Moderators of Association between Adolescent's reports of Parent-child Relationship and Adolescent Aggression

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The primary focus of the present study was to determine the impact of parent-child relationships (PCR) on adolescent aggression as moderated by adolescent and parent gender, and socioeconomic status of parental family. Five hundred and twelve participants (males = 257, females = 255) enrolled at secondary and higher secondary levels ranging in age between 13-19 years (M= 15.5, SD= 1.3) were selected as the test sample. Self reported measures of socioeconomic status scale, parent-child relationship scale (Rao, 2000), and aggression scale (Mathur & Bhatnagar, 2004) were administered respectively, to measure the quality of PCR, level of aggression, and socioeconomic status in participants. Multiple regression analysis showed that the influence of PCR on aggression was moderated by adolescent and parent gender but socioeconomic status did not moderate the link. More specifically, the PCR was more strongly related to adolescent aggression for boys than for girls.

Keywords: parent-child relationship; adolescent aggression; socioeconomic status; gender

Youth aggression is a major public health issue with potentially undesirable and serious consequences for both the victim and the perpetuator. Researchers have identified good quality of parent-child relationships as one of the positive family factors that supports healthy adjustment of adolescents (e.g., Brody et al., 2005). Transition from childhood to adolescence becomes easy and smooth in the context of warm, loving, and secure parent-child relationships. It is evident from previous studies that children and adolescents who enjoy supportive, loving, and warm relations with their parents are less likely to express violence, aggression, or bullying others (e.g., Fatima & Sheikh, 2009; Ooi, Ang, Fung, Wong, & Cai, 2006). Thus, general effects of parent-child relationships on adolescent's adjustment problems specifically on aggression are clear. However, it is also noted that many youth facing similar problems in parent-child interaction may differ in severity and level of adjustment problems. This disparity in resulting effects highlights the need of assessing moderating roles of individual or social factors on the association between parent-child relationship and adolescent aggression, so that complicated relations between parent-child relationships-aggression link may be better understood. A moderator is a variable that is reported to alter the direction or strength of the relation between a predictor and a criterion variable (Baron & Kenny, 1986). Therefore, specific focus of the present study is to observe the effect of parent child relationship on aggression across levels of parent and adolescent gender, and across levels of socioeconomic status.

Gender of the parent as a moderator

Literature from cross cultural studies indicates that childcare is regarded as the main responsibility of mothers as a stereotypical gender role assigned and expected by the society. Fathers are not considered responsible for childrearing and as well as for resulting child's problems arising from inappropriate child care. Common observation indicates differences in the amount of time spent as well as in the type of contact with children and adolescents across mothers and fathers. Quite commonly, mothers spend more time with children

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than does fathers. Mothers and fathers also differ on particular parenting practices such as responsiveness, support, and particularly punishment and discipline. Shek (1998; 2000) reported that fathers were found to be comparatively less concerned, less responsive, and less demanding, but harsher than mothers.

Implementation of discipline is usually considered the duty of fathers. Similar beliefs regarding gender roles are expressed in cultural values and promoted in the media. Gender role differences across mothers and fathers are also observed in implementation of physical punishment. Implementation of physical punishment from mothers is accepted only in younger age, while in adolescent stage it is quite more tolerated when implemented by father rather than by mother. Also, mothers and fathers are observed to be different as far as application of physical punishment on daughters and sons is considered. The same-gender modeling hypothesis (Deater-Deckard & Dodge, 1997) posits that punishment is more likely to be effective when it is implemented by the same gender parent. Therefore, there is a possibility that relationship of mothers and fathers with their children/adolescents may have differential impact on adolescent adjustment.

Literature (e.g., Jackson & Mannix, 2004) as well as common observation indicates that mothers are blamed more than fathers for children's faults and adjustment problems. On the other hand, previous research reports that father's love is a significant predictor of behavioral and emotional development and adjustment problems of the child (Rohner & Veneziano, 2001).

Chang, Schwartz, Dodge, and McBride-Chang (2003) studied the moderation effect of parent and child gender on the relationship between harsh parenting and adolescent aggression. The researchers found that harsh parenting practices by fathers were more strongly related to son aggression than to daughter aggression. In another study, interaction of parent gender with parent-child relationship was found to be significant in predicting externalizing problems (Pettit, Bates & Dodge, 1993). The researchers found mother-child interactions to be stronger predictor of externalizing problems than father-child interactions. In light of the literature review, it is hypothesized that parent gender would moderate the effect of parent-child relationship on the adolescent aggression.

Moderating role of adolescent gender

During transition to adolescence, subtle gender differences are emerged in attachment patterns and autonomy needs alongside changes in the nature of parent-child relationships particularly in the cultural context of Pakistan. Parents grant more autonomy to sons but strictly supervise the activities of daughters during critical stage of adolescence. UNICEF-child and adolescent protection program (Government of Pakistan) reports an interesting finding in this regard. The program described that more guardians (67%) reported freedom of movement to their sons than to their daughters (31%). They also reported that girls are mature early than boys; therefore, restrictions on their freedom are applied at an earlier stage than for boys.

Gender differences in aggression are also described in relation to family factors. In general, girls spend more time within the family than boys, and in turn appear more likely to share their personal experiences with parents and particularly with mothers than boys (Geldard & Geldard, 2003). It is also discussed that gender differences in aggression are learned in the context of culture, tradition, parenting practices, and family environment rather than inherited based on biological differences. Many cultures expect and support the stereotypical image of male to be more aggressive than females, thus perpetuating the learning environment for gender differences in aggression (Mazur, 1983). Another cross cultural observation is that aggression from boys is perceived to be acceptable; while, aggression from girls is viewed more negatively, by adults and also by peers. Empirical evidence supports the same that appraisals of aggressive females were reported to be more negative than of aggressive men, and also that evaluations of physically aggressive women were far more negative than of verbally aggressive women (Barber, Foley, & Jones, 1999). Gender differences are also observed in the preferred mode of aggression, feelings of guilt in response to violence, cognitive appraisals of annoying situations, and reactions to observing aggression by others (Geen, 1990).

Griffin, Bptvin, Scheier, Diaz, and Miller (2000) studied interaction of gender with parenting practices to predict aggression. The researchers found significant moderating effects of family structure and gender on the

relation between parenting practices and adolescent outcomes. Similarly, McFadyen-Ketchum, Bates, Dodge, and Pettit (1996) also found that coercive and non-affectionate mother-child interaction predicted more aggressive tendencies in boys as compared to girls. On the other hand father social support was reported to be the negative predictor of adolescent aggression, in general and lower levels of aggression in females than in males, in particular (Murray, Rubin, Rose-Krasnor, Booth-LaForce, & Laursen, n.d.). Interaction effect of child gender with mother social support was also significant predicting parent reported female aggression than male aggression. Evidence from review studies also supports moderating roles of parent and child gender (e.g., Rothbaum & Weisz, 1994). They reported parenting to be more strongly correlated with externalizing behaviors in boys than in girls.

Moderating role of socioeconomic status

Environment plays a vital role in child development. Earlier research has suggested many factors such as gender, grade, race, ethnicity, and socioeconomic status that are likely to moderate the parenting-adolescent behavior problems link (Kincaid, Jones, Sterrett & Mckee, 2012; Wang, Simons-Morton, Farhart & Luk, 2009). More frequent use of physical discipline in low SES parents as compared to high SES parents is evident from some studies such as Flynn (1994). It also seems plausible that parents from low income families remain stressful regarding meeting family needs, and thus, unable to provide consistent and supportive care giving. Problems in supportive parent-child relationship may, in turn, lead towards adjustment problems in adolescents. But previous findings are inconsistent pertaining to moderating role of socioeconomic status in linking parenting with adolescent behavior problems as in two longitudinal projects, Lansford et al. (2011) found no moderating effects of gender, race or socioeconomic status in association between application of physical discipline by parent and child's externalizing problems. Evidence from Deater-Deckard, Atzaba-Poria, and Pike (2004) study also found no moderation effect of ethnicity, SES, and child gender on the relation between parent-child interactions and externalizing problems. This discussion provides inconsistent views of interaction effect of SES with parent-child relationship in predicting adolescent aggression. Therefore to be clear about the clear effects of parent-child relationships on adolescent aggression, it is necessary to assess this impact across levels of potential moderators such as parent gender, adolescent gender, and SES for generalizability of the findings in society.

Therefore, the main objective guiding the present study was whether the effect of parent-child relationship on adolescent aggression would be moderated by parent and adolescent gender and socioeconomic status. More specifically, the study proposes the following hypotheses:

Hypothesis 1. It was expected that adolescent aggression would be more strongly predicted from mother-child relationships than from father-child relationships.

Hypothesis 2. It was expected that male adolescent aggression would be more strongly predicted from parent-child relationships than female adolescent aggression.

Hypothesis 3. It was expected that parent-child relationship would be more strongly correlated with adolescent aggression at lower level of socioeconomic status as compared to at higher socioeconomic level.

Method

Sampling technique

Cluster random sampling strategy was applied to select sample from public sector schools situated in Lahore. At first stage of sampling, researchers randomly selected 20 schools, 10 schools for girls and 10 schools for boys, from two separate school lists. However, the data was not collected from all the 20 schools, because, permission was not granted by three school principals; one boys' school and two girls' schools. Therefore, participants from 17 schools were included in the final sample.

As the research design was a cluster sampling design, so, after the selection of primary units (schools), the secondary units (sections) were again selected randomly (1 section out of 2-3 sections in a given school). In this way, the tertiary units (students) were cluster sampled in each selected section. Then, parents of the selected students (who were willing to participate) were sent a consent letter for their approval of child's involvement in the study. Almost, 96% parents provided their consent.

Participants

The final sample was selected from seventeen secondary and higher secondary public sector schools situated in Lahore (the second largest city in Pakistan and the fifth largest city in South Asia). Lahore is a cosmopolitan city of Pakistan with a population of more than ten million people belonging to diverse ethnicities. Final sample included 512 participants (secondary students = 397 & higher secondary students = 115). They were selected from both genders including 255 boys and 257 girls. The mean age of students was 15.5 with a standard deviation of 1.3 within range of13-19 years.

Instruments

Socioeconomic status scale (Fatima & Sheikh, 2009). The scale was developed as part of PhD research. It is a 10 items scale based on five factors covering important indicators of socioeconomic status including parent's education, parent's occupation, family income, housing, and crowding. Weighting scores on item options were given according to the Census Report of Pakistan, 1998. For scoring, firstly, scores on crowding dimension were reversed. Afterwards, scores on five dimensions were added to compute a single composite score of socioeconomic status (SES). It was observed that the composite SES score for the current Pakistani sample was ranged from 8-57, with low scores representing low SES and high score representing high SES. Re-test reliability, when administered over a period of three weeks on a sample of 200 adolescents (both boys and girls), ranging in age between 12-19 years, was found to be very good, that is, .87 for full scale. Re-test reliability was also good for five factors, that is, .95 for education, .93 for occupation, .78 for income, .96 for housing, and .96 for crowding. Cronbach's alpha α = .78 also demonstrates that SESS is a reliable measure of socioeconomic status. Correlations of all five factors with overall SES score were also good ranging from .87 to .73, except for occupation (.38).

Aggression scale (Mathur & Bhatnagar, 2004). This is a 55 item scale including 25 negative and 30 positive items. Responses to items are provided on 5 point scale, ranging from strongly agree (5) to strongly disagree (1). Negative statements are reverse scored for calculating a single composite score of aggression. The composite score computed in such a way represents level of aggression with higher score showing higher level of aggression and lower score representing lower level of aggression. The scale is reported to have good concurrent validity (.78 in females & .80 in males) against aggression questionnaire (Buss & Perry, 1992), and re-test reliability (.81 in females & .88 in males). Prior to use in the present study, the scale items were translated into Urdu language by using a standard procedure of forward translation, backward translation, and then, cross validation on a sample of 100 bilingual students. Cross validation of Urdu version found fairly comparable means and standard deviations with English version. Correlation between two versions was .88 for full scale, .87 for negative items, and .89 for positive items. Coefficients of internal consistency (α) were .83 for positive items and .92 for negative items in the current study. Re-test reliability coefficient of Urdu version re-administered to the same sample of 100 students over a period of 10 days was found to be .89.

Parent-child Relationship Scale (PCRS). The PCRS developed by Rao (2000), is a 100 item instrument to assess parent-child relationship quality as reported by adolescents in the age group of 12-18 years. The scale has been described to have significant validity and reliability. It gives a total parent-child relationship score as well as 10 subscale scores for both cordial and un-cordial dimensions including loving, protecting, object reward, symbolic reward, demanding, neglecting, object punishment, rejecting, symbolic punishment, and indifferent behavior. Participants respond to all items on 5 point likert type scale from "always (5)" to "very rarely (1)" for mother and father, separately.

Translation of the scale into Urdu language and cross validation was done on 100 bilingual adolescents in age range of 13-19 years (Fatima & Sheikh, 2014). Urdu version of the scale was found to be comparable to English version. Correlations between Urdu and English version was between .74 – .95 for total scores and subscale scores. Coefficients of internal consistency (α) for full scale and subscales were also moderate to good (.66 – .85), indicating satisfactory internal consistency of items. Re-test reliability coefficients re-administered to the same sample of 100 bilingual participants over a period of 10 days was found to be .88 for total score (Urdu version) and ranged from .76 to .91 for ten subscales.

Procedure

After obtaining permission from selected school principals, initial contacts were made with school teachers and participants. Participants were informed about the nature of the study. Participation in the study was voluntary, and no incentives were offered to the participants. In parallel, a consent letter was sent to the parents of participants who were willing to participate. After receiving parent consent, the respondents were properly seated and administered booklets consisting of socioeconomic status scale, parent-child relationship scale, and aggression scale in a group setting. Instructions were read out and participants were requested to provide genuine responses. The data was collected during fall semester across a period of 50 days.

Results

For data analysis, descriptive statistics of means, standard deviations, and alpha reliability coefficients were calculated to check the consistency of the study instruments. To rule out moderation, multiple regression analyses were calculated by using SPSS.

Table 1 describes the descriptive statistics (means, standard deviations, and reliability coefficients) of study instruments. Alpha coefficients of all the measures are good adding strength to the measures used for further analysis.

Table 1

Descriptive Statistics of Study Variables (N=512)

	Total no. of items	M	SD	α
SES	10	23.83	8.50	.78
Aggression	55	188.89	27.02	.85
PCR	100	732.71	70.97	.87

Note: SES = Socioeconomic Status, PCR = Parent-child relationship

Moderation effect was calculated by regression analysis as suggested by Baron and Kenny (1986). Interpretation of the moderation effect was done using Modgraph (Jose, 2013). Important properties of moderation effect are presented in Figure 1.

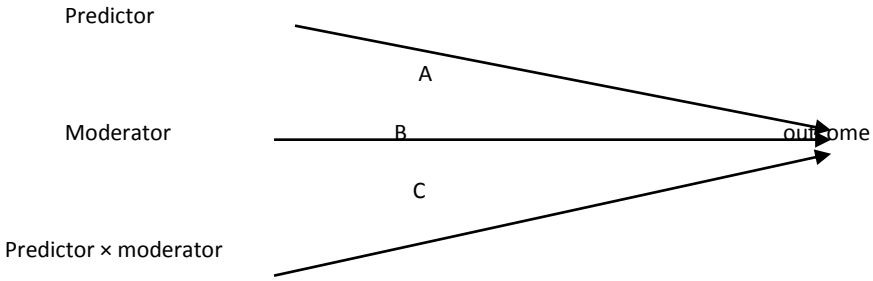

Figure 1: Figure showing the moderating pathways *(Baron & Kenny, 1986)*

The Figure indicates that criterion variable is predicted from three causal paths: first, the independent variable predicts the criterion (path A), second, the moderator predicts the criterion (path B), and third, the interaction between independent and moderator predicts the criterion (path C). Moderation effect is implied if interaction term (path C) is significant. The types of independent and moderator variables determine whether to calculate interaction by ANOVA or regression analysis. If both independent and moderator variables are categorical, a two way ANOVA is recommended. If at least one of the variables is continuous, then interaction effect is assessed using hierarchical regression analyses (Baron & Kenny, 1986). Hierarchical regression analyses are calculated by predicting criterion variable from independent and moderator variables at first step, and from interaction term (IV × Moderator) as a predictor at second step, with both independent and moderator variables being present in the equation. A significant regression weight of interaction term shows a significant moderation effect. But a clear interpretation of moderation calls for an additional step of analyses. Firstly, continuous variables are categorized; next, mean scores of criterion variables are calculated for each cell by crossing the

categories of independent and moderator variables. However, it is a lengthy and time consuming process. Modgraph is a rather better, economical, and easy to calculate choice. Modgraph also represent graphic presentation of moderation effect in addition to generating cell means. Moderation effect becomes clear from graph as the graph shows association between independent and criterion variable at three levels of moderator. Graph also shows the direction of moderation in addition to strength of interaction effect.

Gender of the adolescent and of the parent as Moderators

To assess the moderation effect of gender, the same approach to interaction effect was calculated through regression analyses for mother-child relationship score and for father-child relationship score as predictors and the adolescent gender as the moderator. In parallel regression analyses, mother-child relationship (MCR) or father-child relationship (FCR) scores and adolescent gender were entered as predictors in the first model; and then, interaction of both variables was entered as predictor in the second model. Explained variance, change in explained variance, model fit, and regression coefficients of the predictors are presented in Table 2.

Result shows that interaction of PCR with adolescent gender is significant at α 0.05 level for both parents indicating that both the parent and adolescent gender moderates the relationship between PCR and aggression. An increase in explained variance (R^2) is also evident from first model to second model of regression analyses for interaction of MCR × gender as a predictor (R^2, from .10 to .12, incremental variance = 2 %) and for interaction of FCR × gender as a predictor (R^2, from .07 to .08, incremental variance = 1 %).

Table 2

Regression Weights Showing Moderation Effect of Parent and Adolescent Gender

Predictors	Mother-child relationship				Father-child relationship			
	Model 1		Model 2		Model 1		Model 2	
	B	B	B	β	B	β	B	β
Independent Variable	-.18	-.30**	-.33	-.54**	-.14	-.22**	-.32	-.49**
Gender (moderator)	8.44	.16**	-31.73	-.59	8.62	.16**	-34.58	-.64
IV X gender			.11	.80*			.12	.87*
Total R^2	.10		.12		.07		.08	
Change in R^2			.02				.01	
Model fit	F(2,507) =29.91**		F(3,507) =21.44**		F(2,507) =17.78**		F(3,507) =13.40**	

Notes: ***P* < 0.001, **P* < 0.05

To analyze this interaction effect, Modgraph, a computer program was used to compute cell means and the resulting difference in effect of mother-child relationship / father-child relationship across both genders.

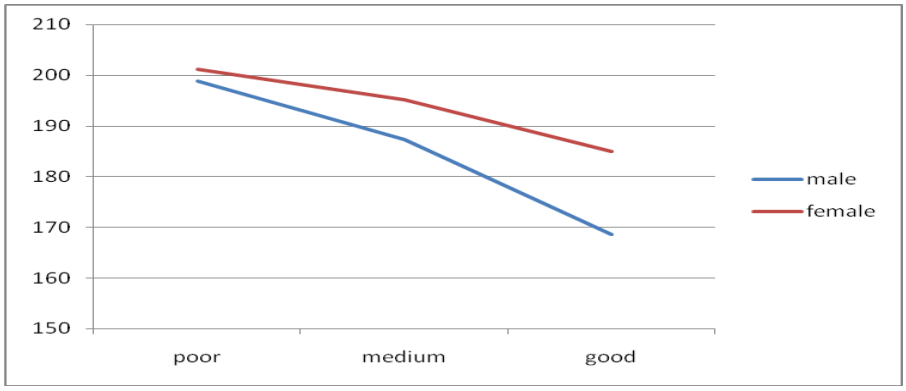

Figure 2 Showing the effect of Mother-child relationship on aggression moderated by adolescent gender.

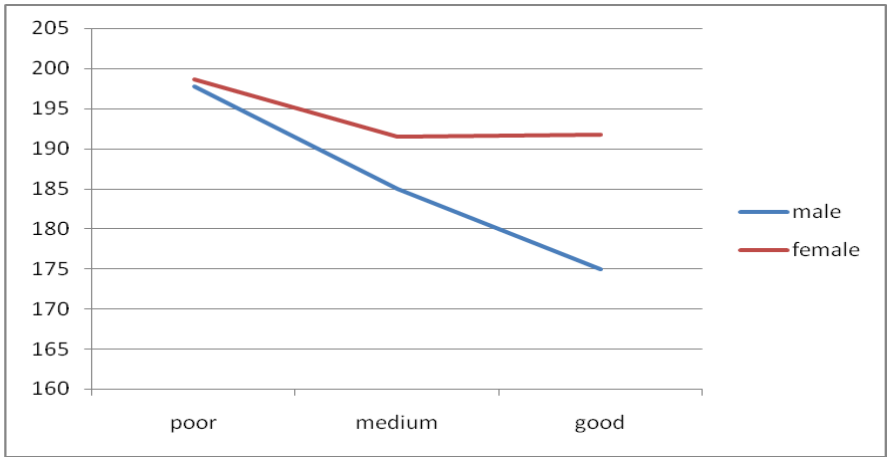

Figure 3 Showing the effect of Father-child relationship on aggression moderated by adolescent gender.

Cell means are presented in Table 3 and supported in Figure 2 and Figure 3. Both Figures clearly indicate that associations of PCR with adolescent aggression are stronger for boys than for girls.

Table 3

Cell Means for Boy's and Girl's Aggression Score across Levels of Mother-child and Father-child Relationship

	Mother-child relations			*Father-child relations*		
Gender	Poor quality	Medium quality	Good quality	Poor quality	Medium quality	Good quality
Girls	201.11	195.18	184.97	198.66	191.48	191.73
Boys	198.85	187.28	168.61	197.71	184.96	174.96

As far as moderation effect of parent gender is concerned, the correlation coefficient for mother-child relationship with adolescent aggression is stronger ($r = -.23$, $p < .001$) than for father-child relationship($r = -.18$, $p < .001$). Same effect is supported by regression analyses in Table 2, as mother-child relationship explains greater variance in adolescent aggression than does the father-child relationship. Thus, findings indicate that gender of the parent also moderates the PCR-aggression link.

SES as moderator

To find the moderation by SES on the link between PCR and aggression, same steps in hierarchical regression analysis were calculated. For this calculation, the main effects of PCR and SES were entered first in the regression equation, and then, in the second model, the interaction term was added. Interaction term was computed by multiplying both independent and moderator variables i.e. PCR × SES.

Table 4

Regression Weights Showing the Moderation Effect of Socioeconomic Status on the Association between Parent-child Relationship and Aggression

		Unstandardized coefficients		Standardized coefficients		
		B	SE	B	R^2	Incremental R^2
1st step	Constant	259.03	12.21		.07	
	PCR	-.08	.02	-.22*		
	SES	-.38	.14	-.12*		
2nd step	Constant	257.89	33.99		.07	.00
	PCR	-.08	.05	-.21		
	SES	-.33	1.37	-.10		
	PCR×SES	-6.50	.002	-.02		

Note: PCR = Parent-child relationship, SES = Socioeconomic Status

Table 4 indicates that regression weights for main effects of parent-child relationship and SES are significant showing that PCR and SES have negative correlation with adolescent aggression. However, the regression coefficient for the interaction term is not significant. The findings indicate that parent-child relationship and SES independently but not interactively predict adolescent aggression.

Discussion

Given a number of researches highlighting the connection between parent-child relationship and adolescent aggression, this study is unique in a way to assess the moderating effects of parent and adolescent gender as well as of socioeconomic status on this connection. The results indicate statistically significant moderation by adolescent gender in parent-child relationship-aggression link, that is, link is stronger for boys than for girls. The findings are in accordance with earlier studies (e.g., McFadyen-Ketchum et al., 1996; Murray et al.). Rothbaum and Weisz (1994) also documented moderating effect of gender in a meta analysis report in favor of boys for having stronger associations of parental care giving with externalizing behaviors.

In many cultures of the world including Pakistan, there is a differentiation in mothers' and fathers' roles in childrearing and parenting practices. One of the reasons can be the division of labor. Therefore, it is quite likely that mother-child relationship and father-child relationship may differently impact child outcomes, in general, and uniquely predicts adolescent's adjustment, in particular. Based on this view, a second study goal was to examine the differential effect of mother-child relationship and father-child relationship on adolescent aggression. The findings demonstrated a significant differential effect of mother-child relationship and father-child relationship on aggression. The correlation coefficient for mother-child interaction with adolescent aggression is stronger (r = -.23) than for correlation coefficient of father-child interaction with adolescent aggression (r = -.183). The same is supported from difference in variance explained by mother-child and father-child relationships in predicting adolescent aggression, that is mother-child relationship explains more variance (2%) than the does the father-child relationships (1%). The findings are in agreement with previous findings from Chang, et al. (2003) and Pettit, et al. (1993), who found moderating effect of parent gender in predicting aggression and externalizing problems in adolescents form mother-child interaction and father-child interaction. The findings support the earlier studies pointing the comparative strength of relation between parent-child relationship and aggression across two levels of parent gender.

Although, the interaction of parent-child relationship with adolescent gender is significant, however, the difference in effect sizes in explained variance is small across mothers and fathers, that is, for interaction of MCR (from 10 % to 12 %, incremental variance = 2 %) and for FCR (from 7 % to 8 %, incremental variance = 1 %) with adolescent gender. Therefore, moderation effect of parent gender in PCR-aggression link should be studied with caution, and in detail in future researches.

As there is evidence that parenting styles are different in strata belonging to different socioeconomic level such as Flynn (1994), so one of our study goals was to study differential impact of parent-child relations belonging to different SES on adolescent aggression. However, the results show no statistically significant interaction impact of SES with parent-child relationship on adolescent aggression. The results are in line with a previous study by Deater-Deckard, Atzaba-Poria, and Pike (2004) who found similar patterns of correlations between dyadic mutuality (Parent-child interaction) and externalizing problems across lower/middle levels of SES.

Limitations and directions for future research

However, the findings from the study should be interpreted with cautions in light of some limitations. First, the study used self-reported measures of parent-child relations, aggression, and socioeconomic status as reported by adolescents. As with all self-report measures, subjectivity bias may affect the results. Findings would be relied on more confidently and might be more supporting to the moderation hypothesis, if multiple assessments of parent-child relationship and adolescent aggression using parent's reports and actual observations could be taken.

Second, cross sectional nature of study does not allow us to draw causal inferences about the association of parent-child relationships and aggression. Therefore, it cannot be inferred whether reported parent-child relationships affected reported aggression or whether reported aggression affected reported parent-child relationships. Therefore, the findings from present study can be considered as an initial indication of moderating roles of parent and adolescent gender in PCR-aggression link. Future studies should continue to explore the moderating roles of gender and SES in controlled settings as well as of other possible interacting factors such as race, ethnicity, family structure etc.

Conclusions

In sum, the study adds in the existing body of knowledge about the possible interaction effect of adolescent and parent gender in predicting aggression from parent-child interaction. Still, the present findings needs to be replicated by future researchers for its better understanding as the above said relation is weakly, though significantly moderated by parent gender.

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