpose: Regarded as an important means of career development, preparation, and transition, career adaptability is a lifelong skill that can enable individuals to overcome 21st-century work–life requirements and challenges. This study aims to investigate the factors contributing career adaptability of high-school students, which pose beneficial implications for career counseling research and practice. **Research Methods**: The sample comprised 1,610 students from public (n = 862) and private (n = 748) high schools in Ankara, Turkey. The Multidimensional Perceived Social Support Scale, Life Orientation Test - Revised, General Self-Efficacy Scale, and Career Adapt-Abilities Scale served as data collection instruments. Multisample structural equation modeling (SEM) was used to investigate model differences across school type. By the reason of model invariance, single-group SEM was used to examine the model on the entire dataset. **Findings:** Results indicated that the measurement model fit with the data, while results of multigroup confirmatory factor analysis confirmed measurement equivalence under the assumptions of configural and metric invariance. Results showed that the hypothesized model accounted for 46% of the variance in career adaptability and thus corroborated the effects of perceived social support and optimism in predicting career adaptability via general self-efficacy. **Implications for Research and Practice**: Findings highlight the role of general self-efficacy, optimism, and social support in high-school students' career adaptability. There is a need for a carefully planned guidance and career education program, beginning in the elementary grades and continuing through secondary school.

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Introduction

Considerable technological, economic, social and moral changes in the 21st century have required new skills in the world of work. Given those transformations, adaptability has become a lifelong skill that helps individuals to navigate today's careers (Savickas, 1997) and master challenging professional circumstances (Hirschi, 2012).

From a traditional perspective, high-school years correspond to an exploration stage of career development (Niles & Harris–Bowlsbey, 2009) at which adolescents are expected to establish vocational identity (Erikson, 1968) by exploring possible careers, generating professional alternatives, and crystalizing their vocational choices (Porfeli & Lee, 2012). Considering salient characteristics of the stage, the need to foster career preparation and improve the decision-making skills of adolescents has come to the fore (Skorikov, 2007). Hirschi (2009) has described career adaptability as a fundamental skill for career development and the professional preparation of adolescents that encompasses behaviors such as planning, exploring oneself and one's environment, and making decisions (cf. Savickas, 1997).

Savickas (2005) has defined career adaptability as "the attitudes, competencies, and behaviors that individuals use in fitting themselves to work that suits them" (p. 45). Multidimensional and hierarchical, the skill of career adaptability includes four components, as outlined by Savickas and Porfeli (2012): concern (i.e., looking ahead and preparing for the future), control (i.e., having decision-making skills), curiosity (i.e., being inquisitive about oneself and occupational options), and confidence (i.e., believing in one's ability to overcome obstacles). Those components serve as psychosocial resources or abilities that facilitate adjustment to various tasks or environments. Career adaptability interrelates with both the development of self and the interaction of the self with the world (Angel, 2012). Thus, career adaptability enables individuals to cope with vocational developmental tasks and work trauma (Savickas, 2005).

Literature on the topic has underlined the impact of career adaptability on improving career development, career preparation, career decision making, and life satisfaction among adolescents (Hirschi, 2009; Soresi, Nota, & Ferrari, 2012). In particular, the optimism that reflects a positive outlook and orientation toward the future (Carver, Scheier, & Segerstrom, 2010) seems to be a pivotal factor in adapting to transitions (Stanojević, Krstić, Jaredić, & Dimitrijević, 2014). Earlier studies indicated the predictive power of optimism over career adaptability (Buyukgoze–Kavas, 2014, 2016; Rottinghaus, Day, & Borgen, 2005), and Ochoa (2011) and Prokopcáková (2015) have characterized higher optimism and higher self-efficacy as positive resources for acting in flexible ways.

As an external resource, perceived social support—that is, perceptions of a range of support such as being valued and getting care from parents, friends or significant others (Sarason, Levine, Basham, & Sarason, 1983)—provides a buffer in response to all stressful conditions (Zimet, Dahlem, Zimet, & Farley, 1988), transitions, and challenges in life (Arce, 1996). In particular, social support strengthens adaptive skills for overcoming career-related issues (Kenny & Bledsoe, 2005) and positively

influences the formation of career adaptabilities (Ebenehi, Rashid, Bakar, & Asimiran 2016). Several studies in the past decade have stressed that role of social support; for instance, Hirschi, Niles, and Akos (2011) found that as perceived social support increases, so does engagement in active career preparation. Wang and Fu (2015) also found that social support enhanced career adaptability as well as mediated the role of career self-efficacy between social support and career adaptability.

Generalized self-efficacy, based upon Bandura's (1995) construct of self-efficacy, connotes beliefs in one's capability in terms of personal competence to overcome challenging circumstances and stressful events (Schwarzer, Mueller, & Greenglass, 1999). Self-efficacy is also regarded as a predictor of career adaptability (Bartley & Robitschek, 2000), and research has shown its influence on career development (e.g., Fouad & Smith, 1996; Panagos & DuBois, 1999). All of the abovementioned relationships underscore that optimists generally perceive themselves to have greater social support (Brissette, Scheier, & Carver, 2002), which affects their perceived self-efficacy (Magaletta & Oliver, 1999; Prokopčáková, 2015; Schwarzer et al., 1999).

In Turkey, high-school students focus on studying for the nationwide university entrance examination instead of exploring themselves and possible occupations (Yeşilyaprak, 2012). The Turkish educational system comprises two major school types—private and public—which differ according to physical conditions, the variety of education materials, the qualifications of the teachers, the number of students in classrooms (Altun & Canca, 2011), the rate of success on the university entrance examination (Uygun, 2003), access to counselling and support services (Karakucuk, 2010), and the socioeconomic levels of parents (Altun & Canca, 2011; Uygun, 2003). By taking into account those differences in school types, this study proposed a model to investigate whether and to what extent optimism, perceived social support, and general self-efficacy predict career adaptability among high-school students in different types of schools in Turkey (Figure 1).

Method

Research Design

A correlational study was used to investigate the nature and magnitude of associations among perceived social support, optimism, general self-efficacy, and career adaptability of high-school students.

Research Sample

The sample consisted of 1,610 students in 9th, 10th, and 11th grades, all recruited by convenience sampling, at six public (53.5%) and six private (46.5%) high schools in Ankara.

Instruments

Life Orientation Test: Life Orientation Test: Revised (LOT-R). The LOT-R (Scheier & Carver, 1985) includes 10 items, consisting of positive items (Items 1, 4, and 10), negative items (Items 3, 7, and 9), and filler items (Items 2, 5, 6, 8), all responded to on a 5-point Likert-type scale. An adaptation of the LOT, whose first form included 12 items, to Turkish (Aydın & Tezer, 1991) ensured a two-factorial structure and adequate internal reliability (.72). Confirmatory factor analysis (CFA) showed that the factor

structure of the LOT-R comprised two dimensions: optimism and pessimism (χ^2 (7) = 37.045, χ^2/df = 4.63, CFI = .98, SRMR = .03, RMSEA = .05). Cronbach's alpha coefficient was .67 for the total sample, and composite reliability (CR) was .78.

Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS (Zimet et al., 1988) consists of 12 items and three subscales—namely, perceived social support from family (Items 3, 4, 8, and 11), friends (Items 6, 7, 9, and 12), and significant others (Items 1, 2, 5, and 10)—responded to on a 7-point Likert-type scale. The adaptation of the MSPSS to Turkish (Eker & Arkar, 1995) confirmed a three-factor structure and internal reliability, while CFA verified the three dimensions [χ^2 (47) = 134.707, χ^2/df = 2.87, CFI = .99, SRMR = .02, RMSEA=.03]. Cronbach's alpha was .85 for the total scale, .87 for the family subscale, .88 for the friends subscale, and .91 for the significant others subscale for the entire sample.

General Self-Efficacy Scale (GSE). The GSE (Schwarzer & Jerusalem, 1995) consists of 10 items as a global dimension responded to on a 4-point Likert-type scale. The Turkish adaptation of the instrument yielded two factors, an internal reliability of .83, and a test–retest reliability of .80 (Aypay, 2007). CFA confirmed one dimension [χ^2 (31) = 81.136, χ^2/df = 2.61, CFI = .99, SRMR = .02, RMSEA = .03,] and a high internal reliability of .86.

Career Adapt-Abilities Scale (CAAS). The CAAS (Savickas & Porfeli, 2012) consists of 24 items in four dimensions—concern (Items 1–6), control (Items 7–12), curiosity (Items 13–18), and confidence (Items 19 and 20)—responded to on a 5-point Likert-type scale. The CAAS: Turkish High School Form (Karacan–Ozdemir, 2016) includes four subscales [χ^2 (245) = 730.085, χ^2/df = 2.98; CFI = .90, SRMR = .05, RMSEA = .05] with internal reliability. Cronbach's alpha coefficients for the scales were .73, .70, .81, and .80, respectively.

Data Analysis

A multi-group structural equation modeling (SEM) by using the maximum likelihood (ML) was employed to evaluate group differences. Given a finding of model invariance, a single-group SEM was run.

Results

Prior to analysis, necessary assumption checks ensured no violation. The strongest and weakest correlations ranged from .49 to .28. Table 1 presents the means, standard deviations, and intercorrelations among study variables.

Table 1
Means, Standard Deviations, and Intercorrelations Among Study Variables

	M	*SD*	*1*	*2*	*3*	*4*
1. LOT-R	12.85	4.46	-			
2. MSPSS	60.14	14.37	.28**			
3. GSE	31.28	5.33	.30**	.28**		
4. CAAS	90.44	14.72	.34**	.34**	.49**	

Note. N = 1135. LOT-R = Life Orientation Test-Revised; MSPSS = Multi-Dimensional Perceived Social Support; GSE = General Self-Efficacy; CAAS = Career Adapt-Abilities Scale. **p < .01, two-tailed

The results of independent sample *t*-tests indicated significant differences among levels of optimism [t (1608) = -2.84, p = .01], perceived social support [t (1608) = -10.87, p = .00], general self-efficacy [t (1608) = -4.34, p = .00], and career adaptability [t (1608) = -3.53, p = .00] among public and private high-school students.

Measurement Model

As a precondition for group comparisons in SEM, measurement equivalence was assessed (Drasgow & Kanfer, 1985). First, a preliminary single-group CFA was computed for the entire dataset and for public and private school groups individually to ensure loose cross-validation (Brown, 2006). After slight modification, the fit indices indicated a measurement model fit (Table 2) that confirmed the suggested relationships among variables in all groups.

Multigroup CFA (MG-CFA) was run to gauge configural and metric invariance (Chen, 2008). By comparing the unconstrained model with the constrained one, configural invariance yielded adequate fit (Table 2), meaning that latent variables were similar in both groups. In turn, a chi-square (χ^2) difference test revealed a nonsignificant value (p = .07) by showing metric invariance that reflected the equivalence of indicator loadings and their corresponding factors across groups. The results appear in Table 2. Model validation was supported by standardized residual covariances without any exceptional cases beyond ±4.00 (Field, 2009) and parameter estimates with standardized regression weights around .50 and squared multiple correlations between 11% and 77%. In sum, the equivalent latent constructs and their factor loadings were confirmed across the groups.

Table 2.

Results of Measurement Model Testing and Measurement Equivalence

	χ^2	*df*	χ^2/df	*CFI*	*TLI*	*SRMR*	*RMSEA*	$\Delta\chi^2$
Optimal value			<5.0 [a]	>.90[b]	>.90[c]	<.08[d]	<.06[e]	
Single-group CFA								
Total sample	578.239	142	4.07	.95	.94	.04	.04	
Public high school	353.203	142	2.49	.95	.94	.04	.04	
Private high school	415.955	142	2.93	.94	.93	.04	.05	
Multigroup CFA								
Configural invariance	769.169	284	2.71	.95	.93	.04	.03	
Metric invariance	797.953	303	2.63	.94	.94	.04	.03	.07

Note. [a, b, c] Schumacker and Lomax (2004); [d, e] Hu and Bentler (1999)

Correspondingly, single-group SEM was used on the entire dataset to test the proposed structural model by taking into account invariance across the public and private high-school groups. Results appear in Table 3.

Structural Model

The structural invariance test was used to test the equivalence of all paths across school types as a prior step (Byrne & van de Vijver, 2010). In a comparison of the unconstrained structural model (χ^2 (286) = 785.774, χ^2/df = 2.75, CFI = .94, SRMR = .04, RMSEA = .03) and fully constrained model (χ^2 (306) = 823.721, χ^2/df = 2.69, CFI = .94, SRMR = .04, RMSEA = .03), the comparative fit indices difference test (ΔCFI) did not reveal group difference (ΔCFI = .002) since it was smaller than .01 (Cheung & Rensvold, 2002).

Table 3.

Summary of Model Fit Statistics for Hypothesized Model

Goodness-of-fit indices							
	χ^2	*df*	χ^2/df	*CFI*	*TLI*	*SRMR*	*RMSEA*
Proposed model	578.24	142	4.07	.95	.94	.04	.04

As Table 3 shows, although the chi-square value was significant (χ^2 (142) = 578.24, (p < .001), the fit indices implied the model's goodness-of-fit (CFI = .95, TLI= .94, SRMR = .04, RMSEA = .03). In support, the normed chi-square value was within an acceptable range: 4.07 (<5.00).

Squared multiple correlation coefficients (R^2) indicated that optimism and perceived social support accounted for 27% of the variance in general self-efficacy. In addition, the overall model explained 46% of the variance in career adaptability.

Hypothesis Testing

According to results, all direct and indirect paths examined by bootstrapping (set at 1,000) and bias corrected bootstrap 95% confidence intervals were statistically significant. Regression coefficients were between .20 and .39 and from small to medium in effect size. Moreover, the relationship between optimism and perceived social support was significantly positive (r = .56, n = 1,610, p < .01). Figure 1 displays the standardized parameter estimates.

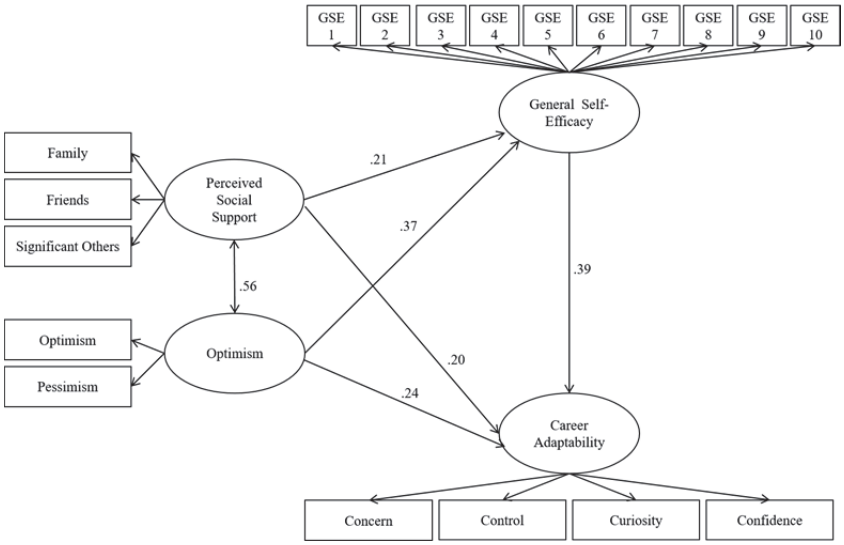

Figure 1. The hypothesized model

Regarding direct effects, optimism (β = .24, p < .05) and perceived social support (β = .20, p < .05) related significantly to career adaptability. Similarly, significant direct effects of optimism (β = .37, p < .05) and perceived social support (β = .21, p < .05) on general self-efficacy as a mediator variable emerged. More precisely, optimists had higher career adaptability. Similarly, the more social support that high-school students perceived from parents, friends, and significant others, the more career adaptability they had. In turn, perceived social support and optimism influenced general self-efficacy as a mediator variable. Lastly, data suggested how general self-efficacy affected career adaptability (β = .39, p < .05).

As for the indirect effects, optimism (β = .15, p < .05) and perceived social support (β = .08, p < .05) contributed to career adaptability as an endogenous variable through general self-efficacy. That is, high-school students who are optimistic and perceive more social support had greater general self-efficacy and career adaptability. In light of those results, all hypotheses were adjusted.

Discussion and Conclusion

The model of career adaptability exploring contributing factors did not differ across school types. For both private and public high-school students, all model variables interacted similarly, possibly because the education system in Turkey requires all high-school students regardless of school type to take the university entrance examination and make vocational choices based on their scores. In other words, the university exam requirement for all students might have acted as an environmental factor that resulted in similar interactions among model variables. However, that tentative assumption needs to be further assessed in future studies.

The first hypothesis confirmed the positive association between optimism and perceived social support, which was consistent with previous studies showing that optimists perceive greater social support (e.g., Dougall, Hyman, Hayward, McFeeley, & Baum, 2001) or are perceived as socially more attractive, hence their greater social networks (e.g., Vollmann, Renner, & Weber, 2007).

Regarding direct relationships, the proposed paths from optimism and perceived social support to general self-efficacy were also confirmed. By conceiving of a social network as a source of positive self-perspective, an individual could enhance his or her self-efficacy beliefs (Bandura, 1994). Subsequently, optimists believe in their potential to go further and overcome obstacles (Prokopčáková, 2015). As a supportive continuation of the literature, the results of this study indicate that high-school students with perceived social support are more optimistic (e.g., Luszczynska, Gutiérrez–Don, & Schwarzer, 2005) and evaluate themselves more efficaciously.

Accordingly, optimism was associated positively and directly with students' career adaptability, as reported in earlier studies (Buyukgoze–Kavas, 2016; Santilli, Marcionetti, Rochat, Rossier, & Nota, 2016). As for environmental factors, the positive impact of perceived social support on career adaptability meant that high-school students who perceived more support from their parents, peers, or significant others had a higher level of career adaptability. That result was somewhat consistent with other findings (Ulaş & Yıldırım, 2015; Wang & Fu, 2015), but not with all (Yousefi, Abedi, Baghban, Eatemadi, & Abedi, 2011). Such results suggest that providing high-school students with positive future orientation may improve their career adaptability before they transition from high school to university or work. In particular, considering the relationship between social support and career adaptability, school counselors should focus on identifying students with low social support from their peers, parents, and teachers.

Results also indicated a strong relationship between general self-efficacy and career adaptability, which extends the findings of related research. Although efficacious students can be expected to be more adaptive (Morton, Mergler, & Boman, 2014), which supports the finding of the present study, research on the association of general self-efficacy with career adaptability (e.g., Hirschi, 2009; Oncel, 2014) remains limited.

Concerning indirect relationships, results indicated the influences of optimism and social support on career adaptability via general self-efficacy. Optimistic high-school students who perceive more social support have greater general self-efficacy beliefs and, in turn, greater career adaptability. Previous research has provided somewhat congruent results by showing that self-efficacy beliefs mediated the relationships of personal and environmental variables such as optimism (Nauta, 2004) and social support (Keller & Whiston, 2008; Wang & Fu, 2015) with career-related variables such as adaptability. Such a finding of the mediator role of general self-efficacy contributes to research on the topic of career adaptability.

Of course, researchers should pay attention to the limitations of this study. First, 12th-grade students could not be included in the sample since they were preparing

for the university entrance examination and were absent from school during the study period. That exclusion might limit the generalization of the findings to high-school students at all grade levels. Second, the private and public schools in the study were selected from Ankara. To investigate differences in school type, researchers could incorporate students from a wide range of public and private schools in other cities. Third, a variety of exogenous variables such as personality, hope, career optimism, and socioeconomic status, as well as other mediators such as career decision-making self-efficacy and self-regulation, might be included in the model in future studies.

Career adaptability is a critical psychosocial resource for the career development of adolescents in order to manage requirements and challenges of the 21st century (Patton & Creed, 2007). The above findings have underscored the contributions of personal and environmental variables—namely, optimism, perceived social support, and general self-efficacy—to the career adaptability of high-school students regardless of school type, which extends literature on career adaptability in light of career construction theory. Apart from the direct influences of optimism and perceived social support on career adaptability, general self-efficacy mediates their relationships. Thus, a deeper understanding of factors contributing to the career adaptability of adolescents can help school counselors to design career counseling and development programs accordingly.

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Lise Öğrencilerinin Kariyer Uyum Yeteneklerini Yordayan Faktörler

Atıf:
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Özet

Problem Durumu: 21. yüzyıl ile gelen sosyal, teknolojik, ekonomik ve ahlaki değişimler kişilerin iş dünyasında birden fazla işle meşgul olabilme, kendilerini yenileyebilme ve değişen koşullara uyum sağlayabilme becerilerine sahip olmalarını gerekli kılmaktadır. Ayrıca "garanti iş" kavramının yerini proje bazlı çalışmalara ve mobil çalışanlara bırakması ve sınırları olmayan organizasyonların biçimlenmeye başlaması iş geçişleri ve değişimlerin sıklaşması gerçeğini doğurmuştur. Bu noktada kişilerin bu değişimler karşısında kendini merkezde tutarak kariyeri ile kişisel yaşamını uyumlaştırması ve yeniden yapılandırması, bu doğrultuda da uyum yeteneklerini artırması önemli hale gelmiştir. Lise yılları ilk mesleki seçimlerin yapılması ve okuldan iş hayatı ya da üniversiteye geçiş gibi bazı önemli değişimleri içermesi açısından odaklanılması gereken bir dönemdir. Bu dönemde ergenlerin yaşam boyu ihtiyaç duyacakları kariyer uyum becerileri açısından desteklenebilmesi önem taşımaktadır. Bu nedenle kariyer uyum yeteneklerini etkileyen değişkenlerin belirlenmesi ortaöğretim düzeyinde verilecek kariyer danışmanlığı ve mesleki rehberlik çalışmalarının biçimlendirilmesinde önemli katkı sağlayacaktır. Öte yandan, Türkiye'deki eğitim sistemi içinde aileler imkânları doğrultusunda çocuklarının daha iyi eğitim fırsatlarından yararlanabilmesi için özel okullara göndermeyi tercih edebilmektedir. Özel okul ve devlet okulları arasındaki farklılıklar göz önünde bulundurularak öğrencilerin kariyer uyum yeteneklerini etkileyen unsurların değişeceği varsayılabilir. Bu farklılıkların araştırılması ve önerilen model doğrultusunda ortaya konulması kariyer danışmanlığı çalışmalarının okul türüne göre yapılandırılabilmesine ışık tutacaktır.

Araştırmanın Amacı: Bu araştırmanın temel amacı; yapılandırmacı kariyer kuramı çerçevesinde lise öğrencilerinin kariyer uyum yeteneğini yordayan bazı olası faktörleri belirlemeye çalışmaktır. Bu doğrultuda, kariyer uyum yeteneği ile algılanan sosyal destek, iyimserlik ve genel öz-yeterlik değişkenleri arasındaki

yapısal ilişki ve bu değişkenlerin kariyer uyum yeteneğine katkıları araştırılmıştır. Ayrıca, araştırılan modelin okul türüne göre farklılaşıp farklılaşmadığı incelenmiştir.

Araştırmanın Yöntemi: Araştırma, ilişkisel bir araştırma desenine sahiptir. Bu araştırmanın örneklemini Ankara'daki 6 devlet ve 6 özel liseden kolay ulaşılabilirlik yöntemiyle seçilmiş 1610 (862 devlet, okulu 748 özel okul) lise öğrencisi oluşturmuştur. Devlet okulları Mamak, Keçiören, Sincan ve Etimesgut ilçelerinden seçilirken, özel okullar Çankaya bölgesinden alınmıştır. Üniversite sınavına hazırlandıkları gerekçesiyle okullarda bulunmayan 12. sınıf öğrencileri araştırmada yer alamamış, bu nedenle veriler 9, 10 ve 11. sınıf öğrencilerinden toplanmıştır. Bu çalışmada, Çok Boyutlu Algılanan Sosyal Destek Ölçeği (ÇBASDÖ; Zimet ve ark., 1988), Gözden geçirilmiş Yaşam Yönelimi Testi (YYT-R, Scheiver ve Carver, 1985), Genel Öz-yeterlik Ölçeği (GÖYÖ; Schwarzer ve Jerusalem, 1995) ve Kariyer Uyum Yetenekleri Ölçeği (KUY; Porfeli ve Savickas, 2012) veri toplama aracı olarak kullanılmıştır. Çoklu grup yapısal eşitlik modellemesi (YEM) kullanılarak önerilen modelin veriye uygunluğu test edilmiş, ancak sonuçların okul türüne göre (özel-devlet) fark göstermemesi üzerine, model, tek örneklemli YEM ile bütün katılımcılar üzerinde sınanmıştır.

Araştırmanın Bulguları: Devlet okulu, özel okul ve bütün grup üzerinde ayrı ayrı uygulanan tek örneklemli Doğrulayıcı Faktör Analizi (DFA) sonuçlarına göre ölçüm modelini onaylanmıştır. Ayrıca, modelin okul türüne göre incelenebilirliği ölçüm modeli karşılaştırmaları ile kanıtlanmıştır. Öte yandan, çok örneklemli yapısal eşitlik modellemesi modelin okul türüne göre farklılaşmadığını ortaya koymuştur. Bu nedenle tek örneklemli YEM analizi uygulanmış ve ki-kare/serbestlik derecesi 2.78, CFI değeri .96, SRMR değeri .03 ve RMSEA değeri .04 olarak bulunmuştur. Kabul edilebilir uyum indeksleri içerisinde yer alan bu sonuçlara göre, modelin veriye uyum sağladığını görülmüştür. Modelde kariyer uyum yeteneklerini yordayabileceği düşünülen yolların hepsi istatistiksel olarak anlamlı çıkmış, bu değişkenler arasında en yüksek ilişki genel öz-yeterlik ile kariyer uyum yeteneği arasında, en düşük ilişki ise algılanan sosyal destek ile kariyer uyum yeteneği arasında bulunmuştur. R^2 (çoklu korelasyon katsayısının karesi) değerlerine göre, algılanan sosyal destek ve iyimserlik genel öz-yeterlik üzerindeki varyansın %27'sini açıklarken, hepsi birlikte kariyer uyum yeteneği üzerindeki varyansın %46'sını açıklamıştır.

Araştırmanın Sonuç ve Önerileri: Modelin okul türüne göre farklılık göstermemesi Türkiye'deki eğitim sistemi içinde ister özel okul ister devlet okulu olsun bütün öğrencilerin aynı sınav sistemine tabi olması ile açıklanabilir. Ayrıca, kişinin mesleğinin bir kimlik göstergesi olarak görülmesi ve bu nedenle okul türü ne olursa olsun bütün öğrencilerin kariyer gelişimini önemsemeleri, bu durumun da kariyer uyum yeteneklerinin okul türüne göre farklılık göstermemesine yol açmış olabileceği şeklinde açıklanabilir. Öte yandan araştırma sonuçları, genel öz-yeterlik, iyimserlik ve algılanan sosyal desteğin ergenlerin kariyer uyum yetenekleri üzerindeki rolünü ortaya koymuştur. Bu bağlamda araştırma bulguları, okullarda yapılacak kariyer danışmanlığı çalışmalarının yapılandırılmasında önemli doğurgular taşımaktadır. Kariyer uyum yetenekleri Türkiye'de yeni çalışılmaya başlanmış bir konudur. Lise öğrencilerine yönelik yapılacak mesleki rehberlik çalışmalarının öğrencilerin

özellikleri ile mesleklerin özelliklerini eşleştirmeye dayalı çalışmaların ötesinde beceri gelişimine dayalı kariyer yapılandırması ve eğitimine yönelik programları içermesinin gerekliliği vurgulanabilir. Bu nedenle gelecek çalışmalar için, kariyer uyum yeteneklerini etkileyen unsurların daha derinlemesine incelenmesi, daha farklı değişkenleri içeren yeni modellerin test edilmesi, farklı okul türlerinin (Güzel Sanatlar Lisesi, Fen Lisesi, Temel Lise vb.) de dahil edilerek örneklem grubunun genişletilmesi ve kariyer uyum yetenekleri yüksek ve düşük olan öğrencilerin boylamsal olarak incelenmesi önerilebilir.
Anahtar Kelimeler: Kariyer uyum yeteneği, sosyal destek, iyimserlik, genel özyeterlik, çoklu grup yapısal eşitlik modellemesi.

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The Effect of Using the Creative Reversal Act in Science Education on Middle School Students' Creativity Levels[1]

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ABSTRACT

Purpose: The purpose of this study is to examine the effects of the creative reversal act (CREACT) used in teaching ecosystems topics on the creativity levels of middle school students. **Research Methods**: The research was conducted using a quasi-experimental design, a quantitative research method, and a pretest–posttest control group design. The sample of the study was comprised of 39 students in two groups. The quantitative data were analyzed using the dependent and independent samples t-tests in SPSS software. **Findings**: There was a significant difference between the experimental group, which underwent creative reversal act training, and the control group, which underwent curriculum-based training in terms of creativity scores. The experimental group had higher scores than the control group. There was a significant difference between the two groups in terms of the subcomponents of creativity (fluency, flexibility, originality, and elaboration). The experimental group was more successful in terms of fluency, flexibility, originality, and elaboration. There was a significant difference between the creativity pre- and post-test scores of the experimental group, who obtained higher scores on the post-test. **Implications for Research and Practice**: The results have revealed that the practice of creative reversal act technique in the teaching of a science subject (ecosystem) promoted the creativity level of seventh graders. The results of such programs whose effectiveness have been tested with regard to creativity training demonstrate that student creativity can be improved. Creating classroom environments in which creativity is highlighted and used is important in terms of increasing the quality of education.

[1] This study was presented as an oral presentation at the III nd International Eurasian Educational Research Congress

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Introduction

The extent to which individuals in a society can be creative is the one of the leading societal questions of the 21st century. Individual creativity, that is, the ability to create original ideas, is the key to contributing to the development of society and increasing its welfare (Davies et al., 2013). While brilliant ideas can mean effective solutions for complex problems, they also have the potential to be transformed into a product with good market share. Promoting creativity and, thus, its quality, is connected to the field of "education" and points to "creativity training," whereby quality is valued rather than giving importance to solely theoretical knowledge and meeting standards.

While Torrance (1968) defined the concept of creativity, which has been investigated by many international researchers for years as being sensitive to disorders and disharmony, determining difficulties, searching for solutions, making predictions, and forming or retesting hypotheses about the deficiencies (as cited in Sungur, 1997), Kirisoglu (2002) regarded it as the product of a multi-dimensional thinking mind. Bentley (1999) regarded creativity as a process through which information is received, shaped, and reshaped until a new product or idea is formed. In addition, creativity is not only producing an original work, but also constructing new syntheses from existing knowledge and, thus, producing different solutions to problems (Koray, 2003). Creativity, which has been regarded as a multi-dimensional concept, is also conceptualized as divergent thinking and creative expert performance (An, Song and Carr, 2016). Creativity is not a property that only artists and scientists can achieve. Although it is unclear whether creativity is innate or acquired, everybody possesses this trait to some extent. It is acknowledged that creativity exists in both cases. Throughout history, many people have had the combination of high intelligence and superior creativity. It has been observed that, with a set objective and enough motivation, these individuals created many innovations that facilitated human lives (Koray, 2003). The first examples that come to mind include Avicenna, Ibn Khaldun, Al-Farabi, Edison, Maxvell, and Einstein, who had superior creativity and intelligence.

While it is commonly agreed that the creative ability is innate, it has also been discovered that it can be improved. Creative development can be achieved by both formal and informal education. In addition, creativity training can be employed in a variety of fields, such as science, education, art, business, and engineering (Conner, 1998; Ihsen, 1998). It has been demonstrated that, given the opportunity to exploit and process creativity through programs to develop the creative potential in almost every field, promising results can be achieved in an individual's development and ability to create a product (Atkinci, 2001; Dinc, 2000). Creativity and creative thinking has become a significant skill in terms of keeping up with the changing world. Many countries strive to increase the number of creative individuals in their societies and exploit them by incorporating them into the system. Studies on creativity training have played a key role in such enterprises. The use of practices such as the creative reversal act, which is the primary concern of this study, and investigating the effects

of such techniques on promoting creativity has the potential to increase the number of creative individuals.

The creative reversal act (CREACT), which was developed by Sak (2014) in line with the Janusian thinking process, was put forward by Rothenberg and requires construction, differentiation, opposition, combination, and elaboration, respectively. As for the Janusian thinking process, it is based on the deliberate determination or development of opposing ideas or propositions in the thought process, followed by the production of new ideas, concepts, theories, and innovations through the combination of these oppositions (Sak, 2009). Janusian thinking centers on the following propositions (Sak, 2009): Existing thought is correct; the opposite of the existing idea is as correct as this thought; oppositions exist simultaneously to form contradictions; opposites are like the east and the west, and this polarity explains the idea in all aspects. It has been suggested that geniuses like Einstein have used this thinking process. The creative reversal act (CREACT), whose theoretical background rests on the Janusian thinking process, comprises five stages. These stages and related details are presented in Table 1.

Table 1

CREACT Discussion and Thinking Form.

Stage		*Discussion and Thinking questions*	*Cognitive Task / Student Task*
1. Construction (Motivation to create)		What do we know about this concept, idea, or theory? What are the advantages of using this? How do you define this concept or phenomenon?	Discover the concept, theory, or idea from different aspects.
2. Decomposition (Deviation or Separation)	*Decomposing the concept into its components*	What are some of the components, elements, or aspects of this concept? What comprises this concept? Why is it a component?	Determine the basic components and differentiates between them.
	Decomposing the components into its subcomponents	What are the subcomponents, components, or elements of this concept? What comprises these components? Why is it a component?	Determine and differentiates between the subcomponents or elements.

Table 1 Continue

3. Opposition (Simultaneous Opposition or Antithesis)	What is the opposite of this component that is as accurate or valid as itself? Is this opposition that you selected in order to explain the concept, as correct or valid as its opposite? In what aspects do these oppositions oppose themselves? (category, dimension, quantity, space, scale, etc.)	Determine the opposite of each element. Determine whether the opposites are as correct and valid as their opposites. Determine the dimensions of opposition.
4. Combination (Construction of the Theory, Discovery, or Experiment)	How do you define this concept using the opposing components so as to create a contradiction? What kind of a relationship does the new definition contain? In what aspects does the new definition explain the concept?	Determine two opposing elements in order to form a new definition. Evaluate the contradictory state of the new definition. Determine in what aspects the new definition explains the concept.
5. Elaboration	How would you like to make the new definition more contradictory or elaborate?	Reorganize the definition If necessary, add new contradictions.

Source: Sak (2014)

As can be seen in Table 1, the CREACT technique comprises five components: construction, decomposition, opposition, combination, and elaboration. In the construction stage, the student explains what s/he knows about a concept, idea, or theory. Discover a concept, theory or idea from differing aspects. Determine the basic components of the concept, theory, or ideas which s/he discovered in the decomposition stage. Determine the opposites of the components, which are as correct and valid as the original components determined in the opposition stage. Form new definitions and explanations using two opposing components in the combination stage Reorganize the formed definitions in the elaboration process, which is the final stage. After all of these stages have been completed, the learner can start from scratch and arrive at a completely different conclusion (Sak, 2014). On these grounds, the CREACT thinking process follows a spiral process.

An analysis of the related literature points to previous studies on creativity training. In a study by Ritter and Mostert (2016), it was found that Cognitive-Based Creativity Training increased creativity in university students and, thus, developed the creative problem-solving skills of learners who used divergent and convergent thinking

processes in line with increased cognitive flexibility. In another study, it was found that the use of natural elements related to living things among young children increased visual creativity (Studente, Seppala and Sadowska, 2016). In a study on the use of creative thinking techniques in science classes, sixth, seventh, and eighth graders stated that it triggered thinking about the techniques and improved creativity and problem solving (Koray, 2005). With regard to the creative reversal act, which is the primary concern of the current study, Sak and Oz (2010) documented that the practice of the creative reversal act improved creative thinking skills in students. Another study by Akar and Sengil Akar (2013) revealed that the use of creative reversal act technique in art classes increased creative thinking skills in fifth graders. In a later study, Eker and Sak (2016) found that the creative reversal act technique is favored by middle school students and thought to be effective in thinking training. Similar results have been obtained in studies on the effectiveness of creativity practices (Shaklee and Amos, 1985; Szecsi, 2008; Hendrix, Eick, and Shannon, 2012; Almutairi, 2015). As can be seen, the literature hosts studies in which various creativity training programs have been tested. However, the most crucial part of creative thinking training is the customization of programs for every age, profession, and even subject, if necessary. The testing of the effectiveness of these programs, which are expected to have certain common features with respect to creativity criteria, will only be possible through scientific research. Further studies on creativity instruction and the interpretation of the findings may facilitate increasing the quality and prevalence of such programs. The aim of the present study is to examine the practice of the creative reversal act (CREACT) technique and analyze its effectiveness concerning the level of creativity of middle school students. It is assumed that the present study will contribute to the literature of experimental research on creativity training and the CREACT technique.

In line with the research objectives, three research questions were formulated:

1. Is there a significant difference in the creativity levels of the experimental group, which performed creative reversal act (CREACT) practices, and the control group, which followed traditional instruction in line with the curriculum?

a. Is there a significant difference between the experimental group, which underwent creative reversal act (CREACT) practices, and the control group, which received instruction in line with curriculum, in terms of the subcomponents of creativity (fluency, flexibility, originality, elaboration)?

2. Is there a significant difference between the creativity pre- and post-test scores of the experimental group, which underwent creative reversal act (CREACT) practices?

a. Is there a significant difference between the creativity subcomponent (fluency, flexibility, originality, elaboration) pre- and post-test scores of the experimental group, which underwent creative reversal act (CREACT) practices?

3. Is there a significant difference between the creativity pre- and post-test scores of the control group, which underwent traditional instruction?

a. Is there a significant difference between the creativity subcomponent (fluency, flexibility, originality, elaboration) pre- and post- test scores of the control group, which underwent curriculum-based instruction?

Method

Research Design

The experimental method was employed in the present study. The experimental method is a research design through which the cause-effect relationship between the variables and the factors affecting them are examined by creating an artificial situation (Cepni, 2012). In order to investigate the research questions, the quasi-experimental method and pre-test/post-test design with control groups were employed. The independent variable was the "creative reversal act based practices" while the dependent variable was "creativity."

Research Sample

The research was carried out at a state middle school in Kdz. Eregli in Zonguldak province during the 2015-2016 academic year. The sample comprised 39 seventh grade students. There were two groups: the experimental group (19 students), which underwent CREACT-based training, and the control group (20 students), which underwent traditional curriculum-based training. The control group comprised 12 girls and 8 boys, and the experimental group comprised 11 girls and 8 boys.

Research Procedure

The study covered the "Human and the Environment," "Biological Diversity," and "Environmental Problems" units of the seventh grade Science curriculum. CREACT-based activities were devised by the researchers, and it was ensured that the activities addressed the gains required by the topics and the properties of the techniques. The practices included five activities: The first activity was related to the concept of "biological diversity." Students were asked to redefine this concept in their own words using the CREACT technique. By combining the components related to biological diversity with the opposites of such components, and using them in the same sentence, a new biological diversity definition was created. The second and third activities based on the CREACT technique were about "factors threatening biological diversity." In the second activity, the "pollution" concept was divided into its components (i.e., soil, air, water, noise). The subcomponents of these components were formed, and the students were asked to write a poem on the components and their opposites. The poem had at least four lines. In the third activity, the answers to the question, "What are the environmental problems affecting biological diversity?" were listed. Within the scope of this question, slogans were written in relation to air

and water pollution, population density, soil erosion, deforestation, and threats to sea life. The fourth and fifth activities were on "endangered living things and respect to nature." In the fourth activity, a news title creation activity was carried out, related to factors causing endangerment of species and the opposites of these factors. Newspaper clips were prepared in order to increase awareness into this topic. In the fifth activity, concepts and their opposing concepts related to "animal and plant love" were determined, and a poem writing activity was organized. The CREACT practices lasted for four weeks and including the TTCD pre- and post-tests, a total of six weeks.

Data Collection Instrument

Figural Form A of the Torrance Tests of Creative Thinking (TTCT) was used in data collection. The TTCT Figural Form test comprised three activities: forming pictures, picture completion, and parallel lines (repeated lines). TTCT yields the fluency, flexibility, originality, and elaboration subcomponents of creativity scores and the creativity total score. TTCT Figural Form A was rated by two raters and the inter-rater reliability coefficient was found to be .75. The subdimensions of creativity were: fluency, the ability to create various oral or written ideas in response to an open-ended question; flexibility, the ability to develop different approaches to a problem; elaboration, the ability to detail the proposed idea; and finally, originality, creative thinking skills related to originality in thought and act.

Data Analysis

The data collected were analyzed in SPSS using dependent and independent t-tests.

Results

In this section, the findings related to the research questions are presented. Data related to research question 1 are presented in Tables 2 and 3:

Table 2

Results of the Independent Samples t-test between the Experimental and Control Group Creativity Post-test Scores

Variable	*Group*	*N*	*M*	*S*	*df*	*T*	*p*
Creativity	Experimental	19	63.57	6.66	37	3.9	.000**
	Control	20	53.55	9.13			

According to Table 2, there is a significant difference between the experimental and control group creativity post-test scores ($t_{(37)}$=3.9, p<.01). The mean post-test scores of the experimental group (M=63.57) was higher than that of the control group

(M=53.55). The experimental group had a higher arithmetic mean than that of the control group.

Table 3

Results of the Independent Samples t-test between the Experimental and Control Group Creativity Subcomponents (Fluency, Flexibility, Originality, Elaboration)

Variables	*Group*	*N*	*M*	*S*	*df*	*t*	*p*
Fluency	Experimental	19	22.52	1.42	37	2.09	.043*
	Control	20	21.05	2.74			
Flexibility	Experimental	19	15.26	2.44	37	4.006	.000**
	Control	20	11.95	2.70			
Originality	Experimental	19	14.21	2.85	37	3,08	.004**
	Control	20	11.45	2.72			
Elaboration	Experimental	19	11.57	2.38	37	3.07	.004**
	Control	20	9.10	2.63			

An analysis of Table 3 shows that there is a significant difference between the experimental and control groups in terms of fluency post-test scores ($t_{(37)}$ =2.09, p<.05). The experimental group (M=22.52) had higher fluency post-test scores than the control group (M=21.05). The experimental and control group also significantly differed in terms of their flexibility post-test scores ($t_{(37)}$=4.006, p<.01). The experimental group had higher mean flexibility post-test scores (M=15.26) than that of the control group (M=11.95). Similarly, there was a significant between groups difference in terms of originality and elaboration post-test scores ($t_{(37)}$=3,08, p<.01) ($t_{(37)}$=3.07, p<.01). The experimental group (M=14.21) had higher post-test scores than the control group (M=11.45) in the originality test. In the same way, the experimental group had higher elaboration post-test scores (M=11.57) than the control group (M=09.10). On the basis of these results, it could be argued that the experimental group was more successful than the control group in terms of the originality and elaboration subcomponents. Data related to research question 2 are presented in Tables 4 and 5:

Table 4

Results of the Dependent Samples t-test between Experimental Group Creativity Pre- and Post-test Scores

Variable	*Measurement*	*N*	*M*	*S*	*df*	*t*	*p*
Creativity	Pre-test	19	54.36	12.55	18	3.73	.002**
	Post-test	19	63.57	6.66			

Table 4 demonstrates a significant difference between the creativity pre- and post-test scores of the experimental group ($t_{(18)}$=3.73, p<.01). The experimental group creativity post-test scores (M=63.57) were found to be higher than their pre-test scores (M=54.36).

Table 5

Results of the Dependent Samples t-test between the Experimental Group Pre- and Post-test Creativity Subcomponent (Fluency, Flexibility, Originality, Elaboration) Scores

Variables	*Measurement*	*N*	*M*	*S*	*df*	*t*	*P*
Fluency	Pre-test	19	21.52	3.93	18	1,06	.303
	Post-test	19	22.52	1.42			
Flexibility	Pre-test	19	10.36	3.11	18	7.25	.000**
	Post-test	19	15.26	2.44			
Originality	Pre-test	19	12.00	3.49	18	2.61	.018*
	Post-test	19	14.21	2.85			
Elaboration	Pre-test	19	10.47	3.48	18	1.69	.108
	Post-test	19	11.57	2.38			

Table 5 shows that there is no significant difference between the fluency pre- and post-test scores ($t_{(18)}$=1.06, p>.05) of the experimental group, which underwent CREACT practices. However, the experimental group fluency post-test scores (M=22.52) were higher than their pre-test scores (M=21.52). A significant difference was also found between the experimental group flexibility pre- and post-test scores ($t_{(18)}$=7.25, p<.01). The experimental group flexibility post-test scores (M=15.26) were higher than that of their pre-test scores (M=10.36). With regard to the experimental group originality pre- and post-test scores, a significance difference was found ($t_{(18)}$=2.61, p<.05). The experimental group originality post-test scores (M=14.21) were found to be higher than that of their pre-test scores (M=12.00). No significant difference was found between the experimental group elaboration pre- and post-test scores ($t_{(18)}$=1.69, p>.05). However, the experimental group elaboration post-test scores (M=11.57) were found to be higher than their pre-test scores (M=10.47)

Data related to research question 3 are presented in Tables 6 and 7.

Table 6

Results of the Dependent Samples t-test between Control Group Creativity Pre- and Post-test Scores

Variables	*Measurement*	*N*	*M*	*S*	*df*	*t*	*P*
Creativity	Pre-test	20	48.20	9.27	19	1.96	.064
	Post-test	20	53.55	9.13			

According to Table 6, there is no significance difference between the control group creativity pre- and post-test scores ($t_{(19)}$= 1.96, p>.05). However, the control group creativity post-test scores (M=53.55) were found to be higher than that of their pre-test scores (M=48.20).

Table 7

Results of the Dependent Samples t-test between the Control Group Creativity Subcomponent (Fluency, Flexibility, Originality, Elaboration) Pre- and Post-test Scores

Variables	*Measurement*	*N*	*M*	*S*	*df*	*t*	*P*
Fluency	Pre-test	20	15.10	3.43	19	5,54	.000**
	Post-test	20	21.05	2.74			
Flexibility	Pre-test	20	10.80	2.70	19	1.47	.158
	Post-test	20	11.95	2.70			
Originality	Pre-test	20	12.20	2.70	19	1.05	.304
	Post-test	20	11.45	2.72			
Elaboration	Pre-test	20	10.10	2.17	19	1.42	.171
	Post-test	20	9.10	2.63			

Table 7 demonstrates a significant difference between the control group fluency pre- and post-test scores ($t_{(19)}$=5.54, p<.01). The control group fluency post-test scores (M=21,.05) were higher than their pre-test scores (M=15.10). No significant difference was found between the control group pre- and post-tests of flexibility ($t_{(19)}$=1.47, p>.05), originality ($t_{(19)}$= 1,05, p>.05), and elaboration ($t_{(19)}$= 1.42, p>.05).

Discussion and Conclusion

The following were concluded on the basis of the present study: There was a significant difference between the experimental group, which underwent creative reversal act (CREACT) training, and the control group, which underwent curriculum-based training in terms of creativity scores. The experimental group had higher scores than the control group. There was a significant difference between the two groups in terms of the subcomponents of creativity (fluency, flexibility, originality, and elaboration). The experimental group was more successful in terms of fluency, flexibility, originality, and elaboration. There was a significant difference between the creativity pre- and post-test scores of the experimental group, which underwent creative reversal act (CREACT) practices, with higher scores on the post-test. There was a significant difference between the experimental group pre- and post-test scores in terms of the subcomponents of flexibility and originality, with higher scores on the post-test. No significant difference was found between the pre- and post-test creativity scores of the control group, which underwent curriculum-based training. Of the subcomponents of creativity, there was a significant difference only between the fluency pre- and post-test scores, with higher scores on the post-test. The results have revealed that the practice of creative reversal act (CREACT) technique in the teaching of a science subject (ecosystem) promoted the creativity level of seventh grade students. The results of such programs whose effectiveness have been tested with regard to creativity training demonstrate that student creativity can be improved.

An analysis of the reported results in the related literature supports the findings of the present study. In a study by Sak and Oz (2010), it was found that the practice of creative reversal act techniques improved creative thinking skills in students. Another study by Akar and Sengil Akar (2013) illustrated that the use of the creative reversal act technique in art classes increased creative thinking skills in fifth graders. In an experimental study on creativity, it was understood that the use of live plants and natural elements in the classroom increased visual creativity skills in students (Studente, Seppala and Sadowska, 2016). Another research by Shaklee and Amos (1985) demonstrated that there was an increase in the problem-solving skills of students who utilized CREACT techniques during the process. Many studies on the effectiveness of the creativity practices have yielded similar results (Szecsi, 2008; Hendrix, Eick, and Shannon, 2012; Almutairi, 2015). In addition, it has been argued that classroom environments that promote creativity give students the freedom to make choices, put forward different ideas, and accept different ideas, which increase their self-confidence. On the other hand, in classroom environments that are not creative, student ideas are not taken into consideration and the authority of the teacher is noticeable (De Souza Fleith, 2000). Creating classroom environments in which creativity is highlighted and used is important in terms of increasing the quality of education. Conducting experimental studies on the effectiveness of creativity training and the interpretation of the obtained data may increase the quality and prevalence of such programs. Both CREACT techniques and other

creativity trainings will contribute to practitioners who will perform related activities. However, instead of working with few participants, which is a limitation of the present study, more individuals should be included in such studies.

The following recommendations can be made on the basis of the present research:

It is presumed that the utilization of the creative reversal act (CREACT) and related programs in Science and Technology, Social Sciences, Turkish, Mathematics, Art, Music, etc. classrooms will increase student creativity and other high-order thinking skills and academic success. In education programs in Turkey, creative thinking is one of the basic principles within the framework of the constructivist approach. For these reasons, creative reversal act practices should be given more importance at different stages of formal education. In this respect, students can be given in-service training seminars on how to use the technique in science and other appropriate classes In addition, sample practices related to how this program can be applied as well as theoretical information should be provided to pre-service teachers. Further studies might test the effectiveness of the CREACT technique in different courses and samples. Qualitative or mixed-design studies can be designed in order to understand whether the technique is practical.

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Fen Öğretiminde Yaratıcı Zıt Düşünme Tekniğinin Uygulanmasının Ortaokul Öğrencilerinin Yaratıcılık Düzeylerine Etkisi

Atıf:

Karaca, T., & Koray, Ö. (2017). Fen öğretiminde yaratıcı zıt düşünme tekniğinin uygulanmasının ortaokul öğrencilerinin yaratıcılık düzeylerine etkisi. *Euraisan Journal of Educational Research*. 67, 199-214. http://dx.doi.org/10.14689/ejer.2017.67.12

Özet

Problem Durumu: 21. yüzyılda bütün toplumların en önem verdiği konuların başında, toplum bireylerinin ne derece yaratıcı olabileceği olgusu gelmektedir. Çünkü bireylerin yaratıcılığı yani özgün fikirler üretebilmeleri, bulundukları toplumun kalkınmasını sağlayacak ve refah düzeyini yükseltebilecek anahtar bir role sahiptir. İyi fikirler karmaşık yapılı problemler için etkili çözümler anlamına gelebileceği gibi, pazar payı yüksek olan her türlü ürüne dönüşme özelliği de taşır. Bireylerin yaratıcılığını dolayısıyla niteliğini arttırmak "eğitim" alanı ile ilişkili olup, salt teorik bilginin önemsendiği ve standartların yerine getirildiği bir anlayıştan ziyade, eğitimde kalitenin ön planda tutulduğu "yaratıcılık eğitimini" işaret etmektedir. Yaratıcılık ve yaratıcı düşünme, değişen dünyaya uyum sağlamada çok önemli bir beceri olarak değerlendirilmektedir. Pek çok ülke kendi toplumlarındaki yaratıcı bireylerin sayılarını arttırmak ve de sistemin içerisine dâhil ederek onlardan faydalanmak adına girişimlerde bulunmaktadır. Yaratıcılık eğitimi üzerine yapılan çalışmalar bütün bu girişimler için anahtar role sahiptir. Bu çalışmanın da konusunu oluşturan yaratıcı zıt düşünme tekniği gibi pek çok uygulamanın yaratıcılık eğitimi bağlamında kullanılması ve bu tür tekniklerin bireylerin yaratıcılıklarını geliştirmedeki etkilerinin incelenmesi yaratıcı bireylerin sayısını arttırabilecek bir potansiyele sahiptir.

Araştırmanın Amacı: Bu çalışmanın amacı, ekosistem konusu üzerine yaratıcı zıt düşünme tekniğinin (YAZID) uygulanmasının ortaokul öğrencilerinin yaratıcılık düzeylerine etkisini incelemektir. "Yaratıcılık" bağımlı değişkeni üzerindeki etkisi

incelenen bağımsız değişken "yaratıcı zıt düşünme tekniğine dayalı uygulamalar" dır. Araştırmanın amacı doğrultusunda belirlenen sorular şu şekildedir:

1. Yaratıcı zıt düşünme (YAZID) tekniği uygulamalarının yapıldığı deney grubu ile müfredata uygun öğretimin yapıldığı kontrol grubu arasında yaratıcılık düzeyi açısından anlamlı bir farklılık var mıdır?

a. Yaratıcı zıt düşünme (YAZID) tekniği uygulamalarının yapıldığı deney grubu ile müfredata uygun öğretimin yapıldığı kontrol grubu arasında yaratıcılığın alt boyutları (akıcılık, esneklik, orijinallik, ayrıntılılık) açısından anlamlı bir farklılık var mıdır?

2. Yaratıcı zıt düşünme (YAZID) tekniği uygulamalarının yapıldığı deney grubu öğrencilerinin yaratıcılık ön test ve son test puanları arasında anlamlı bir farklılık var mıdır?

a. Yaratıcı zıt düşünme (YAZID) tekniği uygulamalarının yapıldığı deney grubu öğrencilerinin yaratıcılığın alt boyutları (akıcılık, esneklik, orijinallik, ayrıntılılık) ön test ve son test puanları arasında anlamlı bir farklılık var mıdır?

3. Müfredata dayalı uygulamanın yapıldığı kontrol grubu öğrencilerinin yaratıcılık ön test ve son test puanları arasında anlamlı bir farklılık var mıdır?

a. Müfredata dayalı uygulamanın yapıldığı kontrol grubu öğrencilerinin yaratıcılığın alt boyutları (akıcılık, esneklik, orijinallik, ayrıntılılık) ön test ve son test puanları arasında anlamlı bir farklılık var mıdır?

Araştırmanın Yöntemi: Araştırmada deneysel yöntem kullanılmıştır. Araştırma problemlerini incelemek için, deneysel yöntemler içerisinden yarı deneysel yöntem ve öntest-sontest kontrol gruplu desen kullanılmıştır. Araştırmanın yöntemine uygun olarak çalışma grubunu, bu okulda öğrenim gören 39 7. Sınıf öğrencisi oluşturmaktadır. Araştırma verilerini toplamak için Torrance Yaratıcı Düşünme Testi (TYDT) Şekilsel A formu kullanılmıştır. Araştırma kapsamında elde edilen veriler SPSS paket programında bulunan bağımlı ve bağımsız gruplar için t-testi yöntemlerine göre analiz edilmiş ve araştırma bulgularına ulaşılmıştır.

Araştırmanın Bulguları: Yaratıcı zıt düşünme (YAZID) tekniğinin uygulandığı deney grubu ile müfredata uygun öğretimin yapıldığı kontrol grubu arasında yaratıcılık puanı açısından deney grubu lehine anlamlı bir farklılık vardır. ($t_{(37)}$=3,9, p<.01). Yaratıcılığın alt boyutları akıcılık ($t_{(37)}$ =2,09, p<.05), esneklik ($t_{(37)}$=4,006, p<.01), orjinallik ($t_{(37)}$=3,08, p<.01) ve ayrıntılılık ($t_{(37)}$=3,07, p<.01) açısından her iki grup arasında anlamlı farklılık tespit edilmiş olup, farklılık deney grubu lehinedir. Yaratıcı zıt düşünme (YAZID) tekniği uygulamalarının yapıldığı deney grubu öğrencilerinin yaratıcılık ön test ve son test puanları arasında anlamlı bir farklılık vardır ($t_{(18)}$=3,73, p<.01). Farklılık deney grubunun sontest puanları lehinedir. Yaratıcılığın alt boyutlarından esneklik ($t_{(18)}$=7,25, p<.01) ve orjinallik ($t_{(18)}$=2,61, p<.05). açısından deney grubunun öntest ve sontest puanları arasında, sontest puanları lehine anlamlı bir farklılık vardır. Müfredata dayalı uygulamanın yapıldığı kontrol grubu öğrencilerinin yaratıcılık toplam ön test ve son test puanları arasında anlamlı bir

farklılık yoktur ($t_{(19)}$= 1,96, p>.05). Yaratıcılık boyutlarından sadece akıcılık açısından kontrol grubunun öntest ve sontest puanları arasında anlamlı bir farklılık vardır ($t_{(19)}$=5,54, p<.01). Bu boyut açısından farklılık kontrol grubunun sontest puanları lehinedir.

Araştırmanın Sonuçları ve Önerileri: Araştırma sonuçlarına göre; bir fen konusu (ekosistem) üzerine yaratıcı zıt düşünme tekniğinin (YAZID) uygulanmasının ortaokul 7. Sınıf öğrencilerinin yaratıcılık düzeylerini geliştirdiği tespit edilmiştir. Yaratıcılık eğitimi bağlamında etkisi sınanan bu tür programların ortaya koyduğu sonuçlar, öğrencilerin yaratıcılıklarının geliştirilebileceğini göstermektedir. Ayrıca öğretmenler tarafından yaratıcılığın ön plana alındığı ve kullanıldığı sınıf ortamlarının hazırlanması, okullarda verilen eğitimin kalitesini arttırma adına da önemlidir. Öğretmenlerin Fen Bilimleri dersi ve Sosyal Bilgiler, Türkçe, Matematik, Resim, Müzik vb. gibi diğer derslerde yaratıcı zıt düşünme (YAZID) ve benzeri programları kullanmaları önerilmektedir. Çünkü bu tür programların yaratıcılığın yanı sıra diğer üst düzey düşünme becerilerini de arttıracağı öngörülmektedir. Ayrıca hizmet içindeki öğretmenlere tekniğin fen derslerinde ve uygun olan diğer derslerde nasıl uygulanacağına yönelik hizmet içi eğitim seminerleri verilebilir. Öğretmen adaylarına da teorik bilginin yanı sıra yöntemin nasıl uygulanacağına ilişkin örnek uygulamalar lisans öğrenimleri boyunca gösterilmelidir.

Anahtar Kelimeler: Janusian düşünme süreci, Torrance yaratıcı düşünme testi, insan ve çevre ünitesi, deneysel çalışma.

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The Relationship between Teacher Candidates' Emotional Intelligence Level, Leadership Styles and Their Academic Success

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ABSTRACT

Purpose: The personal characteristics as well as professional competencies of teachers are important in the formation of changes in student behaviors. This article examines the relation between emotional intelligence level, teacher leadership style and academic success of teacher candidates who are studying in a Pedagogical Teacher Education Program. **Research Methods**: A descriptive survey model is used in this study. The research group consisted of 80 teacher candidates determined by a random sampling method among teacher candidates who studying in a pedagogical teacher education program in a private University. The data collection tool of the study was a survey form which included questions demographic information and used to determine "Emotional Intelligence Scale" (EIS) and "Teacher Leadership Styles Scale. In the analysis of data acquired from the study; variance analysis, correlation analysis and regression analysis are used. **Findings**: The findings suggested that there is a positive, medium-level significant relation between optimism sub-dimension of emotional intelligence and teacher leadership styles; a negative, medium-level significant relation in expression of emotions, no statistically significant relation between the Utilisation of Emotions, Emotional Intelligence total points and teacher leadership styles. Furthermore, no statistically significant relation is found between EIS points, teacher leadership styles and the academic success of teacher candidates. **Implications for Research and Practice**: The pedagogical teacher education process of developing teacher candidates' personality traits to assist them in serving as role models to students, in addition to gaining professional competencies during pre-service education, will be analysed and recorded in accordance with the study's results.

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Introduction

The quality of teacher-student relations is a basic factor that affects learning. Making learning easier, fun and providing that children can perform efficiently at the maximum level mostly depends on the quality of teacher-student interaction. The acceptability range regarding student behaviours differs in relation to teachers' knowledge, experience, perspective or even current mood. A design practice is needed in schools that is learning centred, gives opportunity for development with an integral approach and allows the discovery of different aspects of individuals so that knowledge, skills and values can be gained with integrity.

Knowing the student, effective use of non-verbal messages and positive skills to cope with misbehaviours have come into prominence in student teachers' suggestions for communication strategies to establish a positive classroom atmosphere. As for the student teachers' points of view about positive classroom atmosphere and interaction, it has been observed that the salient factors are that the teacher is an important component in building classroom atmosphere and the classroom should be regarded as a democratic and social system where the teacher's positive personality characteristics are important (B. Ozsezer & I. Saban, 2016). These qualities show the importance of determining relations among certain affective qualities of teachers during their education in addition to others that they need as they play a role in building the society of the future. Studies in the field show that students are affected by teachers' attitudes and behaviours during the learning process. The fact that teachers can leave a positive or a negative impression on students with their attitudes, movements, characters and many other qualities is closely related with their belief and attitude regarding values of society besides field knowledge and pedagogical formation (Yazıcı, 2006).

Elements—including the personality traits of teachers, various problems they face in their professional lives, their relations with their colleagues and managers, characteristics of the work environment, and student and parent profiles—are associated with how teachers perceive these factors and their affective qualities as well as their cognitive and behavioural endeavours to reduce or control stress created by the stimuli they face (Folkman & Lazarus, 1980). Their identity characteristics and emotional intelligence levels, which are individual characteristics, play a great role in determining their strategies for dealing with the problems teacher candidates face. People who have higher emotional and social capacities—in other words, people who know their emotions and can control them and understand other people's emotions and manage them skilfully—are more advantaged both in their private and professional lives. In this sense, emotional intelligence, a series of talents in individual and interpersonal relations, for an individual to perceive hisor her own emotions and others' emotions correctly and to evaluate and express these emotions is as important as IQ in determining an individual's success not only in hisor her private life, but also in his or her professional life (Bar-On, 1997, as cited by Acar, 2002).

Emotional intelligence skill enables an individual to identify emotions that make it easier to deal with himself or herself and others and to understand these emotions and use them efficiently. In other words, it is a competence required for understanding people's expectations and needs and their strong and weak aspects

through emotions, and for being strong in stressful situations and being someone who people would like to be around (Baltaş, 2006). It is possible to identify individuals with emotional intelligence as successful, healthy and happy individuals since they can be aware of their own emotions and those of the people around them and take healthy steps based on this awareness (Göcet, 2006). However, while doing this, first of all, an individual should understand and control his or her own emotions and should not lose his or her motivation until his or her wishes are fulfilled and he or she is able to understand others and establish solid relationships with them (Eymen, 2007). Our emotions determine how we can raise our children, how they can be successful at school and how we can be successful in our career and in our relations with other people. In other words, it determines how we can be "happy" as individuals, and more importantly, as a society (Beceren, 2002). Therefore, the importance of using emotional intelligence in a suitable and efficient way in private life and social life should not be disregarded.

Trained manpower, which directly related to teachers and the teaching profession, is made up the basis of technological development and economic development in countries. One of the primary duties of countries according to the education field is to train teachers according to the requirements of the age. These trained teachers in turn can train students in accordance with the values of the current time and equip them to access information by utilizing information technologies and processing the acquired information. Teachers need to create a supportive and healthy learning environment for students. For this purpose, teachers should be good role models and should reflect their qualities to the class. It should be known that abilities such as being comfortable in the classroom, having a friendly approach, developing a democratic affective aspect, exhibiting kindness and respect, seeing students as individuals and taking their personalities into consideration constitute the basic principles of effective education. Also, showing these qualities in the class affect students' interactions with each other positively and improve democratic class environment (Güven & Demirhan, 2006).

Teachers who are leaders in the education process have unique leadership styles in terms of their knowledge, skill, attitude and behaviours. According to their leadership styles, some teachers teach lessons through authoritarian and oppressor-passive learning activities and some teachers teach lessons through democratic and participant-active learning activities. The type of classroom activity is directly related to the leadership style of teachers. Teachers' perspectives, values, attitudes, knowledge and experiences their students during the education process affect the teachers' leadership styles. Leadership styles have been explained according to leadership theories since the 1960s. According to McGregor's X and Y approaches, the human behaviours of leaders can be gathered in a structure that includes two opposite ideas (Deniz & Hasançebioğlu, 2003). Leaders who believe in X approach show more authoritative behaviour, whereas leaders who believe in Y show more democratic behaviour.

Pursuant to McGregor's X and Y approaches, it is seen that a teacher who evaluates his or her students according to approach X presents an oppressive or autocratic leadership style, and a teacher who evaluated his or her students according to approach Y presents a democratic or participant approach. In the

oppressive or autocratic leadership style, only teachers make decisions, and the method and activity applied are determined by teachers. Teachers determine who does what and when, expect everyone to obey them and do not act objectively while praising and criticizing students. A teacher with an authoritative attitude mostly threatens with low marks, by referring to a disciplinary committee and beating. In this leadership style, it is difficult for students to gain self-control. Since everything depends on the teacher, there is uncertainty. Also, since teachers do not accept any objection or suggestion in any subjects and do not see discussions as necessary, they are seen by students as subjective (not objective) and unfair. For teachers to make a decision on their own may cause students to be passive and to dislike the class. On the other hand, if students are active in the class, if they discuss and ask questions, they learn better during education (Tuğsavul, 2006).

In the authoritative attitude, which has a teacher-centred education method and classroom management, students always feel under pressure and some unwanted situations just as hostility and aggression appear (İlgar, 2000). In the classroom where democratic/participant leadership style is dominant, decisions are mostly made by students. The teachers' role is to inform students of methods and activities to be applied and develop alternatives. Suggestions are made regarding teacher-student collaboration, and suitable ideas are accepted (Tuğsavul, 2006).

Teachers are objective while evaluating their students, and each student is equal for teachers. In this kind of leadership style, freeness does not mean idleness. Teachers are still the managers. They can make decisions on some subjects if needed (İlgar, 2000). According to these descriptions, it is important for teachers' leadership styles to be known since teachers are the leaders of the education environment and affect the people in that environment through establishing human relations in ways suitable to the purposes of the class, school and education program (Deniz & Hasançebioglu, 2003).

Existing studies only emphasize the fact that cognitive intelligence does not guarantee success in life and does not make a strong contribution to an individual's success on its own. The point that should be focused on is that cognitive intelligence and emotional intelligence are not alternatives to one another, but complete each other. The important thing—that should be done—is to realize the importance and value of these two intelligences and benefit from both of them in the necessary amount (Yılmaz, 2007). That is why it is important to determine the emotional intelligence levels and teacher leadership styles of teacher candidates.

The fundamental purpose of education activities is to provide the desired changes in students' behaviour. Thus, the focal point of these activities is the students. Therefore, it is important to establish what amount of behaviour changes are realized in students in terms of educational purposes and what the fundamental elements that affect student success are. When studies of IQ concept in general, academic success or mental developments of students are considered, a relation between IQ and academic success is emphasised by many studies. In this context, other factors or elements related to success should also be presented (Erdoğan & Kenarlı, 2008).

According to Wolman (1973), the concept of success is "an improvement in terms of reaching the desired result." Even though success is defined on a large scale, when

success in education is considered, "academic success" is usually implied, and it is the expression of skills determined or information acquired through points or test scores or both given by teachers and developed in classes provided in school (Carter & Good, 1973; as cited by Erdoğan & Kenarlı, 2008). An academic final grade can be used as an information tool to the related people (parents, teachers, etc.) in terms of the state and development of the students in class, and it can also be used as criteria that constitute a basis for various decisions made about students (Koç, 1981). In this context, presenting the relation between emotional intelligence and academic success and taking precautions or making regulations in education to develop individuals' emotional intelligence, if there is a high-level relation between emotional intelligence and academic success, are important (Furnham, A & Petrides, K.V; as cited by Erdoğan & Kenarlı, 2008).

There is a social perception among societies that it is the responsibility of universities to supplement individual research qualifications. However, acquisition of research qualifications should not be limited to and put on the shoulders of higher education institutions; this should also be expanded to primary and secondary education institutions, at least for basic skills (Y. Konokman, Yelken & Yokuş, 2015). Teacher candidates who will soon be responsible for educating future generations should possess certain characteristics. Especially the following characteristics should be taken into consideration: pre-school and primary teacher candidates should be role models for younger students; psychological counseling and guidance teacher candidates should guide students in terms of choice of profession and provide counseling in case of problems (Aydın, 2015).

In studies conducted in accordance with this information, it is seen that emotional intelligence levels and teacher leadership styles of teacher candidates are approached separately and through different variables. There are no studies regarding teacher candidates who participate in pedagogical teacher education programs (which have increased in number in recent years) and are in the process of becoming teachers. Teacher candidates that earned the right to a teaching profession by participating in a pedagogical teacher education program and graduated from a Faculty of Science and Letters are thought to be more successful in KPSS and have higher assignment opportunities compared to teacher candidates that graduated from the Faculty of Education. Therefore, the purpose of this study is to analyse the relation in terms of emotional intelligence levels, teacher leadership styles and academic success of teacher candidates who receive education in a Private University Pedagogical Teacher Education Program in the 2014–2015 school year. According to this general purpose, the following questions are attempted to be answered:

1. Is there a significant relation between the emotional intelligence levels and teacher leadership styles of teacher candidates?
2. Is there a significant relation between the emotional intelligence levels and academic success of teacher candidates?
3. Is there a significant relation between the teacher leadership styles and academic success of teacher candidates?
4. Is the academic success of teacher candidates a significant predictor for their emotional intelligence levels and teacher leadership styles?

Method

Research Design

The relational survey model is used in this study. The relational survey model is a general survey method. General survey models are screening arrangements realized on a group of examples or samples taken from the whole population or a group of the population after reaching a general conclusion regarding the population in terms of a population consisting of many factors (Karasar, 2009).

Participants

The participants of this study consisted of 80 teacher candidates determined by the random sampling method among teacher candidates who were studying during the fall semester of the 2014–2015 academic year in the pedagogical teacher education program at one of the private universities in İstanbul, Turkey (Karasar, 2009).

Research Instrument and Procedure

As the data collection tool of the study, the survey form, which included questions regarding the demographic information and academic success of teacher candidates, was used to determine specific elements as follows: the "Emotional Intelligence Scale" was used to determine emotional intelligence levels, and the "Teacher Leadership Styles Scale" was used to determine teacher leadership styles.

Emotional Intelligence Scale: the Emotional Intelligence Scale (EIS) was developed by Schutte & et.al (1998), modified by Austin et al. (2004) and adapted to Turkish by Göçet (2006). The Göçet (2006) version is used in this study. The EIS is analysed in terms of structure, concept validity and security and has become applicable. The EIS consists of 41 articles in total, of which 20 are positive and 21 are negative; it has a five-point Likert scale rating system, which consists of (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, (5) strongly agree. The scale also consists of three factors as Optimism or Mood Regulation, Utilisation of Emotions and Appraisal and Expression of Emotions.

It measures general emotional intelligence in its totality along with these three factors. Cronbach's alpha (α) coefficient of Emotional Intelligence Scale was found to be 0.81 for the whole scale.

Teacher Leadership Styles Scale: the "Teacher Leadership Styles Scale" developed by Deniz & Hasançebioğlu (2003) was used as the data collection tool to determine the leadership styles of teacher candidates. The scale is uni-dimensional and consists of 17 articles prepared on the basis of McGregor's X and Y theory. The internal reliability coefficient (Cronbach's coefficient) of the scale was found to be 0.88. Answering options for the scale were prepared in accordance with the five-point Likert scale. Rating points consisted of "1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly Agree." Since there were reversed expressions in articles 5, 6, 12, 13, 14, 16 and 17, these articles were coded in reverse order (5, 4, 3, 2, 1). The lowest score on the scale was 17 and the highest score was 85. The evaluation style of scores in the scale was described as (1) scores 17–64: Autocratic or Oppressive, (2) scores 65–76: Half-Democratic, and (3) scores 77-85: Democratic or Participant. Grade point average received in formation education in a Private University was used as the measure of academic success.

Data Analysis

The analysis of data acquired in this study was performed in terms of the relational screening model, whether there is a relation between emotional intelligence levels, teacher leadership styles and academic success grades of teacher candidates who participate to the study; and if such a relation was found, the quality of these relations were analysed by calculating the Pearson correlation coefficient. Before correlation analysis, the normal distribution range was analysed as a result of descriptive statistics and the Pearson correlation tests were applied in order to determine relations between variables after determining that the data of 74 teacher candidates present a normal distribution. A multiple linear regression test was used to determine the effects of emotional intelligence levels and academic success of teacher candidates on the leadership behaviours of those teacher candidates (Seçer, 2015).

Results

The Emotional Intelligence Scale sub-dimensions of teacher candidates and average and standard deviation numeric values of total scores are presented in Table 1.

Table 1
Emotional Intelligence Scale Sub-Dimension of Teacher Candidates and Average and Standard Deviation Results of Total Scores

Emotional Intelligence	*N*	*Min*	*Max*	*M*	*ss*
Optimism	74	47	83	65.31	6.358
Utilisation of Emotions	74	9	23	15.35	2.911
Expression of Emotions	74	25	54	38.40	6.248
EIS Total	74	96	141	119.06	6.893

When Table 1 is analysed, it is possible to say that the point average teacher candidates receive in terms of emotional intelligence sub-dimensions is M=65.31 in the Optimism sub-dimension, M=15.35 in the Utilisation of Emotions sub-dimension, M=38.40 in the Expression of Emotions sub-dimension and M= 119.06 in the EIS Total. It is possible to say that the highest average of teacher candidates among the emotional intelligence sub-dimensions is in the optimism sub-dimension. Statistical values regarding frequency, percentage and average of points of the Teacher Leadership Styles Scale of teacher candidates are presented in Table 2.

Table 2
Frequency and Percentage Value Distribution of the Teacher Leadership Styles Scale of Teacher Candidates

Teacher Leadership Styles	*N*	*%*	*M*
Autocratic (17–64 points)	23	31	52.43
Half-Democratic (65–76 points)	43	59	71.74
Democratic (77–85 points)	8	10	82.37
Total	74	100	

When Table 2 is analysed, it is understood according to the points teachers received from the Teacher Leadership Styles Scale that 31% of them have an autocratic teacher leadership style, 59% have a half-autocratic teacher leadership style and 10% have a democratic teacher leadership style. Most of the teacher candidates who have participated in the study adopted a half-autocratic teacher leadership style. Pearson correlation analysis was used to determine the relation between EIS sub-dimensions and the teacher leadership styles of teacher candidates, and the findings are in Table 3.

Table 3
Results of Pearson Multiplication Moment Correlation Analysis of EIS Scores, EIS Sub-Dimension Scores and Teacher Leadership Styles Scores of Teacher Candidates

EIS sub-dimensions	*Teacher Leadership Styles*	
Optimism	r= .381**	p = .001
Utilisation of Emotions	r= -.150	p = .202
Expression of Emotions	r= -.327**	p =.005
Emotional Intelligence Total	r= .008	p =.944

When the relation between the Emotional Intelligence and Teacher Leadership Styles of teacher candidates in Table 3 is analysed, it is seen that there is a positive, medium-level significant relation in Optimism level (r=,381**, p=,001), there is a negative, medium-level significant relation in Expression of Emotions (r=-,327**, p=,005) and there is no statistically significant relation between Utilisation of Emotions and Emotional Intelligence total points. This finding generally shows that some of the emotional intelligence sub-dimensions and some of the teacher leadership styles sub-dimensions involve the same abilities and some involve some different abilities. The multiple linear regression test was used to determine the effects of emotional intelligence dimensions on teacher leadership behaviours, and general averages of leadership behaviours are included in the test as the dependent variable and the dimensions of emotional intelligence are included in the test as independent variable The stepwise method was used in the multiple linear regression test to determine the pure effects of independent variants and in order that the dependant variant was not affected by the correlation among independent variants. The statistical values acquired are summarised in Table 4.

Table 4
Effects of Emotional Intelligence Levels on Teacher Leadership Styles

Variant	*B*	*Standard Error*	*Beta*	*t*	*p*
Fixed	- .209	.714	.316	-	.771
Optimism	.031	.011		.292	.006
				2.822	

N=74

As a result of the multiple linear regression analysis, it was determined that only the optimism sub-dimension, of the dimensions of emotional intelligence, has a statistically-low significant effect (R=.316, R^2=.10, p<.01) on leadership styles. It defines 10% of total variance in optimism leadership styles. Distributions of teacher candidates according to academic success are presented in Table 5.

Table 5
Distribution of Teacher Candidates according to Academic Success

Academic Success (Academic Average)	N	%
2–2.5	15	18.8
2.6–3	30	37.4
3.1–3.5	20	25
3.6 and higher	15	18.8

When Table 5 is analysed, it is seen that academic success of 37.4% of the teacher candidates are between a point range of 2.6–3 and 18.8% of them are between a point range of 2–2.5 and 3.6. According to the results of the Pearson correlation analysis conducted to determine the relation among EIS sub-dimensions, EIS total scores, teacher leadership styles and academic success, there is a significant relation. It is possible to explain this finding by stating that even though there is a relation between the intelligence coefficient (IQ) and academic success, the contribution of IQ in terms of success in life is not higher than 10%, but emotional intelligence skills include the utilisation of competence in two hemispheres of the brain in collaboration.

Discussion and Conclusion

In the development of a country, training a qualified work force is of great importance, and the basic purpose of a country's education system is to provide necessary citizenship education. Teachers are the most fundamental elements of the education system, and they play an important role in providing comfort and social peace in society, socializing individuals and preparing them for social life, transferring cultures and values of society to young generations. The emotional intelligence levels and teacher leadership styles of teacher qualities are among the elements that affect education directly or indirectly.

According to the results of this study, in which the relations of points of emotional intelligence levels, teacher leadership styles and academic success of teacher candidates are studied;

- It is seen that the average points that teacher candidates received from the emotional intelligence sub-dimensions is x=65.31 in the Optimism sub-dimension, x=15.35 in the Utilisation of Emotions sub-dimension, x=38.40 in the Expression of Emotions sub-dimension and x= 119.06 in the EIS Total. According to the points that teacher candidates receive on the Teacher Leadership Styles Scale, 31% of them have an autocratic teacher leadership style, 59% of them have a half-autocratic teacher leadership style and 10% of them have a democratic teacher leadership style.
- When the relation between Emotional Intelligence and Teacher Leadership Styles of teacher candidates is analysed, it is seen that there is a positive, medium-level significant relation in the optimism dimension of the Emotional Intelligence sub-dimension; a negative, medium-level significant relation in the Expression of Emotions dimension and no statistically significant relation between the Utilisation of Emotions and Emotional Intelligence total points.

When similar studies in the body of literature are examined, it is seen that there are positive relations between emotional intelligence and social skills, life satisfaction and academic success (Dağlı, 2006). In the study by Güllü & Arslan (2009) to determine the leadership styles of physical education teachers, it was found that P.E. teachers show a "Half-Democratic Leadership Style." There is no significant difference among leadership styles according to teacher genders, service years, education levels, school levels and student levels in schools, but there is a significant difference among leadership styles according to the locations of schools in which teachers work. In the study by Ekinci (2010), in which the relation between emotional intelligence levels and problem solving abilities of preschool teacher candidates were analysed, it was found that total emotional intelligence points and problem solving ability points were higher than the average and there was only a positive and significant relation between problem solving points and the emotional intelligence scale and compatibility sub-dimension. In the study by Erdem, İlğan & Çelik (2013), in which the relation between emotional intelligence levels and critical thinking tendencies of high school teachers was analysed, it was found that there is a positive, significant relation between all sub-dimensions of emotional intelligence and all sub-dimensions of the critical thinking tendencies scale.

These study results are partially in parallel with the finding that the optimism dimension of emotional intelligence found in this study has a statistically low significance on leadership styles. In the study by Gürşimşek, Vural & Demirsöz (2008) with Faculty of Education classroom teaching and preschool teaching students, it was seen that their total emotional intelligence points were higher than the average. Also, in the study by Erdoğdu (2008) with college students studying in different faculties, it was seen that Faculty of Education students and Department of Fine Art students have the highest average of emotional intelligence. It is thought

that the reason for this situation is the fact that the target population of the study consists of graduates or students of Faculty of Science and Letters.

It is possible to say that the high number of recently opened pedagogical teacher education programs should be developed in terms of training teachers with higher emotional intelligence, ability to understand people's emotions, expressing their own emotions, just like graduates or teacher candidates from a Faculty of Education, and it is possible to foresee that this will have positive results on our education system. According to other results of the study:

- The multi-linear regression test was used to determine the effects of emotional intelligence levels on teacher leadership behaviours, and according to the analysis result, it was determined that only the optimism sub-dimension of the three dimensions of emotional intelligence have a statistically low significant effect on leadership styles and total variance of optimism dimension of emotional intelligence on leadership styles was 10%.
- Pearson correlation analysis was used to determine the relation between EIS sub-dimensions, EIS total scores and teacher leadership styles and the Academic Success Situations of teacher candidates participating in the study; and according to the analysis results, there is no statistically significant relation.

When the body of literature related to these results were analysed, similar studies were found in the worldwide, even though there was no study focusing on the relation between emotional intelligence scale points and academic success in Turkey. When these study results on emotional intelligence and academic success are considered, it is seen that many different results are reached.

According to a study in England, there is a low, but significant relation between emotional intelligence and academic success (Petrides & et al., 2004; as cited by Erdoğan & Kenarlı, 2008). Jaeger (2003) analysed the relation between the emotional intelligence and emotional ability and academic performance of graduate students. According to the study's findings, emotional intelligence is related to academic success. All sub-scales of emotional intelligence and total emotional intelligence scale points have a positive relation with reference to the study results.

According to a study in the USA by Thi Lam & Kirby (2002), it is seen that people with higher emotional intelligence have better cognitive performance measurement and that emotional intelligence and individual performance are related. According to Barchard & Hakstian (2004), there is significant relation between social understanding (intellect) of emotional intelligence scale sub-tests and academic success. According to another study by Parker et al. (2004), there is a significant relation between results acquired from emotional intelligence sub-scales and academic success. Newsome, Day & Catano (2000) also analysed the relation between emotional intelligence, personality and cognitive abilities in Canada. According to the study results, there is a relation between cognitive ability, personality traits and academic success. There is no significant relation between sub-dimensions of the emotional intelligence scale and total emotional scale points and academic success. According to the results of the study by Wells et al. (2000), there is no significant

relation between Emotional Intelligence Scale points and student scores (as cited by Erdoğan & Kenarlı, 2008).

As is seen in these studies, there are different results in terms of relations between emotional intelligence and academic success. The results of this study differ from the results of the study by Üzel & Hangül (2012), which state that "There is a positive, significant relation between emotional intelligence levels and their success in mathematic of second-grade students in elementary school," and show similarities with the results of the study by Eskici (2009), which states that "There is no significant relation between emotional intelligence and success in mathematic class and academic success of students in Vocational School."

In the study by Dogutas (2016), teacher candidates, who were considered the customers of education programs and the ones who will teach future generations, were asked whether they thought that the instructors and the education they received were effective. Overall, they were unhappy with their educational programs and critical of the quality of instructors. Therefore, university administrators should work to improve the quality of instructors and education programs at their schools.

Data acquired from the study is restricted to Private University. Similar studies will enable generalization of the data acquired. In this context, the education process of teacher candidates dedicated to developing their personality traits to assist them in serving as role models to students, in addition to gaining professional competencies during the pre-service education process, will be analysed and recorded in accordance with the study's results. Also, it would be useful to carry out similar studies regarding teacher candidates' teachers.

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Öğretmen Adaylarının Duygusal Zeka Düzeyleri, Öğretmen Liderlik Stilleri ve Akademik Başarıları Arasındaki İlişki

Atıf:

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Özet

Problem Durumu: Bir ulkenin egitilmis insan gucu, teknolojik gelisiminin ve ekonomik kalkınmasının temelini olusturur. Ogretmenler ve ogretmenlik meslegi, egitilmis insan gucunun yetistirilmesi ile dogrudan iliskilidir. Son yıllarda ogretmen nitelikleri ile ilgili araştırmalar incelendiginde, ogretmen-ogrenci ilişkisinin niteliginin ogrencilerin ogrenmesini etkileyen en onemli faktor oldugu ortaya çıkmıştır. Ogrenci davranışlarında istendik degisimlerin olusmasında, ogretmenlerin mesleki yeterlikleri kadar kisisel nitelikleri de onem arz etmektedir. Ogrenmenin, ogrencilerin bireysel farklılıklarını goz onunde bulundurarak uygun ve eglenceli hale getirilmesinde, ogrencinin performansını en ust seviyede etkin kullanmasının saglanmasında ogretmen ile ogrenci arasındaki etkilesimin niteligi buyuk bir oneme sahiptir ve ogrenmeyi etkileyen temel etkendir. Ogrenci davranışlarının istendik yonde olma durumu; ogretmenlerin meslek bilgi ve yeterligi, deneyimi, bakıs acısı hatta ogretmenin sınıf ortamındaki anlık duygusal durumu ile baglantılı olarak degisiklik gösterebilmektedir. Ogretmenlerin, ogrencilerine destekleyici ve saglıklı bir ogrenme ortamı oluşturmaları icin iyi bir rol model olmaları ve bu ozelliklerini sınıfa yansıtabilmeleri gerekmektedir. Sınıfta ogrencileri kisilik ozelliklerini dikkate alarak birey olarak gorulmesi, demokratik tutum ve yaklasıma sahip olunması, nezaket, saygı, gibi ozelliklerin etkili ogretimin temel ilkelerinden oldugu ogretmenler tarafından bilinmeli, bu ozellikler sınıf icinde sergilenmelidir. Boylece, ogrencilerin birbirleriyle olan etkilesiminin olumlu yonde gelismesi ve demokratik sınıf ortamı olusturulmasına katkı saglanacaktır. Bireylerin farklı yonlerinin olduğunu kesfeden, gelisimine butunsel yaklasımla fırsat saglayan bir ogrenme merkezi olarak okullarda; bilgi, beceri ve degerlerin bir butunluk içinde kazanılacagı bir egitim modelinin uygulamasına ihtiyac duyulmaktadır. Bu ozellikler, gelecegin toplumunu insa etme rolunu ustlenen ogretmenlerin, ogretmenlik egitimi sırasındaki mesleki ozellikleri yanında duyussal bazı ozellikleri belirlenmesinin ve bunlar

arasındaki iliskilerin incelenmesinin onemini ortaya koymaktadır. Bu baglamda, konu ile ilgili yapılan araştırmalarda, genel olarak ogretmen ve ogretmen adaylarının duygusal zeka duzeyleri ve ogretmen liderlik stilleri ayrı ayrı ve farklı degiskenlerle ele alındıgı görülmektedir. Son yıllarda oldukca fazla sayıda acılan formasyon egitim programlarına katılarak ogretmenlige hazırlanan ogretmen adayları ile yapılmıs calısmalara rastlanmamıstır. Formasyon egitimine katılarak ogretmenlik hakkını elde eden ogretmen adaylarının Fen-Edebiyat Fakultesi mezunu olmaları, Egitim Fakultesi mezunu ogretmen adaylarına gore KPSS sınavında başarılı olarak ogretmen atanmalarında daha fazla yer alacakları duşunuldugunde konunun ele alınmasının onemi ortaya cıkmaktadır.

Araştırmanın amacı: 2014–2015 akademik yılında Formasyon Egitim Programına devam eden ogretmen adaylarının duygusal zeka duzeylerini ve ogretmen liderlik stillerini belirlemek, ayrıca duygusal zeka duzeyleri ogretmen liderlik stilleri ve akademik basarıları arasındaki iliskiyi incelemektir.

Araştırmanın Yöntemi: Araştırmada iliskisel tarama yöntemi kullanılmıstır. İliskisel tarama modeli, iki veya daha çok değisken arasında birlikte degisim varlıgını ve derecesini belirlemeyi amaclayan arastırma modelidir (Karasar, 2009). Arastırmanın calısma grubunu, 2014-2015 egitim-ogretim yılının bahar doneminde Istanbul'daki ozel bir vakıf universitesinde formasyon egitimine devam eden ogretmen adaylarından tesadufi ornekleme yontemi ile belirlenen toplam 80 ogretmen adayı oluşturmustur. Arastırmada veri toplama aracı olarak; ogretmen adaylarının demografik bilgilerini ve akademik basarılarını belirlemek icin bunlara yönelik soruların yer aldıgı anket formu, duygusal zeka duzeylerini belirlemek amacı ile Schutte ve digerleri (1998) tarafından gelistirilmis olan Austin ve digerleri(2004) tarafından modifiye edilmis versiyonunun Türkceye uyarlaması Göcet (2006) tarafından yapılan ve uç alt boyuttan oluşan "Duygusal Zeka Olcegi", ogretmen liderlik stillerini belirlemek icin de Deniz ve Hasancebioglu (2003) tarafından gelistirilen ve uç alt boyuttan olusan "Ogretmen Liderlik Stilleri Olcegi" kullanılmıstır. Arastırmada elde edilen verilerin analizinde, iliskisel tarama modelinde ele alınan varyans analizi, korelasyon ve regresyon analizleri kullanılmıstır (Secer, 2015).

Arastırmanın Bulguları: Elde edilen bulgulara gore, ogretmen adaylarının duygusal zeka alt boyutlarından en yuksek ortalama puanı iyimserlik boyutunda aldıkları ve ogretmen adaylarının yarısından fazlasının yarı otokratik ogretmen liderlik stiline sahip oldukları görülmüstür Duygusal zeka alt boyutlarından iyimserlik boyutu ile ogretmen liderlik stilleri arasında pozitif, orta düzeyde anlamlı iliski olduğu ve duyguların ifadesi boyutunda ise negatif, orta düzeyde anlamlı iliski olduğu, duygulardan faydalanma ve duygusal zeka toplam puanları arasında ise istatistiksel olarak anlamlı bir iliski olmadıgı gorulmuştur. Ogretmen adaylarının DZO alt boyutları, DZO toplam puanları ve ogretmen liderlik stilleri ile akademik başarı durumları arasında Pearson Korelasyon analizi sonuclarına göre istatistiki olarak anlamlı bir iliski bulunmamıstır.

Arastırmanın Sonucları ve Onerileri: Araştırmaya katılan ogretmen adaylarının duygusal zeka alt boyutlarından iyimserlik boyutunda puan ortalamalarının yuksek olduğu, yarı otokratik ogretmen liderlik stiline sahip oldukları ve genel olarak

akademik ortalamalarının 2.6- 3 puan aralıgında oldugu belirlenmiştir. Bu sonuclarla ilgili alan yazın incelendiginde ise, Turkiye'de duygusal zeka olcegi puanları ile akademik basarı arasında iliskileri konu alan az sayıda calısmaya rastlanmakla birlikte dunyada benzeri calısmalar bulunmaktadır. Duygusal zeka ile akademik basarı arasında yapılan bu arastırma sonuclarına bakıldığında, cok farklı sonucların ortaya cıktığı gorulmektedir.

Ogretmen adaylarının ogretmen liderlik stilleri ile duygusal zeka alt boyutlarından iyimserlik boyutu arasında pozitif, orta düzeyde anlamlı iliski oldugu ve duyguların ifadesi boyutunda ise negatif, orta düzeyde anlamlı iliski oldugu, duygulardan faydalanma ve duygusal zeka toplam puanları arasında ise istatistiksel olarak anlamlı bir iliski olmadığı gorulmustur. Ayrıca ogretmen adaylarının DZO alt boyutları, DZO toplam puanları ve ogretmen liderlik stilleri ile akademik basarı durumları arasında istatistiki olarak anlamlı bir iliski bulunmamıstır.

Arastırmadan elde edilen veriler Istanbul'daki ozel bir üniversitede formasyon egitimine devam eden ogretmen adayları ile sınırlıdır. Elde edilen bulgularla genelleme yapılamaz, ancak ogretmen adaylarının kisisel gelisimleri ile ilgili konularda farklı calısma grupları ile arastırmaların yapılması ile konu hakkında yargılara ulasılabilmesi mumkun olacaktır. Bu baglamda, arastırma sonuclarına dayalı olarak ogretmen adaylarına hizmet oncesi egitim surecinde mesleki yeterliklerin kazandırılmasının yanında ogrencilerine rol model olmaları açısından kisisel niteliklerinin gelistirilmesinin geregi ortaya çıkarılarak, formasyon egitim surecinin yeniden gozden gecirilerek düzenlenmesi ihtiyacı vurgulanmıstır. Ayrıca egitim fakultelerinde egitim goren ogretmen adaylarına ve uygulayıcı ogretmenlere benzer arastırmaların yapılması ogretmen adaylarının kisisel niteliklerinin gelistilebilmesine katkı saglayacaktır.

Anahtar Kelimeler: Pedagojik formasyon, kisisel nitelikler, ogretmen davranışları, ogretmen-ogrenci iletisimi.

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Relationship between Attitudes of Multicultural Education and Perceptions Regarding Cultural Effect of Globalization[1]

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ABSTRACT

Purpose: This research aims to determine the relationship between the perceptions of teacher candidates towards the cultural effect of globalization and their attitudes towards multicultural education. **Research Methods**: The sample group consisted of 213 teacher candidates. In the study's personal information form, the scale of attitude towards multicultural education and the scale of perceptions of the cultural effect of globalization were used. Teacher candidates' attitudes towards multicultural education and their perceptions of the cultural effect of globalization indicated a difference according to some variables, which was analyzed with Mann-Whitney U (MWU) and Kruskall-Wallis H (KWH) tests. In order to examine the relationship between teacher candidates' perceptions of the cultural effect of globalization and their attitudes towards multicultural education, the Pearson correlation coefficient technique was carried out. In addition, a hierarchic regression technique was utilized in the examination of the relations between variables. **Findings**: A significant positive relationship was confirmed between the perceptions regarding cultural effect of globalization and their attitudes towards multicultural education. It is seen that there is a significant difference in accordance with the variable of what kind of high school the teacher candidates graduated from within the perceptions regarding the cultural effect of globalization. **Implications for Research and Practice**: It is seen that teachers' perceptions of the cultural effect of globalization has an effect on their attitudes regarding multicultural education. Multiculturalism and globalization should be added to class content at every level of the teacher training program.

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Introduction

At the present time, multicultural education is considered as a form of education that respects differences and operates without discrimination. The attitudes and behaviors of the previous generation are losing ground with the new generation, and a new source is emerging by the name of a "global culture" (Ozdemir, 2014). Within this fast information flow, education plays an important role in processing knowledge correctly. Global effects reach every human from younger and younger ages in formal and informal ways, and the effects grow with problems as long as they are left without control (Seyfi, 2006). Especially in Turkey, as far as multicultural education is concerned, an approach that disrupts the integrity of the state and causes the country to split may be perceived (Topses, 2014). In avoiding this disruption, starting from the preschool period, teachers aware of the effects of globalization on culture and who care for cultural values will contribute to raising individuals respectful of differences.

Globalization is a phenomenon that gains strength from change and emerges as a result of increasing the quality of life, being open to new ideas, achieving the ideals of setting new goals and never ceasing to seek out wonder. Globalization, which is the last step of the change, causes the world to turn into a global village (Dogan, 2012; Ozdemir, 2014). Together with globalization, the change occurs in perception of education and encourages the methods, techniques and systems of education to change (Dogan, 2012; Topses, 2014). As a result, the national emphasis on education gains a universal dimension and education systems all over the world take a similar shape.

Globalization causes certain cultural effects, such as intercultural fast flow of values, the interaction in between and emergence of subcultures and sub-identities (McBurnie, 2001). As a result of these global effects, cultural values, habits, traditions, conventions and customs change as well. This change is conveyed to individuals through teaching-learning processes (Dogan, 2012; Steffen et al, 2011). Consequently, through education, by learning the values, habits, rituals and consumption patterns of the society they were born and grew up in, individuals become ready to participate in society.

Multicultural education is the process of students from different groups obtaining education with equal opportunities and accordingly is presented as the reconstruction of the school environment. Although, until the present day, the applications teachers performed without considering the individual differences of their students were enough for different children to sustain an education, these applications caused assimilation and made some students abort their education (Dogan, 2012). When education is defined as the process of developing predetermined behaviors in the individual, the question of what must that predetermined behavior be must be posed. Presently, together with a fast process of change, it is seen that the desired behavior concept consists of converting an education system based on a single truth into an individual-based education system (Sönmez, 2011). Therefore, in creating a multicultural education environment,

increasing the levels of awareness of the children, respecting the differences among them and raising individuals that keep up with change and are open to new ideas have gained importance. However, studies indicate that teachers define multiculturalism as race, religion, language and social class, yet they do not consider gender, age and disability in the multiculturalism dimension (Basari, Sarı and Cetin, 2014; Logvinova and Ivanova, 2016). In addition, other studies indicate that teachers do not include multiculturalism very much, and therefore they should be educated regarding multicultural education (Banks, 2013; Bigatti et al., 2012; Brown, 2007; Damgaci and Aydin, 2013; Oksuz, Demir and Ici, 2016).

Hence, it is very important for teachers, who will shape the future, to have multicultural points of view and be individuals that respect differences. There have been several scale studies and research projects carried out regarding multicultural education in literature (Gunay and Aydin, 2015; Jimenez, Guzman and Maxwell, 2014; Kaya and Soylemez, 2014; Kocak and Özdemir, 2015; Sharma, 2005; Polat and Barka, 2014; Tortop, 2014; Turkan, Aydin and Üner, 2016). Also, studies and collected works that include the relation between globalization and education are represented in the literature (Gomleksiz and Kilinc, 2012; Myers, 2010; Seyfi, 2006). However, a study regarding globalization and multicultural education is not found. It is thought that this research will contribute to filling this gap and support multicultural applications not already included in the teacher training process.

This research is carried out in order to determine the relationship between the perceptions of teacher candidates towards the cultural effect of globalization and their attitudes towards multicultural education. Besides the departments of teachers, the type of high school from which they graduated and whether they have friends from different countries cause a difference in their attitudes included in the objectives of this research. Also, the current research examines the differentiating role of these variables in teacher candidates' attitudes towards multicultural education.

Method

Research Design

In this research, a relational scanning model, which is a quantitative research model, was used in order to examine the relationship between attitudes towards multicultural education and perceptions regarding cultural effect of globalization. A relational scanning model is a research method carried out in order to determine the relationships between two or more variables and obtain clues for a cause-effect relationship. Within this research, the attitude of teacher candidates towards multicultural education is taken into consideration as the dependent variable and their perceptions of the cultural effect of globalization is the independent variable.

Research Sample

One thousand ninety teacher candidates, who studied in the department of Preschool Education and Primary School Education in the 2015–2016 academic year, constitute the population of the study. The sample group consists of 213 teacher candidates who study in Uludag University Faculty of Education, 113 of them from preschool education and 110 of them from primary school. The rate of the sample to the population is 20%. The number determined is considered to be acceptable according to the population (Krijeie and Morgan, 1970; cited Gibbon and Morris, 1978, s.159). The reason why the research was carried out in Uludag University's Faculty of Education is that this university consists of students coming from different parts of the country. Considering the fact that early education shapes the perceptions and the attitudes of children towards multicultural education, only teacher candidates from Primary School and Preschool Education departments were studied in the scope of this research. From this point of view, the sample was chosen with the method of simple random sampling, which has the quality of representing the population. Of the candidates, 86.9% (N=185) were female and 13.1% (N=28) were male; 68.1% of them had friends from different countries, and 31.5% of them did not. In addition, 17.8% of the teacher candidates stated that they graduated from a general high school, 44.6% of them graduated from an Anatolian high school, and 37.1% of them graduated from teacher high schools.

Research Instrument and Procedure

In the study's personal information form, the scale of attitude towards multicultural education and the scale of perceptions of the cultural effect of globalization were used.

Personal information form. A personal information form was made by the researchers, in which questions regarding gender, department, high school graduated from and whether they had a friend from different countries are posed, after consulting expert opinions and examining other studies.

The scale of attitude towards multicultural education. The adaptation of the scale of attitude towards multicultural education, which was developed by Ponterotto, Baluch, Greig, & Rivera, (1998), was adapted into Turkish by Yazici, Basol and Toprak (2009). It is 5-point Likert scale, which consists of 20 items. In this study, Cronbach's alpha coefficient was determined as .71. It can be said that as long as the scores obtained from the scale increase, the positive attitude of the individual has increased.

The scale of perceptions regarding the cultural effect of globalization. The scale, which was developed by Seyfi (2006), consists of three parts. The items of the scale consist of the effects that globalization poses in a cultural sense and statements intended to determine the perceptions of teachers regarding its current equivalents at schools and students. The reliability coefficient of the scale, which is a 5-point Likert scale and consists of 35 items, was determined to be .76. As a result of the reliability analysis within this research, Cronbach's alpha coefficient was found to be .92.

Data Analysis

In order to determine Primary School and Preschool Education students' attitudes towards multicultural education and perceptions of the cultural effect of globalization, descriptive statistics were used. The data gathered in the study was analyzed applying SPSS (Statistical Packet of Social Science) 20.0. In order to determine whether the data had normal distribution, the Kolmogorov-Smirnov test was carried out. As a result of this test, it was determined that the distribution was normal. It was then determined that the data was appropriate for non-parametric statistics techniques. Next, the researchers used the Mann-Whitney U (MWU) and Kruskall-Wallis H (KWH) tests to analyze whether teacher candidates' attitudes towards multicultural education and perceptions of the cultural effect of globalization indicate a difference according to their department, high school graduated and whether they have a friend from a different culture. In order to examine the relationship between teacher candidates' perceptions of the cultural effect of globalization and attitudes towards multicultural education, the Pearson correlation coefficient technique was carried out. In addition, a hierarchic regression technique was utilized to examine the relations between the variables. The department variable handled within the scope of the analysis included two categories, which were primary school and preschool education departments; the high school from which they graduated included three categories, which were General, Anatolian and Teacher High School; and whether they had a friend from a different country included two categories, which were yes and no. The department, High School and whether they had a friend from a different country were entered as co-variates in the first step of the regression model. Subsequently, the perceptions of the cultural effect of globalization were entered as the main predictor.

Results

It is seen that the lowest scores that teacher candidates exhibited from the scale of attitude towards multicultural education was 53, and the highest score was 95. The lowest score found from the scale of perceptions of the cultural effect of globalization was 33 and the highest score was 120. While the score average on the scale of attitude towards multicultural education was 75.34, the score average on the scale of perceptions of the cultural effect of globalization was 94.82.

Table 1

Mann-Whitney U Test Results Regarding the Cultural Effect of Globalization and Multicultural Education

	Groups	*N*	*Average of Sequences*	*Total of Sequences*	*M-Whitney U*	*Z*	*P*
The Cultural Effect of Globalization	Primary School Education	110	100.05	11005.5	4900,500	-1.702	.089
	Preschool Education	103	114.42	11785.5			
	Total	213					
The Attitude Towards Multicultural Education	Primary School Education	110	106.08	11669.00	5564.000	-.225	.822
	Preschool Education	103	107.98	11122.00			
	Total	213					

As seen in Table 1, the findings regarding the Mann-Whitney U test indicate that there is not a significant difference in the perceptions of the teacher candidates of primary school and preschool education regarding the cultural effect of globalization (Z=-1.702; p>.05).

Also, the findings from the Mann-Whitney U test indicate that there is not a significant difference between the departments of teacher candidates and their attitude towards multicultural education (Z=-.225; p>.05).

Table 2

The *KWH Test Results Regarding the High School They Graduated from to the Perceptions of the Cultural Effect of Globalization*

The Type of High School They Graduated from	*n*	*Average of Sequence*	*sd*	*KWH*	*p*	*Significant Difference*
1-General High School	38	85.72	2	7.064	.029*	1-3
2-Anatolian High School	95	105.44				
3-Teacher High School	79	117.77				
Total	212					

*p<.05

Table 2 exhibits that there is a significant difference among the perceptions of teacher candidates towards the cultural effect of globalization when compared to the variable of the high school they graduated from ($KWH_{(2)}$=7.064; p<.05). As a result of the Mann-Whitney U test, which was carried out in order to find the source of the difference, a significant difference was confirmed between the teacher candidates who graduated from a general high school and those graduated from a teacher high school on behalf of teacher high school graduates. The KWH test carried out on the high schools that primary school teacher candidates ($KWH_{(2)}$=3.367;p>.05) and preschool teacher candidates graduated from, a significant difference was not encountered between the groups.

It is confirmed that the attitude of teacher candidates towards multicultural education does not cause a significant difference in accordance with the variable of what high school they graduated from ($KWH_{(2)}$=1.006; p>.05). In addition, as a result of the KWH test carried out in accordance with the high school graduated from regarding the attitudes of primary school teacher candidates ($KWH_{(2)}$=.913; p>.05) and preschool teacher candidates ($KWH_{(2)}$=.282;p>.05) toward multicultural education, a significant difference was not encountered between the groups.

When the findings in Table 3 regarding the Mann-Whitney U test are observed, it is seen that whether primary school teacher candidates had a friend from a different country caused a difference in the attitudes towards multicultural education (Z=-2.403;p<.05). In the findings of the Mann-Whitney U test of preschool teacher candidates, it is confirmed that primary school and preschool teacher candidates having friends from different countries does not cause a significant difference in their attitudes towards multicultural education (Z=-.907; p>.05).

Table 3

Mann-Whitney U Test Results Regarding the Attitudes towards Multicultural Education and Whether They Had a Friend from a Different Country

Groups	*Having A Friend*	*n*	*Average of Sequences*	*Total of Sequences*	*M-Whitney U*	*Z*	*P*
Primary School Teaching	Yes	74	60.59	4483.50	955.500	-2.403	.016*
	No	36	45.04	1621.50			
	Total	110					
Preschool Teaching	Yes	71	53.25	3781.00	976.000	-.907	.364
	No	31	47.48	1472.00			
	Total	102					

*p<.05

In addition, as a result of the Mann-Whitney U test carried out in order to determine teacher candidates' perceptions of the cultural effect of globalization and whether primary school teacher candidates had friends from other countries, a significant difference was not found (Z=-.918; p>.05). Also, in the perceptions of preschool teacher candidates towards the cultural effect of globalization a significant difference was not encountered (Z=-1.027; p>.05).

Table 4

The Relationship between the Perceptions of the Cultural Effect of Globalization and Attitudes towards Multicultural Education

Variables	*M*	*sd*	*r*
The Attitudes Towards Multicultural Education	75.34	6.32	.143*
The Perceptions of the Cultural Effect of Globalization	94.82	15.37	

*p<.05

When the correlation coefficients in Table 4 are observed, it is seen that there is a significant relationship between the scores of teacher candidates' attitudes towards multicultural education and their perceptions of the cultural effect of globalization (r =.143; p<.05). There is a low-level positive relationship between the attitudes of teacher candidates towards multicultural education and their perceptions of the cultural effect of globalization.

Table 5

Multiple Hierarchic Regression Analysis of Variables Regarding the Effect on Attitudes Towards Multicultural Education

Mod	*Predictor Variables*	*R*	*R^2*	*F*	*df*	*Beta*	*β*	*p*
1	(Stable)	.075	.006	.391	3/212			
	Department					-.03	-.34	.72
	High School Type					.08	.65	.32
	Friend from Different Country					.04	.77	.56
2	(Stable)	.169	.029	1.526	4/212			
	The Cultural Effect of Globalization					.16	.06	.02

*p<.05

As seen in Table 5, it is confirmed that the variables entered in the first step, which are department (β=-.34,p>.05), high school type (β=-.65, p>.05) and having a friend from a different country (β=-.77,p>.05), do not make original contributions to the model. It is seen that the original contribution of perceptions regarding the cultural effect of globalization, which was entered in the second step, was significant (R^2=.029, F $(_{4/212)}$ = 1.526, p<.05). Teacher candidates' perceptions regarding cultural effect of globalization have a role in differentiating their attitudes towards multicultural education. It is seen that the variation ratio of perceptions regarding cultural effect of globalization and attitudes towards multicultural education is .029.

Discussion and Conclusion

Multicultural education is the process of hosting different cultures to prepare students to live for common goals, learn and cooperate (Sonmez, 2011). Within this research, the relationship between teacher candidates' attitudes towards multicultural education and the cultural effect of globalization was analyzed according to different variables. Accordingly, a significant positive relationship was confirmed between perceptions of the cultural effect of globalization and attitudes towards multicultural education. As long as teacher candidates' perceptions of the cultural effect of globalization increase, their attitudes towards multicultural education increase positively as well. Thus, the high average of scores that teacher candidates showed on the scales supports this finding. Perkins (2012) states that teacher candidates' perceptions of high multicultural competence will be helpful in making efforts to have multicultural competence.

In addition, it was questioned whether teacher candidates' demographic variables and perceptions regarding the cultural effect of globalization were significant predictors of their attitudes to multicultural education. Within this scope, it is seen that demographic variables were not predictors of teacher candidates' attitudes towards multicultural education; however, teacher candidates' perceptions of the cultural effect of globalization do explain their attitudes towards multicultural education at the rate of 3%. In their study, Kocak and Ozdemir (2014) express that the departments of teacher candidates predict their attitudes towards multicultural education. It is thought that the difference between the two studies results from the fact that Kocak and Ozdemir's (2014) sample group consists of teacher candidates from a foreign languages department and this department has more lessons with multicultural contents compared to other departments. Other studies indicate that the attitudes of students in social sciences and primary school teaching departments to multicultural education are higher than those of students in science departments (Alanay and Aydin, 2016; Koc and Koybasi, 2016). Similar to this research project, some studies have indicated that the departments of teacher candidates do not create a significant difference in their attitudes towards multicultural education (Bigatti et al., 2012; Demircioglu and Ozdemir, 2014; Okojie-Boulder, 2010; Tortop, 2014).

While teachers generally express positive opinions towards multicultural education, they do not consider themselves competent in multicultural education (Berthelsen and Karuppiah, 2011; Demir and Basarir, 2013; Kaya and Soylemez, 2014; Smith, 2009; Tonbuloglu, Aslan and Aydin, 2016). Other studies indicate that most university students know little about multiculturalism, and therefore they hesitate to work in multicultural environments and have difficulty in turning their knowledge and skills into behavior (Keengwe, 2010; Layne & Lipponen, 2016; Unlu and Orten, 2013; Katri Jokikokkoa & Hannele Karikoski, 2016). All these results indicate that although teacher candidates support multicultural education, their competence in multicultural education may not be enough.

In this study, it is confirmed that whether primary school teacher candidates have friends from different countries or not creates a difference in their attitudes towards multicultural education. Accordingly, it can be said that primary school teacher candidates' having friends from different countries affects their attitudes towards multicultural education positively. As a result of the study that Gursoy and Akyniyazov (2016) carried out, it is determined that teachers' having a foreign teacher affects their attitudes towards multicultural education positively. There are studies that state teacher candidates should have an education qualified in multicultural early childhood education in order to achieve success in the education of children (Szabo & Anderson, 2009; Alismail, 2016; Logvinova and Ivanova, 2016; Jung, 2016). Thus, Son and Kim (2016) state that the experiences gained in multicultural environments and the education given regarding multiculturalism in the process of teacher training is important and effective in the application of multicultural education by teachers.

It is seen that there is a significant difference in accordance with the variable of what kind of high school teacher candidates graduated from within the perceptions of the cultural effect of globalization. Seyfi (2006) determined that the culture impact of globalization on teachers is higher because they have undergraduate and postgraduate degrees compared to teachers who have associate's or secondary education degree. The reason why the perceptions of teacher candidates who graduated from teacher high schools are higher than teachers who graduated from other kinds of high schools may be due the fact that students coming from different regions constitute a heterogenic structure in the teacher high school. In their study, Bulut and Basbay (2015) stated that teachers' multicultural competence perceptions differ according to their education level.

It is seen that teachers' perceptions of the cultural effect of globalization impacts their attitudes regarding multicultural education. Accordingly, it is thought that training regarding multicultural education should be given to teacher candidates at the Education Faculties. Gomleksiz and Kilinc (2012) expressed that education programs at universities should be student centered, appropriate for social values and adaptable to change.

Considering the fact that education starts during the preschool period, it is thought that information and skills regarding the development of universal features, like

being democratic, respecting difference, multiculturalism and globalization, should be practically added to class contents at every level of the education program. In addition, working teachers by the time of their in-service training and teacher candidates within the training process should be provided with opportunities to gain awareness through the development of information and skills regarding the cultural effect of globalization and multicultural education. It is thought that in universities, within the scope of exchange programs such as Erasmus and Comenius, the extension of foreign education and exchange programs that provide students with chances to know different cultures is needed. A limitation of this research is that it assesses only teacher candidates' attitudes. Future research should perform experiments to measure the effect of teachers' education regarding multiculturalism and globalization on their attitudes and teaching applications.

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Çokkültürlü Eğitim Tutumları ile Küreselleşmenin Kültürel Etkisine Yönelik Algılar Arasındaki İlişki

Atıf:

Bagceli Kahraman, P. (2017). Relationship between attitudes of multicultural education and perceptions regarding cultural effect of globalization. *Eurasian Journal of Educational Research*, 67, 233-249, DOI: http://dx.doi.org/10.14689/ejer.2017.67.14

Özet

Problem Durumu: Çokkültürlü eğitim ortamının oluşturulmasında bireylerin farklılıklarına saygı duyulması, çocukların farkındalık düzeylerinin arttırılması ve çokkültürülülüğe yönelik çalışmaların yürütülmesi gerekmektedir. Küreselleşmenin etkileri sayesinde öğrenci merkezli yaklaşımlar eğitim sistemlerinde yer bulmaktadır. Ancak günümüze kadar öğretmenlerin eğitim sürecinde bireysel farklılıkları göz önünde bulundurmadan yaptıkları uygulamalar, farklı olan çocukların eğitimlerini sürdürebilecek yeterlikte olmalarına rağmen, asimilasyonuna ve eğitimlerini yarıda bırakmalarına sebep olmuştur. Bu nedenle öğretmenlerin okul öncesi dönemden başlayarak küreselleşmenin kültür üzerindeki etkilerinin bilincinde ve kültürel değerlere önem veren ve farklılıklara saygılı bireylerin yetişmesine katkı sağlayacak bireyler yetiştirmesi önem kazanmaktadır.

Araştırmanın Amacı: Bu araştırma öğretmen adaylarının küreselleşmenin kültürel etkisine yönelik algıları ile çok kültürlü eğitime yönelik tutumları arasındaki ilişkiyi belirlemek amacıyla yapılmıştır. Ayrıca öğretmen adaylarının bölümlerinin, mezun oldukları lise türünün ve farklı ülkelerden arkadaşlarının olup olmamasının tutumlarında farklılaşmaya yol açıp açmadığı araştırmanın diğer amaçları içinde yer almaktadır. Bununla birlikte araştırmada, bu değişkenlerin öğretmen adaylarının çokkültürlü eğitime yönelik tutumlarını farklılaştırıcı rolü de incelenmiştir.

Araştırmanın Yöntemi: Yapılan bu araştırmada öğretmen adaylarının küreselleşmenin kültürel etkisine yönelik algılarının çok kültürlü eğitime yönelik tutumları arasındaki ilişkiyi incelemek amacıyla nicel araştırma modellerinden ilişkisel tarama modeli kullanılmıştır. Bu araştırmada öğretmen adaylarının çokkültürlü eğitime yönelik tutumları bağımlı değişken, küreselleşmenin kültürel etkisine yönelik algıları bağımsız değişken olarak ele alınmıştır. Araştırmanın evrenini 2015-2016 eğitim öğretim yılında Okul Öncesi Eğitimi ve Sınıf Eğitiminde öğrenim görmekte olan 1090 öğretmen adayı oluşturmaktadır. Örneklem grubunu Uludağ Üniversitesi Eğitim Fakültesinde öğrenim gören, 113 okul öncesi eğitimi ve 110 sınıf eğitimi öğretmen adayı olmak üzere toplam 213 öğretmen adayı oluşturmaktadır.

Araştırmada kişisel bilgi formu, çok kültürlü eğitime yönelik tutum ölçeği ve küreselleşmenin kültürel etkisine yönelik algıları ölçeği kullanılmıştır. Sınıf

Öğretmenliği ve Okul Öncesi Öğretmenliği öğrencilerinin çokkültürlü eğitime yönelik tutumları ile küreselleşmenin kültürel etkisine algılarını belirlemek için betimsel istatistikler kullanılmıştır. Verilerin normal dağılım olup olmadığını belirlemek için Kolmogorov-Smirnov normallik testi yapılmıştır Bu test sonucunda dağılımın normal olmadığı tespit edilmiştir. Non-parametrik istatistik tekniklerine uygun olduğu belirlendikten sonra öğretmen adaylarının küreselleşmenin kültürel etkisine ilişkin algıları ile çokkültürlü eğitime yönelik tutumlarının bölüm, mezun oldukları lise türü, farklı kültürlerden arkadaşlarının olup olmama durumuna göre anlamlı bir farklılık gösterip göstermediği Mann Whitney U (MWU) ve Kruskall Wallis-H (KWH) testleri ile analiz edilmiştir. Öğretmen adaylarının küreselleşmenin kültürel etkisine yönelik algıları ile çok kültürlü eğitime yönelik tutumları arasındaki ilişkiyi incelemek için Pearson Korelasyon Katsayısı tekniği uygulanmıştır. Ayrıca değişkenler arası ilişkilerin incelenmesinde hiyerarşik regresyon tekniğinden yararlanılmıştır. Analiz kapsamında ele alınan bölüm değişkeni sınıf öğretmenliği ve okul öncesi öğretmenliği olmak üzere iki kategoriden; mezun olunan lise türü düz lise, anadolu lisesi ve öğretmen lisesi olmak üzere üç kategoriden ve farklı ülkede arkadaşı olma durumu ise var ve yok olmak üzere iki kategoriden oluşturulmuştur. Öğretmen adaylarının bölüm, lise türü ve farklı ülkede arkadaşı olma durumu regresyon modelinin birinci basamağında co-variate olarak girilmiş, ardından ikinci basamakta küreselleşmenin kültürel etkisine yönelik algıları ana yordayıcı olarak girilmiştir.

Araştırmanın Bulguları: Öğretmen adaylarının çokkültürlü eğitime yönelik tutum puanları ile küreselleşmenin kültürel etkisine yönelik algı puanları arasında anlamlı ilişkinin olduğu saptanmıştır. Öğretmen adaylarının çok kültürlü eğitime yönelik tutumları ile küreselleşmenin kültürel etkisine yönelik algıları arasında düşük düzeyde pozitif yönlü bir ilişki bulunmaktadır. Ayrıca öğretmen adaylarının küreselleşmenin kültürel etkisine yönelik algılarının çokkültürlü eğitime yönelik tutumlarını farklılaştırıcı rolü bulunmaktadır. Küreselleşmenin kültürel etkisine yönelik algıların çok kültürlü eğitime yönelik tutumlara ilişkin varyansı açıklama oranının .029 olduğu görülmektedir. Öğretmen adaylarının küreselleşmenin kültürel etkisine yönelik algıları arasında mezun oldukları lise değişkenine göre anlamlı bir farklılık olduğu belirlenmiştir. Farkın kaynağını bulmak amacıyla yapılan Mann-Whitney U Testi sonucunda düz lise ile öğretmen lisesinden mezun olan öğretmen adayları arasında öğretmen lisesinden mezun olanların lehine anlamlı farklılık tespit edilmiştir. Sınıf öğretmenliği öğretmen adaylarının farklı ülkelerden arkadaşlarının olup olmamasının çok kültürlü eğitime yönelik tutumlarında farklılığa yol açtığı saptanmıştır.

Araştırmanın Sonuçları ve Önerileri: Öğretmen adaylarının çokkültürlü eğitime yönelik tutumları üzerinde küreselleşmenin kültürel etkisine yönelik algılarının etkili olduğu görülmektedir. Bu sonuca göre öğretmen adaylarının çok kültürlü eğitime yönelik eğitimlerinin öncelikle Eğitim Fakültelerinde verilmesi gerektiği düşünülmektedir. Eğitimin okul öncesi dönemden başladığı düşünülerek, tüm kademelerde programda yer alan ders içeriklerine küreselleşme, çokkültürlülük, farklılıklara saygı duyma ve demokratik olma gibi evrensel özelliklerin geliştirilmesine yönelik bilgi ve

becerilerin uygulamaya dönük olarak eklenmesi gerektiği düşünülmektedir. Ayrıca meslekteki öğretmenlere hizmet içi eğitim yoluyla, öğretmen adaylarına ise, eğitim-öğretim süreci içerisinde çokkültürlü eğitime ve küreselleşmenin kültürel etkisine yönelik bilgi ve becerilerinin geliştirilmesi yoluyla farkındalık kazanmaları sağlanmalıdır. Üniversitelerde Erasmus ve Comenius öğrenci değişim programları kapsamında öğrencilerin farklı kültürleri tanımalarını sağlayacak yurtdışı eğitim ve değişim programlarının yaygınlaştırılması gerektiği düşünülmektedir. Sadece öğretmen adaylarının tutumlarını ölçmeye yönelik olması bu araştırmanın sınırlılığıdır. İleriye dönük yapılacak araştırmalarda öğretmen adaylarına, çokkültürlülük ve küreselleşmeye yönelik olarak verilecek eğitimlerin, tutumlarına ve uygulamalarına yönelik etkisini ölçmeye dayanan deneysel araştırmaların yapılması da önerilmektedir.

Anahtar Kelimeler: Küreselleşme, çokkültürlülük, çokkültürlü eğitim, öğretmen adayı.

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Motivational Orientations and Self-Efficacy Beliefs of Turkish Students towards EFL Learning*

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affective factors, integrative motivation, instrumental motivation, confidence

ABSTRACT

Purpose: There has been a concern as to what motivates people to learn a foreign language among researchers. Another concern in EFL context is that students may not benefit from learning opportunities due to low self-efficacy and low motivation to learn a foreign language. The main goal of this study is to explore the motivational orientations of high school students. **Research Methods:** In the study, a quantitative research design was employed during the data collection and the analysis phases. **Findings** The data analysis indicated that the participants were moderately motivated to learn English as a foreign language (*M=92.62*). In addition, a meaningful difference between participants' instrumental and integrative orientations towards EFL learning was observed. It was also indicated that there was not a significance difference between male and female students' motivation level. However, students' instrumental motivation had a greater influence on language learning. In addition, there was not a gender-related significant difference in students' motivational orientations. The overall mean score for students' self-efficacy was found to be at moderate level (M = 3.88). Furthermore, female students' self-efficacy scores were significantly higher than those of the male students. Lastly, positive correlation was found between students' motivational orientations and self-efficacy beliefs. **Implications for Research and Practice**: The results emphasized the importance given to English language as a primary foreign language, a part of career paths and an indicator of various job opportunities. However, with support of integrative motivation, students' can set more realistic goals towards integrating into the international community.

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Introduction

Learner differences have always been the main concern of researchers in the field of foreign language learning. Johnson (2001) states that learners themselves bring individual differences to the learning task, and puts individual differences into three categories; cognitive variables, affective variables, and personality variables. All these three variables include different sub-variables that affect learning. For example, intelligence and language aptitude as cognitive factors influence learning behavior. According to Chastain (1988, p. 121) some of the affective factors that influence the development of second-language skills are self-concept, attitude, and perseverance, internal versus external locus of control, introversion versus extroversion, interests and needs. As the personality types, the effects of being introverted or extroverted on language learning have been investigated in different academic settings.

Most of the research in EFL context has placed affective factors to forefront for the last two decades. One of the affective factors, which are influential on learning, is motivation. Lightbown and Spada (1997) reported that motivation had an influence on pedagogical practices. Zimmerman (2000) also highlighted the importance given to motivation for learning during the last decades. In literature different definitions were given to motivation. According to Gardner (1985) motivation is ''the extent to which an individual works or strives to learn the language because of a desire to do so…''. In addition, Williams and Burden (1997) explained motivation as "a state of cognitive and emotional arousal, which leads to a conscious decision to act, and gives a rise to a period of sustained intellectual and physical effort" (p.120). Different schools of thought also put forward explanations to motivation. From the behavioristic angle, motivation is the expectation of reward or reinforcement. For cognitivists, motivation is related to thoughts and decisions. As such, it is clear that motivation comes not only from external forces but also from an internal mechanism. Dörnyei (2005, p. 68) described motivation as 'effort, desire and attitude towards learning. He referred motivation as a multifaceted psychological phenomenon. Similarly, Lightbown and Spada (1997, p. 63) explained motivation in terms of two factors: learner's communicative needs and their attitudes towards the second language community. In view of the explanations, it is certain that motivation, which has a dynamic nature, affects one's cognitive performance.

From 1959 to 1990 Gardner remained as a prominent figure of motivational studies. Gardner and Lambert (1959) classified students as integratively or instrumentally motivated to learn. Integrative motivation concerned about learners' tendency to integrate into the target communities while instrumental motivation was related to pragmatic and utilitarian goals of language learning such as getting a good job and getting through the public exams. For example, instrumentally motivated learner regards foreign language learning as a means to a pragmatic end. Gardner (1985) developed Attitude/Motivation Test Battery (AMTB) in order to measure individual differences based on the socio-educational model of second language learning.

Many studies, which were inspired by Gardner's AMTB, were conducted in the field. Some of them focused on instrumental and integrative orientations for learning. In the Chinese EFL context, Xiong, 2010 investigated motivation differences among middle school students and observed that they had both instrumental and integrative motivation for learning English. In the Iranian EFL context, studies examined learners' motivational orientations and reported high instrumental motivation among foreign language learners (Hashemi and Hadavi, 2014; Vaezi, 2008). In the Turkish context, some studies supported that finding (Bektaş-Çetinkaya, 2012; Köseoğlu, 2013; Öztürk and Gürbüz, 2013). All those studies indicated the dominance of instrumental motivation among EFL students.

The relationship between gender and motivation is undeniably another important topic studied in EFL settings. Gardner and Lambert (1972) reported that the female were more motivated to learn a foreign language. Similarly, in his study Xiong (2010) found that girls were more interested in English and motivated to learn it than the boys. In the Turkish EFL some studies pointed out that female students had higher motivation than males did (Gördü-Aşıcı, 2016; Kızıltepe, 2003; Öz, Demirezen and Pourfeiz, 2015). There are not many studies on gender differences and motivation in the Turkish EFL context.

Another affective factor, which has a role on success in foreign language, is self-efficacy. Bandura (1977) introduced the construct as a part of his Social Cognitive Theory. He posited that people's levels of motivation was affected by their self-efficacy beliefs and described self-efficacy as an individual difference and explained it as personal beliefs about one's own capabilities. Self-efficacy as a possible predictor of motivation has been studied extensively in different pedagogic settings. Research into motivation also emphasized that motivation and learning behavior are influenced by learners' self-efficacy. Schunk (1989) argued that self-efficacy could enable learners to apply their knowledge, by which they attain cognitive skills. In addition, researchers reported that learners' self-efficacy beliefs had an inevitable influence on their motivation (Bandura, 1989; Linnenbrink and Pintrich, 2003; Pajares and Vakliante, 1997; Yang, 1999).

Some studies showed that there was a positive relationship between learners' motivation and self-efficacy beliefs (Bandura, 1989; Clement, R., Z, Dörnyei and K.A. Noels, 1994; Wang, CH., Schawab, G., Fenn, P., and Chang, M., 2013). In the Turkish EFL context, Tılfarlıoğlu and Cinkara (2009) stated that EFL university students had a high sense of self-efficacy in language learning tasks. Genç, Kuluşaklı and Aydın's (2016) findings were also in line with those of Tılfarlıoğlu and Cinkara (2009). However, Ersanlı (2015) reported that there was a low-level negative correlation between English language learning motivation and self-efficacy beliefs of students in Grade 8. All these studies did not include high school students.

One concern in EFL area is that students may not benefit from learning opportunities due to low self-efficacy and low motivation to learn a foreign language. Moreover some language learners with low self-efficacy remain nonresponsive to productive tasks. Another argument is about why students with

low motivation to learn a foreign language stay silent and inert in the classroom. Although there are many reasons for low desire to learn or low willingness to perform in the classroom, foreign language teachers should think about options to create more positive beliefs about self-capabilities in students' creative minds. If there is positive relation between learners' self-efficacy and their motivation, then new methods can be suggested to increase motivation, as well as self-efficacy.

In the light of all these facts and seeing the need for further research in the Turkish high school context, the current study aimed to investigate learners' motivational orientations in the Turkish EFL high school context. It also aimed to investigate the relationship between their foreign language learning self-efficacy beliefs and motivational orientations. To this end, following research questions were posed for the study:

1. What is the motivation level of Turkish high school EFL students?

2. Is there a significant difference between male and female students in terms of English language self-efficacy?

3. Is there a relationship between students' self-efficacy beliefs and their motivationalorientations?

Method

Research Design

The present paper mainly aimed to investigate the relationship between learners' motivational orientations and their English language learning self-efficacy beliefs. To this aim, the study employed a quantitative research design during the data collection and analysis phases. Quantitative studies provide findings, which are descriptive in nature. Furthermore, the findings of this type of studies are easily comparable with those of their methodologically similar counterparts. The present quantitative study provided accurate numbers, which made it easy to create charts or graphics. Mean scores and other values are also useful while comparing the current results with those of the previous ones.

Research Design

The participants were 100 Turkish EFL students, 49 females and 51 males, studying at a Private High School in Muğla province, Turkey. The participants' age ranged from 17 to 18 with an average age of 17. As the study targeted only 11th and 12th graders, the participants were selected non-randomly because the 9th and 10th graders were supposed to have more concerns about their foreign language related self-capabilities. Thus, it was better to include more proficient learners to get healthy results.

Research Instrument and Procedure

The study was conducted during the spring term of 2015-2016 educational year. To gather data, two scales were used. The data were collected by means of the two scales. Initially, the Turkish version of 5-point Likert-type motivational orientations scale, which was adapted from Gardner's AMTB (1985) and the work of Clement, Dörnyei and Noels (1994) and used in Vaezi's (2008) study, was utilized to gather data on students' motivation. Revised versions of Vaezi's 25-item motivational orientations scale were used and found reliable in various studies. For example, the scale had a good reliability (α = .80) in Naeini's (2012) and Hosseini and Taheri's (2014) studies. The scale in the present study consisted of two subcategories; integrative (12 items) and instrumental (13 items) motivation.

As a secondary research instrument, a 7- point Likert-type language Self-efficacy Scale (SES) was used in the study. The original scale was obtained from Wang et al.'s (2013) study. The scale (α= .96) had a good reliability (Wang et al., 2013). The self-efficacy scale included four subcategories; listening efficacy scale, speaking efficacy scale, reading efficacy scale, writing efficacy scale. Each subscale was composed of 8 items that are relevant to four language modes. The responses ranged from "I cannot do it at all" to "I can do it very well".

The language of the original scales was English. Thus, In order to keep the original meaning of the statements and to increase reliability, back-translation method was employed during translation. In addition, the items written in the scales were explained whenever required by researchers in order to avoid any misunderstanding. After the examination of the instruments, the researcher administered each scale. Both of the scales were administered respectively during one class hour on the same day. It took the participants 20 minutes to complete each scale.

Data Analysis

Statistical Package for Social Sciences (SPSS) software version 20.0 was used to compute data, to compare mean scores and to make tables. In the study descriptive statistics provided mean scores, frequencies and standard deviation. As the data were normally distributed according to Kolmogorov–Smirnov test, parametric tests were used during analyses. Pearson Correlation Coefficients was used to find out whether or not there is a relationship between motivational orientations and self-efficacy beliefs of students. Furthermore, paired and independent t-tests were utilized to determine if there is a significant difference between students' scores in the scales or not.

As for the reliability issues, the reliability scores of the two scales were calculated. The Cronbach's alpha values were not only calculated for motivational orientations and self-efficacy scales but also for the subscales. The details are given below. Motivation scale was found to be highly reliable (α = .94). The scale also contained two subscales; integrative motivation (12 items; α = .91), instrumental motivation (13 items; α = .92). The second scale was Self-efficacy Scale (SES) which was used to

determine students' self-efficacy levels (32 items α = .98). The SES comprised of four subcategories; listening self-efficacy (α = .94), speaking self-efficacy (α = .94), reading self-efficacy (α = .93) and writing self-efficacy (α = .94). Each subscale consisted of 8 items.

Results

After the reliability tests confirmed that research instruments were reliable the data, which were gathered by means of two instruments, were analyzed through several statistical tests. Firstly, students' general motivation level was determined by calculating overall mean scores. The study indicated that students were moderately motivated to learn English as a foreign language in general (M = 92.62).

Table 1

Descriptive Statistics for Students' Overall EFL Learning Motivation

	N	*Minimum*	*Maximum*	*Mean*	*SD*
General Motivation	100	36.46	123.96	92.0104	18.17056

The calculation of students' motivation level was carried out as it was in Öztürk and Gürbüz's (2013) study on EFL motivation. The motivation scale consisted of 25 items. As the scale was likert type, the grading system was changed and recoded. The recoded version of the scores ranged from 25 to 125. The scores were as follows; High level motivation = 100 – 125, Moderate level motivation = 75 – 99, Low level motivation = 50 – 74, very low level motivation = 25 – 49.

In addition to the general motivation level of the students, descriptive statistics provided the frequencies of the students, who had different levels of motivation. According to the results, %13 of the participants (N = 100) had a motivation level below the moderate threshold level. The study indicated that %54 and most of the participants had moderate level of motivation. Besides, %33 of the participants scored high in the study (See Table 2).

Table 2

Frequencies of Students' General Motivation Level

Motivation Level	**Frequencies of Students**
High Level Motivation	33
Moderate Level Motivation	54
Low Level Motivation	9
Very Low Level Motivation	4

The study aimed to find out how students differ in their motivational orientations. Firstly, students' general orientation towards learning EFL was investigated. To achieve this, the study utilized paired samples t-test. The results of

paired samples t-test indicated that there was a statistically significant difference between students' integrative motivation (*M* = 88.3, *SD* = 19.7) and instrumental motivation (*M* = 96.5, *SD* = 19.1) at the .05 level of significance (p = .000). The test also revealed that instrumental motivation towards EFL learning was the dominant type of motivation among the participants (See Table 3).

Table 3.

Paired Samples T-test for Students' Motivational Orientations

	Motivation Type					95% CI of the Difference				
	Integrative		**Instrumental**							
	M	*SD*	*M*	*SD*	*N*	*Lower*	*Upper*	*t*	*df*	*p*
Pair 1	88.37	19.75	96.53	19.11	100	-11.09	-5.22	-5.51	99	.000

*$p < .05$.

The study also examined gender-related difference in students' motivational orientations (See Table 4).

Table 4

Results of T-test and Descriptive Statistics for General Motivation regarding Gender

	Gender						95% CI of the Difference				
	Male			**Female**							
	M	*SD*	*n*	*M*	*SD*	*n*	*Lower*	*Upper*	*t*	*df*	*p*
Motivation	88.76	18.43	51	95.38	17.43	49	-13.74	.50	-1.8	98	.06

*$p < .05$

According to the results female students had a slightly higher level of motivation than the motivation level of male students. However the independent t-test indicated that there was no significant difference between male students' motivation level (*M* = 88.7, *SD* = 18.4) and the females' (*M* = 95.3, *SD* = 17.4) at the .05 level of significance (p = 0.68).

Table 5

Results of Independent T-test and Descriptive Statistics for Students' Integrative and Instrumental Motivation Scores regarding Gender

	Gender						95% CI of the Difference				
	Male			Female							
	M	*SD*	*n*	*M*	*SD*	*n*	*Low.*	*Upp.*	*t*	*df*	*p*
Integ. Mot.	3.37	.79	51	3.70	.76	49	-.63	-.01	-2.11	98	.037
Inst. Mot.	3.75	.79	51	3.97	.72	49	-.51	08	-1.39	98	.165

*$p<.05$

The analysis of the data showed how students differ in their motivational orientations towards learning a foreign language (FL) regarding their gender. Although the students had both types of motivation towards EFL learning, the study aimed to find out whether there is a significant difference between the scores of instrumentality and integrativeness. Initially, Levene's test for equality of variances confirmed the homogeneity of the groups. Then, the independent-samples t-test indicated that mean scores of integrative motivation were significantly higher for females (M = 3.70, SD= 0.76) than for males (M = 3.37, SD= 0.79) at the .05 level of significance (p = .37). However, it was not found any significant difference between the scores of instrumental motivation for males (M = 3.75, SD = 0.79) and for females (M = 3.97, SD = 0.72) at the .05 level of significance (p = .165).

Table 6

Overall Self-efficacy Level of the Students

	N	*Minimum*	*Maximum*	*Mean*	*SD*
Overall Self-efficacy	100	1.13	6.78	3.8841	1.34293

In the second phase of the research, the data gathered by means of the self-efficacy scale were analyzed in order to answer to the second research question. Firstly, students' overall mean score for self-efficacy was calculated and found as M = 3.88, which pointed to a moderate level of self-efficacy. The results indicated students had a moderate level of English self-efficacy (See Table 6).

Table 7

Students' Mean Scores in SES according to Their Gender

	Gender						95% CI of the Difference			
	Male			Female						
	M	*SD*	*n*	*M*	*SD*	*n*	*Low.*	*Upp.*	*t*	*df* *p*
Self-efficacy	3.61	1.27	51	4.16	1.37	49	-1.07	-.02	-2.07	98 .040

*$p < .05$

After the students' overall self-efficacy mean score had been calculated, an independent t-test was used to determine whether there is a significant difference between male and female students' self-efficacy level. The analysis of the data revealed that there was a statistically significant difference between female students' self-efficacy level (M = 4.16, SD = 1.37) and that of the males (M = 3.61, SD = 1.27) favoring females at the .05 level of significance (p = .40).

As for the correlation between variables, the study utilized Pearson's correlation Coefficients. The analyses of the data provided numbers that indicated correlations among variables. According to Evans (1996), the correlation value of 'r' can be explained verbally in research papers. The suggested values were as follows:

- .20 - .39 as "weak"
- .40 - .59 as "moderate"
- .60 - .79 as "strong"
- .80 - 1 as "very strong"

The third research question was posed to find out whether there is a correlation between motivational orientations and self-efficacy of the participants. The analysis of the data found positive correlations among all the variables at the level of .0.01 significance. Firstly, the analysis indicated that students' self-efficacy moderately correlated with their motivational orientations and general motivation. Secondly, it was revealed that both integrative motivation and instrumental motivation positively correlated with self-efficacy beliefs.

Table 8.

Correlations among Variables

Correlations				
Variables	Self-efficacy	Motivation	Integrative Motivation	Instrumental Motivation
Self-efficacy	1			
Motivation	.50**	1		
Integrative Motivation	.48**	.92**	1	
Instrumental Motivation	.45**	.92**	.71**	1

**p < 0.01

According to the analyses, integrative motivation had a moderate positive correlation with students' self-efficacy in four skills (listening, speaking, reading and writing). The analyses also indicated that students' instrumental motivation had a positive correlation with their self-efficacy in three skills (listening, speaking and writing). However, a weak positive correlation was found between speaking self-efficacy and instrumental motivation.

Table 9.

Correlations among Variables

Correlatios						
Variables	Instrumental	Integrative	Listening	Speaking	Reading	Writing
Instrumental	1					
Integrative	.71**	1				
Listening	.48**	.47**	1			
Speaking	.39**	.47**	.82**	1		
Reading	.44**	.43**	.90**	.83**	1	
Writing	.40**	.47**	.85**	.91**	.89**	1

**p < 0.01

Discussion and Conclusions

The analysis of the data indicated that there was a meaningful difference between participants' instrumental and integrative orientations towards EFL learning. According to the paired samples t-test, the participants were mostly instrumentally motivated to learn a foreign language. That finding supported different other studies conducted in the Turkish EFL context (Bektaş-Çetinkaya, 2012; Köseoğlu, 2013; Öztürk and Gürbüz, 2013). The finding was also in line with those of other studies in the Iranian EFL context (Hashemi and Hadavi, 2014; Vaezi, 2008). According to the present findings, the aim of learning English as a foreign language was mostly to find a good job (M= 98.75). In different other countries, studies on students' motivational orientations towards foreign language learning reported more or less the same results. The results emphasized the importance given to English language as a primary FL, a part of career paths and an indicator of various job opportunities in EFL contexts. This is the direct result of the rapid spread of English as a means of communication in different fields such as Science and Business.

The present research also found that female students were more motivated to learn English than male students. That finding was supported by other studies conducted in Turkey (Gördü-Aşıcı, 2016; Kızıltepe, 2003; Öz et al., 2015). The current findings also indicated that female students had more integrative motivation than male students did. In the Turkish context, the teaching profession is mostly attributed to girls and in most of the ELT departments girls are dominant in number. It can be thought that females show much more tendency to study in this department and consequently are more motivated than boys.

In the last years, studies also focused on the relationship between motivation and self-efficacy. The present investigation has showed that there is a positive correlation between participants' motivation and self-efficacy level. Some previous studies also reported that self-efficacy had an influence on students' success and motivation (Genç et al., 2016; Tılfarlıoğlu and Cinkara (2009). However, Ersanlı (2015) found low level negative correlation between 8th grade students' motivation and self-efficacy levels. This contradiction may be caused by the age factor. With regard to the relationship between motivation and self-efficacy, the present study found a moderate level positive correlation between the two variables. That finding was in line with Gördü-Aşıcı's (2016) study. In literature, some other studies showed that there was a positive relationship between learners' motivation and self-efficacy beliefs (Bandura, 1989; Clement et al., 1994; Wang et al., 2013). In addition, Williams and Burden (1997) pointed out the role of self-efficacy and stated that the development of self-efficacy was a complex phenomenon. They also added that learners with high self-efficacy can be more successful in achievement tasks than those who are more capable of doing something. In conclusion, as Williams and Burden stated, in this area much more research needs to be carried out. Different factors can affect the relationship between the variables. Thus, it is better to examine factors that best match the research topics.

In this current communicative era, cognitive and affective factors are of great importance in terms of making interactions easy. Motivation, as an effective factor

has an undeniable influence both on cognitive processes and behavior. If communication is the main goal of language learning, then motivation should be of great importance. Recently, there has been an on-going debate on what motivates people to learn a foreign language. In addition, the present study supported the existing research reporting that instrumental purposes for learning a foreign language play an important role in various EFL contexts. Having a good knowledge of English can become an end itself, but learners have utilitarian goals for learning it. If learners' instrumental motivation is supported with more integrativeness towards foreign language, they will be more confident in FL related activities both inside and outside the language classrooms.

One must never forget that opportunities offered to students do not necessarily yield success in foreign language learning. In addition, motivation does not necessarily come from external sources. Apart from external sources like rewards, personal feelings have an influence on students' motivation to learn EFL. As students' self-efficacy level increases, they will benefit more easily from foreign language learning opportunities. Similarly, if students believe that they can do well in the tasks, they will be more motivated and confident in EFL learning. Additionally, high self-efficacy level may lower the adverse feelings and anxiety which are regarded as the main causes of failure by many people. Setting goals can also make students believe in themselves and become more confident in foreign language learning classrooms, and then it is important that teachers should encourage their learners and provide some tasks, which will help them to be more confident.

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Türk Öğrencilerin Yabancı Dil Olarak İngilizce Öğrenimine Karşı Güdüsel Yönelimleri ve Öz-Yeterlik İnançları

Atıf:

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Özet

Problem Durumu: Öğrencilerin yabancı dile yönelik düşük öz-yeterlik ve güdüsel yönelimleri yüzünden öğrenme fırsatlarından faydalanamayacağı yabancı dil olarak İngilizce öğrenimi alanında bir kaygıdır. Bunun yanı sıra, bazı düşük öz-yeterlik sahibi dil öğrenicileri üretkenlik gerektiren etkinliklerde tepkisiz kalabilirler. Diğer bir iddia da yabancı dil öğrenmeye karşı düşük güdüsel yönelimleri olan öğrencilerin sınıflarda sessiz ve eylemsiz kalmasıdır. Sınıf içerisinde düşük öğrenme

arzusu ve üretme istekliliğinin birçok sebebi olmasına rağmen, yabancı dil öğretmenleri öğrencilerin yaratıcı zihinlerinde öz- yapabilirlikleri hakkında olumlu inançlar yaratacak seçenekler hakkında düşünmeliler. Eğer öğrencilerin güdüsel yönelimleri ve öz-yeterlikleri arasındaki ilişki olumluysa, öz-yeterliği ve dolayısıyla motivasyonu arttıracak yeni yöntemler önerilebilir. Bu nedenle bu çalışma bu ikisi arasındaki ilişkiyi ele almaktadır.

Çalışmanın Amacı: Tüm bu bilgilerin ışığında ve Türkiye'deki lise öğrenimi alanında başka çalışmalara duyulan ihtiyacı dikkate alarak, bu çalışma yabancı dil olarak İngilizce öğrenen Türk lise öğrencilerinin güdülenme yönelimlerini inceledi. Çalışma aynı zamanda yabancı dil öğrenimi öz-yeterlik inançları ve motivasyon yönelimleri arasındaki ilişkiyi araştırmayı amaçladı. Bu amaç doğrultusunda aşağıdaki araştırma sorularına cevap arandı:

1. Yabancı dil olarak İngilizce öğrenen Türk lise öğrencilerinin motivasyon seviyeleri nedir?
2. Bayan ve erkek öğrencilerin İngilizce öz-yeterlik düzeyleri arasında anlamlı bir farklılık var mıdır?
3. Öğrencilerin öz-yeterlik inançları ve güdüsel yönelimleri arasında anlamlı bir ilişki var mıdır?

Yöntem: Bu araştırma esas olarak öğrencilerin motivasyon yönelimleri ve İngilizce öğrenimi öz-yeterlikleri arasındaki ilişkiyi inceledi. Bu amaç doğrultusunda veri toplama ve analiz süresince nicel araştırma yöntemleri kullanılmıştır. Nicel çalışmalar genel olarak betimleyici bulgular sağlamaktadır. Buna ek olarak, bu tip çalışmaların bulguları yöntem olarak benzer diğer araştırmaların sonuçları ile kolayca karşılaştırılabilir.

Bulgular: Güvenirlik testleri ölçme araçlarının güvenilir olduğunu doğruladıktan sonra ilk olarak, öğrencilerin genel motivasyon düzeyleri belirlendi. Öğrencilerin genelde İngilizce öğrenmeye orta düzeyde güdülendiklerini bulundu (M = 92.62). Paired Samples T-test sonuçları öğrencilerin bütünleşmeci motivasyonları (M = 88.3, SD = 19.7) ve araçsal motivasyonları (M = 96.5, SD = 19.1) arasında .05 önem düzeyinde istatistiksel olarak anlamlı bir farklılığa işaret etmiştir (p = .000). İngilizce öğrenmeye yönelik araçsal motivasyonun katılımcılar arasında baskın motivasyon tipi olduğu görülmüştür. Sonuçlar, genel olarak erkek öğrencilerin motivasyonları (M = 88. 7, SD = 18. 4) ile bayan öğrencilerin motivasyonları (M = 95. 3, SD = 17. 4) arasında. 05 düzeyinde anlamlı bir farklılık olmadığını gösterdi (p = 0.68). Ancak kız öğrencilerin bütünleşmeci motivasyonları daha yüksek bulundu. Bulgulara ek olarak, ölçekten elde edilen genel puanlar öğrencilerin araçsal olarak İngilizce öğrenmeye daha fazla güdülendiklerini gösterdi.

Araştırmanın ikinci safhasında öz-yeterlik ölçeği aracılığıyla elde edilen veriler ikinci araştırma sorusuna cevap vermek için analiz edildi. Öğrencilerin genel ortalama öz-yeterlik değeri (M = 3.88) orta düzey bir öz-yeterliğe işaret etti. Öğrencilerin genel öz-yeterlik puanları hesaplandıktan sonra erkek ve bayanların öz-yeterlikleri arasında anlamlı bir farklılık olup olmadığını belirlemek için bir bağımsız T-test

yapıldı. Veri analizi bayan öğrenciler (M = 4.16, SD = 1.37) ve erkek öğrencilerin (M = 3.61, SD = 1.27) öz-yeterlik seviyeleri arasında. 05 anlamlılık düzeyinde bayanların lehine bir farklılık olduğunu göstermiştir (p = .40). Değişkenler arasındaki ilişkilere gelince, çalışma Pearson İlişki Katsayılarından yararlandı. Evans'a (1996) göre, ilişki değeri 'r' araştırma raporlarında sözel olarak açıklanabilir. Önerilen sözel değerler yandaki gibidir; .20 - .39 "zayıf" .40 - .59 "orta", .60 - .79 "güçlü" .80 - 1 "çok güçlü". Üçüncü araştırma sorusu güdüsel yönelimler ve öz-yeterlik arasındaki ilişkiyi ortaya çıkarmak için ileri sürüldü. Veri analizleri tüm değişkenler arasında 0.01 anlamlılık düzeyinde olumlu ilişkiler buldu. Öncelikle, analizler öğrencilerin motivasyon yönelimlerinin genel motivasyonları ile orta düzeyde olumlu ilişki gösterdiğini belirtti. İkinci olarak, hem bütünleşmeci motivasyon hem de araçsal motivasyonun öz-yeterlik inançları ile olumlu ilişki gösterdiği ortaya çıkarıldı. Ayrıca, bütünleşmeci motivasyonun öğrencilerin dinleme, konuşma okuma ve yazma öz-yeterlikleri ile orta düzeyde olumlu bir ilişkiye sahip olduğu görüldü. Öğrencilerin konuşma öz-yeterlikleri ve araçsal motivasyonları arasında zayıf derecede olumlu bir ilişki bulunmuştur.

Sonuç ve Öneriler: Veri analizleri katılımcıların yabancı dil olarak İngilizce öğrenimine yönelik araçsal ve bütünleşmeci motivasyonları arasında anlamlı bir farklılık olduğunu göstemiştir. Paired samples t-test sonuçları katılımcıların yabancı dil öğrenmeye karşı çoğunlukla araçsal olarak güdülenmekte olduklarını gösterdi. Bu bulgu Türkiye'deki yabancı dil olarak İngilizce öğrenimi alanında diğer farklı çalışmaları desteklemektedir (Bektaş-Çetinkaya, 2012; Köseoğlu, 2013; Öztürk & Gürbüz, 2013). Bulgu aynı zamanda İran'da yapılan diğer araştırmalar ile de aynı doğrultudadır (Hashemi & Hadavi, 2014; Vaezi, 2008). Güncel bulgulara göre, yabancı dil olarak İngilizce öğrenmenin amacı çoğunlukla iyi bir iş bulmaktır (M= 98,75). Diğer ülkelerdeki öğrencilerin motivasyonu üzerine çalışmalar da az çok benzer bulgular sunmuştur. Bulgular temel yabancı dil, kariyer yolunun bir parçası ve farklı iş fırsatlarının göstergesi olarak yabancı dil öğrenme alanında İngilizcenin önemini vurgulamıştır. Bu İngilizcenin bir iletişim aracı olarak bilim alanında ve iş sektörlerinde yaygınlaşmasının bir sonucudur. Son yıllarda, çalışmalar motivasyon ve öz-yeterlik üzerine de yoğunlaşmıştır. Bu çalışma lise öğrencilerinin İngilizceye öğrenmeye yönelik motivasyonları ve öz-yeterlikleri arasında olumlu bir ilişki olduğunu göstermiştir. Önceki bazı araştırmalar öz-yeterliğin öğrenci başarısı ve motivasyon üzerinde etkisi olduğunu bildirmiştir. (Genç et al., 2016; Tılfarlıoğlu & Cinkara (2009). Fakat, Ersanlı (2015) 8. sınıf öğrencilerinin motivasyon ve öz-yeterlikleri arasında düşük derecede olumsuz bir ilişki bulmuştur. Bu çelişki, yaş faktörü yüzünden olmuş olabilir. Bu çalışma motivasyon ve öz-yeterlik arasındaki ilişki bakımından orta düzeyde olumlu bir ilişki bulmuştur. Bu bulgu Gördü-Aşıcı (2016)'yı destekler niteliktedir. Alanyazında bazı diğer çalışmalar motivasyon ve öz-yeterlik arasında olumlu ilişki olduğunu göstermiştir (Bandura, 1989; Clement et al., 1994; Wang et al., 2013). Buna ek olarak Williams ve Burden (1997) yüksek öz-yeterliğe sahip öğrencilerin etkinliklerde daha bilgili olanlara göre daha iyi performans gösterdiğini öne sürmüştür. Sonuç olarak, farklı faktörler değişkenler arasındaki ilişkileri etkileyebilir. Böylece, araştırma konusuna en uygun faktörleri incelemek en iyisidir. Günümüz iletişim çağında bilişsel ve duyuşsal faktörler

etkileşimi kolaylaştırmak bakımında çok önemlidir. Motivasyonun hem bilişsel süreçler hem de davranış üzerinde inkar edilemez bir etkisi vardır. Eğer dil öğrenmenin temel amacı iletişim kurmak ise, o zaman motivasyona önem verilmesi gerekir. Son günlerde insanları yabancı dil öğrenmeye neyin motive ettiği konusunda süregelen bir tartışma vardır. Bu çalışma yabancı dil öğreniminde araçsal motivasyonun önemli bir rol oynadığını bildiren önceki araştırmaları desteklemektedir. İyi bir İngilizce bilgisine sahip olmak bir amaç olabilir, fakat öğrenciler onu öğrenmek için farklı faydalı amaçlara sahipler. Eğer öğrencilerin İngilizceye karşı araçsal motivasyonları bütünleyici motivasyon ile desteklenirse, sınıf içindeki ve dışındaki yabancı dil öğrenme etkinliklerinde kendilerinden daha emin olacaklardır. Asla unutulmamalıdır ki, öğrencilere sunulan fırsatlar illa başarıyı ortaya çıkarmak zorunda değildir. Ayrıca, motivasyon mutlaka dış etkenlerden gelmek zorunda da değildir. Ödül gibi dış etkenlerin dışında, kişisel duygular da İngilizce öğrenenlerin üzerinde bir etkiye sahiptir. Öğrencilerin öz-yeterlik düzeyleri arttıkça onlar yabancı dil öğrenme fırsatlarından daha fazla yararlanacaklardır. Benzer bir şekilde, eğer öğrenciler etkinliklerle daha başarılı olacaklarına inanırlarsa, İngilizce öğrenmeye daha fazla motive olacaklar ve kendilerinden emin olacaklardır. Bunlara ilaveten, yüksek öz-yeterlik seviyesi birçok insan tarafından başarısızlığın temel sebebi olarak sayılan olumsuz duyguları ve kaygıyı azaltabilir. Öğrencilerin kendilerine hedefler belirlemeleri kendilerine daha fazla inanmalarına ve yabancı dil sınıflarında başarılı olmalarına yol açar. Öyleyse, öğretmenler öğrencilerini kendilerine inanmaları konusunda cesaretlendirmeli ve onların kendilerine güvenini artırmalarını sağlayacak aktiviteleri planlamalıdırlar.

Anahtar Kavrmlar: duyuşsal faktörler, bütünsel motivasyon, araçsal motivasyon, güven

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