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Factor Structure of the Reactive-Proactive Aggression Questionnaire in Turkish Children and Gender, Grade-Level, and Socioeconomic Status Differences in Reactive and Proactive Aggression

Aslı Uz Baş¹ and İrfan Yurdabakan¹

Abstract

The present study aimed to evaluate the factor structure of the Reactive-Proactive Aggression Questionnaire (RPQ) with Turkish children, and to investigate gender, grade-level, and socioeconomic status (SES) differences in reactive and proactive aggression. Participants consisted of 1,081 Turkish children (544 boys and 537 girls) aged 9 to 14 years. Findings from the confirmatory factor analysis provided evidence for the two-factor reactive-proactive model. It was also found that the factor structure of the RPQ was the same across gender groups. Reactive and Proactive Aggression scales and Total Aggression scale showed high internal consistency. Boys got higher scores on both Reactive and Proactive Aggression scales. Reactive and proactive aggression increased with age until Grade 7 in both boys and girls. Finally, the findings showed that, for both boys and girls, children with low SES had significantly higher reactive and proactive aggression scores than children with middle and high SES.

Keywords

Reactive aggression, proactive aggression, factor structure, Turkish children

Research suggests that *aggression* is a heterogeneous construct (Vitiello & Stoff, 1997), and there are distinct forms of aggression in humans. For almost two decades, some authors argued that subtypes of aggressive behavior should be distinguished on the basis of their form and function when examining the developmental trajectories, antecedents, and consequences of aggressive behavior (Brendgen, Vitaro, Boivin, Dionne, & Perusse, 2006; Vitaro, Brendgen, & Barker, 2006). According to this notion, there are two types of aggressive behavior—reactive

¹Dokuz Eylül University, Buca Faculty of Education, Buca, İzmir, Turkey

Corresponding Author:

Aslı Uz Baş, Dokuz Eylül University, Buca Faculty of Education, Department of Educational Sciences, Division of Guidance and Psychological Counseling, Buca, İzmir, Turkey
Email: asliuzbas@gmail.com

and proactive—on the basis of their underlying function or motivation. In the literature, different terms are also used for subtypes of aggression in humans. The samples of commonly used terms are nonimpulsive versus impulsive aggression and hostile versus instrumental aggression (Kempes, Matthys, de Vries, & van Engeland, 2005). Pulkkinen (1996) argued that the distinction between hostile and instrumental aggression bears a resemblance to the distinction between reactive and proactive aggression, but they are not overlapping concepts. According to the author, both reactive and proactive aggression may involve different degrees of hostility or instrumental goals.

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 that they produce negative affect. 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. Proactive aggression is an unprovoked, deliberate, 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 social learning theory, people acquire aggressive responses the same way they acquire other complex forms of social behavior. Social learning theory explains the acquisition of aggressive behaviors via observational learning processes (Anderson & Bushman, 2002). Proactive aggression can be directed toward possessing objects or dominating people (Vitaro, Gendreau, Tremblay, & Oligny, 1998). Proactive aggression that is object oriented is aimed at the acquisition of an object, territory, or privilege and is equivalent to what has been labeled *instrumental aggression* in the past (Hartup, 1974). Proactive aggression that is more person directed has the goal of intimidating or dominating a peer and so includes instances of bullying (Hubbard et al., 2001).

The reactive-proactive dichotomy has been supported by several studies (Fossati et al., 2009; Fung, Raine, & Gao, 2009; Poulin & Boivin, 2000; Raine et al., 2006; Vitaro et al., 2006). Although Bushman and Anderson (2001) argued that proactive aggression and reactive aggression strongly co-occur, other researchers believe that these two forms of aggression are fundamentally distinct, with diverse developmental differences (Fung et al., 2009). Day, Bream, & Paul (1992) have found teacher-rated behavioral differences between proactively and reactively aggressive school-aged boys. Reactively aggressive boys were less able to handle peer pressure than were nonaggressive boys. They performed more poorly at school and had more internalized symptoms. In contrast, proactively aggressive boys did not have more school problems and did not manifest more internalized symptoms than nonaggressive boys. Crick and Dodge (1996) reported that there are significant differences between the social information-processing patterns of reactive- and proactive-aggressive children. Proactive-aggressive children are likely to view aggression as an effective and viable means for obtaining social goals. Reactively aggressive children interpret others' ambiguous provocations as hostile more readily than proactively or reactively and proactively aggressive children. They also display more problem-solving deficits in difficult social situations. Accordingly, reactively aggressive children are likely to be rejected. On the other hand, proactively aggressive children can be popular with classmates, but this behavior is associated with a decrease in the quality of peer relationships (Poulin & Boivin, 1999).

Some authors showed that proactive aggression can lead to externalizing problems such as delinquency and disruptive behaviors, whereas reactive aggression does not (Pulkkinen, 1996; Vitaro et al., 1998). Raine and colleagues (2006) have also highlighted the differential nature of these two forms of aggression and stated that the proactively aggressive adolescent is

psychopathy prone, seriously violent, and emanating from a poor social background, whereas the reactively aggressive adolescent is more impulsive, anxious, and has schizophrenia-spectrum characteristics hallmarked by reality distortion and information-processing abnormalities. Marsee and Frick (2007) found that reactive aggression was uniquely associated with poorly regulated emotion and anger to perceived provocation, whereas proactive aggression was uniquely associated with callous-unemotional traits and biased outcome expectations for aggression in a sample of detained girls aged 12 to 18. Overall, research has found distinguishing characteristics of reactive and proactive aggression in children and adolescents.

Differentiating these different forms of aggression is important to obtain a clearer understanding of the etiology of aggression (Raine et al., 2006). In addition, dissimilar aggression types may differentially respond to specific therapeutic interventions (Connor, Anderson, Steingard, Cunningham, & Melloni, 2004). Several measures have been developed to examine the distinction between reactive aggression and proactive aggression. One of the most commonly used questionnaire is the Teacher-Rating Scale developed by Dodge and Coie (1987). Numerous studies have been used the measure to assess reactive and proactive aggression in children (e.g., Connor, Steingard, Anderson, & Melloni, 2003; Crick & Dodge, 1996; Hubbard et al., 2002). Some researchers have used the Parent-Rating Scale for Reactive and Proactive Aggression (PRPA; Kempes et al., 2005) and Revised Parent-Rating Scale for Reactive and Proactive Aggression (R-PRPA; Brown, Atkins, Osborne, & Milmanow, 1996) to assess reactive and proactive aggression. Besides the questionnaires, reactive aggression and proactive aggression have been assessed by using behavioral observations of playgroup interactions in many studies (e.g., Hubbard et al., 2001; Kempes et al., 2010).

In recent years a self-report measure was designed to specifically evaluate these two forms of aggressive behavior (Raine et al., 2006). The Reactive-Proactive Aggression Questionnaire (RPQ) consists of 23 behavioral items and is appropriate for use with children, adolescents, and young adults. Raine et al. reported that because of the importance of intrinsic motivation for reactive and proactive aggression, self-report measures of proactive-reactive aggression would have a potentially important advantage over more objective teacher rating or observational measures. Recent studies of cross-cultural generalizability of the scale suggest that the RPQ can be operationalized successfully in different countries (Fossati et al., 2009; Fung et al., 2009). The literature on the measurement in children via questionnaires and behavioral observations shows that though subtypes can be distinguished they are substantially correlated (Kempes et al., 2005). Miller and Lynam (2006) have reported that there are high correlations between reactive and proactive aggression, and these correlations run between .60 and .80.

In order to gain a better understanding of reactive and proactive aggression, it is important to investigate demographic correlates of both types of behavior. In this study gender, grade-level and socioeconomic status (SES) differences were discussed. Although for aggression in general it is clear that boys and men are more aggressive than girls and women, gender differences in reactive and proactive aggression were not clear. Fung et al. (2009) found significant main effect for gender on proactive aggression, with boys being more proactively aggressive than girls. They reported no main effect for gender on reactive aggression. Connor et al. (2003) found no gender differences in reactive and proactive aggression in a clinical sample. To our knowledge, no study has assessed grade-level differences in reactive and proactive aggression. The findings of previous studies investigating age differences in reactive and proactive aggression are inconsistent. Fung et al. found that both types of aggression increase with age, whereas Barker et al. (Barker, Tremblay, Nagin, Vitaro, & Lacourse, 2006) reported that a majority of the boys showed low and desisting levels during adolescence and a small proportion of the boys followed a high trajectory that peaked at 15 years of age and thereafter desisted. Consequently, it is unclear whether there are meaningful gender and grade-level differences in reactive and proactive aggression. Regarding SES differences in reactive and proactive aggression, previous studies were also very

limited. There are several research works investigating links between SES and aggression; only one study (Raine et al., 2006) specifically investigated SES differences in reactive and proactive aggression and found that boys from low-SES families had significantly higher proactive scores but not reactive scores.

In the present study we aimed to evaluate the factor structure of the RPQ with Turkish children and to investigate gender, grade-level, and SES differences in reactive and proactive aggression. Based on previous research, it was hypothesized as follows:

Hypothesis 1: A two-factor model would provide a better fit to the data than a one-factor model.

Hypothesis 2: The factor structure of the RPQ would be the same across gender groups.

Hypothesis 3: Boys would get higher scores than girls in both proactive and reactive forms of aggression.

Hypothesis 4: Reactive and proactive aggression would increase with age.

Hypothesis 5: Children with low SES would get higher scores in both proactive and reactive forms of aggression than their counterparts.

Method

Participants

Participants consisted of 1,081 children (544 boys and 537 girls) aged 9 to 14 years ($M = 11.622$, $SD = 1.401$). The participating children were from five public elementary schools and a private school located in İzmir, Turkey. Schools were selected based on the neighborhood characteristics to ensure variability in the SES of the participating children. In each SES, two schools were included in the study.

Instruments

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 2 subscales. A total of 11 items assess reactive aggression (e.g., "Gotten angry when frustrated") and 12 items proactive aggression (e.g., "Vandalized something for fun"). The items were rated on a 3-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. The Cronbach's alpha coefficients have previously been reported as .84, .86, and .90 for reactive aggression, proactive aggression, and total aggression, respectively (Raine et al., 2006).

For this study, the RPQ was translated into Turkish. The recommendations made by Beaton, Bombardier, Guillemin, and Ferraz (2000) were followed to establish the cultural equivalence of the original English version of the RPQ. In the translation process, two translators with different backgrounds independently translated the original questionnaire into Turkish. The researchers then synthesized the results of the translations and designed later versions of the questionnaire. These versions of the questionnaire were then given to a translator fluent in both English and Turkish to translate the scales back into the original language. This translator was not shown the original English version. In the next stage, all translations and the original questionnaire were given to two experts in order to consolidate all the versions of the questionnaire and achieve equivalence between the original and target version. In addition to these applications, the prefinal Turkish version and the original English version of the RPQ were administered to 35 prospective English teachers in 2 sessions separated by an interval of 2 weeks, and correlations

between the two administrations were calculated. All correlations were significant for the Reactive scale, the Proactive scale, and the Total scale (.87, .92, and .95, respectively). The analyses of the psychometric properties of the translated version of the scale are reported in the Results section.

Procedure

The study was conducted after obtaining permission from the school administrators. Students were informed about the goal of the research and voluntary participation. All of the students accepted to participate in the study. Questionnaires were given to the students in their classrooms. It took 10 to 15 min to fill out the scales. Data collection was undertaken by the authors.

Data Analysis

Confirmatory factor analysis (CFA) was conducted to examine the factor structure of the Turkish version of the RPQ. 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 based on prior research: a one-factor model (general aggression) and a two-factor model (proactive and reactive aggression). The five fit indices—goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), standardized root mean-square residual (SRMR), and root mean square error of approximation (RMSEA)—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 > 0.95 for the GFI, AGFI, and CFI; values < 0.05 for the RMSEA; and values ≤ 0.08 for the SRMR suggest a good fit. On the other hand, values of χ^2/df less than 3 to 4 are considered to reflect a good fit of the model to the data (Haigh, Moore, Kashdan, & Fresco, 2011). If fit was acceptable, the total sample was divided into subgroups on the basis of gender (girls vs. boys) and multi-group CFA was done 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 investigate gender differences in reactive, proactive, and total aggression, independent samples *t* test was used. Finally, analysis of variance (one-way ANOVAs with Post Hoc Scheffé Multiple Comparison Test) was used to examine grade-level and SES differences in reactive, proactive, and total aggression.

Results

Confirmatory Factor Analysis

To compare the two-factor model (reactive-proactive) with a one-factor model (general aggression), goodness-of-fit indices for the two-factor model (proactive-reactive) and one-factor model (general aggression) were computed for all children ($n = 1,081$). 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 than the one-factor model. The relative chi-square difference test indicated a significantly better fit for the two factor model over the one-factor model, $\Delta\chi^2 = 465.39$, $df = 1$, $p < .01$. The two-factor model provided a satisfactory fit, GFI = 0.95, AGFI = 0.94, CFI = 0.97, SRMR = 0.04, RMSEA = 0.04, and $\chi^2(229, n = 1,081) = 676.61$, $p = .05$, $\chi^2/df = 2.95$. All the paths from the constructs to the items were statistically significant at the 5% level. The standardized path coefficients range from .31 to .63, suggesting that the items are good indicators of the

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
One factor	1142.00	230	0.89	0.87	0.93	0.056	0.073
Two factor	676.61	229	0.95	0.94	0.97	0.043	0.042

Note: GFI = goodness of fit index; AGFI = adjusted goodness of fit index; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation.

four constructs. The correlation between reactive and proactive aggression was significant ($r = .68, p < .001$; see Figure 1).

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. Goodness-of-fit indices were found slightly better for boys (see Table 2). For girls, two-factor model yielded the following fit indices: GFI = 0.91, AGFI = 0.89, CFI = 0.94, SRMR = 0.05, RMSEA = 0.05, and $\chi^2(229, n = 537) = 639.45, p = .05, \chi^2/df = 2.79$. The correlation between reactive and proactive aggression was significant ($r = .74, p < .001$; see Figure 2). For boys, two-factor model yielded the following fit indices: GFI = 0.93, AGFI = 0.92, CFI = 0.96, SRMR = 0.04, RMSEA = 0.04, and $\chi^2(229, n = 544) = 434.05, p = .05, \chi^2/df = 1.89$. Again both factors were significantly correlated with one another ($r = .65, p < .001$; see Figure 3).

Internal Reliability and Descriptive Statistics

Means, SDs, and internal reliabilities for the scales are provided in Table 3. All three scales showed high internal consistency (Yurdabakan, 2008). Item-total correlations ranged from .29 to .55 for the Proactive scale, .34 to .59 for the Reactive scale, and .23 to .56 for the Total scale. Reactive aggression was considerably more prevalent than proactive aggression (paired $t = 57.792, df = 1083, p < .001$). The effect size was large, indicating crucial practical significance (Cohen, Manion, & Morrison, 2007).

Gender Differences

Gender differences in reactive aggression, proactive aggression, and total aggression were assessed by using independent samples t test. Significant differences were observed in reactive aggression, indicating that boys had higher reactive aggression, proactive aggression, and total aggression scores than girls: reactive aggression, $t(1083) = -1.99, p < .05$; proactive aggression, $t(1083) = -5.69, p < .001$; and total aggression scores, $t(1083) = -3.83, p < .001$ (see Table 3). Effect size (Cohen's d) for Reactive Aggression scale was 0.20, indicating small effect. Effect sizes (Cohen's d) for Proactive Aggression and Total Aggression scales were 0.38 and 0.31, respectively, indicating modest effects (Cohen et al., 2007).

Grade-Level Differences

To assess grade-level differences, two separate ANOVAs were performed for boys and girls. For boys, significant grade-level differences were found on reactive aggression, $F(4, 543) = 6.226, p < .001$; proactive aggression, $F(4, 543) = 2.517, p < .05$; and total aggression, $F(4, 543) = 4.950, p < .01$. Post hoc comparisons showed that fourth graders (age range: 9-11 years) had significantly lower scores on reactive aggression than seventh graders (age range: 12-14 years) and

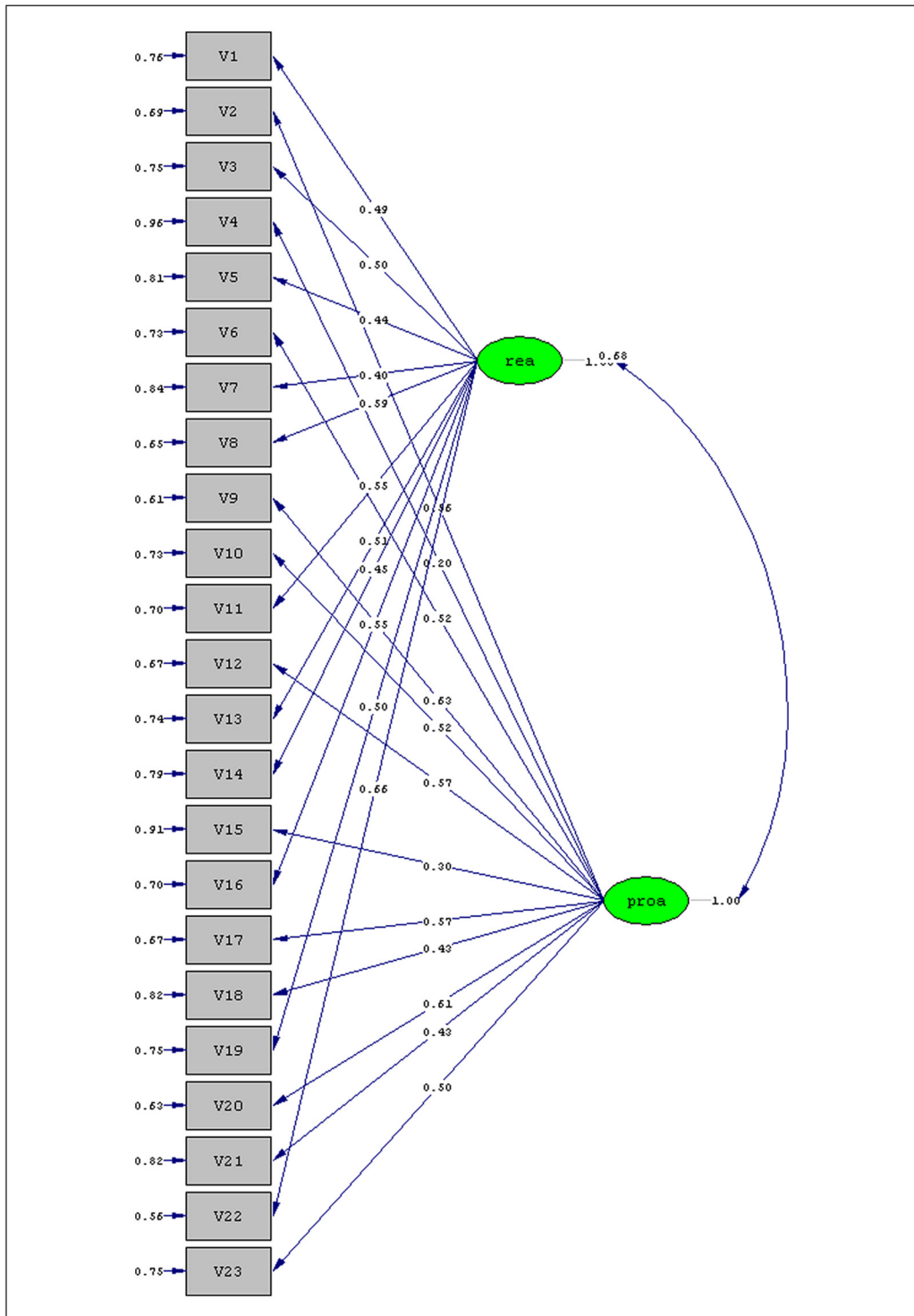


Figure 1. The two-factor reactive-proactive model of the Turkish version of the Reactive-Proactive Aggression Questionnaire (RPQ)

Table 2. Goodness-of-Fit Indices for the Two-Factor (Proactive-Reactive) Model Across Gender

	χ^2	Df	GFI	AGFI	CFI	SRMR	RMSEA
Girls	639.45	229	0.91	0.89	0.94	0.059	0.058
Boys	434.05	229	0.93	0.92	0.96	0.045	0.041

Note: GFI = goodness of fit index; AGFI = adjusted goodness of fit index; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation.

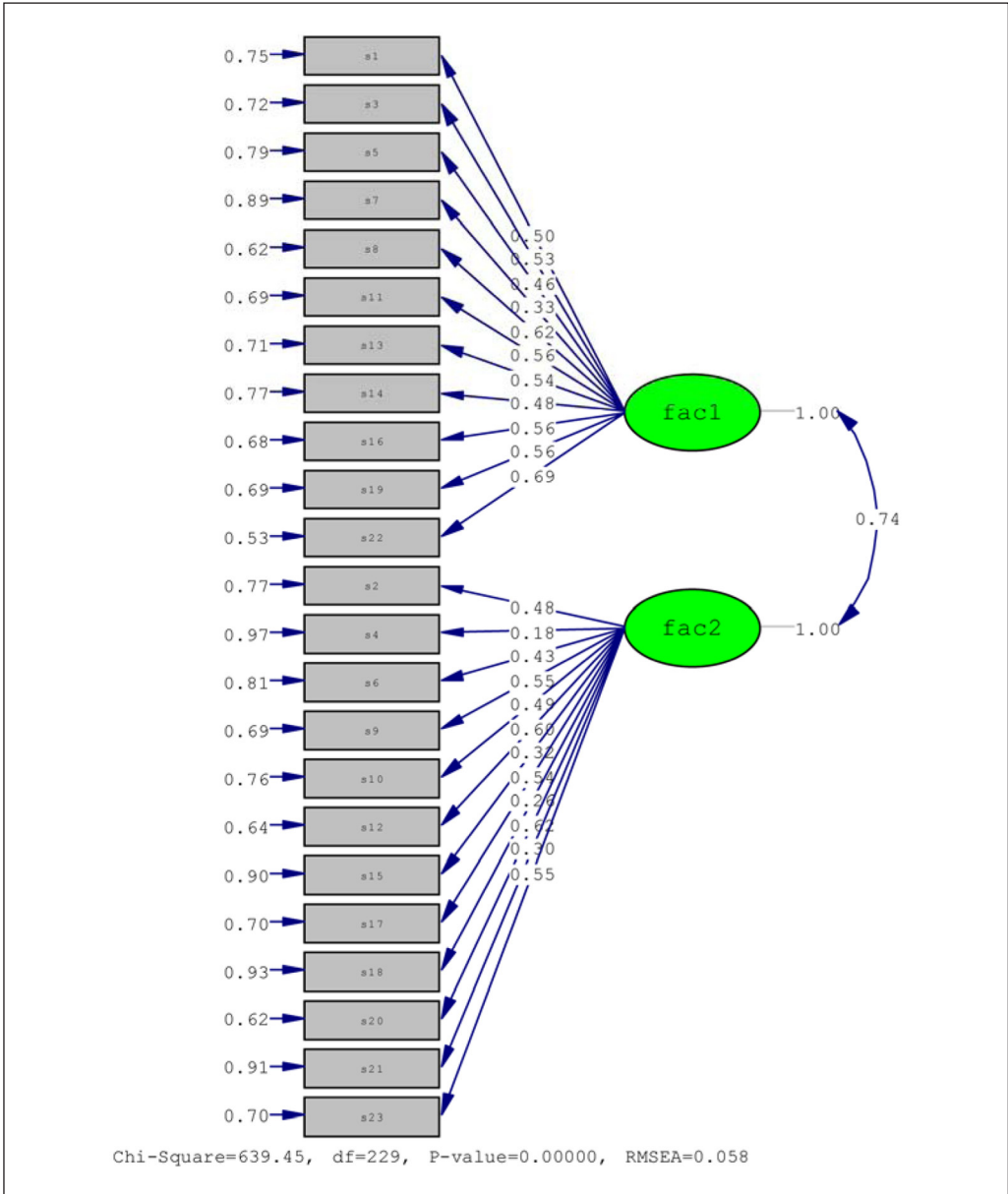


Figure 2. The two-factor reactive-proactive model of the Turkish version of the Reactive-Proactive Aggression Questionnaire (RPQ) in the sample of girls

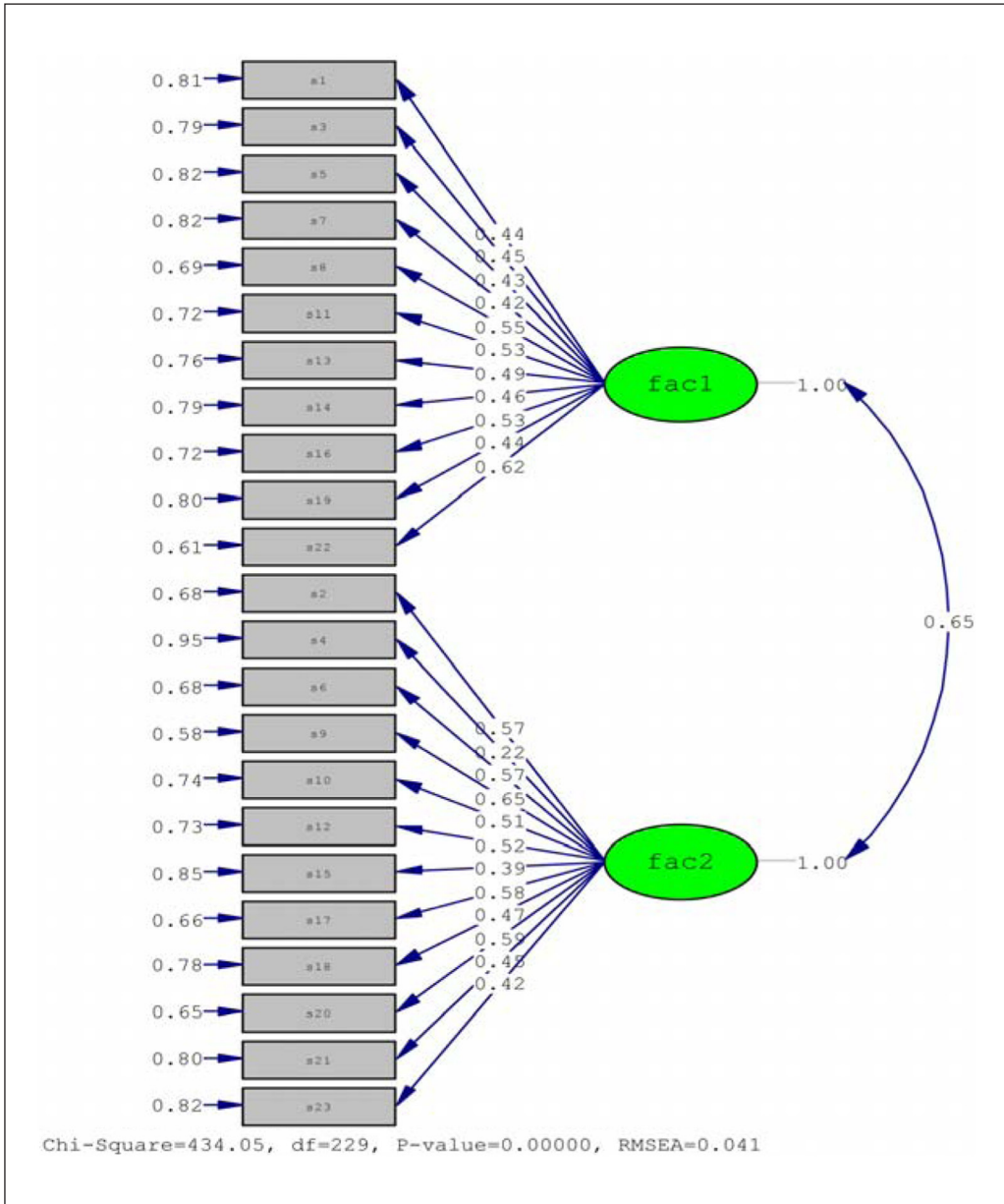


Figure 3. The two-factor reactive-proactive model of the Turkish version of the Reactive-Proactive Aggression Questionnaire (RPQ) in the sample of boys

eighth graders (age range: 13-15). Similarly, fourth graders had significantly lower scores on total aggression than seventh graders. Seventh graders had the highest scores on all the scales. The effect sizes (η^2) for these differences were 0.04, 0.02, and 0.04, respectively, indicating small effects (Cohen et al., 2007). For girls, significant grade-level differences were also found on reactive aggression, $F(4, 536) = 16.371, p < .001$; proactive aggression, $F(4, 536) = 4.147, p < .01$; and total aggression, $F(4, 536) = 13.265, p < .001$. Post hoc comparisons showed that

Table 3. Means, Standard Deviations, and Internal Reliabilities for Reactive-Proactive Aggression Scale Scores

	Boys (<i>n</i> = 544)	Girls (<i>n</i> = 537)	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
Reactive					
<i>M</i>	7.81	7.33	-1.99	.047	0.20
<i>SD</i>	3.97	4.07			
α	.77	.81			
Proactive					
<i>M</i>	2.01	1.16	-5.69	.000	0.38
<i>SD</i>	2.81	2.03			
α	.79	.76			
Total aggression					
<i>M</i>	9.82	8.48	-3.83	.000	0.31
<i>SD</i>	5.97	5.49			
α	.84	.85			

Table 4. Reactive-Proactive Aggression Scale Mean Scores and Standard Deviations in Terms of Grade Level

Aggression	Grade	Boys			Girls		
		<i>M</i>	<i>SD</i>	<i>F</i>	<i>M</i>	<i>SD</i>	<i>F</i>
Reactive	4	6.60	3.81	6.226***	5.74	3.35	16.371***
	5	7.93	4.01		6.41	3.85	
	6	7.99	3.96		7.82	4.05	
	7	8.94	4.05		9.03	3.87	
	8	8.39	3.60		9.08	4.38	
Proactive	4	1.81	2.88	2.517*	0.89	1.64	4.147**
	5	1.67	2.73		0.89	1.75	
	6	2.02	2.80		1.14	1.75	
	7	2.79	2.98		1.87	2.85	
	8	1.93	2.43		1.25	2.12	
Total	4	8.41	6.10	4.950**	6.64	4.38	13.265***
	5	9.60	5.89		7.30	5.05	
	6	10.01	5.64		8.97	5.21	
	7	11.73	6.09		10.91	6.22	
	8	10.32	5.43		10.33	5.85	

p* < .05. *p* < .01. ****p* < .001.

fourth graders had significantly lower scores on reactive aggression and total aggression than sixth (age range: 11-13 years), seventh, and eighth graders. On the other hand, fourth and fifth graders (age range: 10-12 years) had significantly lower scores on proactive aggression than seventh graders (see Table 4). The effect size (η^2) for reactive aggression was 0.11, indicating modest effect, and for proactive and total aggression the effect sizes were 0.03 and 0.09, respectively, indicating small effects.

Table 5. Reactive-Proactive Aggression Scale Mean Scores and Standard Deviations in Terms of Socioeconomic Status

Aggression	Socioeconomic status	Boys			Girls		
		M	SD	F	M	SD	F
Reactive	Low	8.77	3.97	15.045*	8.89	4.36	30.079*
	Middle	7.87	3.76		6.73	3.70	
	High	6.50	3.87		5.84	3.25	
Proactive	Low	2.67	3.15	11.388*	1.75	2.53	15.834*
	Middle	1.90	2.45		0.71	1.48	
	High	1.28	2.54		0.85	1.57	
Total	Low	11.44	6.16	17.504*	10.65	6.18	30.196*
	Middle	9.78	5.42		7.45	4.65	
	High	7.78	5.73		6.69	4.29	

* $p < .001$.

Socioeconomic Status Differences

The findings of two separate one-way ANOVAs revealed significant SES differences in all Aggression scales for both girls and boys. Boys with low and middle SES had significantly higher reactive aggression scores than boys with high SES, $F(2, 543) = 15.045$, $p < .001$. Boys with low SES had significantly higher proactive aggression and total aggression scores than boys with middle and high SES, $F(2, 543) = 11.388$ and $F(2, 543) = 17.504$ ($p < .001$). The effect sizes (η^2) for these differences were 0.05, 0.04, and 0.06 respectively, indicating small effects. Similar results were found for girls. Girls with low SES had significantly higher reactive aggression, proactive aggression, and total aggression scores than girls with middle and high SES, $F(2, 536) = 30.079$, $F(2, 536) = 15.834$, and $F(2, 536) = 30.196$ ($p < .001$; see Table 5). The effect sizes (η^2) were 0.10, 0.06, and 0.10 respectively, indicating small effects.

Discussion

The primary aim of this study was to evaluate the factor structure of the RPQ with Turkish children. Findings from the CFA provide evidence for the two-factor reactive-proactive model. All fit indices were superior for the two-factor model than the one-factor model. This finding was consistent with previous studies that examined the factor structure of the RPQ in different cultures (Fossati et al., 2009; Fung et al., 2009). In addition, factorial invariance across gender was examined. Results confirmed the two-factor model for both girls and boys. Reactive and Proactive Aggression scales and Total Aggression scale also showed high internal consistency. Findings support the psychometric properties of the RPQ in a different cultural context.

In the current study, consistent with past research, the correlation between reactive and proactive aggression was significant, $r = .68$, $p < .001$, indicating that reactive and proactive aggression were related. Miller and Lynam (2006) reported that there are high correlations between reactive and proactive aggression, and these correlations run between .60 and .80. On the other hand, 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). Taking into account the results of previous 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. In this study, reactive aggression total scores were found to be 2.55 times higher than proactive scores. The ratio of reactive aggression to proactive aggression is 4.77 for the total sample in the current study. Consistent with the early findings, the results of the current study imply that reactive aggression is more normative in this Turkish children sample.

The secondary aim of this study was to examine gender, grade-level, and SES differences in reactive and proactive aggression. As expected, findings revealed that boys get higher scores on both Reactive and Proactive Aggression scales. These findings support findings from other studies reporting higher rates of both reactive and proactive aggression for boys compared to girls (Salmivalli & Nieminen, 2002). In addition, the current findings related to proactive and total aggression scores were consistent with a previous study using RPQ (Fung et al., 2009), whereas findings related to reactive aggression were inconsistent with the same study. In the study, researchers found no significant gender differences in reactive aggression scores. Inconsistent findings related to reactive aggression can be explained by cultural issues. Several studies reported that cultural differences exist in different types of aggression (Rahman, 2009; Walker, 2010). Bergeron and Schneider (2005) reported that children living cultures characterized by collectivistic values showed lower levels of aggression than their counterparts living in individualist cultures. Turkey is a Euro-Asian country that links Europe to Asia. Compared with East Asian cultures, which have been described as being collectivist, Turkish culture includes both individualistic and collectivistic features (İmamoğlu & Gültekin, 1993).

Regarding grade-level differences for boys, findings showed a linear increase in all Aggression-scale scores from Grade 4 (age range: 9-11 years) to Grade 7 (age range: 12-14 years). A slight decrease in all of the aggression scores was observed in Grade 8 (age range: 13-15 years). The findings are consistent with a previous finding that showed that a small proportion of boys showed an increase in both types of aggression when they are in the age range of 13 to 15 years and a decrease in the age range of 15 to 17 years (Barker et al., 2006). Our results may be interpreted as support for the notion that with brain maturation, children experience greater control over their negative emotional reactions during adolescence and, hence, a reduction in reactive aggression is observed (Barker et al., 2006). On the other hand, the current results are inconsistent with a recent study using the RPQ, which found that both types of aggression increase with age among schoolchildren in the age range of 11 to 15 years. Similar findings were observed for girls. Proactive aggression and total aggression increased until Grade 7 and then decreased, whereas reactive aggression increased until Grade 8 in girls. The increase in aggression, especially for girls, between Grade 4 and Grade 7 is remarkable. This finding is also inconsistent with the study of Fung et al. (2009). They found no significant age differences in proactive aggression scores for girls. Therefore, it can be speculated that the issue of grade-level differences in reactive and proactive aggression remains unclear. Further studies are needed to clarify grade-level differences in reactive and proactive aggression. When evaluated together, the current findings indicate that reactive and proactive aggression increase with age until Grade 7 (age range: 12-14 years) in both boys and girls and, thus, confirm the notion that developmental trajectories of reactive aggression and proactive aggression are very similar (Barker et al., 2006).

This study has assessed SES differences in reactive and proactive aggression. Although numerous research revealed the links between SES and child development (Bradley & Corwyn, 2002), very little is known on SES differences in reactive and proactive aggression. The current findings showed that, for both boys and girls, children with low SES had significantly higher reactive aggression, proactive aggression, and total aggression scores than children with middle and high SES. The findings related to proactive aggression were consistent with the findings of Raine et al. (2006). They found that boys from low-SES families had significantly higher proactive scores but not reactive scores. This study provides information regarding the links between SES and reactive and proactive aggression, but more research is needed to get a better understanding of these links.

In conclusion, the present study provided psychometric support for the Turkish version of the RPQ. However, the study has some limitations. The first limitation of the study is that the current study did not examine convergent or discriminant validity of the Turkish version of the RPQ. Additional research on further validity of the Turkish version of the RPQ is needed. Second, this study is a cross-sectional study. Future longitudinal studies assessing gender and grade-level differences in reactive and proactive aggression may provide better understanding of developmental trajectories of aggressive behavior in children and adolescents.

Declaration of Conflicting Interests

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Bios

Ash Uz Baş is a lecturer in the Department of Educational Sciences, Dokuz Eylül University, İzmir, Turkey. She received her PhD in Psychological Counseling and Guidance from Dokuz Eylül University. Her professional interests are focused on social and behavioral development in children and adolescents, including social skills, assertiveness and aggressive behaviors. She is also interested in perfectionism in children and adolescents.

İrfan Yurdabakan is assistant professor from the Educational Sciences Department of Buca Faculty of Education at Dokuz Eylül University, İzmir, Turkey. His major field of study is measurement and evaluation. Most of his studies focus on traditional and modern test development theories. However, he has been studying alternative assessment methods in education for the last ten years.