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Research Article

Do Anger Control and Social Problem-Solving Mediate Relationships Between Difficulties in Emotion Regulation and Aggression in Adolescents?

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Abstract

Although recent studies have provided some explanation about the relationship between difficulties in emotion regulation and aggression in adolescence, the role of intervening variables in this connection has been ignored. The purpose of this research was to understand the relationship between adolescents' emotion regulation and aggression and to focus on the mediator function of social problem-solving and anger control. Participants comprised 413 adolescents (252 females and 161 males; mean age 15 years). The findings provided evidence for the partial mediator role of anger control and social problem-solving. The author discusses the theoretical and practical implications of these results in this study.

Keywords

Emotion regulation • Aggression • Anger control • Social problem-solving • Common method variance

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Emotions are an individual's reaction to their environment to either maintain or change the environment (Saarni, Mumme, & Campos, 1998) and provide individuals with very useful knowledge about themselves, their environment, and their relationships (Zeman, Cassano, Perry-Parrish, & Stegall, 2006). Emotion regulation is the ability to modify and adapt emotions to the social context (Campos, Mumme, Kermoian, & Campos, 1994). It is described as the intrinsic and extrinsic processes responsible for observing, assessing, and modulating emotional responses for personal purpose and adaptive social functioning (Thompson, 1994). Studies indicated that effective emotion regulation is connected with fewer internalizing and externalizing issues (Rydell, Thorell, & Bohlin, 2007), while ineffective emotion regulation is associated with mental health problems (Gross & John, 2003).

The skill to communicate one's emotional experiences to another person develops during late childhood and adolescence (Kopp, 1992). Adolescents experience more frequent and stronger emotions than both younger and older people (Larson & Lampman-Petraitis, 1989). It is important for adolescents to regulate emotions in adaptive ways, without the assistance of the adults who guide them in their childhood (Steinberg & Avenevoli, 2000). Adolescents who were less capable of regulating negative feelings during actual-life emotional experiences mentioned more problems compared with those who handled negative experiences more readily (Silk, Steinberg, & Morris, 2003). In particular, poor emotional understanding and difficulties in regulating negative emotions has been linked to aggression in adolescence (Bohnert, Crnic, & Lim, 2003; Herts, McLaughlin, & Hatzenbuehler, 2012).

Indeed, adolescents who are capable of managing their emotional behavior are less likely to act aggressively (Underwood, Coie, & Herbsman, 1992). However, those with great difficulties in emotion regulation had problems with anger control and aggressive behavior (McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011). However, only a few studies have researched the relationship between aggression and difficulties in emotion regulation (Laible, Carlo, Panfile, Eye, & Parker, 2010). Because most of the evidence on this topic comes from results that have indicated a relationship between anger control and aggression (Roberton, Daffern, & Bucks, 2012), a better comprehension of difficulties in emotion regulation during adolescence can identify individual differences in aggression at the time of increased risk (Silk, Steinberg, & Morris, 2003).

Aggressive behavior is predicted by anger in adolescents. Anger leads to adolescent to misinterpret existing cues, and this misinterpretation is more likely results in physical, verbal, and indirect aggression (Fives, Kong, Fuller, & DiGiuseppe, 2010). The cognitive contents specificity model, the most commonly discussed model, suggests that increased anger results in socially constructed apparent behavioral

reactions in the shape of aggression, and these reactions mainly function to remove the anger (Kassinove & Tafrate, 2002). At the same time, research shows that aggressive behavior does not decrease the level of experienced anger. Indeed, conversely, research indicates that discharging aggressive behavior (i.e., kicking a punch-bag) makes the anger worse (Bushman, 2002).

It is claimed that individuals with increased anger may become angry because of a lack of emotion regulation ability and, in turn, perpetrate aggression (Harper, Austin, Cercone, & Arias, 2005). Difficulties in emotion regulation are associated with increased anger (Wilkinson & Robinson, 2008) and decreased anger control (McLaughlin et al., 2011), suggesting that a failure to control one's emotions might cause increased anger and then aggression. An understanding of one's own emotions is important for the appropriate expression and management of emotional experiences (Saarni, Mumme, & Campos, 1998).

Individual differences in capacities for emotion regulation influence coping styles, problem-solving and psychological well-being (Cooper, Shaver, & Collins, 1998). In their study, Chow, Chiu, and Wong (2011) indicated that emotional regulation was connected to psychological problems, and social problem-solving moderated links between emotional regulation and psychological distress.

The social problem-solving theory emphasizes the prevention function of social problem-solving in aggression. When encountering troubles, adolescents who have better social problem-solving abilities use these methods rather than aggressive behaviors (D'Zurilla & Nezu, 1999). Consistent with the theoretical background, research findings have shown that problem-solving inadequacy in adolescents is related to aggressive behaviors (Lochman, Wayland, & White, 1993) and non-aggressive adolescents use more effective methods compared with aggressive peers (e.g., Lochman & Dodge, 1994).

A study indicated that aggressive people are more likely to see other people as unfriendly and to comprehend others' behaviors as hostile, while taking less notice of the favorable signals in their communication (Dodge, Bates, & Pettit, 1990). This useless comprehension or contribution might cause incompetent problem-solving, which then increases the likelihood of aggression (Quiggle, Garber, Panak, & Dodge, 1992). Aggressive adolescents also overvalue their own ability, rate themselves incorrectly high on measures of social skills (Calvete & Cardeñoso, 2005) and react in an impulsive manner, which is determined by a weak description of the problem, an insufficient ability to find an alternative answer, and irrational evaluation of their results (D'Zurilla, Chang, & Sanna, 2003).

Purpose

To clarify the reasons for adolescent aggression, it is necessary to understand adolescents' anger control and problem-solving skills, and the factors that influence these. There has been no study that, to our knowledge, examines how difficulties in emotion regulation could contribute to aggressive tendencies. Therefore, it is presumed that social problem-solving and anger control may have a mediating role in the relationship between difficulties in emotion regulation (DER) and aggression. Specifically, increased DER may lead to decreased anger control and problem-solving abilities, which, then, might cause increased aggression. We tested the hypothesis that anger control and social problem-solving skills would serve as mediators for the relationship between DER and aggression applying structural equation modeling (Figure 1).

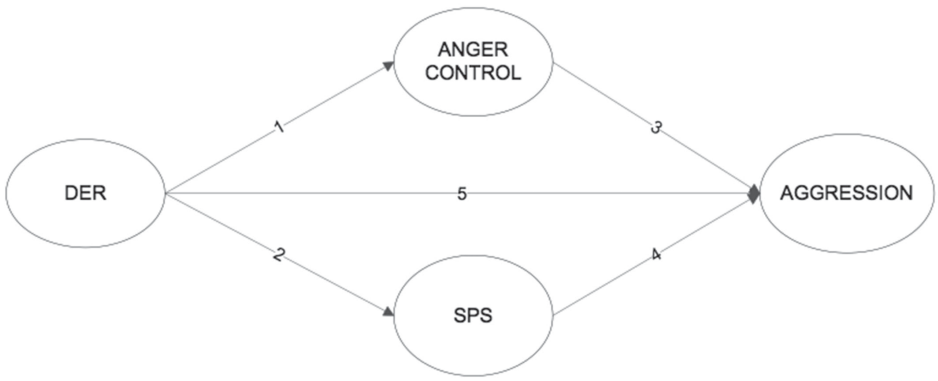

Figure 1. The hypothesized model concerning the mediator role of SPS and anger control on the relationship DER with aggression. DER= Difficulties in emotion regulation, SPS= Social problem solving

Method

Sampling/Study Population

The research method chosen for the study group was the random set sampling method. The data was collected in 2013 based on the convenience sampling method. This study consisted of total of 413 high school students from five different schools in Aydın, Turkey (251 (61%) females and 162 (39%) males). The mean age was 15.28 years (SD = 0.97 years; range 13–18).

Procedure

The battery of self-report measures was administered to the participants at their school, with an overall administration time of approximately 40 minutes. Written informed consents were completed by all participants. Participants were volunteers and no personal revealing information was assembled. Twelve participants were dropped from the study due to incomplete data. Students were required to answer

questionnaires including scales of difficulties in emotional regulation, anger control, social problem-solving (SPS) and aggression.

Data Collection Tools

Difficulties in emotion regulation. The Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004) comprises 36 items in a self- administered questionnaire. It has six subscales: Awareness, clarity, non-acceptance, strategies, impulse and goals. Ruganci and Gençöz (2010) adapted DERS to the Turkish language and examined the factor structure. The results of exploratory factor analysis provided support for a six-factor structure. The DERS and its factors correlation with psychological distress were calculated for the concurrent validity. Results indicated good correlations, except the awareness factor of DERS. For the reliability test, the coefficients of internal consistency and test-retest reliability were found to be 0.94 and 0.83, respectively (Ruganci and Gençöz, 2010). In the present research, Cronbach's alpha for this scale is 0.90.

Social problem-solving. The Social Problem-Solving Inventory-Revised Short-Form (SPSI-RSF; D'Zurilla, Nezu, & Maydeu-Olivares, 2002) was used. The scale has 25 self-administered questions, which were developed to assess cognitive, emotional or behavioral reactions of individuals to real life problem-solving situations. It has five dimensions: Two problem orientations of positive and negative and three problem-solving styles, rational, impulsive/carelessness, and avoidance. The scale was adapted into Turkish by Eskin and Aycan (2009). The internal consistency coefficients ranged from 0.62 to 0.92. The test-retest reliability coefficients ranged from 0.60 to 0.84. For the present study, the coefficient of internal consistency is ranged from 0.68 to 0.90.

Anger control. Anger control was assessed using the 8-item Anger Control subscale of the Anger Expression Scale (Spielberger, et al. 1985). The Trait Anger and Anger Expression Style Scale (STAXI) is a self-report scale comprised of 44 items; 10 items of this 44-item scale define trait anger, 10 items define state anger and 24 items define anger expression style (anger control, anger-out and anger-in). The scale allows researcher to use each subscale independently and we used the anger control subscales to test our hypotheses. Higher scores display better anger control. The tool was adapted into Turkish by Özer (1994). In his study, for anger control, the coefficients of internal consistency were calculated as 0.84. For the present study, the coefficient of internal consistency is 0.83.

Aggression. Aggression was measured using the Buss–Perry Aggression Questionnaire – Short-Form (BPAQ-SF; Bryant and Smith, 2001), which is 12-item scale derived from the 29-item BPAQ (Buss & Perry, 1992) and has four dimensions:

hostility, anger, verbal aggression and physical aggression. For the two different samples, internal consistency coefficients were adequate for hostility (0.75, 0.70), anger (0.76, 0.76), verbal aggression (0.83, 0.80), and physical aggression (0.79, 0.80). For the present study, the coefficient of internal consistency was 0.83. Item-total correlations were calculated and values ranged from 0.48 to 0.60 for the 12 items. The factor structure was also examined and the results of the explanatory (with eigenvalue of 4.46 accounting for 65% of the variance and all items loaded greater than .70 for all factors) and confirmatory factor analyses (Chi-square/df = 99/48; GFI = 0.96; AGFI = 0.95; SRMR = 0.04; RMSEA = 0.05) supported a four-dimensional construct.

Results

Preliminary Analyses

Multilevel regression and SEM have the same assumptions as their single-level counterparts. So, the multilevel regression analysis assumes linearity of relationships, normal residual errors, homoscedasticity, autocorrelation, and independence conditional on the grouping variables in the model (Cohen, Cohen, West, & Aiken, 2013; Hox, 2013). Depend on this knowledge, before empirically testing the model, the data were examined for normality, homoscedasticity, multicollinearity, and autocorrelation problem.

The distribution of the variables was controlled using skewness (an index of how much steeper the distribution of scores) and kurtosis (an index of asymmetry of distribution) values which ranging from .09 to .68 and from .08 to .89, respectively. All numbers were less than 1, which shows that all variables are distributed normally in the sample.

According to Tabachnick and Fidell (2001), heteroscedasticity can lead to serious distortion of findings and gravely weaken the analysis, thus increasing the possibility of a Type 1 error. The Breusch-Pagan Test for homoscedasticity (Hayes & Cai, 2007) was calculated and the result indicated no significance, which means that the assumption was satisfied.

Multicollinearity refers to the linear relationship between two or more indicators and may cause serious problems with the reliability of the estimates (Alin, 2010). Checking for multicollinearity is necessary, because high correlation between variables may cause poor fit indices (Browne, MacCallum, Kim, Anderson, & Glasser, 2002). In the literature, several methods have been suggested to detect the problem of multicollinearity, such as condition index and variance inflation factor (VIF) (Alin, 2010). In the current study, VIF and condition index values were found lower than the critical values of 10 and 30, respectively. Results supported that there was no multicollinearity problems in the data set.

Table 1

Means, Standard Deviations, Intercorrelations of Observed Variables

Observed Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Difficulties in Emotion Regulation																				
1. Clarity	18.11	3.82	-																	
2. Impulsive	16.94	3.67	.52**	-																
3. Goal	17.36	3.98	.51**	.50**	-															
4. Non- accept	16.65	3.93	.48**	.52**	.58**	-														
5. Strategy	17.09	3.88	.49**	.51**	.59**	.57**	-													
6. Awareness	18.11	3.82	.50**	.52**	.51**	.48**	.49**	-												
Social Problem Solving																				
7. PPO	13.19	4.51	-.17*	-.16**	-.19*	-.18**	-.18**	-.04	-											
8. NPO	10.00	4.61	.35**	.31**	.40**	.34**	.40**	.25**	-.17**	-										
9. RPS	16.45	4.47	-.22**	-.16**	-.19*	-.18**	-.17**	-.04	.52**	-.19**	-									
10. ICS	14.86	3.43	.17**	.25**	.21**	.26**	.25**	.18**	-.18**	.33**	-.18**	-								
11. AS	14.06	4.35	.19**	.22**	.33**	.33**	.28**	.17**	-.14**	.43**	-.18**	.46**	-							
Aggression																				
12. Physical	6.95	2.98	.19**	.24**	.18**	.21**	.19**	.13**	-.14*	-.21**	-.17**	-.21**	.27**	-						
13. Verbal	7.56	2.88	.24**	.23**	.20**	.19**	.26**	.19**	-.19*	-.29**	-.16**	-.20**	-.28**	.46**	-					
14. Anger	8.64	2.74	.19**	.22**	.20**	.18**	.24**	.11*	-.15**	-.37**	-.15**	-.21**	-.32**	.46**	.47**	-				
15. Hostility	8.75	2.81	.19**	.20**	.17**	.17**	.20**	.10*	-.18*	-.32**	-.17**	-.18**	-.19**	.41**	.51**	.55**	-			
Anger Control																				
16. Parcel 1	7.15	2.04	.16**	.19*	.11*	.15**	.13*	.04	-.18**	.11*	-.24**	-.11*	-.10*	.22**	.23**	.18**	.21**	-		
17. Parcel 2	7.40	1.95	.18**	.17*	.16*	.15*	.16*	.02	-.15*	.11*	-.17**	-.13*	-.14**	.24**	.21**	.20**	.22**	.52**	-	
18. Parcel 3	5.04	1.56	.21**	.18*	.11*	.13*	.15*	.08	-.16**	.12*	-.17**	-.10*	-.10*	.31**	.24**	.22**	.25**	.48**	.50**	-

Notes. N = 413, * $p < .05$, ** $p < .01$. PPO = The positive problem orientation, NPO = The negative problem orientation, RPS = Rational problem solving, AS = The avoidant problem solving style.

Parcel 1, 2, and 3 = three parcels from Anger Control.

Another important assumption is no autocorrelation in the data. Autocorrelation occurs when the residuals are not independent from each other and not linearly auto-correlated (Cohen et al., 2013). If this assumption does not occur, there is a correlation between the error terms of independent variables, and it can weaken the estimates (Godfrey, 1988). The Durbin-Watson and Breusch-Godfrey LM tests are usually the preferred tests to examine this assumption. In the current study, the Durbin-Watson test was used. This test checks the null hypothesis that the residuals are not linearly auto-correlated (Cohen et al., 2013). In the Durbin-Watson test, as a rough estimate, a value of between 1.5 and 2.5 shows that there is no autocorrelation. According to the findings of analysis, the value is 2.01, therefore no correlation among the error terms of variables was accepted.

For the 18 measured variables, correlations, means, and standard deviations was calculated, and the results are shown in Table 1. Aggression subscales had positive correlations with each subscales of DER, except awareness subscale. Awareness subscale also had low or insignificant correlations with subscales of SPS, anger control, and aggression subscales. Anger control parcels had significant but low correlation DER and SPS.

Testing Measurement Model

SEM is a multivariate methods of analysis that includes the test of measurement and structural models. In the first step, a confirmatory factor analysis is conducted to analyze whether the measurement model gives an adequate fit to the data. In the present research, the measurement model was estimated utilizing the maximum likelihood method in the LISREL 8.8 program (Jöreskog & Sörbom, 1993). Because, compared to the Weighted Least Squares or Unweighted Least Squares methods, The Maximum Likelihood estimation method created fit indices that are less likely to be affected by sample size and distribution (Hu & Bentler 1998).

This model specified the posited relations of the observed variables with their basic patterns permitted to intercorrelate freely. In the structural equation model testing, four latent variables were used: DER, anger control, SPS, and aggression. DER, SPS, and aggression latent construct were defined by sum scores of their subscales. One latent variable, anger control, was one-dimensional in the model, so three parcels were created for anger control. The item parceling method normalizes the distribution of observed variables and enhances the reliability of these indicators. The most commonly used method depends on creating relatively equivalent indicators (Little, Cunningham, Shahar, & Widaman, 2002). Clearly, parcels were built for every latent construct using the superiority of the item-total correlation and summarizing groups of items to get equal indicators for those patterns.

After the parceling procedure, the measurement model was tested. Result provided an acceptable fit to the data, $x^2(129, N = 413) = 551.\ 99$; CFI = 0.95; GFI = 0.87;

SRMR = .079; RMSEA = 0.089 (90% CI for RMSEA = 0.082; 0.097). The loadings on the latent variables were significant (standardized values differed from 0.33 to 0.79 $p < .001$) and indicating that the latent variables were acceptably explained by their relevant indicators. The latent variables correlations are represented in Table 2 and most of the correlations among the variable were moderate.

Table 2
Correlation of the Research's Latent Variable with (Above Diagonal) and without (Below Diagonal) Control Variable

Variable	DER	SPS	Anger Control	Aggression
DER	-	0.47**	0.38**	0.47**
SPS	0.60**	-	0.54**	0.52**
Anger Control	0.54**	0.65**	-	0.59**
Aggression	0.60**	0.66**	0.69**	-

Notes: N = 413, *$p < .05$, **$p < .01$.
DER= Difficulties in emotion regulation, SPS= Social problem solving

Testing with Common Method Variance (CMV)

Many scientists accept that CMV is a probable difficulty in psychological research (Podsakoff, MacKenzie, Podsakoff, & Lee, 2003), and it is shown to result in biased parameter estimates (Johnson, Rosen, & Djurdjevic, 2011). As all scales were applied in one meeting with the same participants, CMV was expected to influence covariance among the variables. People want to look consistent and rational in their responses and to seek a consistency between their cognitions and attitudes (Podsakoff et al. 2003). The researcher proposed that a method latent variable make it possible to test the effect of this confounding variable on the relationships among all research variables. These items are permitted to load on their theoretical designs, like a latent CMV factor. To understand whether there was a serious problem in the data with regard to method bias, the significance of the structural parameters is compared both with and without the latent common methods variance factor in the model.

To see the effect of this factor in the measured variables, the method suggested by Podsakoff et al., (2003) was applied. CMV was defined as a marker variable, from which a path was assigned to all observed variables used in the model. The variance of the marker variable was set to 1.0, while to deal with identification problems, its covariance with the other latent variables was set to 0.

The model in which method latent factor had loadings to all measured variables indicated these statistics: $\chi 2$ (117, $N = 413$) = 353.80, CFI = 0.97; GFI = 0.96; SRMR = 0.047; RMSEA = 0.070 (90% CI for RMSEA = 0.062; 0.079. Based on the test of chi-square difference (198.19, 11 $p < .05$), the model was better than initial measurement model tested before. It means that method factor accounted additional variance in the model. However, results showed that one indicator of the DERS latent variable (self-

awareness sub-factor of the DERS) had very small factor loading (0.09) even after modification listed by the LISREL 8.8 program (Jöreskog & Sörbom, 1993). It was clear that the error in this variable resulted in a decreased reliability of latent variable, and, thus poorer goodness of fit statistics. After deletion of this variable from the measurement model, the output file provided a much better result: $\chi 2$ (102, $N = 413$) = 232.06, CFI = 0.98; GFI = 0.97; SRMR = 0.039; RMSEA = 0.056 (90% CI for RMSEA = 0.049; 0.076). Indeed, the test of chi-square difference (121.74, 15: $p <$ .001) showed that the revised model fitted data better. The loadings were significant (standardized values differed from 0.29 to 0.64, $p < .001$, see Table 3).

Table 3
Factor Loadings, Standard Errors, and t-Values for the Measurement Model

Measure and variable	Unstandardized factor loading	SE	*t*	Standardized factor loading
Aggression				
Physical	1.99	0.36	11.31	0.45
Verbal	1.63	0.42	9.02	0.46
Anger	1.34	0.36	10.23	0.54
Hostility	1.22	0.33	11.16	0.60
Difficulties in Emotion Regulation				
Clarity	1.36	0.76	9.15	0.45
Impulsive	1.84	0.65	8.94	0.38
Goal	1.72	0.78	9.32	0.42
Non-acceptance	1.82	0.36	12.41	0.56
Strategy	1.28	0.24	12.81	0.64
Social Problem Solving				
PPO	1.56	0.26	9.76	0.38
NPO	1.86	0.32	7.51	0.29
RPS	1.61	0.30	10.92	0.40
ICS	1.94	0.29	12.06	0.42
AS	1.62	0.30	11.95	0.47
Anger Control				
Parcel 1	1.54	0.42	10.98	0.56
Parcel 2	1.62	0.36	10.36	0.48
Parcel 3	1.48	0.61	4.82	0.37

Notes. N = 413, RPS = Rational problem solving, PPO = The positive problem orientation, ICS = Impulsive/carelessness style, NPO = The negative problem orientation, AS = The avoidant problem solving style. Parcel 1, 2, and 3 = three parcels from Anger Control.

Testing Structural Models Using Common Method Variance

The mediational hypotheses were examined by analyzing the structural models. Figure 1 indicated the suggested relationships among the latent variables. The numbers on Figure 1 refer to the relationship of DER to aggression with the mediatory role of anger control and SPS (1, 2, 3, and 4) or without such mediation (5).

For the mediation test, differences between the partially mediated model (path 5 is represented) and the full mediated model (path 5 is deleted) were analyzed. The partial mediated model concluded in a good fit to the data as showed by these statistics: $c^2(98, N = 413) = 247.26$; CFI = 0.98; GFI = 0.93; SRMR = 0.051; RMSEA = 0.061 (90% CI for RMSEA = 0.051; 0.070). Testing the fully mediational role of anger control and SPS with regards to DER and aggression relationship revealed these goodness of fit statistics: $c^2(97, N = 413) = 241.12$; CFI = 0.98; GFI = 0.94; SRMR = 0.050; RMSEA = 0.060 (90% CI for RMSEA = 0.051; 0.070). The test of chi-square difference (6.14, 1: $p < .001$) revealed a difference between models, meaning that the path from emotion regulation to aggression is necessary to achieve a better fit to the data and should not be omitted. Compared to the saturated model, lower values of AIC and ECVI indicate better a better model fit (Jöreskog, & Sörbom, 1993). The AIC and ECVI statistics were 353.26 and 0.74, respectively, and supported the model in which the path is retained. The findings indicated the relationship between DER and aggression, which is partially mediated by anger control and SPS.

According to the findings, 28% of the variance in anger control and 22% of the variance in SPS was explained by DER. Anger control and SPS, in turn, accounted for 36% of the variance in aggression. Clearly, LISREL estimates for the indirect effects of emotion regulation (0.36, $p < .01$) on aggression through SPS and anger control verified the partially mediator role in the model.

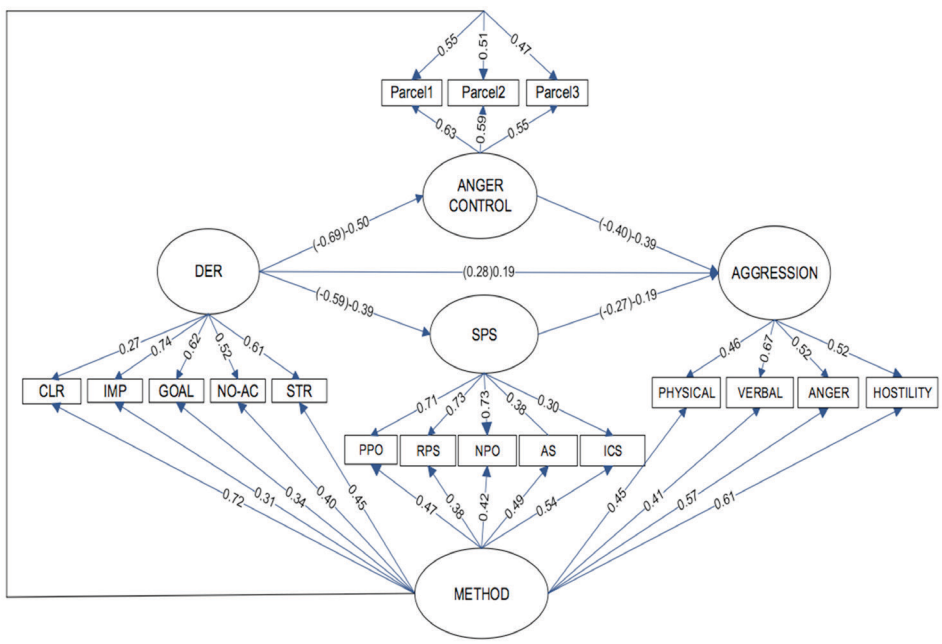

Figure 2. The standardized parameter estimates for the final model with method variance.

Notes. N = 413, the estimates are all significant at the 0.01; the values within parenthesis refers to those produced in the structural model including no method effect.

Although the structural model indicated good fit to the data, the mediation hypotheses were analyzed by computing the intervals of bootstrap confidence. The procedure of bootstrapping was found to be the most reliable way of examining the effects of intervening variables (MacKinnon, Lockwood, Brown, Wang, & Hoffman, 2002) and was utilized to test whether indirect pathways were significantly different from zero (Shrout & Bolger, 2002). Bootstrapping depends on computing the significance of the indirect paths from the independent variable (DER) to mediators (anger control and SPS) and from the mediators to dependent variable (aggression). Bootstrapping creates huge sample numbers from the dataset and applies them to gain standard errors estimates. In present study, 10,000 bootstrap samples were drawn. The significance of indirect effects was evaluated by considering the interval confidence of standard errors. Because the lower and upper limits of the 95% confidence interval (CI) do not contain 0, indirect effect is significant. Bootstrap CIs are shown in Table 4.

Table 4
Bootstrap CIs and Parameters for the Final Model

Independent Variable	Mediators	Dependent Variable	95% CI (Lower –Upper)
DER	Anger Control	Aggression	0.26–0.48
DER	SPS	Aggression	0.22–0.42

Notes. N = 413. SPS = Social problem-solving; DER = Difficulties in emotion regulation.

In this study, CIs for the indirect effects confirmed the mediation hypotheses. The findings reinforced the final model, which presumed that DER contributes to the aggression through anger control and SPS. The findings indicated that DER has both a direct and indirect relationship with aggression and anger control and SPS mediated to the relationship between DER and aggression.

Two alternative structural equation models were used to rule out the possibility that the fit of the final model was simply the result of a statistical coincidence and to define the advantage of the final model versus these alternative models. The first alternative model proposed that SPS contribute to aggression by the mediatory role of DER and anger control. Structural equation model results indicated that this model impaired the model fit as revealed by the fit statistics: χ^2 (115, N = 413) = 339.78; CFI = 0.97; GFI = 0.91; SRMR = 0.071; RMSEA = 0.061 (90 percent CI for RMSEA = 0.060; 0.077). The second alternative model tested the hypothesis that the relations of DER and anger control with aggression were mediated by SPS. Test of the model again concluded in a worse fit: χ^2 (116, N = 413) = 506.94; GFI = 0.87; CFI = 0.94; SRMR = 0.17; RMSEA = 0.090 (90 percent CI for RMSEA = 0.082; 0.099). It is explicit that the final model produced better fit than the both alternatives models.

Discussion

The present study examined, within a cross sectional framework, the mediator roles of the anger control and SPS skills for the relationship between DER and aggression. The results of SEM and bootstrapping methods provided preliminary support. The common method bias in the measurement and structural model was controlled by using method latent factor. Alternative models, in which the causal direction is somewhat different and reversed, was tested, and findings provided good statistical support for the final model.

According to the results, the relationship between DER and aggression was partially mediated by SPS and anger control. With showing the anger control and SPS plays partially mediatory role in this association, results enable the understanding of processes concerning the link between DER and aggression in adolescents.

The present research results are consistent with findings that indicated difficulties in emotion regulation had problems with anger control, SPS and aggressive behavior (Cooper et al., 1998; Laible et al., 2010; McLaughlin et al., 2011). Emotion regulation is a very important link between emotional and behavioral problems among adolescents. Theoretical conceptualizations of emotion regulation state that the emotion regulation skills are related to socially competent behavior, which influences emotional experience and expression (Gross, 2002). Indeed, individuals who can regulate their emotions displayed higher prosocial behavior (Eisenberg & Fabes, 2006) and tended to experience empathy (Eisenberg, Wentzel, and Harris 1998) and sympathy (i.e., other-focused concern) when encountered with another person's problem (Guthrie et al., 1997). Aggressive behavior is often defined as a self-defeating attempt to solve social problems, which implies that non-adoptive problem-solving might enhance the likelihood of aggression (D'Zurilla et al., 2003). The abilities of SPS are necessary for efficiently dealing with difficulties and might help people to discover effective coping skills instead of behaving aggressively (Seçer & Ogelman, 2011). Gaining the ability of SPS has proven to be helpful in decreasing aggressive behavior through preschool ages and adolescence (Nangle, Erdley, Carpenter, & Newman, 2002).

Empirical result indicated the importance of emotional regulation for anger control. Emotion regulation is an ability to sufficiently inhibit impulsive behaviors which help individual to engage in goal-directed behavior (Gratz & Tull, 2010). Emotion regulation is also functional for attending to the emotion experience and allowing it to unfold (Roberton, Daffern & Bucks, 2015). Emotion management skills help individuals gain more knowledge about their emotions. Increasing conscious thoughts about emotions helps internal self-control, inner self-regulation and self-analysis (Snyder, 2011). Kashdan, Barret, and McKnight (2015) demonstrated that healthy

emotion regulation is positively related to emotion differentiation (understanding and clarify experiences). Angry people with high emotional differentiation are reported to have less aggressive tendencies compared to angry people with low emotional differentiation (Pond et al., 2012). People who effectively regulate their emotions can also regulate their anger experiences (Roberton, Daffern, & Bucks, 2012). If people describe their emotion experience as anger, a linked network of unfriendly thoughts and aggressive motor impulses are triggered (Berkowitz, 1998). The anger experience on its own cannot undoubtedly deteriorate analytic thought; however, the high level of physiological arousal that usually goes alongside anger has been denoted to decrease knowledge processing power, impairing the reappraisal processes that determines part of the decision to aggress (Rydell et al., 2008). For the purpose of coping with aggressive behavior, it is important for people to learn adaptive ways of emotion regulation (Roberton et al., 2012).

Counseling Implications

An increased focus on prevention in schools has accompanied the rising interest in adolescent aggression (Hoagwood, 2000), and currently, administrators, teachers, and parents are engaged in identifying risk factors for preventable aggressive behavior (Tobin & Sprague, 2000). This research has potential implications for preparing intervention programs to diminish aggression. The current findings emphasize the importance of emotion regulation problems—via SPS and anger control—on aggression. When considered the role of emotional regulation in aggression, it can be suggested that counselors should focus on emotion regulations as well as anger control. The preventative intervention and treatment should incorporate techniques to improve emotional regulation, SPS, and anger control skills.

The current study proposed that a targeted intervention approach for rising aggression in adolescence might be suggested by training emotion regulatory skills through social context and by focusing such practices on individuals with tendencies to negatively perceive social information.

Limitations and Suggestions for Future Research

Results from the study ought to be clarified considering its limitations. The basic limitation of the present research is the causal pathways indicated by the proposed model retrieved from the theoretical as well as empirical literature. Although it is tested alternative models against the proposed model, a more rigorous test of causality should be tested in a longitudinal or experimental research.

Using DERS without its awareness subscale is another limitation of the present study. In their adaptation study, only the awareness subscale had comparatively

poorer correlations with the variable of psychological distress (Ruganci & Gençöz, 2010). In this study, consistent with the adaptation study, awareness subscale had a low or not significant correlation with other variables. Similarly, after using method variables, awareness the subscale did not work well in the measurement model.

Another important limitation is that the data comes from self-report measures. Future research should use multi-trait multi-method analysis strategies with multi-informant data to assure validity of and to control bias in the measurement. The present findings illuminated the link between DER and aggression; future research should more fully explore the connection between difficulties in emotion regulation problems and aggression. It is considered that there could be some other possible causes that are worth examining. The results implies the existence of other mediators. Therefore, it is importance that future research should also focus on other potential mediator variables.

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