Elementary Education Online, 2018; 17(4): pp. 2124-2135
İlköğretim Online, 2018; 17(4): s. 2124-2135. [Online]: http://ilkogretim-online.org.tr
doi 10.17051/ilkonline.2019.506978

The Predictive Role of Temperamental Traits and Inhibitory-Control Skills on Ego Resiliency of Preschool Children*

Mizaç Özellikleri ve Öz Kontrol Becerilerinin Okul Öncesi Dönem Çocuklardaki Ego Sağlamlık Düzeyini Yordayıcı Rolü

Dilan Bayındır, *Balıkesir Üniversitesi, dilanbayindir@gmail.com*, ORCID: 0000-0002-6081-36901
Asude Balaban Dağal, *Marmara Üniversitesi, asudebd@marmara.edu.tr*, ORCID: 0000-0002-9527-5335
Ozana Ural, *Marmara Üniversitesi, oural@marmara.edu.tr*, ORCID: 0000-0002-5067-3655

Abstract. Ego resiliency means positive development tendency despite risk factors. Resilient children are expected to cope with individual, familial and environmental risk factors, so developing resiliency could be accepted as a developmental task for children. The aim of the study is to investigate the predictive role of two selected individual variables; inhibitory control skills and temperament characteristics of preschool children, on their ego resiliency levels. The study is in survey method. The sample of the study includes 55-73 months old 78 children, who attend preschools. The data collection tools that are used in this study are; The Personal Information Form, The Short Temperament Scale for Children and Children's Ego Resiliency Scale (Mother Form). Also two tasks, named as *Green-Red Signs* and *Touch Your Toe* were used to assess preschoolers' inhibitory control skills. When all the variables are considered together in the regression analysis, it has been found that the inhibitory control skills are significantly predictive of children's ego resiliency, but temperamental characteristics are not.

Keywords: Ego Resiliency, Inhibitory Control, Temperament, Preschool Children

Öz. Ego sağlamlığı risk faktörlerine rağmen olumlu gelişim eğilimini ifade etmektedir. Ego sağlamlığına sahip çocukların bireysel, ailesel ve çevresel risk faktörleri ile baş etmeleri beklenmektedir, bu nedenle de ego sağlamlığı geliştirmek çocuklar için bir gelişim görevi olarak kabul edilebilir. Bu araştırmanın amacı, bireysel boyutta seçilmiş iki değişkenin, öz kontrol becerileri ve mizaç özellikleri, ego sağlamlık düzeyleri üzerindeki yordayıcı rolünü araştırmaktır. Araştırma tarama modelinde tasarlanmıştır. Araştırmanın örneklemini, yaşları 55-73 aylar arasında olan okul öncesi eğitim kurumlarına devam eden 78 çocuk oluşturmaktadır. Kişisel Bilgi Formu, Çocuklar için Kısa Mizaç Ölçeği ve Çocuk Ego Sağlamlığı Ölçeği (Anne Formu) araştırmada kullanılan veri toplama araçlarıdır. Ayrıca çocukların öz kontrol becerilerini değerlendirmek için Yeşil-Kırmızı İşaretler ve Ayak Parmağına Dokun görevleri kullanılmıştır. Regresyon analizi ile tüm değişkenlerin birlikte etkisine bakıldığında, öz kontrol becerilerinin çocukların ego sağlamlık düzeylerinin anlamlı bir yordayıcısı olduğu, fakat mizaç özelliklerinin yordayıcı etkisinin olmadığı bulunmuştur.

Anahtar Sözcükler: Ego Sağlamlığı, Öz Kontrol, Mizaç, Okul Öncesi Dönem Çocuğu

* This study was presented at the International Congress on Afro-Eurasion Research III, which was held between 19-21 October 2017 in İstanbul.

Received: 29.03.2018 Accepted: 26.09.2018 Published: 31.10.2018

ÖZET

Amaç ve Önem

Bireysel, ailesel veya çevresel boyutta risk faktörlerine karşı, yine bu boyutlar altında kategorize edilebilecek koruyucu faktörler çocukların ego sağlamlık düzeyleri üzerinden gelişimsel çıktıları belirleyebilir. Bu araştırma kapsamında bireysel faktörlerden mizaç özellikleri ile öz kontrol becerisinin okul öncesi dönem çocuklardaki ego sağlamlık düzeylerini yordayıcı etkisi incelenmektedir. İlgili alan yazında, ego sağlamlığı, mizaç ve öz kontrol arasındaki ilişkileri inceleyen araştırmalar bulunsa da, bu araştırmalar belirtilen bu değişkenlerin tümünü içermemektedir ve aynı zamanda bu çalışmalar genellikle batılı ülkelerde yapılmış çalışmalardır. Bu araştırma ise hem mizaç hem de öz kontrol becerilerinin ego sağlamlığı üzerindeki yordayıcı etkisini birlikte incelemekte ve sonuçları Türkiye örneklemi üzerinden ortaya koymaktadır.

Yöntem

Araştırma tarama modelindedir. Araştırmanın örneklemini 55-73 aylar arasında olan, okul öncesi eğitim kurumlarına devam eden, %47.4'si (n=37) kız ve %52.6'si (n=41) erkek, toplam 78 çocuk oluşturmaktadır. Araştırmada veri toplama araçları olarak Kişisel Bilgi Formu, Çocuklar için Kısa Mizaç Ölçeği ve Çocuk Ego Sağlamlığı Ölçeği (Anne Formu) kullanılmış ve bu formların hepsi anneler tarafından doldurulmuştur. Çocuklardaki öz kontrol beceri düzeylerini belirlemek için ise iki görev kullanılmış, bu görevler çocuklarla birebir şekilde araştırmacılar tarafından okul öncesi eğitim kurumlarında uygulanmıştır. Araştırma hakkında bilgi ve izinler okullar aracılığıyla annelere iletilmiş, gönüllülük esasına göre araştırmaya katılan annelerin çocukları ile uygulamalar gerçekleştirilmiştir. Verilerin analizinde çoklu regresyon analizi kullanılmıştır.

Bulgular

Regresyon analizi sonuçlarına göre, kontrol becerileri ve mizacın alt boyutları olan sıcakkanlılık, sebatkarlık, ritmiklik ve tepkisellik birlikte ele alındığında ego sağlamlığına ilişkintoplam varyansın %17'sini açıklamaktadır. Regresyon modeline ilişkin parametreler incelendiğinde, standardize edilmiş regresyon katsayıları (β), yordayıcı değişkenlerin çocukların ego sağlamlığı üzerindeki önem sırasının kontrol becerileri (β=.281; t= 2.381; p< 0.05), sıcakkanlılık (β=-.197; t= -1.176, p> 0.05), sebatkarlık (β=0.188, t = 1.623, p> 0.05), ritmiklik (β=0.143, t= 1.177, p> 0.05) ve tepkisellik (β=0.120, t= 1.013, p> 0.05) olduğunu göstermektedir. Bütün değişkenler birlikte ele alındığında, kontrol becerilerinin çocukların ego sağlamlığı düzeyinde anlamlı yordayıcı olduğu ancak mizaç özelliklerinin bu analizde anlamlı bir yordama gücüne sahip olmadığı bulgulanmıştır.

Tartışma ve Sonuç

Araştırmanın sonuçları ego sağlamlığının gelişiminde öz kontrol becerilerinin önemine işaret etmektedir. Öz kontrol, duruma uygun şekilde bir davranışı aktive etme veya baskın olan bir davranışı erteleyebilme/bastırabilme becerisini ifade etmektedir. Öz kontrol becerisine sahip olan bir birey kendi duygu ve davranışlarını kontrol ederek stresli durumlar karşısında bir avantaja sahip olabilir. Öz kontrol becerilerinin desteklenmesi ile dolaylı olarak çocukların ego sağlamlıkları da geliştirilebilir. Olumlu ebeveynliğin öz kontrol becerilerinin gelişmesinde önemli rol oynadığı bulunmuştur. Bu bulgular ışığında ebeveynlik niteliğinin desteklenmesi ile öz kontrol becerileri ve ego sağlamlığının desteklenmesi önerilmektedir.

INTRODUCTION

Resilience refers to the ability to adapt to environmental stress and to develop healthy adjustment and be successful under difficult or challenging circumstances. Luthar (1993) defined ego resiliency as "behaviorally manifested success at negotiating salient developmental tasks, in spite of major stressors and possible underlying emotional distress" (p. 442). Similarly, Luthar and Zelazo (2003) stress the positive adaptation of resilient individuals as stating "substantially better than what would be expected given exposure to the risk circumstances being studied" (p. 515). Individuals with high ego resiliency has some characteristics as adapting easily to changing circumstances, shifting behaviors as needed, and using problem-solving strategies flexibly (Taylor, Eisenberg, Spinrad, Eggum & Sulik, 2013). These skills are the ones that also could make children socially and academically competent. Research results reveal clues about the relationship between ego resiliency and social competence (Block and Block, 2006; Coyne & Thompson, 2011), academic achievement (Kwok, Hughes & Luo, 2007; Prince-Emburry, 2015) and school readiness (Bayındır, Önder & Balaban-Dağal, 2016). So, ego resiliency could be seen as a developmental task to be achieved. The underlying considerations should be understood to support ego resiliency development. The first question to be answered in that point is that; Which factors make an individual more resilient? The protective factors that make a child more resilient than others are categorized into three domains; individual, familial and environmental (Brown, Barbarin & Scott, 2013; Gizir, 2007). This study examines the relationship of temperamental characteristics and inhibitory control skills, that could either be a risk or a protective factor at the individual level, with ego resiliency.

Eisenberg, Valiente and Eggum, (2010) defined temperament as the "Constitutionally based individual differences in reactivity and self-regulation, in the domains of affect, activity, and attention". Children who could manage reactivity and who have self-regulation skills are the ones who are referred as the easy temperament individuals. Having easy temperament is directly related with ego resiliency (Wyman, Cowen, Work & Parker, 1991). Temperamental regulation and behavioral reactivity differences have been found to be related to ego resiliency (Eisenberg et al. 2004). The literature indicates self-regulation skills as one of the most effective individual protective factors against risk factors (Alvord & Grados, 2005; Benzies & Mychasiuk, 2009).

Temperament is a superordinate construct that includes self-regulation and other related subskills as effortful control. Eisenberg and her colleagues (2004) define effortful control as a component of temperament. In their definition effortful control includes attentional control and inhibitory control. Attentional control means the ability to focus or shift attention and persist on tasks. And inhibitory control, which is one of the studied variables of this research, means the ability to activate or inhibit behavior as is necessary to respond adaptively (Eisenberg et al., 2004). In other words, inhibitory-control skills is defined as the ability to reinforce the dominant response and/or to activate the nondominant response to plan or eliminate mistakes (Rothbart & Bates, 2006; Eisenberg et al., 2010). Raising a hand instead of shouting out an answer is an example of adaptive behavior that rooted from inhibitory control skills (McClelland & Cameron, 2012). The individual differences in inhibitory control skills usually stay stable until the middle childhood and play an important role in internalizing the socially accepted behavior (Kochanska, Murray & Coy, 1997; Olson, Schilling & Bates, 1999). Research has shown that inhibitory control at low level in early ages associated with high level impulsivity and hyperactivity during middle childhood and behavior problems in adulthood (Olson et al., 1999; Utendale, Hubert, Saint-Pierre & Hastings, 2011). The under control of the ego involves ineffective impulse modulation, inability to delay of gratification, direct motivation and affect expression, which make the individual vulnerable to environmental distractors (Eisenberg et al, 2003). Although controlled temperament was negatively related to externalizing problems, effortful control was positively related to ego resiliency (Eisenberg et al., 2010).

Effortful control and ego resiliency have been positively linked (Cumberland-Li, Eisenberg, & Reiser, 2004; Eisenberg et al., 2004; Eisenberg, Spinrad, & Morris, 2002; Taylor, et al., 2013). It is perhaps because children, who have developed effortful control skills, are able to respond in a flexible manner by modulating their level of control (Eisenberg, Spinrad & Morris, 2002). Also,

these abilities could be seen as tools that help to modulate emotion and behavior. So, individuals high in effortful control could have an advantage to adapt effectively in stressful situations (Eisenberg et al., 2004). Effortful control skills could be seen as protective also against familial and environmental risk factors. A study that was done with very young children indicated that effortful control that was measured at 30 months mediated the negative relation between 18-month intrusive parenting and ego resiliency at 42 months (Taylor, Eisenberg, Spinrad & Widaman, 2013).

As it was mentioned, in the related literature there are studies, which investigate the relationship between the temperamental characteristics, the ego resiliency level and inhibitory control skills of preschool children (Cumberland-Li, Eisenberg, & Reiser, 2004; Eisenberg et al., 2004; Eisenberg et al., 2010; Eisenberg, Spinrad, & Morris, 2002; Taylor, Eisenberg, Spinrad, Eggum & Sulik, 2013) Literature review reveals that these three issues have been almost thoroughly researched separately or pairwise. On the other hand, the data and the respective inferences might be reflecting the facts mainly belonging to western culture. Therefore, this study aims to investigate the relationship between the temperamental characteristics, the ego resiliency level and inhibitory control skills of preschool children, provide data on the relationship of these issues in a different cultural environment by using a combination of different measurement tools. The results could guide us to create appropriate intervention steps to improve children's ego resiliency. So, this study aims to examine the predictive role of temperamental characteristics and inhibitory control skills on ego resiliency levels of preschoolers. This research has been conducted with preschool children as the relevant literature clearly shows the importance of early childhood. Since individual factors can be improved more rapidly than environmental factors and it is assumed that individual factors to be protective against all kinds of risky environmental factors, individual factors affecting ego resiliency have been studied in this research. Although the literature includes research that examine the relationship between ego resiliency, temperament and self-control, these studies do not examine all of these variables in the same sample. Also, these studies are usually carried out in Western countries. This research examines both the effect of temperament and inhibitory control skills together as predictive factors of ego resiliency on a sample taken from a different cultural context.

METHOD

Design of the Study

This research, which investigates the effect of the temperamental characteristics of preschool children and their inhibitory control skills on their ego resiliency level, was designed in survey model.

The Sample of the Study

The sample of the study consisted of 78 children, aged between 55-73 months, who attended preschool education institutions in Istanbul during the academic year of 2015-2016 and their mothers. The sample of the study was chosen randomly from among the kindergartens located on the Asian side of İstanbul. 47.4% of the children were girls (n=37); 52.6% of them were boys (n=41). The age distribution of the mothers is as follows: 1.3% are below 25 years old, 23.1% are 26-30 years old, 23.1% are 31-35 years old, 28.2% are 36-40 years old, 16.7% are 41-45 years old and 1.3% are 45 and above (5 missing data). The distribution of their educational levels is as follows: 15.4% are primary school, 6.4% are secondary school, 24.4% are high school graduates and 34.6% have bachelor degrees and 11.6% have graduate degrees (6 missing).

Data Collection Tools

The data collection tools that are used in this study are; The Personal Information Form, The Short Temperament Scale for Children, Children's Ego Resiliency Scale's (Mother Form). Also, Inhibitory Control Skills are measured by the observation of the performance of two tasks.

Personal Information Form: This form was developed by the researchers. It covers 12 questions to obtain information about children's age, gender, schooling year, parent's age, parental education level, work, marriage, level of income, number of children in the family, birth order, number of family members and whom the child raised by.

Short Temperament Scale for Children (STSC)*:* In order to measure temperamental characteristics of the child, the Turkish version (Yağmurlu & Sanson, 2009) of the Short Temperament Scale for Children (STSC) (Prior, Sanson, & Oberklaid, 1989 cited in Baydar et al., 2010) is completed by the mothers. The first Turkish version of the scale was prepared by translation-back translation method by Kumru, Sayıl, Yağmurlu (2006 as cited in Baydar et. al, 2010) and it was adapted into Turkish by Yağmurlu and Sanson (2009). The scale consists of 30 items in which each behavior is rated on a 6-point scale. Four temperamental dimensions are taped in the scale: Reactivity, persistence, approach/withdrawal and rhythmicity. Item examples are as follows: Reactivity (e.g. 'When upset or annoyed with a task, my child throws it down, cries, slams doors, etc.'), Persistence (e.g. 'My child likes to complete one task or activity before going on to the next.'), Approach (e.g. 'My child is shy when first meeting new children.'), and Rhythmicity (e.g. 'My child asks for or takes a snack about the same time each day.'). A high score on each dimension, respectively, shows reactive, persistent, withdrawing, and rhythmic temperamental traits. The internal consistency for reactivity subscale was .84, persistence subscale was .84, approach subscale was .81 and rhythmicity subscale was found as .65 in a study (Baydar et al., 2010).

Children's Ego Resiliency Scale: It is a 12 item measuring instrument that identifies the resiliency level of preschool-primary school children. Evaluation of the scale is between 1 and 9; where 1 is "not at all descriptive of resiliency" and 9 is "most descriptive of resiliency." The scale has no subscales. A high score obtained from the scale indicates that children in the study group have a high resiliency level. Items of the scale measure the resiliency properties of children in various situations, their reactions and behaviors when faced with difficult stressful situations. The scale was developed by Eisenberg and her colleagues (1996) and it was adapted into Turkish by Önder and Gülay-Ogelman in 2011. The cronbach alfa value of the Turkish form is .86 (Önder & Gülay-Ogelman, 2011).

The Inhibitory Control Tests: To test the inhibitory control, the children are asked to perform two tasks (games). In the first game *"Touch Your Toe"* (Baydar et al., 2010; Cameron Ponitz at al, 2008) they are instructed to touch their heads, and then to do the opposite, and touch their toes. After checking understanding by two questions, children are given four practice tests and the instructions are repeated up to three times during the practice tests. Then without feedback, ten test commands are given verbally in random order. The child's responses are coded with scores ranging from 0 to 2 (0 = incorrect response, 1 = for a self-correct, defined as making any discernible motion (ranging from slight to complete) toward the incorrect response but ending with the correct response, 2 = correct response). Thus, the total maximum score possible on ten trials is 20 points. During the testing portion, the experimenter states the behavioral commands without modelling any actions. The other task is the *"Green-Red Signs"* game (Kochanska and Knaack, 2003; Kochanska, Murray & Coy, 1997). The instructor raises his/her hand, holding a sign. In the first 10 trials, the child is asked to raise the same hand as the model. In these trials, only the green sign is used. In the second 10 trials, the child is asked to raise the opposite hand to the instructor's. The instructor uses only the red sign on these trials. In the third session, 20 trials are applied. The child is asked to raise the same hand to green and opposite hand to the red sign. The instructor uses the both signs on these trials. The child's responses are coded with scores ranging from 0 to 3 (0 = fails to raise the right hand, 1 =raises the wrong hand but then raises the correct hand, 2 = raises the wrong hand partially but then raises the correct hand, 3 =raises the correct hand). The scores of these two tasks are added to obtain an overall inhibitory control score. The higher scores indicate higher inhibitory control skills.

Data Collection Procedure

First of all, information letters that explain the aim and the procedure of the research were distributed to mothers by the help of preschool teachers. A written text message, containing the purpose of the research and the contact information of the researchers, was sent to mothers. It is stated that the mothers could participate in the research on the basis of volunteerism. Also it was stressed that the data would only be used for this research and the information would be kept confidential. Ego resiliency and temperamental traits of children were evaluated by their mothers. 86 returned from 120 submitted forms. The ones that include missing information were excluded from the study. An identification number was given to each returned form. Inhibitory control skills were determined by the application of two tasks that were run by the researchers with each child individually. In this stage, 78 children were reached and inhibitory control tasks were performed. The tasks were applied in the schools of children in isolated prepared rooms provided by the institutions on the days and hours determined together with the class teachers. Time is allocated for scoring after each application. The data was collected in 2015-2016 academic year. The obtained data was transferred to the appropriate statistical package program.

Data Analysis

In this study, ego resiliency of children was accepted as the dependent variable and it was examined how inhibitory control skills and temperamental characteristics of children affect their ego resiliency. The obtained data were analyzed by Multiple regression analyses. The effects of subscales of temperament scale and inhibitory control scores were taken into consideration together and stepwise multivariate regression analysis model was preferred (Özdamar, 2004).

Before analysis of the research data, it was observed that the distributions of the histogram and distribution curve for the predicted variables were approximately normal. In order to be able to perform multiple regression, there should be no significant deviation from the normal distribution in the observed and expected cumulative probability distribution plot drawn with respect to standardized deviation values (Sipahi, Yurtkoru, & Çinko, 2006). The graph of standardized values with standardized deviations shows that the linearity assumption is met. When the observed and expected cumulative probability distribution graph is examined, it is seen that there is no significant deviation from the normal. Besides the assumptions on normal distribution of error terms providing multiple regression, constant variance of error terms and no relation between error terms were also met. After verifying that multiple regression analysis assumptions were met, the analyses were carried out.

Before the analysis, the assumptions of the multiple regresion analysis were tested. Within this context, the distribution was tested for the normality assumption by Kurtosis and Skewness coefficients and they turned out to be with in the acceptable range (±1). The Skewness coefficients were between -.148 and -.761 and the Kurtosis coefficients were between -761. and .767. And also kolmogrov smirnov statistics were ,133 and ,158 (p> ,05). According to these results, the normality of the distribution was accepted. Another assumption for the regression analysis is the absence of multiple correlations between independent variables. The variance inflation factor (VIF) analysis and the non-standardized regression coefficients (B) were carried out to determine the absence of the multiple correlations between predicted variables. In the current study, the highest VIF value was found to be 1.112 which was less than the critical value of 10 (Field, 2009) and the highest B value was found to be .303 which was less than the critical value of 2 (Field, 2009). Thus, there no multiple correlation problem was identified.

RESULTS

Findings on Correlations of Scales with Each Other

The ego resiliency of the children was accepted as the dependent variable and the predictivity of the temperamental traits and inhibitory control skills were tested with a multiple regression model. The stepwise regression model was preferred and the effects of subscales of temperament and inhibitory control skills on the ego resiliency were tested together. Before that, the necessary assumptions to run multi-relational model were evaluated. By testing that the relation between multi-related independent variables is lower than 0,70; VIF value is smaller than 10; there is not an autocorrelation and all variables are normally distributed, the hypothesis of not having a multi relation was approved.

Table 1. *The basic correlation, mean and standart deviation scores of the relationships between dependent and independent values*

				Temperament			
		Ego Resiliency Total	**Inhibitory Control**	**Approach/ Withdrawal**	**Persistence**	**Rhythmicity**	**Reactivity**
Pearson Corelation	**Ego Resiliency**	1					
	Inhibitory Control Skills	.298*					
	Approach/ Withdrawal	-.197*	-.110				
	Persistence	.167	.102	.178			
	Rhythmicity	.021	-.268*	.042	-.012		
	Reactivity	.104	.115	-.066	-.099	-.298*	1
Sig. (1-tailed)	**Ego Resiliency**						
	Inhibitory Control Skills	.006					
	Approach/ Withdrawal	.049	.179				
	Persistence	.080	.197	.067			
	Rhythmicity	.431	.011	.362	.459		
	Reactivity	.192	.168	.290	.203	.006	

P<.05

As can be seen from the table above, there is a relationship between inhibitory control skills and ego resiliency and between inhibitory control skills and rhythmicity ($r_{controlego}$ =.298; p <.5, $r_{controlrhythmicity}$ = -.268; p <.05). However, since these associations are smaller than .70, it can be concluded that there is no multiple correlation. Furthermore, when the precipitation matrix is examined, it has been shown that the relations between dependent and independent variables are not linear. This result shows that multiple regression analysis can be performed among dependent and independent variables.

Findings on Predictive Role of Independent Variables on Ego Resiliency

The results of the stepwise multiple regression analysis, that was applied to determine whether the temperamental traits and inhibitory control skills predicted the children's ego resiliency levels significantly, was indicated in Table 2.

Table 2. *Multiple regression analyses on predictive role of independent variables on ego resiliency*

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	r
	B	Std. Error	Beta			
(Constant)	1.954	1.612		1.212	.230	
Inhibitory control total	.100	.042	.281	2.381	.020	.298*
Approach/ Withdrawal	-.231	.135	-.197	-1.716	.091	-.197*
Persistence	.265	.163	.188	1.623	.109	.167
Rhythmicity	.208	.176	.143	1.177	.243	.027
Reactivity	.149	.147	.120	1.013	.315	.104
R= .412 R^2 =.167 F= 2.692 p<.001		*p<.05				

The significance of the result of the analysis of variance in the table at p <0.01and this indicates that the explained variance of the ego stability of the variables is statistically significant. According to the results inhibitory control ability and subscales of temperament that are approach/withdrawal, persistence, rhythmicity and reactivity together account for 17% of the total variance related to ego resiliency. When the parameters related to the regression model are examined, standardized regression coefficients (β) indicate that the order of significance of the predictive variables over the children's ego resiliency is as the inhibitory control skills (β =.281; t = 2.381; p < 0.05), approach/withdrawal (β=-.197; t = -1.176, p> 0.05), persistence (β = 0.188, t = 1.623, p> 0.05), rhythmicity (β = 0.143, t = 1.177, p> 0.05) and reactivity (β = 0.120, t = 1.013, p> 0.05). When all the variables are considered together, it has been found that the inhibitory control skills are significantly predictive of children's ego resiliency, but such temperamental characteristics as approach/withdrawal, persistence, rhythmicity and reactivity are not significantly predictive of children's ego resilience.

DISCUSSION AND CONCLUSION

The most obvious result of the research is the indicated importance of inhibitory control skills for the development of ego resiliency in preschool children. As it was stated in the literature inhibitory control skills means the ability to activate or inhibit behavior as is necessary to respond adaptively (Eisenberg et al., 2004; Eisenberg et al., 2010: Rothbart & Bates, 2006). Activating and inhibiting behavior necessarily means acceptable expression of emotions, regulating impulses and ability to delay gratification. Because inhibitory control skills are accepted as a part of effortful control skills, it could be said that the findings of the research are parallel to the previous research findings that indicate the relation between effortful control and ego resiliency (Cumberland-Li, Eisenberg, & Reiser, 2004; Eisenberg et al., 2004; Eisenberg, Spinrad, & Morris, 2002; Taylor, Eisenberg, Spinrad, Eggum & Sulik, 2013). If individuals could control their emotions and behaviors, than they could have an advantage to adapt stressful situations (Eisenberg et al., 2004). However, if they could not, they will be vulnerable to environmental distractors (Eisenberg et al, 2003). Also, the literature indicates that effortful control skills, including inhibitory control skills, are a protective factor against risk factors. For example these skills could help development of ego resiliency against intrusive parenting experiences (Taylor, et al., 2013).

The study indicated that the most explanatory temperament traits are approach/withdrawal, persistence, rhythmicity and reactivity respectively. These traits are defined by Prior, Sanson and Oberklaid (1989 as cited in Yağmurlu et al., 2005) as four temperamental characteristics between the ages of 3 and 8. Approach/withdrawal means how an

individual is friendly. Friendly children are expected to show willingness to approach to new people and environments. This trait also could be seen as indicator of social skills. A friendly child makes friends easily and because of her/his social support resources s/he is more resistant to risk factors. The multivariate regression analysis indicated the second most explanatory temperamental trait as persistence. The meaningful relationship that is indicated between ego resilience and persistence corresponds with the results of previous studies that are in international literature (Hutchinson, Stuart, & Pretourius, 2010) and also in Turkey (Balaban-Dağal, Önder & Bayındır, 2016). An important part of persistence trait is the ability to regulate the attention. The persistence trait of temperament defines focusing attention on a certain situation or event by eliminating distributing stimulus. This ability could positively affect ego resiliency by helping coping with negative feelings (Derryberry & Reed, 1996; Lengua, Sandler, West, Wolchik, & Curran, 1999; Rothbart, Ahadi, & Evans, 2000). A similar study carried out by Altan (2006) presented very similar results. Altan's (2006) research carried out with a sample in Turkey, similary indicated the ability to delay gratification is predicted by temperament traits of persistance and approach. Results indicated the task performance is highest when children are high approaching. Rhythmicity indicates the regularity of the daily routines (eg. Eating, sleeping). When this result is tried to be explained, it should be noted that temperamental characteristics of children are evaluated by their mothers. Rhythmicity could be an important factor that makes a mother call her child as an easy temperamental one. Also, reactivity trait was included into the model. Reactivity means readiness to react to a specific stimulus or event and this trait makes it difficult to regulate emotions and control behaviors. Higher reactivity is related with lower social competence (Sanson, Smart, Prior, Oberklaid, & Pedlow; 1994). Delay of gratification and self-control skills that are relevant with reactivity trait of temperament, are expected to be related with ego resiliency (Eisenberg, Spinrad & Morris, 2002, Eisenberg et al., 2010, Rothbart & Bates, 1998, Eisenberg et al., 2004). However, high reactivity are found to be positively related with ego resiliency in this study and in another similar study that was held with Turkish preschoolers in a very close past (Balaban Dağal, Önder & Bayındır, 2016).

Kochanska and Knaack (2003) define effortful control as "the ability to suppress a dominant response to perform a subdominant response" (p.1088). The tasks they offer to assess effortful control skills, or s inhibitory control tasks, vary. In this study Red Sign/Green Sign, was used. This task is an example of suppressing or initiating activity to signal. Also, Touch Your Toe task is an example of signal reacted suppressing or initiating activity. However, they offer also delaying tasks (e.g. snack delay, wrapped gift and etc.), slowing down motor activity tasks (e.g. walk-a-line, turtle and rabbit and etc.), effortful attention and lowering voice tasks. The future studies could include the other tasks to be applied to children to get a broader assessment on these skills. The other significant limitation of this research, is that the data on child's temperamental traits and ego resiliency are evaluated by mothers. To avoid this bias risk, evaluation of these variables could be done based on different sources in future studies. Another limitation of the study is that the data collected comes from a limited sample size. To increase the precision of the results, the size of the sample could be increased. In addition, the relationship between the temperamental characteristics of children and their ego resiliency and inhibitory control skills can be discussed in more detail by taking the data longitudinally.

The importance of inhibitory control skills for ego resiliency and other developmental areas is significant. Although inhibitory control skills are thought to be determined by temperament, research indicates adult-child reciprocal interaction has impact on these skills (Greenberg, 2006). The positive support that is given by parents to their 2 year old babies, support the development of inhibitory control skills between ages 2 and 4 (Moilanen, Show, Dishion, Gardner & Wilson, 2010). So, development of these skills could be targeted in early childhood intervention programs. However, further research is needed to explain how these skills could be supported.

REFERENCES

Altan, Ö. (2006). *The effects of maternal socialization and temperament on children's emotion regulation*. Unpublished master thesis, Koç University, Social Sciences Institude, İstanbul: Turkey.

Alvord M. K. & Grados, J. J. (2005). Enhancing resilience in children: A proactive approach. *Professional Psychology: Research and Practice, 36*(3), 238–245, http://dx.doi.org/10.1037/0735-7028.36.3.238.

Balaban-Dağal, A., Önder, A. & Bayındır, D. (2016). Okul öncesi dönemde çocukların mizaç özellikleri ve ebeveynlik stillerinin çocukların ego sağlamlık düzeyleri üzerindeki yordayıcı etkisi (The predictive effect of preschool children's temperament characteristics and parenting styles of mothers on ego resiliency level of children), 3rd International Eurasian Educational Research Congress.

Baydar, N., Küntay, A., Gökşen, F., Yağmurlu, B. & Cemalcılar, Z. (2010). *Türkiye'de erken çocukluk gelişim ekolojileri araştırması (Turkey* Early Childhood *Development* Ecologies *Research)* http://www.manevisosyalhizmet.com/wpcontent/uploads/2014/01/erkencocuklukgelisimekolojileriarastirmasi.pdf, E.T. 31.09.2014.

Bayındır, D., Önder, A. & Balaban Dağal, A. (2016, Mayıs). Temperament and Resiliency as Predictor Factors of Preschoolers' School Readiness. X.European Conference on Social and Behavioral Science, Sarajevo, Bosnia-Herzegovina, 19-22 May 2016.

Benzies, K. & Mychasiuk, R. (2009). Fostering family resiliency: A review of the key protective factors. *Child & Family Social Work, 14*, 103–114.

http://dx.doi.org/10.1111/j.1365-2206.2008.00568x.

Block, J. & Block, J. H. (2006). Venturing a 30-year longitudinal study. *American Psychologist*, 61, 315–327. doi:10.1037/0003-066X.61.4.315.

Brown, J., Barbarin, O. & Scott, K. (2013). Socioemotional trajectories in black boys between kindergarten and the fifth grade: the role of cognitive skills and family in promoting resiliency. *American Journal of Orthopsychiatry, 83,* (2,3) 176–184. doi: 10.1111/ajop.12027.

Cameron-Ponitz, C.E., McClelland, M.M., Jewkes, A.M., McDonald-Connor-C., Farris, C.L. & Morrison, F. J. (2008). Touch your toes! Developing a direct measure of behavioral regulation in early childhood, *Early Childhood Research Quarterly,* 23, 141-158.

Coyne, L. W. & Thompson, A. D. (2011). Maternal depression, locus of control, and emotion regulatory strategy as predictors of preschoolers' internalizing problems. *Journal of Child and Family Studies*, 20, 873–883. doi:10.1007/s10826-011-9455-2.

Cumberland-Li, A., Eisenberg, N., & Reiser, M. (2004). Relations of young children's agreeableness and resiliency to effortful control. *Social Development*, *13*, 193–212.

Derryberry, D. & Reed, M. A. (1996). Regulatory processes and the development of cognitive representations*. Development and Psychopathology*, *8*, 215–234.

Eisenberg, N., Haugen, R., Spinrad, T.L., Hofer, C., Chassin, L., Zhou, Q et al. (2010). Relations of Temperament to Maladjustment and Ego Resiliency in At-risk Children, Social Development, 19 (3), 577-600.

Eisenberg, N., Spinrad, T. L., Fabes, R. A., Reiser, M., Cumberland, S. A., Valiente, C., et al. (2004). The relations of effortful control and impulsivity to children. *Child Development*, *75*, 25–46.

Eisenberg, N., Spinrad, T. L., & Morris, A. S. (2002). Regulation, resiliency, and quality of social functioning. *Self and Identity*, *1*, 121–128.

Eisenberg, N. Zhou, Q., Losoya, S.H., Fabes, R.A., Shepard, S. A., Murphy, B.C. et al.(2003). The relations of parenting, effortful control, and ego control to children's emotional expressivity, *Child Development,* 74, 875–895.

Eisenberg, N., Valiente, C. & Eggum, N.D. (2010). Self regulation and school readiness, *Early Education and Development*, 21:5, 681-698.

Eisenberg, N., Fabes, R. A., Guthrie, I. K., Murphy, B. C., Maszk, P., Holmgren, R. & Suh, K. (1996), The relations of regulation and emotionality to problem behavior in elementary school children, *Development and Psychopathology*, *8,* 141–162.

Field, A. (2009). Discovering statistics using SPSS. (3 rd.) London: Sage Publications.

Gizir, C. A. (2007). Psikolojik sağlamlık, risk faktörleri ve koruyucu faktörler üzerinde bir derleme çalışması. *Türk Psikolojik Danışma ve Rehberlik Dergisi*, *3,* 28, 113-128.

Greenberg, M. T. (2006). Promoting resilience in children and youth: Preventive interventions and their interface with neuroscience. *Annals New York Academy of Sciences*, 1094, 139–150.

Hutchinson, A.K., Stuart, A.D., & Pretorius, H.G. (2010). Biological contributions to wellbeing: The relationships amongst temperament, character strengths and resilience. *Journal of Industrial Psychology, 36*, 1-10. DOI: 10.4102/sajip.v36i2.844.

Lengua, L.J., Sandler, I.N., West, S.G., Wolchik, S.A. & Curran, P.J. (1999). Emotionality and self-regulation, threat appraisal, and coping in children of divorce. *Development and Psychopathology*, *11.*15-37.

Luthar, S. S. (1993). Annotation: Methodological and conceptual issues in research on childhood resilience. *Journal of Child Psychol Psychiatry, 34:* 441–454..

Luthar, S. S. & Zelazo, B. Z. (2003). Resilience and Vulnerability: An Integrative Review. Ed. S. Luthar, *Resilience and Vulnerability: Adaptation in The Context of Childhood Adversities*. Cambridge: Cambridge Üniversitesi Yayınları.

Kochanska, G., Murray, K. & Coy, K. C. (1997). Inhibitory control as a contributor to conscience in childhood: From toddler to early school age. *Child Development*, 68, 263–277.

Kochanska, G. & Knaack, A. (2003). Effortful control as a personality characteristic of young children: antecedents, correlates, and consequences. *Journal of Personality,71*(6), 1087-1112.

Kwok, O., Hughes, J. N. & Luo, W. (2007). Role of resilient personality on lower achieving first grade students' current and future achievement, *Journal of School Psychology*, 45, 61-82.

McClelland, M.M. & Cameron, C.E. (2012). Self regulation in early childhood: Improving conceptual clarity and developing ecologically valid measures, *Child Development Perspectives*, 6 (2), 136–142.

Moilanen, K. L., Shaw, D. S., Dishion, T. J., Gardner, F. & Wilson, M. (2010). Longitudinal growth and predictors of inhibitory control in early childhood. *Social Development*, 19, 326–347.

Sanson, A. V., Smart, D. F., Prior, M., Oberklaid, F.& Pedlow, R. (1994). The structure of temperament from age 3 to 7 years: Age, sex, and sociodemographic influences. *Merrill-Palmer Quarterly*, *40*, 233-252.

Sipahi, B, Yurtkoru, S. E. & Çinko, M. (2006). *Sosyal bilimlerde SPSS'le veri analizi*. İstanbul: Beta Publishing

Prince-Embury, S. (2015). Assessing personal resiliency in school settings: The resiliency scales for children and adolescents. *Journal of Psychologists and Counsellors in Schools*, 25 (1). 55-65.

Rothbart, M. K., & Bates, J. E. (2006). Temperament. In N. Eisenberg (Vol. Ed.), W. Damon, & R. M. Lerner (Series Eds.), *Handbook of child psychology. Vol. 3. Social, emotional, personality development* (pp. 99–166). New York: Wiley.

Rothbart, M. K., Ahadi, S. A. & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology*, *78*, 122–135. doi: 10.1037//0022-3514.78.1.12 l .

Sipahi, B, Yurtkoru, S. E. & Çinko, M. (2006). *Sosyal bilimlerde SPSS'le veri analizi*. İstanbul: Beta Publishing.

Taylor, Z.E., Eisenberg, N., Spinrad, T. L., Eggum, N.D. & Sulik, M.J. (2013). The relations of ego-resiliency and emotion socialization to the development of empathy and prosocial behavior across early childhood, *Emotion,* 13(5): 822–831., doi: 10.1037/a0032894.

Taylor, Z.E., Eisenberg, N., Spinrad, T.L. & Widaman, K.F. (2013). Longitudinal relations of intrusive parenting and effortful control to ego-resiliency during early childhood, *Child Development*, 84 (4), 1145-1151.

Olson, S. L., Bates, J. E., Sandy, J. M. & Schilling, E. M. (2002). Early developmental precursors of impulsive and inattentive behavior: From infancy to middle childhood. *Journal of Child Psychology and Psychiatry,* 43, 435–447.

Olson, S. L., Schilling, E. M. ve Bates, J. E. (1999). Measurement of impulsivity: Construct coherence, longitudinal stability, and relationship with externalizing problems in middle childhood and adolescence. *Journal of Abnormal Child Psychology,* 27, 151–165.

Önder, A. & Gülay-Ogelman, H. (2011). The reliability-validity study for the Ego Resiliency Scale (Teacher-Mother-Father Forms) for children aged between 5 and 6, *International Refereed Academic Social Sciences Journal*, 2(1): 5-21.

Özdamar, K. (2004). *Paket Programlar ile İstatistiksel Veri Analizi 1 (5. Edi).* Eskişehir: Kaan Publishing.

Utendale, W. T., Hubert, M., Saint-Pierre, A. B. & Hastings, P. D. (2011). Neurocognitive development and externalizing problems: The role of inhibitory control deficits from 4 to 6 years. *Aggressive Behavior*, 37, 476–488.

Wyman, P. A., Cowen, E. L., Work, W. C. & Parker, G. R. (1991). Developmental and family milieu interview correlates of resilience in urban children who have experienced major life-stress. *American Journal of Community Psychology*, 19, 405-426.

Yağmurlu, B., & Sanson, A. (2009). Parenting and temperament as predictors of prosocial behavior in Australian and Turkish Australian children. *Australian Journal of Psychology, 61*(2), 77-88.

Yağmurlu, B., Sanson, A. & Bahar Köymen, S. (2005). Ebeveynlerin ve Çocuk Mizacının Olumlu Sosyal Davranış Gelişimine Etkileri: Zihin Kuramının Belirleyici Rolü, (Effects of Parenting and Child Temperament on the Development of Prosocial Behavior: The Mediating Role of Theory of Mind), *Türk Psikoloji Dergisi*, 20(55), 1-20.