Research Article

Peer Relations and Peer Deviance as Predictors of Reactive and Proactive Aggression among High School Girls

Aslı Uz Baş[1]
Dokuz Eylül University

Fatma Selda Öz Soysal[2]
Dokuz Eylül University

Abstract

This study aimed to investigate associations between reactive and proactive aggression and peer relations and peer deviance among high school girls. A total of 442 high school students participated in this study. Reactive–Proactive Aggression Questionnaire, the Peer Relations Scale, and the Peer Deviance Scale were used to collect data. Results revealed that self-disclosure, loyalty, mild deviance, and serious deviance were significantly and positively correlated with both reactive and proactive aggression. Findings also indicated that self-disclosure, loyalty, and mild deviance among peers were significant predictors of reactive aggression, while loyalty and mild deviance were significant predictors of proactive aggression.

Keywords

Reactive aggression • Proactive aggression • Peer relations • Peer deviance • high school girls

1 **Correspondence to:** Aslı Uz Baş (PhD), Department of Educational Sciences, Buca Faculty of Education, Dokuz Eylül University, İzmir 35150 Turkey. Email: asliuzbas@gmail.com

2 Department of Educational Sciences, Dokuz Eylül University, İzmir Turkey. Email: seldaoz.oz@gmail.com

Aggressive behavior is a severe and pervasive problem in adolescence. Numerous studies have shown that aggressive behaviors are consistently associated with psychosocial adjustment (see Card & Little, 2006). To effectively intervene in these problem behaviors, teachers and school counselors need to know of the function that underlies aggressive behaviors. Aggressive behaviors are divided into two categories in terms of underlying functions: reactive versus proactive aggression (Dodge & Coie, 1987).

Reactive aggression is a defensive, retaliatory response to a perceived provocation from a peer and is accompanied by a display of anger (Hubbard, Dodge, Cillessen, Coie, & Schwartz, 2001). Reactive aggression has its theoretical roots in the frustration–aggression model (Berkowitz, 1989). According to this formulation, frustrations are aversive events and generate aggressive inclinations only to the extent of producing negative effects. An unanticipated failure to obtain an attractive goal is more unpleasant than an expected failure, and it is the greater displeasure in the former case that gives rise to the stronger instigation to aggression.

However, proactive aggression is an unprovoked, deliberate, and goal-directed behavior used to influence or coerce a peer (Hubbard et al., 2001). The theoretical roots of proactive aggression can be found in social learning theory, according to which, people acquire aggressive responses in the same way that they acquire other complex forms of social behavior. Social learning theory explains the acquisition of aggressive behaviors via observational learning processes (Anderson & Bushman, 2002).

There are two approaches toward studying reactive and proactive aggression. The first approach is the person-centered approach in which a person is categorized as either reactively or proactively aggressive. These classifications have been made on the basis of the deviation from the mean for both reactive and proactive aggression (Dodge & Coie, 1987). The second approach is the variable centered approach that examines reactive and proactive aggression as two separate characteristics that can co-exist within an individual. Studies using this approach do not classify individuals as reactively or proactively aggressive. In the present study, the variable centered approach was used.

Prior studies that used a variable centered approach have provided support for the distinction of reactive and proactive aggression (Fossati et al., 2009; Fung, Raine, & Gao, 2009; Raine et al., 2006; Uz Baş & Yurdabakan, 2012). Although reactive and proactive aggression are distinct constructs, there is an overlap between them. Miller and Lynam (2006) reported that there are high correlations between reactive and proactive aggression, and these correlations run between .60 and .80. Despite these high correlations, different developmental precursors (e.g., Ostrov, Murray-Close, Godleski, & Hart, 2013) and different psychological outcomes (see Card & Little, 2006) are associated with these aggression subtypes.

In the present study, we aimed to investigate associations between reactive and proactive aggression and peer relations and peer deviance among high school girls. Theoretical models and the empirical foundation for understanding the development of aggression have been based on prior research on aggressive boys (Pepler, Craig, Yuile, & Connolly, 2004). Recently, researchers, practitioners, and policymakers have lamented the lack of good empirical data describing the developmental course of disruptive behavior problems and the emergence of antisocial behaviors among girls (Bierman, Bruschi, Domitrovich, Fang, & Miller-Johnson, 2004). In a meta-analysis study of the distinction between reactive and proactive aggression in children and adolescents, the reseachers reviewed 50 studies in terms of gender and found that 21 of these were only conducted for boys (Polman, Castro, Koops, Boxtel, & Merk, 2007). In another review of trends in delinquent girls' aggression and violent behavior, Chesney-Lind and Belknap (2004) suggested that girls' capacity for aggression and violence has historically been ignored, trivialized, or denied. They also reported that discussions of girls' gang behavior and, more recently, girls' violence have also been extremely prevalent in the media. Adolescent girls may be more likely than boys to use "indirect aggression" such as gossip, telling bad or false stories, or secrets. Moreover, researchers have realized that the development of antisocial behavior in girls is important, not only from the perspective of the girls themselves but also beacuse of the link between antisocial girls and the intergenerational transmission of behavioral problems (Zoccolillo, Paquette, Azar, Cote, & Tremblay, 2004). The possibilty that aggressive and disruptive behaviors may increase risk rates for early sexual activity and pregnancy as well as dysfunctional parenting is worth pursuing empirically (Bierman et al., 2004). For all these reasons, we have included high school girls in our study.

Research suggests aggression in girls is socially motivated and is a learned behavior (Snethen & Van Puymbroeck, 2008). Systemic influences related to female aggression include general socializing factors, family factors, peer influences, and school factors (Leschied, Cummings, Van Brunschot, Cunningham, & Suanders, 2001). In the present study, we considered peer relations and deliquency as potential correlates and predictors of reactive and proactive aggression among high school girls. Friends play an important role during adolescence, and aggression and popularity become progressively more intertwined (Cillessen & Mayeux, 2004). Adolescents may use aggression to reach and maintain high peer status (Prinstein & Cillessen, 2003). Aggression appears to assume many forms in the social world of girls—they aggress often and in a wide variety of ways, especially among familiar peers (Putallaz, Kupersmidt, Coie, McKnight, & Grimes, 2004). The relationships between peer relations and aggressiveness among adolescents were considered in some studies that were conducted in Turkey (e.g., Kaplan & Aksel, 2013; Yavuzer, 2013). The findings of the study of Kaplan and Aksel (2013) showed that peer relations were significantly related to aggressiveness among adolescents. Yavuzer (2013) also found

that peer status and popularity were differentially related to aggressiveness in boys and girls. Prior studies on associations between reactive and proactive aggression and peer relations showed that proactively aggressive children have less problems with forming friendships than reactively aggressive children (Poulin & Boivin, 2000), and reactively aggressive children are liked less than proactively aggressive children (Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Poulin & Boivin, 2000; Prinstein & Cillessen, 2003). Moreover, both proactive and reactive aggression are independently associated with peer rejection; however, the relationship of rejection and reactive aggression is significantly stronger than rejection and proactive aggression (Card & Little, 2006). Recent findings regarding peer delinquency and aggression demonstrated that peer delinquency was associated with both proactive and reactive aggression. Furthermore, peer delinquency may be more strongly linked to proactive aggression, rather than reactive aggression (Fite, Wimsatt, Elkins, & Grassetti, 2012). In fact, the associations between peer deliquency and reactive and proactive aggression have not been well-studied. However, prior findings regarding the relations of peer deliquency with reactive and proactive aggression is somewhat controversial.

On the basis of prior research findings regarding female adolescent aggression, we aimed to focus on the role of peer relations as a predictor of aggression in girls. More specifically, we aimed to determine predictive roles of peer relations and peer deviance in both reactive and proactive aggression. When working in schools, it can be helpful for school counselors to be aware of peer risk factors that may put girls at a greater risk of being aggressive.

Method

Study Design

A descriptive correlational study was utilized to examine predictive roles of peer relations and peer deviance in reactive and proactive aggression among high school girls. While peer relations and peer deviance are predictive variables, reactive and proactive aggression are dependent variables in the study.

Participants

A total of 442 high school students participated in this study. The mean age of the participants was 15.22 years ($SD = .59$). All participants were girls who were attending a vocational high school in İzmir. The school was selected in accordance with the aim of the study. The study focuses on female adolescent aggression and the selected school is an all-girls school.

Measures

The Reactive–Proactive Aggression Questionnaire (The RPQ). The RPQ is a self-report questionnaire developed to distinguish between reactive and proactive aggression. The RPQ has a total of 23 items and two subscales: 11 items assessing reactive aggression (e.g., "Gotten angry when frustrated") and 12 items assessing proactive aggression (e.g., "Vandalized something for fun"). The items were rated on a three-point scale, with the following response options: 0 = never, 1 = sometimes, and 2 = often. For each subscale and the total scale, higher scores indicate higher levels of aggression. Cronbach's alpha coefficients were previously reported as .84, .86, and .90 for reactive aggression, proactive aggression, and total aggression, respectively (Raine et al., 2006). Questions were kept grammatically simple and written at a third grade reading level. The scale is also appropriate for use with late adolescents and young adults. The questionnaire was adapted into Turkish by Uz Baş & Yurdabakan (2012) in a sample of Turkish children aged 9 to 14. Findings from the confirmatory factor analysis provided evidence for the two-factor reactive–proactive model. Reactive and Proactive Aggression scales and the Total Aggression scale showed high internal consistency. Cronbach's alpha coefficients were found to be .77, .79, and .84 for the Proactive scale, Reactive scale, and Total scale, respectively.

Adaptation of the RPQ for use with Turkish adolescents. Prior to the main study, the RPQ was adapted for the adolescent population. The Turkish version of the RPQ was administered to a sample of 728 high school students (397 girls and 331 boys) aged 15 to 19. A total of 216 were ninth graders, 172 were tenth graders, 173 were eleventh graders, and 176 were twelfth graders.

Confirmatory factor analysis (CFA) was conducted to examine the factor structure of the Turkish version of the RPQ in a sample of high school students. LISREL 8.51 (Jöreskog, & Sörbom, 2001) was used to analyze the 23 items. A covariance matrix was used as input data and maximum likelihood was employed to estimate the model. Two models were evaluated on the basis of prior research: a one-factor model (general aggression) and a two-factor model (proactive and reactive aggression). The seven fit indices—goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), Akaike information criteration (AIC), and expected cross validation index (ECVI)—and relative chi-square/degree of freedom (χ^2/df) were used to test the models. According to cutoff guidelines suggested by Hu and Bentler (1999), values > .95 for the GFI, AGFI, and CFI; values < .05 for the RMSEA; and values ≤ .08 for the SRMR suggests a good fit. Among the competing models, the smallest values of the AIC and ECVI indicates the best fit (Byrne, 2001). Conversely, values of χ^2/df less than 2 are considered to reflect a good fit of the model to the data (Schermelleh-Engel, Moosbrugger, & Muller, 2003). If fit

was acceptable, the total sample was divided into subgroups on the basis of gender (girls vs. boys) and multigroup CFA was conducted to assess factorial invariance. After confirming the factor structure of the questionnaire, the internal consistency of each of the RPQ subscales and the total scale were calculated.

To compare the two-factor model (reactive–proactive) with a one-factor model (general aggression), goodness-of-fit indices for the two-factor and one-factor model were computed for all high school students (n = 728). Goodness-of-fit indices for these models are presented in Table 1. The results showed that the two-factor model fit the data significantly better than the one-factor model. All fit indices were superior for the two-factor model compared to the one-factor model. All the paths from the constructs to the items were statistically significant at the 5% level. The correlation between reactive and proactive aggression was significant (r = .66, p < .001).

After confirming the two-factor structure of the questionnaire for the total sample, multigroup CFA was done to determine whether the two-factor model was invariant across gender groups. Results indicated that the two-factor model provided fit to the data for both girls and boys (see Table 1). For girls, the two-factor model yielded the following fit indices: GFI = 0.87; AGFI = 0.84; CFI = 0.92; SRMR = 0.067; RMSEA = 0.072; AIC = 922.469; ECVI = 2.365; and χ^2(229, n = 397) = 713.33, p = 0.05, χ^2/df = 1.80. The correlation between reactive and proactive aggression was significant (r = .70, p < .001). For boys, two-factor model yielded the following fit indices: GFI = 0.84; AGFI = 0.81; CFI = 0.92; SRMR = 0.074; RMSEA = 0.81; AIC = 805.345; ECVI = 2.44; and χ^2(229, n = 331) = 667.63, p = .05, χ^2/df = 2.02. Both factors were again significantly correlated with one another (r = 0.62, p < .001).

Table 1

Model-Fitting Results Comparing the One-Factor (General Aggression) Model with the Two-Factor (Proactive-Reactive) Model

Model	χ^2	df	GFI	AGFI	CFI	SRMR	RMSEA	AIC	ECVI
Total sample									
One factor	1429.33	230	0.81	0.77	0.90	0.076	0.10	1650.05	2.270
Two factor	1015.13	229	0.88	0.86	0.94	0.065	0.073	1186.12	1.632
Girls									
One factor	876.55	230	0.82	0.78	0.90	0.078	0.092	1094.41	2.806
Two factor	713.33	229	0.87	0.84	0.92	0.067	0.072	922.469	2.365
Boys									
One factor	894.28	230	0.77	0.72	0.88	0.085	0.11	1063.02	3.221
Two factor	667.63	229	0.84	0.81	0.92	0.074	0.081	805.345	2.44

Cronbach's alpha coefficients for reactive aggression subscale, proactive aggression subscale, and total scale were .84, .81, and .88, respectively. The results suggest that the scores of both subscales and total scale were of sufficiently high internal consistency. Item-total correlations ranged from .35 to .62 for the Proactive scale, .32 to .55 for the

Reactive scale, and .22 to .59 for the Total scale. Reactive aggression was considerably more prevalent than proactive aggression (paired $t = 42.655$, $df = 726$, $p < .001$).

Peer Relationship Scale. The scale was developed by Kaner (2000) to investigate adolescents' peer relations. The scale consisted of 18 items and four subscales. These subscales are Commitment, Trust and Identification, Self-disclosure, and Loyalty. The items were rated on a five-point scale. Higher scores indicate higher levels of peer relations. Structure validity of the scale was investigated by principal component analysis with varimax rotation. Reliability of the scale was tested by internal consistency (Cronbach's alpha and Spearman Brown split-half) and test-retest. The Cronbach's alpha coefficients of the subscales and the total scale ranged from .58 to .86. The Spearman Brown split-half coefficients ranged from .60 to .84, and test-retest reliability coefficients ranged from .77 to .93. The Cronbach's alpha coefficients were found to be .87, .61, .73, .64, and .87 for the Commitment, Trust and Identification, Self-disclosure, and Loyalty subscales, and the total scale, respectively, for the sample in the present study.

Peer Deviance Scale. The scale was developed by Kaner (2000) to investigate peer deviance in adolescents. The scale comprises 14 items and two subscales. These subscales are Mild Deviance and Serious Deviance. The items were rated on a six-point scale. Higher scores indicate having more friends who display deviance. Structure validity of the scale was investigated by principal component analysis with varimax rotation. Reliability of the scale was tested by internal consistency (Cronbach's alpha and Spearman Brown split-half) and test-retest. Cronbach's alpha coefficients of the subscales and the total scale ranged from .87 to .90. The Spearman Brown split-half coefficients ranged from .81 to .90, and test-retest reliability coefficients ranged from 0.89 to 0.95. Cronbach's alpha coefficients were found to be .85, .77, and .86 for Mild Deviance and Serious Deviance subscales, and the total scale, respectively, for the sample in the present study.

Procedure

The study was conducted during the 2012–2013 academic year. School administration approval was obtained for the study. Data collection was undertaken by the authors. Students were informed about the goal of the research, and participated voluntarily. The questionnaires were given to the students in their classrooms. It took 15–20 minutes to respond to the scales.

Data Analysis

Data was processed using the Statistical Package for the Social Sciences (SPSS, version 15.0 for Windows). Prior to carrying out the main statistical analyses, all the study variables were examined for accuracy of data entry, missing values, and

the assumptions of multivariate analysis. Univariate outliers were identified by inspecting z scores and graphical methods. There were no cases with standardized scores in excess of ± 3.29. Histograms of the variables revealed approximately normal distributions for each variable and indicated that there were no univariate outliers. Mahalanobis distance values were examined, to identify possible multivariate outliers. With the use of a $p < .001$ criterion for Mahalanobis distance, no outliers were found (Tabachnick & Fidell, 2007). Evaluation of assumptions of normality, lienarity, and the homoscedasticity of residuals were satisfactory. During data analysis, descriptive statistics for each of the variables were calculated. The relationships between reactive and proactive aggression and peer relations and peer deviance were examined using Pearson correlations. Finally, multiple regression analysis was used to explore predictiors of reactive and proactive aggression.

Findings

Descriptive Statistics

The means and standard deviations for Reactive and Proactive Aggression, subscales of the Peer Relations Scale, and subscales of the Peer Deviance Scale are presented in Table 2. Reactive aggression was considerably more prevalent than proactive aggression among high school girls (paired $t = 33.279$, $df = 367$, $p < 0.001$).

Table 2

Descriptive Statistics

Variable	M	SD	Range
Reactive Aggression	7.45	4.277	0–21
Proactive Aggression	1.36	2.242	0–12
Mild deviance	13.67	5.592	8–37
Serious deviance	6.55	1.788	6–27
Commitment	35.49	5.123	8–50
Trust and identification	15.43	3.388	4–20
Self-disclosure	10.27	3.320	3–15
Loyalty	6.71	2.952	3–15

Relationship between reactive and proactive aggression and peer relations subscales and peer deviance subscales. Pearson correlations were calculated between all study variables and are presented in Table 3. Reactive aggression was found to be significantly and positively correlated with mild deviance ($r = .322$, $p < .001$); serious deviance ($r = .216$, $p < .001$); self-disclosure ($r = .286$, $p < .001$); and loyalty ($r = .361$, $p < .001$). Similarly, proactive aggression was found to be significantly and positively correlated with mild deviance ($r = .256$, $p < .001$); serious deviance ($r = .226$, $p < .001$); self-disclosure ($r = .136$, $p < .01$); and loyalty ($r = .307$, $p < .001$). The correlation between reactive and proactive aggression was also significant ($r = .58$, $p < .001$).

Table 3

Correlations between All Study Variables

Variables	2	3	4	5	6	7	8
1. Reactive aggression	0.588***	0.322***	0.216***	−0.004	0.038	0.286***	0.361***
2. Proactive aggression	-	0.256***	0.226***	−0.020	−0.020	0.136**	0.307***
3. Mild deviance	-	-	0.443***	−0.50	−0.140**	0.028	0.223**
4. Serious deviance	-	-	-	−0.080	−0.102*	−0.019	0.174***
5. Commitment	-	-	-	-	0.454***	0.435***	0.169**
6. Trust and identification	-	-	-	-	-	0.480***	0.244***
7. Self- disclosure	-	-	-	-	-	-	0.362***
8. Loyalty	-	-	-	-	-	-	-

*correlation is significant at .05 (two-tailed),

**correlation is significant at 0.01 (two-tailed), ***correlation is significant at .001 (two-tailed).

Peer relations and peer deviance as predictors of reactive and proactive aggression. To determine whether peer relations subscales and peer deviance subscales significantly predict reactive and proactive aggression, two separate multiple regression analyses were conducted. The results are presented in Table 4. In predicting Reactive Aggression, Reactive Aggression was entered as the dependent variable, and Self-disclosure, Loyalty, Mild Deviance and Serious Deviance were entered as potantial predictors. Results revealed that Self-disclosure (β = .179, p < .001), Loyalty (β = .230, p < .001) and Mild Deviance (β = .223, p < .001) significantly and positively predicted Reactive Aggression scores. Self-disclosure, Loyalty, and Mild Deviance, taken together, accounted for significant variation in Reactive Aggression scores (R^2 = .219, p < .001). The standardized beta value of Serious Deviance (β = .054, p > .05) was not significant. In predicting Proactive Aggression, Proactive Aggression was entered as the dependent variable, and Self-disclosure, Loyalty, Mild Deviance, and Serious Deviance were entered as potantial predictors. Results revealed that Loyalty

Table 4

Results of Multiple Regression Analysis Predicting Reactive Aggression and Proactive Aggression

	B	SE	β	t
Reactive aggression				
Constant	−0.408	0.989		−0.413
Self-disclosure	0.229	0.064	0.179	3.565***
Loyalty	0.334	0.076	0.230	4.391***
Mild deviance	0.171	0.041	0.223	4.163***
Serious deviance	0.134	0.132	0.054	1.014
R = .468, R^2 = .219, Adjusted R^2 = .210, F(4,361) = 25.282, p < .001.				
Proactive aggression				
Constant	−1.730	0.547		−3.161
Self-disclosure	0.019	0.036	0.028	0.525
Loyalty	0.177	0.042	0.234	4.215***
Mild deviance	0.058	0.023	0.144	2.553*
Serious deviance	0.138	0.073	0.106	1.882

R = .369, R^2 = .136, Adjusted R^2 = .126, $F(4,361)$ = 14.014, p < .001.

($\beta = .234$, $p < .001$) and Mild Deviance ($\beta = .144$, $p < .05$) significantly and positively predicted Proactive Aggression scores. Loyalty and Mild Deviance, taken together, accounted for significant variation in Proactive Aggression scores. $R^2 = .136$, $p < .001$. The standardized beta value of Self-Disclosure ($\beta = .028$, $p > .05$) and Serious Deviance ($\beta = .106$, $p > .05$) were not significant.

Discussion

The present study aimed at understanding the relationship of reactive and proactive aggression with peer relations and peer deviance in high school girls. The results of the correlation analysis revealed that both reactive and proactive aggression were significantly and positively correlated with Self-disclosure and Loyalty subscales of Peer Relations scale. In other words, the higher levels of reactive and proactive aggression associated with higher levels of self-disclosure and loyalty among peers. These findings are consistent with the results of previous research suggesting that there are meaningful links between peer relations and aggression in children and adolescents (e.g., Coie & Kupersmidt, 1983). Both reactive and proactive aggression were also significantly and positively correlated with peer deviance. Prior studies reported that peer delinquency is one of the contextual factors that impact aggressive behavior (Fergusson, Woodward, & Horwood, 1999; Tremblay et al. 2004). In fact, the associations between peer deliquency and reactive and proactive aggression have not been well-studied. Prior findings regarding the relations of peer deliquency with reactive and proactive aggression is somewhat controversial. While a recent study (Fite et al., 2012) found that best friend deliquency was positively associated with proactive aggression and unrelated to reactive aggression, Fite et al. (2010) reported that peer delinquency was positively associated with both proactive and reactive aggression. In the present study we focused on "peer deliquency" rather than "best friend deliquency." Inconsistent results may be explained according to the difference between the study variables or the participants of these studies. The participants' characteristics of the present study in terms of gender (only high school girls versus both girls and boys) and developmental stage (adolescents versus children and adolescents) are different from the study above-mentioned.

The findings of multiple regression analyses revealed that self-disclosure, loyalty, and mild deviance among peers were significant predictors of reactive aggression. Taking into consideration that the Loyalty subcscale of the Peer Relations Scale includes items such as telling lies to protect friends, this finding may refer to problematic peer relations of reactive aggresive adolescents. Mild deviance was found to be another important predictor of reactive aggression. Mild Deviance subscale includes items such as having friends telling ties or friends being absent from school. For this reason, this finding was consistent with the previous research

emphasizing peer influence on aggression during adolescence (Fergusson et al., 1999; Fite et al., 2010; Tremblay et al. 2004). Self-disclosure was also a significant predictor of reactive aggression. The Self-disclosure subscale of the Peer Relations Scale includes items regarding adolescents' sharings with friends. This finding may be explained by the fact that peer relations play an increasingly important role in adolescent girls' aggressive behavior.

The findings regarding proactive aggression showed that loyalty is the strongest predictor of proactive aggression. This finding is consistent with the social learning theory of aggressive behaviors. Reactive and proactive aggression may be reinforced by social rewards from peers (Prinstein & Cillessen, 2003). Adolescent girls may show proactive aggressive behaviors toward their peers in order to maintain their friendships and to show loyalty to them. As explained above, this finding may also refer to the links between problematic peer relationships and proactive aggression. Consistent with previous studies (Fite et al., 2010; Fite et al., 2012), mild deviance was also found to be a significant predictor of proactive aggression. Peer delinquency is believed to effect proactively aggressive behavior through peer socialization. Delinquent and aggressive peers provide both modeling and positive reinforcement of aggressive behavior (Fite et al., 2010). Self-disclosure was not a significant predictor of proactive aggression. However, no studies have examined the link between self-disclosure and proactive aggression among adolescents. Future research is needed to better understand the relationships between self-disclosure among peers and proactive aggression. However, the current findings provide empirical support for the theoretical proposition that reactive and proactive aggression are differently related to peer relations (Polman, 2008).

Finally, consistent with past research, the correlation between reactive and proactive aggression was significant, $r = .59$, $p < .001$, indicating that reactive and proactive aggression were related. However, proactive aggression scores were considerably lower than reactive aggression scores. The same findings have been observed in previous studies using the RPQ (Fung et al., 2009; Raine et al., 2006; Uz Baş & Yurdabakan, 2012). Taking into account the results of prior research on reactive and proactive aggression, this is an expected finding. Raine et al. argued that reactive aggression may be more adaptive and quasi-normative, whereas proactive aggression may be more pathological and more serious.

Although the results of the study contributed to the existing knowledge regarding reactive and proactive aggression among high school girls, limitations should be considered when interpreting findings. First, data was cross-sectional and correlational in nature. Second, this study used self-report measures to examine the associations between reactive-proactive aggression and peer relations and peer deviance. It is important for

future research to design a longitudinal research to determine the influences of peer relations and peer deviance on reactive and proactive aggression. Moreover, alternative sources of information such as peer groups could be used by the researchers.

Overall, the current findings contribute to our understanding of reactive and proactive aggression and their relationships with peer relations among high school girls. The findings of this study have some implications for mental health professionals, school counselors, and high school teachers. First of all, while deviant girls were relatively ignored in the past, now we know that girls engage in a range of disruptive and oppositional acts that harm others' social relationships (Dodge, 2004). There is an obvious need for school counselors to observe adolescent peer relations in terms of their relationships with aggressive behaviors. Second, school counselors and teachers need to increase their awareness of negative outcomes of girls' aggression. Previous research showed that girls' aggression are associated with negative outcomes in adulthood including choosing antisocial romantic partners, marital assault, drug use, and poor parenting abilities (Underwood & Coie, 2004). From an intervention perspective, it seems important to identify high-risk girls early and provide comprehensive prevention and intervention to these girls and their families. It is also important to address girls' needs in these prevention and intervention programs. Finally, school-based supports such as promoting social and emotional development and building social skills may be provided by school counselors. In the present study, we revealed that reactive and proactive aggression are differently related to peer relations and peer deviance. These differences should be considered when planning prevention and intervention programs. Conversely, researchers interested in adolescent aggression may utilize the present study. Literature regarding adolescent girls' aggression is limited, especially in Turkey. Thus, further research addressing female adolescent aggression may provide additional knowledge about correlates and predictors of adolescent girls' aggressive behaviors.

References

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*, 27–51.

Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin, 106*, 59–73.

Bierman, K. L., Bruschi, C., Domitrovich, C., Fang, G. Y., & Miller-Johnson, S. (2004). Early disruptive behaviors associated with emerging antisocial behavior among girls. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls* (pp. 137–161). New York, NY: The Guilford Press.

Byrne, B. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programming.* Mahwah, NJ: Lawrence Erlbaum.

Card, N. A., & Little, T. D. (2006). Proactive and reactive aggression in childhood and adolescence. A meta-analysis of differential relations with psychosocial adjustment. *International Journal of Behavioral Development, 30*, 466–80.

Chesney-Lind, M., & Belknap, J. (2004). Trends in delinquent girls' aggression and violent behavior: A review of the evidence. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls* (pp. 203–222). New York, NY: The Guilford Press.

Cillessen, A. H. N., & Mayeux, L. (2004). From censure to reinforcement: Developmental changes in the association between aggression and social status. *Child Development, 75*, 147–163.

Coie, J. D., & Kupersmidt, J. B. (1983). A behavioral analysis of emerging social status in boys' groups. *Child Development, 54*(6), 1400–1416.

Dodge, K. A. (2004). Public policy and the "discovery" of girls' aggressive behavior. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls* (pp. 302–312). New York, NY: The Guilford Press.

Dodge, K. A., & Coie, J. D. (1987). Social-information processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology, 53*, 1146–1158.

Dodge, K. A., Lochman, J. E., Harnish, J. D., Bates, J. E., & Pettit, G. S. (1997). Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth. *Journal of Abnormal Psychology, 106*, 37–51.

Fergusson, D. M., Woodward, L. J., & Horwood, L. J. (1999). Child peer relationship problems and young people's involvement in deviant peers in adolescence. *Journal of Abnormal Child Psychology, 27*(5), 357–369.

Fite, P. J., Vitulano, M., Wynn, P., Wimsatt, A., Gaertner, A., & Rathert, J. (2010). Influence of perceived neighborhood safety on proactive and reactive aggression. *Journal of Community Psychology, 38*(6), 757–768.

Fite, P. J., Wimsatt, A. R., Elkins, S., & Grasetti, S. N. (2012). Contextual influences of proactive and reactive subtypes of aggression. *Child Indicators Resarch, 5,* 123–133.

Fossati, A., Raine, A., Borroni, S., Bizzozero, A., Volpi, E., Santalucia, I., & Maffei, C. (2009). A crosscultural study of the psychometric properties of the Reactive-Proactive Aggression Questionnaire among Italian non-clinical adolescents. *Psychological Assessment, 11*, 131–135.

Fung, A. L., Raine, A., & Gao, Y. (2009). Cross-cultural generalizability of the Reactive-Proactive Aggression Questionnaire (RPQ). *Journal of Personality Assessment, 91*(5), 473–479.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternations. *Structural Equation Modeling*, 6, 1–55.

Hubbard, J. A., Dodge, K. A., Cillessen, A. H. N., Coie, J. D., & Schwartz, D. (2001). The dyadic natüre of social information processing in boys' reactive and proactive aggression. *Journal of Personality and Social Psychology, 80*(2), 268–280.

Jöreskog, K., & Sörbom, D. (2001). LISREL 8: *User's reference guide*. Chicago, IL: Scientific Software International Inc.

Kaner, S. (2000). Akran ilişkileri ölçeği ve akran sapması ölçeği geliştirme çalışması [A study on developing a peer relationships scale and a peer deviance scale]. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi, 33*(1–2), 67–75.

Kaplan, B., & Aksel, E. S. (2013). Ergenlerde bağlanma ve saldırganlık davranışları arasındaki ilişkinin incelenmesi [The investigation of relationship between attachment and aggressive behavior of adolescents]. *Nesne Psikolojisi Dergisi, 1*(1), 20–49.

Leschied, A. W., Cummings, A., Brunschot, M. V., Alison, C., & Saunders, A. (2000). *Female adolescent aggression: A review of the literature and the correlates of aggression*. Public Works and Government Services Canada. Retrieved September 14, 2015 from www.pimatisiwin.com/uploads/1444772841.pdf

Miller, J. D., & Lynam, D. R. (2006). Reactive and proactive aggression: Similarities and differences. *Personality and Individual Differences, 41*, 1469–1480.

Ostrov, J. M., Murray-Close, D., Godleski, S. A., & Hart, E. M. (2013). Prospective associations between forms and functions of aggression and social and affective processes during early childhood. *Journal of Experimental Child Psychology, 116*(1), 19–36.

Pepler, D., Craig, W., Yuile, A., & Connolly, J. (2004). Girls who bully: A developmental and relational perspective. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls* (pp. 90–109). New York, NY: The Guilford Press.

Polman, H. (2008). *Hot-headed or cold-blooded? Towards a clear distinction between reactive and proactive aggression in youth* (Master's thesis, Utrecht University, Netherlands). Retrieved from http://dspace.library.uu.nl/handle/1874/27772

Polman, H., Castro, B. O., Koops, W., Boxtel, H. W., & Merk, W. W. (2007). A Meta-Analysis of the distinction between reactive and proactive aggression in children and adolescents. *Journal of Abnormal Child Psychology, 35*, 522–535.

Poulin, F., & Boivin, M. (2000). Reactive and proactive aggression: Evidence of a two-factor model. *Psychological Assessment, 12*, 115–122.

Prinstein, M. J., & Cillessen, A. H. N. (2003). Forms and functions of adolescent peer aggression associated with high levels of peer status. *Merrill-Palmer Quarterly, 49*, 310–342.

Putallaz, M., Kupersmidt, J. B., Coie, J. D., McKnight, K., & Grimes, C. L. (2004). A behavioral analysis of girls' aggression and victimization. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls* (pp. 110–136). New York, NY: The Guilford Press.

Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., … Liu, J. (2006). The Reactive-Proactive Aggression (RPQ) Questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior, 32*, 159–171.

Schermelleh-Engel, K., Moosbrugger, H., & Muller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research-Online, 8,* 23–74.

Snethen, G., & Van Puymbroeck, M. (2008). Girls and physical aggression: Causes, trends, and intervention guided by social learning theory. *Aggression and Violent Behavior, 13*(5), 346–354.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Boston, MA: Allyn and Bacon, Pearson Education Inc.

Tremblay, R. E., Nagin, D. S., Seguin, J. R., Zoccolillo, M., Zelazo, P. D., Boivin, M., … Japel, C. (2004). Physical aggression during early childhood: Trajectories and predictors. *Pediatrics, 114*, 43–50.

Underwood, M. K., & Coie, J. D. (2004). Future directions and priorities for prevention and intervention. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls* (pp. 289–301). New York, NY: The Guilford Press.

Uz Baş, A., & Yurdabakan, İ. (2012). Factor structure of the Reactive-Proactive Aggression Questionnaire in Turkish children and gender, grade-level, and socioeconomic status differences in reactive and proactive aggression. *Journal of Psychoeducational Assessment, 30*(3), 284–297.

Yavuzer, Y. (2013). Investigation of relationship between aggression and sociometric popularity in adolescents. *Educational Science Theory& Practice, 13,*767–780.

Zoccolillo, M., Paquette, D., Azar, R., Cote, S., & Tremblay, R. (2004). Parenting as an important outcome of conduct disorder in girls. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls* (pp. 242–261). New York, NY: The Guilford Press.