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Components of Effortful Control and Their Relations to Children's Ego-Resiliency

Çaba Gerektiren Kontrolün Bileşenleri ve Çocukların Ego-sağlamlığı ile İlişkisi

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Abstract: The purpose of this study was to examine the associations between components of effortful control (inhibitory control, attentional focusing, perceptual sensitivity, and low intensive pleasure) and ego-resiliency during early childhood. A total of 182 children (93 girls and 89 boys), who were ranging from 48 to 72-month-old (M: 61.20, SD: 7.81) and attending early childhood institutions, participated in the study. Teachers reported on children's effortful control and ego-resiliency. Initially, independent samples t-test was conducted to investigate the effect of gender and age on children's ego-resiliency. Afterward, regression analyses were conducted to examine the role of independent variables on children's ego-resiliency. Findings showed that children's age had an effect on their ego-resiliency while their gender did not. Moreover, children's effortful control was positively associated with their ego-resiliency. Children's attentional focusing and perceptual sensitivity were also positively associated with their ego-resiliency. On the other hand, components of effortful control accounted for more variance than effortful control composite in regression models. Findings are discussed within the frame of possible implications for researchers and teachers.

Key Words: Ego-resiliency, effortful control, components of ego-resiliency, early childhood

Özet: Bu çalışmanın amacı, çaba gerektiren kontrolün bileşenleri (ketleyici kontrol, dikkatini odaklama, algısal hassasiyet ve düşük yoğunluklu etkinliklerden memnuniyet) ile ego-sağlamlık arasındaki ilişkiyi incelemektir. Yaşları 48 ile 72 ay (M: 61.20, SS: 7.81) arasındaki erken çocukluk kurumlarına devam eden toplam 182 çocuk çalışmaya katılmıştır. Çocukların çaba gerektiren kontrol ve ego-sağlamlık düzeyleri öğretmenler tarafından doldurulan formlar aracılığı ile belirlenmiştir. Öncelikle, bağımsız gruplar t-testi uygulanarak çocukların yaşlarının ve cinsiyetlerinin onların ego-sağlamlığına etkisi incelenmiştir. Sonrasında, regresyon analizleri yapılarak bağımsız değişkenlerin çocukların ego-sağlamlığı üzerindeki rolü araştırılmıştır. Bulgular yaşın çocukların ego-sağlamlığı üzerinde etkisi olduğunu, fakat cinsiyetin etkisinin olmadığını göstermiştir. Ayrıca, çocukların çaba gerektiren kontrolleri onların ego-sağlamlığı ile pozitif ilişkilidir. Çocukların dikkatini odaklamaları ve algısal hassasiyetleri de onların ego-sağlamlığı ile pozitif ilişkilidir. Bununla birlikte çaba gerektiren kontrolün bileşenlerinin regresyon modellerindeki varyansı, çaba gerektiren kontrolden daha fazla açıkladığı görülmüştür. Bulgular araştırmacılara ve öğretmenlere yönelik öneriler çerçevesinde tartışılmıştır.

Anahtar Kelimeler: Ego-sağlamlık, çaba gerektiren kontrol, çaba gerektiren kontrolün bileşenleri, erken çocukluk

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Introduction

Early childhood is attracting more and more attention in national educational policy agendas. It is an important period in which children's cognitive language, physical, social and emotional abilities change tremendously (Oktay, 2007). Classified under socioemotional abilities, effortful control and ego-resiliency are such abilities which are linked to children's school readiness, academic achievement and school functioning (Taylor & Spirand, 2017).

One key component related to socioemotional abilities is ego-resiliency. According to Block and Block (1980, p. 48), ego-resiliency is "the dynamic capacity of an individual to modify his/her modal level of ego control, in either direction, as a function of the demand characteristics of the environmental context." Resilient individuals have the capacity to change their behaviors to adapt socially and cognitively; to assimilate or accommodate deliberately; to bounce back from negative experiences and to relax. On the contrary, less resilient individuals have difficulty in adapting to novel situations; responding to changes; bouncing back from negative experiences (Block & Block, 2006). According to literature, children's ego-resiliency is associated with their school functioning and school achievement (Taylor & Spinrad, 2017). It is related to higher social functioning (Eisenberg et al., 2003), higher academic achievement (Swanson, Valiente, Lemery-Chalfant, & Caitlin O'Brien, 2011), more positive peer relations (Cumberland-Li, Eisenberg, & Reiser, 2004), lower behavior problems (Eisenberg, Chang, Ma, & Huang, 2009). In this regard, Taylor and Spinrad (2017) concluded that ego-resiliency has direct and indirect roles on school adjustment.

Sameroff, Gutman, and Peck (2003) claimed that several individual characteristics, family environments, parenting styles, neighborhoods, and cultural characteristics could all be risk factors or protective (or promotive) factors for children's ego-resiliency. For example, while a negative parenting style could be a risk factor; a positive parenting style could be a promotive factor. Similarly, a positive temperament characteristic such as effortful control could buffer negative effects of negative parenting style and promote ego-resiliency (Taylor, Eisenberg, Spinrad, & Widaman, 2013). Therefore, children's effortful control could be considered as a promotive factor for ego-resilience.

Effortful control is a temperamental characteristic that underpins the development of self-regulation in children. It is derived from temperament studies of Rothbarth and her colleagues (Rothbart, 2011; Rothbart, Ahadi, Hershey, & Fisher, 2001; Rothbart & Bates, 2006). According to Rothbart (2011), effortful control refers to an individual's capacity to voluntarily inhibit an inappropriate response and replace it with an appropriate one. According to several studies, effortful control is specifically related to the emergence of emotional and behavioral regulation (Liew, 2012; Zhou, Chen, & Main, 2012). For others, effortful control itself is self-regulation (Eisenberg, Valiente, & Eggum, 2010). In addition, it is a multidimensional construct and an umbrella term for inhibitory control, attentional focusing, perceptual sensitivity and low intensive pleasure.

Inhibitory control is defined as an individual's capacity to suppress inappropriate responses in new situations. A child's capability to lower her voice or to stop an activity when asked to do so or to follow instructions could be examples of inhibitory control. Attentional focusing is, on the other hand, an individual's capability of sustaining attention on a task or an activity. For example, a child's concentration while drawing or on a task he/she chose until it is done could be indicators of his/her higher level of attentional focusing capacity. Perceptual sensitivity is defined as an individual's capability of noticing low-intensity stimuli from the environment. A child's listening to even quiet sounds or quickly being aware of new items in an environment could be signs of his/her perceptual sensitivity. Low intensive pleasure is to enjoy being involved in a low-intensity task or activity. To enjoy looking at picture books or being read books could be possible indicators of low intensive pleasure (Putnam, Ellis, & Rothbart, 2001; Rothbart et al., 2001).

In the literature, effortful control during early childhood was associated with several positive social and learning outcomes such as positive peer relations, close child-teacher relations, school readiness, school functioning, and academic success in the primary years (Acar, Rudasill, Molfese, Torquati, & Prokasky, 2015; Blair & Razza, 2007; Eisenberg et al., 2010; Silva et al., 2011). Besides, effortful control is a unique as well as a moderately correlated construct with ego-resiliency. Several studies revealed associations between effortful control and ego-resiliency (Eisenberg et al., 2009; Hofer,

Eisenberg, & Reiser, 2010; Taylor et al., 2013). In a recent study, Taylor et al. (2013) found that 30-month-old children's effort control predicted their ego-resiliency at 42 months. In contrast, 30-month-old children's ego-resiliency did not predict their effortful control at 42 months. Therefore, it appeared that there was a unidirectional transaction rather than a bidirectional association between effortful control and ego-resiliency.

As aforementioned in the present study, several studies revealed that effortful control and its components were significantly correlated with ego-resiliency and there was a unidirectional association, i.e. from effortful control to ego-resiliency. However, to our knowledge, the extent to which components of effortful control predict children's ego-resiliency during early childhood remain understudied. Therefore, the present study aimed to investigate the association between components of effortful control and ego-resiliency.

The Present Study

There are several studies indicating the role of effortful control on children's ego-resiliency (Eisenberg et al., 2009; Hofer et al., 2010; Taylor et al, 2013). Besides, the correlation between the components of effortful control and ego-resiliency has been documented in the literature (Cumberland-Li et al., 2004). However, there is a lack of studies investigating to what extent the components of effortful control predict children's ego-resiliency. Therefore, the present study was conducted with the purpose of examining the association between components of effortful control and ego-resiliency during early childhood. It was expected to give insights into existing literature and to draw implications for teachers to support children's ego-resiliency depending upon their effortful control. In this regard, the following research questions were addressed:

To what extent is children's effortful control associated with their ego-resiliency?

To what extent are children's inhibitory control, attentional focusing, perceptual sensitivity, and low intensive pleasure associated with their ego-resiliency?

It was hypothesized that both effortful control and the components of effortful control would predict children's ego-resiliency (Hypothesis 1). Moreover, components of effortful control account for more variance in models than effortful control (Hypothesis 2).

Method

In order to investigate the association between effortful control and ego-resilience, data were collected from a group of children at the age of 4-6. Correlational analyses determining the relationships among the variables were followed by independent samples t-test analyses so as to determine whether children's age and gender affect their level of ego-resilience. The role of children's demographic characteristics, effortful control, and components of effortful control on their ego-resilience were investigated through regression analyses.

Participants

In the present study, data were obtained through teachers' reports of children's effortful control and ego-resilience. Children enrolled in early childhood institutions in Istanbul and their teachers participated in this study. All of the teachers were female. 182 children (93 girls and 89 boys) ranged from 48 to 72-month-old (M: 61.20, SD: 7.81).

Measures

All teachers completed a demographic questionnaire asking children's birth date and gender. They also answered the following psychometrically validated scales.

Teachers rated children's effortful control on a 7-Likert scale (1 = never to 7 = always). "Effortful Control Questionnaire" is one of the broad dimensions of Children's Behavior Questionnaire developed by Robarth et al. (2001) for teachers to assess young children's temperament. As developing the original questionnaire, factor analysis was conducted to ensure construct validity. According to findings, Effortful Control Questionnaire has four subscales: Inhibitory control, attentional focusing, perceptual sensitivity, and low intensive pleasure. While internal consistency coefficients of the original subscales ranged from .75 to .91; test-retest correlations of subscales were between .57 and .73. The Turkish

version of the questionnaire was adapted by Adagideli (2018) for teachers. In order to test psychometric characteristics of the questionnaire, Adagideli (2018) conducted language equivalence, reliability and validity analyses. The internal consistency coefficient of the questionnaire was .94; whereas the internal consistency coefficients of the subscales ranged from .75 to .91. Test-retest correlations of the scale and subscales were also statistically significant. In the present study, internal consistency of the subscales ranged between .71 and .88.

"Child Ego-resilience Scale" was developed by Eisenberg et al. (1996) and adapted into Turkish by Önder and Gülay-Ogelman (2011). The scale has 14 items answered on a 9-Likert scale ranging from 1 = "completely wrong" to 9 = "completely true". While internal consistency coefficient of the original scale was .87; the test-retest reliability was .87 ($p<.01$). Önder and Gülay-Ogelman (2011) found that Turkish version of the scale had also high internal consistency ($\alpha=.86$) and test-retest reliability ($r=.96$; $p<.01$). In the present study, internal consistency of the scales was .84.

Results

The correlations among ego-resilience, effortful control, and components of effortful control as well as their means and standard are presented in Table 1. Children's ego-resiliency was significantly related to their effortful control composite ($r=.59$, $p<.01$) and components of effortful control ranging from .36 to .65 ($p<.01$). Taking effortful control composite and components of effortful control into consideration, attentional focusing was the highest correlated variable with ego-resilience.

Table 1: Correlations among the Variables, Means and Standard Deviations

	1	2	3	4	5	6
1. ER	1	.59*	.49*	.65*	.54*	.36*
2. EC		1	.92*	.86*	.74*	.83*
3. Inhibitory C.			1	.80*	.53*	.69*
4. Attentional F.				1	.55*	.57*
5. P. Sensitivity					1	.48*
6. L. I. Pleasure						1
M	73.50	232.19	66.32	44.36	58.80	62.70
SD	16.16	38.36	14.23	9.69	10.04	11.50

*p<.01

Moreover, effortful control composite was also significantly correlated with its components while the correlation between effortful control and perceptual sensitivity was the lowest one ($r=.74$, $p<.01$). On the other hand, components of effortful control were positively and moderately correlated with each other; except for the correlation between inhibitory control and attentional focusing ($r=.80$, $p<.01$). That is, the correlation between inhibitory control and attentional focusing was relatively high.

Table 2: Comparison of age difference in children's ego-resiliency

Age	N	$\overline{X}$	SD	t Test	
				t	df
48-60 Month	79	69.51	16.67	-3.55*	175
61-72 Month	98	77.79	14.34		

*p<.01

In order to determine whether children's age and gender affect their level of ego-resilience, t-test analyses were conducted. As shown in Table 2, findings of the t-test analysis revealed that 61-72-month-old children were more resilient than younger children at the age of four. This finding revealed that as

children get older, they become more resilient; therefore, they are able to change their behaviors to adapt socially and cognitively; and to assimilate or accommodate deliberately.

Table 3: Comparison of gender difference in children's ego-resiliency

Age	N	$\overline{X}$	SD	t Test	
				t	df
Girls	93	74.91	27.37	1.21*	180
Boys	89	72.02	29.31		

**p>.05*

As presented in Table 3, there was not any significant difference in ego-resiliency between girls and boys. Therefore, gender did not seem to make a difference in children's level of ego-resilience. After preliminary analyses, in order to investigate the role of demographic characteristics, effortful control and components of effortful control on their ego-resilience, multiple regression analyses (MRA) were performed.

Table 4: Summary of Regression Analysis for Variables Predicting Ego-resilience

	Model 1			Model 2			Model 3		
Variables	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Gender	-4.31	2.30	-.14	1.37	2.04	.04	-.64	1.91	-.02
Age	8.34	2.32	.26**	4.83	1.99	.15*	4.90	1.85	.15**
EC				.24	.03	.56**			
Inhibitory C.							-.17	.12	-.15
Attentional F.							.97	.16	.59**
P. Sensitivity							.47	.11	.29**
L. I. Pleasure							-.07	.11	-.05
R^2		.08**			.35**			.46**	

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

As shown in Table 4, several MRA were conducted. While Model 1 consisted of only children's demographic characteristics as independent variables, effortful control composite was added in the next model (Model 2). Components of effortful control and demographic characteristics were included when performing analysis of regression for Model 3.

As presented in Table 4, the results of the regression indicated that in Model 1, the predictors explained 8% of the variance (R2=.08, F (2, 174) = 8.12, p<.01). Results of MRA showed that age significantly predicted ego-resilience. On the other hand, gender did not significantly predict ego-resilience. According to these findings, older children were more resilient.

Model 2 revealed that effortful control composite significantly predicted ego-resilience (β = .56, p<.01), as did age (β = .15, p<.05). Both of them predicted ego-resilience positively and accounted for 35% of the variance. Given this finding; although effortful control was a stronger predictor than age, older children were still more resilient.

Model 3 showed how demographic characteristics and components of effortful control predicted ego-resilience. Results of MRA indicated that independent variables accounted for 46% of the variance in the model and that these three independent variables did not predict ego-resilience: gender, inhibitory control, and low intensive pleasure (R2=.48, F (7, 169) = 24.00, p<.01). On the other hand, attentional focusing, and perceptual sensitivity were positive predictors of ego-resilience. Besides, attentional focusing was the strongest predictor in the third model (β = .59, p<.01). Moreover, age predicted ego-resilience after including components of effortful control. Therefore, older children were still more resilient in this model.

Discussion

The present study was mainly conducted to explore the role of components of effortful control on young children's ego-resiliency. According to findings, although young children's gender was not a significant predictor of their ego-resiliency, age had a significant role on the development of ego-resiliency during early childhood. Moreover, while both effortful control composite and components of effortful control predicted children's ego-resiliency, components of effortful control explained more variance in the model. Lastly, only two components of effortful control significantly predicted children's ego-resiliency, i.e. attentional focusing and perceptual sensitivity. These findings are discussed according to existing literature as followings.

Given the preliminary analyses, the only demographic characteristic of children that affected their ego-resiliency was age. This result is partially parallel with existing literature: As children get older, they become more resilient (Block & Block, 2006; Grych, Jouriles, Swank, McDonald, & Norwood, 2000; Miljević-Riđički, Plantak, & Bouillet, 2017; Sun & Stewart, 2007). Similarly, teachers participated in the present study seemed to perceive older children more resilient than younger ones. Considering this result within the scope of school functioning due to the influence of ego-resiliency on it, teachers may believe that older children were better at changing their behaviors to adapt socially and cognitively; and assimilating or accommodating deliberately. However, there were some studies reporting that gender had also significant effects on ego-resiliency (Block & Block, 2006; Sun & Stewart, 2007). In their longitudinal study, Block and Block (2006) concluded that although there was not any significant difference in ego-resiliency between girls and boys; ego-resiliency of young boys was related with their ego-resiliency in the long term. That is, their ego-resiliency continues over time. For girls, there was not such a relation. Resilient girls during early childhood could be resilient or unresilient during adolescence, or vice versa. In this regard, it cannot be predictable whether there would be a significant difference in the resiliency of girls and boys who participated in the present study, although there was not any significant difference at the time this study was conducted. Results of preliminary analyses were also consistent with regression analyses; age was the only demographic characteristic that predicted ego-resiliency significantly.

Secondly, teachers' ratings of children's effortful control significantly predicted teachers' ratings of their ego-resiliency (controlling their gender and age). That is, children with higher levels of effortful control were rated as more resilient. These results are also consistent with the existing literature (Eisenberg et al., 2009; Hofer et al., 2010; Taylor et al., 2013). Accordingly, children who are better at voluntarily inhibiting an inappropriate response and choosing an appropriate one to act are more resilient. On the other hand, the main reason for conducting the present study was to determine the extent to which the components of effortful control predict ego-resiliency. As mentioned, there were no studies investigating the role of components of effortful control on ego-resiliency. Findings revealed that children's attentional focusing and perceptual sensitivity were significant predictors of their ego-resiliency (controlling their gender and age). Teachers seemed to perceive children who were able to sustain attention on a task or an activity (children with higher attentional focusing), and notice low-intensity stimuli in the environment (children with higher perceptual sensitivity) as more resilient.

Despite its contribution to the existing literature, the present study had also limitations. One limitation was its dependence on only teachers' reports. Although previous research reported that strength of teachers' report on both effortful control (Allan, Hume, Allan, Farrington, & Lonigan, 2014) and ego-resiliency (Gülay-Ogelman, 2014); findings may be more accurate with the use of different sources. In the future studies, parents' reports can also be included to remove possible biases. Moreover, only age and gender of children's demographic characteristics were controlled in the present study. Demographic variables such as educational and socioeconomic status of children's parents should also be considered as risk factors during data collection.

Implications

To our knowledge, this was the first study examining the associations of components of effortful control with children's ego-resiliency. Until the present study, it was not clear which components of effortful control teacher should foster to promote children's ego-resiliency. Results of the present study underlines the importance of components of effortful control on children's ego-resiliency and draws

implications for teachers and researchers. As aforementioned, effortful control has a buffering effect on risk factors such as intrusive parenting that threaten children's ego-resiliency (Taylor et al., 2013). Accordingly, teachers can promote children's ego-resiliency by fostering their effortful control, specifically their attentional focusing and perceptual sensitivity.

Furthermore, our results highlight that researchers can examine components of effortful control rather than effortful control composite in the future ego-resiliency studies. Specifically, there is a need to further investigate the promotive or buffering role of attentional focusing and perceptual sensitivity on children's ego-resiliency.

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