

THE RELATIONSHIP BETWEEN PERCEIVED PARENTAL ACCEPTANCE-REJECTION, PERSONALITY AND BEHAVIORAL DISPOSITIONS, AND EXECUTIVE FUNCTION IN A TURKISH PRIMARY SCHOOL SAMPLE

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Abstract

The aim of the present study was to investigate the relationship between perceived parental acceptance-rejection measured by The Child Parental Acceptance Rejection Questionnaire (PARQ), psychological adjustment measured by the Child Personality Assessment Questionnaire (PAQ), and executive function measured by the Wisconsin Card Sorting Test (WCST) in a group of primary school children. The study was conducted with 59 fourth grade students selected from two low SES primary schools in Istanbul. High scores on the PAQ, which indicate impairment of an individual's psychological adjustment, were found to be related with many of the subtests of PARQ, suggesting that psychological adjustment is negatively influenced by perceived parent rejection. In relation to the total scores on the PARQ, a significant relation was found between the father form of the PARQ and perseverance scores and the number of errors on the WCST. Multiple regression analysis was computed in order to see the effects of WCST on the PAQ total scores, when PARQ mother and father scores were held constant. WCST error and WCST perseverance had a significant effect on total PAQ scores when PARQ mother and father scores were held constant. In a hierarchical regression model, when gender and father scores for the PARQ were held constant, WCST perseverance had a significant effect on the hostility aggression subtest and emotional instability subtest of the PAQ, suggesting perseverance is related to problems in psychological adjustment.

Keywords: child maltreatment; parental acceptance-rejection; psychological adjustment; executive function

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Introduction

Parental involvement and affection is a major factor in the emotional and social development of the child, which in turn affects the psychological self-assessment of the child. In relation to child development, it is important that children are raised in a supporting environment, with appropriate parenting and social support from others. Although the rate may change, development is sequential for all children (Aldgate, Jones, & Rose, 2006). Children's temperament and their behavior style will affect how others react to them, and shape the relationship, thus it can be said that the child is active in shaping his or her environment while interaction takes place. In this case, development is an interaction between the child and his or her social environment, and any aspect of child development, physical, emotional, psychological, social or educational, can be impeded and impaired in this process (O'Hagan, 2006).

Some of the major roles of parents is to guide and control the child permitting him/her to mature and gain autonomy (Crosson-Tower, 1999). Problems encountered in the family system can arise from failure to provide basic needs of family members such as food, shelter, protection and education; difficulties in dealing with developmental issues concerning the children, crisis situations such as illness, death, unemployment, and natural disasters. Relatedly, all humans have a need for positive responses such as love, approval, warmth and affection, from important people in their lives, and as defined by Rohner (1975), warmth/affection, hostility/aggression, indifference/neglect and undifferentiated rejection are the four universally defined classes which perception of acceptance and rejection are organized around.

Child maltreatment and parental acceptance and rejection

Child maltreatment is a multifaceted problem, and thus should be dealt in a holistic and multi-level way, no single dimensional perspective will be enough to explain the problem thoroughly. Theory, research, and social intervention is shaped by the legal-social definition of child abuse. Parents' wrongdoing and deviant behavior is central to this definition, which directs the focus on implicitly intending to harm the child, or being unable to protect the child (Wolfe, 1999). Feelings of anxiety, helplessness, stress, or feeling under siege and threatened may enhance the likelihood of showing abuse (Howe, 2005). Relatedly, child maltreatment and abuse should be handled with an

integrative approach, whilst trying to understand family dysfunction and long-term consequences (Sesar, Zivcic-Becirevic, & Sesar, 2008).

A social psychological perspective in which, family, cultural, socioeconomic, and societal factors which are believed to shape the relationship between the parent and child, is crucial in order to broadly understand child abuse. Also, ecological risk factors should be considered together with the developmental stage and functioning of the child, in which, a family-centered focus is useful in understanding the problem thoroughly (Wolfe, 1999; Scannapieco & Connell-Carrick, 2005).

Children growing in an abusive, inconsistent and chaotic family environment are deprived of appropriate developmental opportunities (Wolfe, 1999). Also, instead of dividing parents as abusive or non-abusive, maltreatment can be seen on a continuum, where the beginning of the continuum starts from high levels of abuse and ends with parenting practices which improve children's social, intellectual and emotional development.

Neglect and emotional abuse is a major focus of the present study. Neglected children are at immediate risk due to unmet needs, which may cause harm to the physical well-being and health of the child and indirect dangers associated with lack of care and supervision (Daniel & Taylor, 2004).

Emotional abuse can result in a significant impairment of a child's competence, involving behaviors of parents, which make the child, feel worthless and unloved (Garbarino, 2000; Twaite & Rodriguez-Srednicki, 2004).

Garbarino's (2000) paper was one of the fundamentals in the definition of emotional maltreatment, which shed light on further work in the area and also introduced the term "psychological abuse". Psychological abuse should be tackled in a developmental and social perspective, it should be well conceptualized, and diagnosis should be taken seriously, also individual differences such as the temperament of the child affecting parent-child relationships, must be taken into account. It is important to note in this context that, the way the child perceives the parenting behaviors is a key factor. Perception of parental acceptance and rejection involves the interpretation the parents' parenting behaviors by the child. Here personal and cultural factors affect the interpretation (Rohner, Khaleque, & Cournoyer, 2005). Also, children and adolescents exposed to one form of abuse also have a high probability to being exposed to another kind of abuse (Sesar, Zivcic-Becirevic, & Sesar, 2008). Every child faces emotional and/or psychological maltreatment

in some way during their growth, sometimes in the form of mixed messages. Emotional abuse or maltreatment is harder to detect than physical abuse, which in turn makes it more difficult to intervene. Most of the time this kind of maltreatment accompanying physical abuse creates more devastating adverse outcomes. Maltreatment may cause the child to fight back by showing aggression, hostility and behavioral problems, or to the contrary the child may reflect his/her anger inwards and show patterns of self-destruction, depression, or withdrawal, and may in turn, suffer from sleep problems and somatic complaints (Crosson-Tower, 1999).

The parent-child relationship is multidimensional, and as stated, affects all aspects of the development of the growing child. Research shows a relationship between parental maltreatment and the psychological well-being of the child, where parental rejection also negatively affects later psychological adjustment in adulthood (Khaleque, Shirin, & Uddin, 2013). Khaleque (2013), in his meta-analysis study, found that parental warmth/ affection was positively related with children's psychological adjustment, as signified in PARTheory, regardless of culture, ethnicity, gender and geographical location.

Parental rejection negatively affects the child's emotional development and adjustment. Perceived parental rejection is associated with many mental health issues and social adjustment. Research shows that rejected and neglected children show lower levels of self confidence, self-adequacy and self-esteem compared to their accepted peers, they can be clingy, possessive, and repeatedly seek for approval, nurturance and attention (Ansari & Qureshi, 2013; Rohner, 1975), and they can also have a higher risk of showing delinquency, cruelty, destructiveness, sexual offenses, rebelliousness and being arrested for juvenile alcohol and drug offenses (Chen, Propp, Lara, & Corvo, 2011).

Parental rejection is positively correlated with peer relationships such as aggression, asocial behavior, exclusion, fearful anxiety and victimization and is negatively correlated with prosocial behavior, social development, and social skills (Gülay, 2011; Rohner, 1975). Emotionally maltreated children, especially when the maltreatment has an early onset, show difficulties forming close relationships with friends. This is also true for neglected and less supervised children (Bolger, Patterson, & Kupersmidt, 1998). Children who are maltreated by their parents, who haven't developed trusting relationships, who don't receive affection, and who are disciplined in an authoritarian way are usually deprived of appropriate social experiences. This further affects negatively the

child's present and later relationships, and as a result, they may have problems regulating their emotions and relations with others (Wolfe, 1999).

Victims of childhood abuse and neglect are also prone to show deviant behaviors as adults, such as violence, substance abuse and prostitution, but this is not always the case, and successful recovery is possible and will lead to a healthy adult development (Crosson-Tower, 1999). Social anxiety disorder in adulthood was also, found to be linked to childhood trauma, especially emotional abuse and neglect and adults with social anxiety disorder who were emotionally abused and neglected showed higher levels of trait anxiety and depression (Kuo, Goldin, Werner, Heimberg, & Gross, 2011). Hussain and Munaf (2012), investigated whether father rejection in childhood affected later psychological adjustment using the Adult Personality Assessment Questionnaire (Rohner, Khaleque, & Cournoyer, 2005). University students who perceived their fathers as accepting were psychologically more adjusted than their peers who perceived their fathers rejecting them in childhood.

Executive Function

Executive Function (EF) involves the ability to organize, to start goal directed, problem solving oriented behavior and to be able to proceed independently in the intended behavior, and react in a spontaneous manner (Lezak, 1995; Karakaş & Karakaş, 2003), it is highly related with effortful control (Bridgett, Oddi, Laake, Murdock, & Bachmann, 2013) and affects academic achievement (Neuenschwander, Cimeli, Röthlisberger, & Roeber 2013). Performance based executive function skills such as attentional and behavioral regulation, planning and working memory, inhibition, and auditory attention, are found to be predictive of academic success but not so much of the functioning of the 6th grade child at home (Jacobson, Williford, & Pianta 2011). This shows that academic and behavioral adjustment to middle school is positively affected by executive function skills. Some studies also have demonstrated that abused children, compared to neglected and non-maltreated children showed lower memory performances (Valentino, Cicchetti, Rogosch, & Toth, 2008) whereas some studies found no difference between groups (Chae, Goodman, Eisen, & Qin, 2011).

EF measured in kindergarten was found to be related with math and reading/writing skills at the end of Grade 1, where a socio-affective variable (anger-aggression) had a mediating effect (Monette, Bigras, & Guay, 2011), and frustration was found to decrease EF levels (Pnevmatikos & Trikkaliotis,

2013). It can be said that the regulation of anger–aggression can be influenced by EF, to quote, in the face of anger caused by frustration, an appropriate regulatory mechanism is needed to inhibit a more likely or automatic response. Cognitive regulation of emotion is accepted as a component of EF, suggesting that cognition and emotion work hand in hand (Pieper & Laugero, 2012; Monette, Bigras, & Guay, 2011).

Eating behavior is studied in relation to emotion regulation, and it was found that emotionally based eating can be lower in children with increased EF. In this case, EF is seen as a regulating factor in the influence of emotions on food intake. Increased emotional arousal led to emotional eating (when not hungry) only when there was a lower delay of gratification and lower effortful control related to emotional regulation (Pieper & Laugero, 2012). Inhibition was found to be positively correlated with EF. Domain-general inhibition is required for successful emotion regulation, for it aids the child in regulating anger; working memory mostly better together with inhibition, can help in suppressing unwanted emotional experience, exhibition of inappropriate emotions, self-talk and alternative solutions to anger (Carlson & Wang, 2007; Monette, Bigras, & Guay, 2011). These findings support the influence of EF on successfully handling emotions, coping with frustration, delaying gratification, also, this relation is both ways, where emotional regulation also helps in successful inhibitory control.

Keeping in mind that EF is related with cognitive regulation of emotion, and that maltreated children have a higher risk of showing cognitive impairment and general executive function impairment (Pieper & Laugero, 2012; Monette, Bigras, & Guay, 2011; Frechette, 2015), a correlational design was implemented with the aim to see whether increased parental rejection and problems in psychological adjustment were related to EF, and whether parental acceptance and rejection and EF had an effect on the psychological adjustment of children.

Method

Participants

The study was conducted with 59 fourth grade students aged 9-10, with 35 girls and 24 boys. Students were selected from two low SES primary schools in the Beyoglu district of Istanbul, 29 students were randomly selected from the first school, and 30 students were again randomly selected from the

second school. Two of the public primary schools have a very similar profile, and the demographic characteristics of students in both schools are similar.

Measures

Child Parental Acceptance Rejection Questionnaire. Parental Acceptance Rejection Questionnaire (PARQ) is a self-reported questionnaire measuring parental acceptance and rejection (Rohner, Khaleque, & Cournoyer, 2005). There is a mother and father form, consisting of the same questions. For the first form, the child responds referring to his/her mother, in the latter form referring to his/her father. The participants are asked to respond the questions depending on their perception of their parents. The questionnaire consists of 60 questions, and for the short form consists of 24 questions. The short form is used in the present study. There are four dimensions in the test which are, warmth/affection, hostility/aggression, indifference/neglect, undifferentiated rejection. The questionnaire is a four point Likert scale. The warmth/affection subtest is reversely scored. The higher the score on the questionnaire, the higher the perceived parental coldness/lack of affection, hostility/aggression, indifference/neglect, undifferentiated rejection, and overall perceived rejection (Child PARQ; Rohner et al., 2005). There is also an adult form and a parent form of the questionnaire. Anjel and Erkman (1993) translated the scale into Turkish. The transliteral equivalence, reliability and validity studies of the parental Acceptance-Rejection Questionnaire (PARQ), mother form was conducted by Anjel (1993). The internal consistency measured by Cronbach's alpha was found between .88 and .89. Further reliability and validity studies in Turkey were conducted by Varan (2003).

Child Personality Assessment Questionnaire. The Personality Assessment Questionnaire (PAQ) is a self-report questionnaire measuring psychological adjustment. The questionnaire has a child and adult form, where the individual's self-perception is measured under seven personality dispositions, namely, hostility and aggression, which includes physical aggression, verbal aggression, passive aggression, problems related to management of aggression and hostility; dependency, self-esteem, self-adequacy, emotional responsiveness, emotional stability, and worldview. The respondents are asked to answer the questions reflecting on their personality dispositions. The child form is for ages 7 to 12. The adult version consists of 63 items, while the child form consists of 42 items. The questionnaire has seven dimensions which are hostility and aggression, dependence, negative self-

esteem, negative self-adequacy, emotional unresponsiveness, emotional instability, and negative worldview. The questionnaire is a four point Likert scale with almost always true (4), sometimes true (3), rarely true (2) and almost never true (1). There are reversely scored items. Higher scores implicate impairment of the individual's psychological adjustment (Child PAQ; Rohner et al., 2005). The Turkish validity and reliability study was conducted by Varan (2001; 2003), and internal consistency measured by Cronbach's alpha was found between .73 and .85.

Wisconsin Card Sorting Test. The Wisconsin Card Sorting Test (WCST) is an individually administered clinical neuropsychological test measuring executive function. It measures abstract reasoning and the ability to shift cognitive strategies, as a result to possible changes in the environment. The WCST provides objective scores for the total number of categories completed, failures to maintain set, perseverative errors, non-perseverative errors, and total errors (Heaton, Chelune, Talley, Kay, & Curtiss, 1993).

Turkish standardization studies were conducted by Yalçın and Karakaş (2007), and Karakaş, Irak, and Erzen (1998).

Procedure

The scales were administered in two primary schools. Before the assessment procedure, the school psychological counsellor helped obtain written consent from the parents of the students for the administration of the tests. In both schools, the PARQ and PAQ questionnaires were administered to students during class hours, with the teacher and the school counsellor present. After data had been obtained for the PARQ and PAQ, the WCST was given to the participants, on a one to one basis in the school counsellor's office, with the verbal consent of the child.

Results

The PARQ, PAQ and WCST were given to 59 fourth grade students. High scores on the PAQ, which indicate impairment of an individual's psychological adjustment, were found to be related to many of the subtests of PARQ, which measures parental acceptance and rejection, suggesting that psychological adjustment is negatively influenced by parent rejection. In turn, it can also be said that the psychological impairment of the child may also be a

risk factor for parental rejection, making it hard for the parents to relate positively to their children.

The mean and standard deviation scores of subtests can be seen in Table 1.

Table 1. Descriptive statistics for PARQ, PAQ AND WCST scores

	N	Mean	SD
PARQ Mother	59	36.23	10.10
PARQ Father	59	35.59	10.48
PAQ	59	71.83	19.40
WCST error	59	47.01	19.36
WCST perseverance	59	18.76	11.39
WCST category	59	5.83	14.82
WCST failset	59	1.57	1.34

Correlation analyses were computed to identify subtest relations of perceived rejection and psychological assessment (*see* Table 2). The hostility/aggression subtest of the PAQ was significantly correlated with the indifference/neglect and undifferentiated rejection subtests of the mother form of the PARQ, and the undifferentiated rejection subtest of the father form of the PARQ.

The negative self-esteem subtest of the PAQ was significantly related to the indifference/neglect subtest of the mother form of the PARQ. As seen in Table 2, the negative self-adequacy subtest of the PAQ was significantly related to all the mother and father forms of the PARQ. The emotional unresponsiveness subtest of the PAQ significantly correlated with most of the mother subtests of the PARQ and the indifference/neglect, and undifferentiated rejection subtest of the father subtests of the PARQ.

The emotional instability subtest of the PAQ showed no significant correlation with the mother forms of the PARQ. For the father form, only the hostility/aggression subtest of the PARQ was significantly correlated with the emotional instability subtest of the PAQ.

The negative worldview subtest of the PAQ was positively associated with the mother and father subtests of the PARQ (*see* Table 2).

These results support previous findings supporting the relationship between parental acceptance/rejection and psychological adjustment.

Table 2. Correlation between PARQ subtests and PAQ subtests

	WAM	H/AM	I/NM	URM	WAF	H/AF	I/NF	URF
PAQ Hostility Aggression	.16	.14	.29*	.34**	.16	.12	.23	.30*
PAQ Dependency	-.03	.11	-.22	-.02	.01	.00	-.16	-.08
PAQ Negative Self Esteem	.15	.13	.26*	.01	.07	.19	.01	.01
PAQ Negative Self Adequacy	.37**	.30*	.30*	.35**	.34**	.45**	.36**	.26*
PAQ Emotional Unres.	.30*	.29*	.35**	.39**	.18	.10	.31*	.33*
PAQ Emotional Instability	.04	.08	.19	.22	.08	.27*	.06	.21
PAQ Negative World View	.28*	.32*	.54**	.39**	.45**	.31*	.45**	.40**

Note: WAM-Warmth Affection Mother; H/AM-Hostility/Aggress Mother; I/NM-Indiff./ Neglect Mother, URM-Undiff. Rejection Mother; WAF-Warmth Affection Father; H/AF-Hostility/Aggres Father; I/NF- Indiff./Neglect Father; URF-Undiff. Rejection Father; *p<.05; **p<.01

It was assumed that as parental rejection increases and executive function decreases, psychological adjustment would decrease. In relation to the total scores on the PARQ, significant relation with the perseverance scores and the number of errors on the WCST were found to be related to only the father form of the PARQ total score. Error and perseverance scores on the WCST showed a significant relation with the total scores on the father form of the PARQ ($r=.29$, $p<.05$ and $.31$, $p<.05$ respectively, *see* Table 3). A significant relation was also found between the number of errors and perseverance scores on the WCST. WCST failset scores were not significantly related to PARQ and PAQ scores.

Table 3. Correlation between WCST error, WCST perseverance and WCST failset scores and total scores on the mother and father forms of the PARQ and the total scores on the PAQ

	WCST error	WCST perseverance Failset	WCST
PARQ Mother Total	.17	.13	.21
PARQ Father Total	.29*	.31*	.18
PAQ Total	.23	-.05	.05
WCST Error	1	.55**	-.12
WCST Perseverance	.55**	1	-.03

Note: *p<.05; **p<.01

The relationship between WCST scores and PARQ subtests were computed with Pearson's correlation coefficient. As can be seen in Table 4, the number of errors and perseverance scores on the WCST were positively

associated with several subtests of the PARQ, suggesting that as perceived father rejection increases, executive function abilities decrease. The number of errors on the WCST was significantly correlated with the hostility/aggression subtest of the father form of the PARQ ($r=.31$, $p<.05$). Perseverative errors on the WCST was significantly correlated with indifference/neglect ($r=.36$, $p<.01$) and undifferentiated rejection subtests ($r=.33$, $p<.05$) of the father form of the PARQ. The number of categories completed in the WCST showed a significant negative correlation with warmth/affection ($r=-.29$, $p<.05$), hostility/aggression ($r=-.26$, $p<.05$), and undifferentiated rejection subtests ($r=-.26$, $p<.05$) of the father form of the PARQ.

Each incorrect response after 5 or more consecutive correct responses, is accepted as the failure to maintain set on the WCST. The failure to maintain set was the only WCST score to correlate with the mother form of the PARQ, namely the hostility/aggression subtest ($r=.28$, $p<.05$). Although no significant relation was found between WCST and PARQ mother total scores, interestingly when subtest relations were considered, as mother hostility/aggression increased, children had problems forming set on the WCST. These results are interesting considering that a relationship between WCST and PARQ was found mainly for the father form.

No significant relation was found indicating that psychological adjustment was related to EF.

Table 4. Correlation between WCST scores and PARQ subtests mother and father forms

	WAM	H/AM	I/NM	URM	WAF	H/AF	INF	URF
WCST Error	.21	.20	.24	.18	.25	.31*	.24	.24
WCST Persever.	.10	.21	.24	.24	.16	.06	.36**	.33*
WCST Category	-.20	-.23	-.24	-.19	-.29*	-.26*	-.21	-.26*
WCST Failset	.09	.28*	.14	.17	.16	.06	.12	.16

Note: WAM-Warmth Affection Mother; H-AM-Hostility/Aggres. Mother; I-NM-Indiff./Neglect Mother; URM-Undiff. Rejection Mother; WAF-Warmth Affection Father, H-AF-Host./Aggress. Father; I/NF-Indiff/Neglect Father; URF-Undiff. Rejection Father; * $p<.05$; ** $p<.01$

In addition to the expected/previewed relation between psychological impairment and parental rejection, it was investigated whether executive function would interact with these variables.

Multiple regression analysis was computed in order to see the effects of WCST error and WCST perseverance scores, on the PAQ total scores, when PARQ mother and father scores were held constant. Table 5 shows that WCST error has a significant effect on total PAQ scores at $p<.02$ and WCST

perseverance has a significant effect on total PAQ scores at $p < .03$ level, when PARQ mother and father scores were held constant.

Table 5. Multiple regression analysis of WCST error, WCST perseverance, and WCST failset scores and the PAQ total scores, with PARQ mother and father scores held constant

	B	SE B	β	t	p
1 (Constant)	62.747	6.340		9.898	.001**
PARQ Mother total	0.420	0.242	0.322	1.736	.08
PARQ Father total	0.191	0.247	0.151	0.776	.44
WCST Error	0.213	0.095	0.311	2.242	.02*
WCST Perseverance	-0.360	0.163	-0.314	-2.207	.03*
WCST Failset	-0.166	1.189	-0.017	-0.139	.89

Note: Dependent Variable: PAQ TOTAL; * $p < .05$; ** $p < .01$

As can be seen in Table 6, all subtests of the PAQ were respectively computed as dependent variables in a regression model. In the model, first of all gender and PARQ scores were selected. Using the hierarchic regression analysis, WCST error was added to the second model, WCST perseverance was added to the third, and WCST failure to maintain set subtest was added to the fourth model, while computing the significance of the difference between each R^2 as each model was added.

As a result, there was no significant effect of the WCST error, WCST perseverance, and WCST failure to maintain set subtest for each subtest of the PARQ mother and father forms (see Table 6).

Table 6. Hierarchical regression model for the mother and father subtests of the PARQ and WCST error, WCST perseverance, and WCST failset scores, dependent variable PAQ hostility aggression

Model	R	R^2	Adjust. R^2	PC	Change Statistics				
					R^2 Change	F_{Change}	β	SE B	$P F_{\text{change}}$
1 PARQ Mother & Father	.369 ^a	.136	-.022	-	.136	0.858	-	-	.56
2 WCST Error	.371 ^b	.137	-.042	.03	.001	0.070	0.007	0.028	.79
3 WCST Perseverance	.438 ^c	.192	.003	-.25	.055	3.189	-0.118	0.066	.08
4 WCST Failset	.440 ^d	.194	-.017	.04	.001	0.075	0.107	0.392	.78

Note: Dependent variable PAQ Hostility Aggression; PC-Partial Correlation

As can be seen from Table 7, when gender and father scores for the PARQ were held constant, WCST error was added to the second model, WCST perseverance was added to the third, and WCST failset was added to the fourth model. As a result, WCST perseverance had a significant effect

($p < .04$) on the hostility/aggression subtest of the PAQ. These results propose an interesting effect of perseverance, on hostility and aggression.

Table 7. Hierarchical regression model for the father subtests of the PARQ and WCST error, WCST perseverance, and WCST failset, dependent variable PAQ hostility aggression

Model	R	R ²	Adjust. R ²	PC	Change Statistics				
					R ² Change	F _{Change}	β	SE B	P F _{change}
1 PARQ Father	.299 ^a	.089	.004	-	.089	1,041	-	-	.40
2 WCST Error	.300 ^b	.090	-.015	.02	.000	0.020	0.004	0.027	.88
3 WCST Perseverance	.403 ^c	.163	.048	-.28	.073	4.449	-0.128	0.060	.04*
4 WCST Failset	.406 ^d	.165	.031	.047	.002	0.113	0.124	0.37	.73

Note: Dependent variable PAQ Hostility/Aggression; PC-Partial Correlation; * $p < .05$

A similar hierarchical regression analysis was computed with PAQ emotional instability subtest as a dependent variable. Table 8 shows that, when gender and father scores for the PARQ were held constant, WCST perseverance has a significant effect ($p < .04$) on the emotional instability subtest of the PAQ. Again as in the case of hostility and aggression, perseverance, also had an effect on emotional instability. Consistently perseverance was related to problems in psychological adjustment.

Table 8. Hierarchical regression model for the father subtests of the PARQ and WCST error, WCST perseverance, and WCST failset, dependent variable PAQ emotional instability

Model	R	R ²	Adjust. R ²	PC	Change Statistics				
					R ² Change	F _{Change}	β	SE B	P F _{change}
1 PARQ Father	.365 ^a	.133	.051	-	.133	1.625			.16
2 WCST Error	.416 ^b	.173	.078	.21	.040	2.535	0.042	0.026	.11
3 WCST Perseverance	.488 ^c	.238	.133	-.28	.065	4.323	-0.123	0.059	.04*
4 WCST Failset	.495 ^d	.245	.124	-.09	.007	0.482	-0.25	0.36	0.49

Note: Dependent variable PAQ Emotional Instability; PC-Partial Correlation; * $p < .05$

Discussion

PARQ and PAQ Scores

In line with previous research, which shows a relationship between parental maltreatment and the psychological well-being of the child (Khaleque, Shirin, & Uddin, 2013; Sentse, Lindenberg, Omvree, & Veenstra, 2010), in the present study, psychological maladjustment measured by the PAQ was closely related to parental rejection, measured by the PARQ. Emphasis was on

confirming similar findings with a Turkish sample from an extremely disadvantaged background. Participants were selected from 2 schools in the same district with a very similar profile. All the participants came from low SES families where parent education is particularly low.

One of the subtests of PARQ measures parental indifference and neglect, which is rather an underestimated area because of no apparent maltreatment. In fact being neglected by parents impair the emotional development of the child. Participants of this present study come from crowded families with 2-4 siblings, where it is common practice to leave children, even toddlers, in the care of their siblings who are just several years senior. Studies show that children who are rejected and neglected have lower levels of self-confidence, self-adequacy and self-esteem (Ansari & Qureshi, 2013; Rohner, 1975), which is in line with the present study, where indifference and neglect are positively related to negative self-esteem and negative self-adequacy. Keeping in mind that leaving children unattended at home is very common in the area, the findings are crucial in advocating social awareness programs in the neighborhood, where guiding the children to maturity and permitting them to gain autonomy during this process may be emphasized as some of the major roles of parents, while keeping in mind that positive responses such as love and approval are important to all human beings in dealing with the problems within the family system. These problems can be in the form of failure to provide the basic needs of the child, which applies to the present sample, or inability to deal with certain issues concerning crisis.

PARQ and PAQ Scores and Executive Functioning

Children who undergo neglect and physical maltreatment have a higher risk of showing cognitive impairment, compared to children who grow up in a healthy family environment. At that point, neuropsychological assessment can be helpful in identifying such probable cognitive deficits (Nolin & Ethier, 2007). The effects can be continuous, and child maltreatment including neglect is associated with poorer performance on executive function assessments, even in middle adulthood (Nikulina & Widom, 2013).

On the other hand, if somehow the child shows higher levels of executive functioning, this could decrease the impairing effects of parental rejection and help the child to adjust psychologically. It can be argued that executive function helps the child in processing the rejection, coping without internalizing it, and thus helping him/her positively cope with it.

Nolin and Ethier (2007) found that neglected children with and without physical abuse showed lower auditory attention and response set, and visual-motor integration. Whereas only the physically abused group showed impairment in problem solving, abstraction, and planning, interestingly neglected children obtained higher scores on these cognitive functions compared to the control group. The authors suggested that these unexpected results might be due to the fact that neglected children may become more resourceful in their daily lives because of lack of parenting provided to them. Whereas children in a more supportive family environment where parents are available showed lesser independence.

In the present study perceived parental rejection from the father was related to the number of errors and perseverance scores on the WCST, suggesting that executive functioning is somehow impaired in children who perceive their fathers as rejecting (*see* Table 3). In another study, perseveration errors were also found to be associated with depression in children who underwent negative life events (Lien, Yang, Kuo, & Chen, 2011).

Further on in the present study, when children perceived their fathers as showing hostility and aggression, the number of errors on the WCST increased. Again as children perceived their fathers as lacking warmth and affection, showing hostility and aggression, and undifferentiated rejection, they showed increasing trouble in achieving categories on the WCST. Also as perceived father neglect and undifferentiated rejection increased, so did perseverance scores on the WCST (*see* Table 4). In the present study, on the mother form, only children who perceived their mothers as hostile and aggressive had trouble in maintaining set. It is interesting to note that besides this result on the mother form, EF was related mostly with perceived father rejection. In a recent study conducted by Meuwissen and Carlson (2015) fathers behavior was stressed, the researchers found that fathers parenting behavior was related to children's EF as young as 3 years. Children with fathers who supported autonomy in their children had higher EF, which suggests that overly controlling parenting style has a negative impact on EF. Relatedly, Frechette (2015) in her study with psychiatry inpatient children found that childhood maltreatment was related to general executive function impairment. Neglected children had significantly impaired planning ability and problem solving skills. De Bellis, Hooper, Spratt, and Wooley (2009) found that neglected children showed lower language skills, learning and memory performance, intelligence scores, academic

achievement, attention, and executive function performance compared to a control group.

Executive function deficiencies can continue through the teenage years. Mothes et al. (2015) found that teenagers who were maltreated at childhood had decreased performance on cognitive flexibility and visual processing speed tasks, initiation, and lower verbal processing speed.

Research shows that behavioral inhibition and peer relations influence theory of mind in children as young as 36 months (Suway, Degnan, Sussman, & Fox, 2012). The authors suggest that children who show rejection towards their peers are deprived of necessary social experiences for theory of mind development. This rejection may in turn lead to problems in social understanding and positive social interaction later in childhood. This pattern may explain the vicious cycle where poor social behavior and lack of positive social experiences negatively influences EF, which in turns makes it harder for the child to form positive relations in the future, and which can further lead to problems in child-parent interaction.

In addition to perceived parent rejection, the relationship between EF and personality and behavioral dispositions of the children was also investigated (*see* Table 5). When PARQ scores were held constant, the WCST error and perseverance scores had a significant effect on the PAQ total scores, suggesting a relationship between psychological adjustment and EF, which is one of the main concerns of the study. Further on when PAQ subtest relations were investigated, as gender and father scores for the PARQ were held constant, WCST perseverance scores showed a significant effect on hostility and aggression and emotional instability (*see* Table 7 & 8). Perseverance may explain the hostility/aggression cycle, a style which the child adopts as a response mechanism. Although this is not an adaptive problem-solving strategy the child continuously uses a hostile/aggressive style in approaching problems and events. This perseverative style can explain the ongoing use of hostility/aggression as a behavioral style.

As widely accepted, trauma and abuse affect the child psychologically and socially, and negatively affects emotional regulation by disrupting the related brain networks (Hunter & Sparrow, 2012). Lee and Hoaken (2007) suggest that the negative effects of childhood maltreatment on cognitive development, especially EF, contributes to the likelihood of aggressive behavior. As the results of the present study suggest, as levels of hostility/aggression increased in the sample, so did perceived parental rejection,

and again there was a significant relation between hostility/aggression and perseverance scores (when father scores of the PARQ was held constant), which supports the conclusion of Lee and Hoaken (2007).

Also it should be noted that as the negative worldview subtest of the PAQ was positively associated with all the mother and father subtests of the PARQ, which is again a strong relationship. It can be stated that being maltreated and neglected by parents has a serious negative impact on the child's evaluation of himself/herself as an adequate individual, and can also lead to a negative evaluation of the environment, and a negative approach to life. This can also result in doubts about himself/herself and his/her performance, and how the environment reacts back. This, in turn, can be associated with impairments in EF.

Emotional instability refers to unpredictable mood, having difficulty dealing with drawbacks and challenges (Rohner et al., 2005). The relationship of emotional instability with increased perseverance, may suggest that these children may have trouble learning from ineffective coping mechanisms and changing them, thus it can be concluded they lack the cognitive flexibility to deal with upcoming events and difficulties.

Conclusions

Scores on the PAQ were found to be related with many of the subtests of PARQ suggesting that psychological adjustment is negatively influenced by parent rejection.

In relation to the total scores on the PARQ, a significant relation was found between the father form of the PARQ and perseverance scores and the number of errors on the WCST. Error and perseverance scores on the WCST indicate a significant relation with the total scores on the father form of the PARQ (*see* Table 3). A significant relation was also found between the number of errors and perseverance scores on the WCST.

In terms of subtest relations, the number of errors on the WCST and perseverance scores were positively associated with several subtests of the PARQ, suggesting that as executive function abilities decrease, perceived father rejection increases. The number of errors on the WCST was significantly correlated with the hostility/aggression subtest of the father form of the PARQ. Perseverative errors on the WCST were significantly correlated with indifference/neglect and undifferentiated rejection subtests of the father form of

the PARQ. The number of categories completed in the WCST was negatively significantly correlated with warmth/affection, hostility/aggression, and undifferentiated rejection subtests of the father form of the PARQ (*see* Table 4). The failset on the WCST, which shows the number of times a child has failed to form a set, was also significantly correlated with the hostility/aggression subtest of the mother form of the PARQ (*see* Table 4).

WCST error has a significant effect on total PAQ scores at and WCST perseverance has a significant effect on total PAQ scores, when PARQ mother and father scores are held constant (*see* Table 5). When gender and father scores for the PARQ were held constant, WCST perseverance had a significant impact on the hostility aggression subtest of the PAQ (*see* Table 7). When gender and father scores for the PARQ were held constant, WCST perseverance had a significant effect on the emotional instability subtest of the PAQ (*see* Table 8).

Limitations and implications for future research

The sample of this study is limited to a low SES group selected from two similar schools in the same district in Istanbul. If the age range and SES group would be dispersed a more conclusive result would help us understand the problem and make comparison possible. An achievement test could also be given to further explain and support the findings. Also, a similar study can be implemented by comparing a clinical group of abused and neglected children with a control group.

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