Adolescents' Emotional Reactivity Across Relationship Contexts

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Abstract:

Adolescents' emotional reactivity in family, close friendships, and romantic relationships was examined in a community-based sample of 416 two-parent families. Six waves of annual data were analyzed using structural equation modeling. Emotional reactivity to interparental conflict during early adolescence was associated prospectively with adolescents' reactivity to conflict in friendships and romantic relationships during middle adolescence. Close friendship reactivity partially explained the prospective association between reactivity to interparental conflict and romantic relationship reactivity. The association between perceived emotional reactivity and relationship conflict was stronger for girls than boys. Results have important developmental implications regarding adolescents' emotional reactivity across salient interpersonal contexts during adolescence.

Keywords: adolescence | close friendships | emotional reactivity | family | romantic relationships | sex differences

Article:

Adolescents' relationships serve as a context for the development and refinement of important interpersonal competencies, one of which is managing emotional reactions to conflict encountered in relationships. *Emotional reactivity* is defined as arousal and dysregulation of adolescents' emotions including fear, distress, preoccupation with a stressor, and an inability to calm oneself down in response to an interpersonal stressor (e.g., interparental conflict; Buehler & Welsh, 2009; Davies & Cummings, 1994). Emotional reactivity is similar to the constructs of emotionality (i.e., experiencing and expressing primary emotions such as anger, sadness, and fear; Goldsmith & Campos, 1986) and negative reactivity (i.e., expressed and felt distress of fear,

anger, sadness, discomfort, and low soothability; Rothbart, 2007). Emotional reactivity defined here differs, however, from a trait-like emotionality or negative reactivity because it is a domain-specific behavior that is experienced in the context of close interpersonal relationships during adolescence.

Emotional reactivity has long-term implications for mental health, physical health, and close relationships including increases in internalizing problems (Buehler, Lange, & Franck, 2007; Harold, Shelton, Goeke-Morey, & Cummings, 2004), poorer physical health (Davies, Sturge-Apple, Cicchetti, Manning, & Zale, 2009), dating violence (Kinsfogel & Grych, 2004), and problems in intimate relationships during young adulthood (Donnellan, Larsen-Rife, & Conger, 2005; Gottman & Mettetal, 1986). Given the importance of emotional reactivity for adolescents' future adjustment, it is critical for researchers to understand emotional reactivity across different relationship contexts.

Family is one of the most salient relationship contexts in which adolescents might experience interpersonal conflict and develop various emotional responses to deal with the potential elicited stress. Adolescents who experience conflict within the family may manifest higher emotional reactivity (Buehler et al., 2007; Davies & Cummings, 1998). In turn, adolescents' emotional reactivity to familial conflict may influence adolescents' emotional reactivity when faced with conflict in other salient interpersonal relationships. Maintaining interpersonal relationships with age mates, particularly managing conflict in those relationships, is a primary developmental task during adolescence (Laursen, 1998). As such, adolescence is an important developmental period to examine the associations among emotional reactivity experienced in the family-of-origin and emotional reactivity in close friendships and romantic relationships. Despite recent interest in family factors and peer relationships, the associations among emotional reactivity across family and peer contexts has not been examined. Thus, the main goal of the current study is to test a model that examines emotional reactivity across important interpersonal contexts from early through middle adolescence. In this model, we propose that youths' emotional reactivity to interparental conflict is associated prospectively with adolescents' emotional reactivity in romantic relationships. We also propose that this association is partially explained by youths' emotional reactivity in close friendships. Major contributions of this study include a focus on the developmentally-central construct of youths' emotional reactivity as well as an integration of relational functioning across family, friendship, and romantic contexts.

Emotional Reactivity in the Family Context

Adolescents' experiences with interpersonal conflict in the family may shape youths' emotional reactivity to conflict in other relational contexts. The current study draws on emotional security theory (EST; Cummings & Davies, 2010; Davies & Cummings, 1994), which states that children's and adolescents' responses to interparental conflict are motivated by a need to maintain emotional security. Preserving emotional security is reflected in adolescents' ability to minimize emotional reactivity to conflict, regulate exposure to interpersonal conflict (i.e., avoidance or

involvement in conflict), and develop secure internal representations of relationships. Emotional reactivity, as defined above, is an overtly negative response and suggests that children are interpreting the conflict they witness between parents as destructive. The process model of EST hypothesizes that such emotional reactivity is associated with negative outcomes as a result of adolescents' personal meaning-making regarding the conflict at hand and increasingly depleted biopsychological resources (Cummings & Davies, 2010).

Several studies have demonstrated an association between interparental conflict and increased emotional reactivity in adolescents (Buehler et al., 2007; Davies, Forman, Rasi, & Stevens, 2002). In turn, emotional reactivity to interparental conflict has been associated with lower behavioral, physiological, psychological, and social functioning for children and adolescents (Davies et al., 2009; Harold et al., 2004). To date, however, little is known about the extent to which emotional reactivity to interparental conflict is associated with adolescents' emotional reactivity when faced with conflict in other close relationships. Given that adolescence is a critical period for the refinement of interpersonal and intrapersonal skills needed in the context of peer relationships, youths' emotional reactivity to interparental conflict may have direct implications for experiences in close friendships and romantic relationships. Specifically, feeling emotionally insecure in the family context may be associated with feelings of emotional insecurity and higher emotional reactivity when confronted with conflict in other important relationship contexts—romantic relationships and close friendships.

Emotional Reactivity Across Interpersonal Contexts

Family-of-Origin and Romantic Relationships

Emotional reactivity experienced in the family context may be associated with social functioning outside the family-of-origin (Cummings & Davies, 1996). Theoretically, we extend emotional security theory by examining ways that this process model may move outside the family system into adolescents' peer relationships. We propose that adolescents who interpret interparental conflict as destructive, as indicated by emotional reactivity, are likely to interpret their own interpersonal conflicts as destructive. Through an ongoing process of personal meaning-making, adolescents who have experienced destructive interparental conflict may be more likely to view conflict with intimate peers as a threat to their emotional security, thus triggering a response of emotional reactivity in close personal relationships, such as dating relationships.

Empirically, expressed negative affect, distress, and anxiety experienced in conjunction with negative family interactions have been associated with negative interactions between romantic partners during adolescence (Donnellan et al., 2005; Steinberg, Davila, & Fincham, 2006). Furthermore, a scant amount of research has examined the relationship between emotional responses to interparental conflict and general functioning in romantic relationships (Kinsfogel & Grych, 2004; Rodrigues & Kitzmann, 2007; Simon & Furman, 2010; Stocker & Youngblade, 1999), documenting a connection between family and romantic relationships during adolescence.

The current study extends this theoretical and empirical literature by testing the hypothesis that early adolescents' emotional reactivity to interparental conflict is associated prospectively with youths' emotional reactivity in romantic relationships during the second half of adolescence.

Family-of-Origin and Friendships

Emotional security theory also may be applied to explain linkages between conflict experienced in the family-of-origin and youths' reactivity to conflict in relationships with close friends. Theoretically, youths' close friendships are central to socioemotional development during adolescence (Buhrmester, 1990). There is some evidence that youths' involvement in parents' disputes have deleterious associations with relations with close friends and peers in general, but this research has not focused specifically on emotional reactivity (Bartle-Haring & Sabatelli, 1997; Benson, Larson, Wilson, & Demo, 1993; Buehler, Franck, & Cook, 2009). The current study extends this scant literature on the linkages between family-of-origin processes and youths' close friendships by testing the hypothesis that early adolescents' emotional reactivity to interparental conflict is associated with youths' emotional reactivity in close friendships during the second half of adolescence.

Close Friendships and Romantic Relationships

Close friendships are adolescents' first voluntary, intimate relationships and thus might have distinct associations with later romantic relationships (Furman, Simon, Shaffer, & Bouchey, 2002). Sullivan (1953) proposed that friendships are vital to later romantic relationships because friends and romantic partners can experience intimacy and reciprocity in ways that are not possible in hierarchical relationships such as those with parents. Moreover, before most adolescents begin dating, they form their first intimate relationships with same-sex friends, which require new interpersonal competencies that were less necessary in childhood. One important new competency is adolescents' ability to manage conflict, an aspect of which is managing emotional responses when conflict occurs (Laursen, 1998). As such, theoretically, the extent to which adolescents learn how to manage emotional reactivity to conflict in friendships is a precursor to adolescents' emotional reactivity that they bring into romantic relationships.

Although no studies have directly examined the association between emotional reactivity in adolescents' friendships and romantic relationships, researchers have found concurrent and longitudinal associations between negative and positive interactions in friendships and romantic relationships (Connolly, Furman, & Konarski, 2000; Furman et al., 2002; Simpson, Collins, Tran, & Haydon, 2007). Furthermore, friendship quality contributes to the development of romantic relationship quality above and beyond family relationships. Stocker and Richmond (2007) found that hostility in adolescents' friendships was associated with hostility in adolescents' romantic relationships, controlling for hostility in parents' marital relationships. Linder and Collins (2005) found that friendship interactions during adolescence predicted later conflict in romantic relationships at 21 years of age, above and beyond parent–

adolescent hostility and conflict. Neither of these studies tested a prospective relational model in which friendships might have explained the association between family and romantic relationships. They did, however, provide an important foundation for the hypothesis that emotional reactivity in close friendships partially explains the prospective association between youths' emotional reactivity to interparental conflict and emotional reactivity in romantic relationships.

Youth Gender

During adolescence, girls may be more prone to experiencing conflict in relationships as stressful and manifesting higher emotional reactivity (Rudolph, 2002). Gender intensification theory proposes that during early adolescence, gender-differentiated socialization practices become more prominent and shape gendered behavior. For girls, gender socialization strongly encourages building and maintaining relationships with others, which might make interparental conflict an important interpersonal stressor that fosters emotional reactivity (Davies & Lindsay, 2004). Furthermore, for girls, concerns about maintaining close peer relationships might heighten sensitivity to conflict and be associated with girls being more emotionally reactive to interpersonal conflict than boys (Laursen, 1998; Rudolph, 2002). Research during adolescence supports the assertion that girls manifest more emotional difficulties as a result of experiencing conflict within the family and within peer relationships than do boys (Davies & Lindsay, 2004; Rudolph, 2002; Unger, Brown, Tressel, & McLeod, 2000). In contrast, however, some studies have found that adolescents' emotional responses to conflict have a stronger association with romantic relationship aggression for boys than for girls (Kinsfogel & Grych, 2004; Simon & Furman, 2010). However, these studies focused on aggression and conflict in romantic relationships and did not specifically examine emotional reactivity. Even though there has been research on gender differences in the associations between relational conflict and emotional reactivity, we were unable to find studies that examined gender differences in the associations among emotional reactivity to conflict in family relationships, close friendships, and romantic relationships. Thus, drawing on gender intensification theory, we hypothesized that girls are more emotionally reactive to interparental conflict than are boys and that emotional reactivity across relationships would evidence greater continuity for girls than for boys.

Hypotheses

Drawing on the existing literature, we tested a relational model that suggests close friendship emotional reactivity (friendship ER) provides one way in which emotional reactivity experienced in the family-of-origin (interparental conflict ER) is associated prospectively with romantic relationship reactivity (romantic ER). Specifically, we examined the following hypotheses:

> 1. Interparental conflict ER during early adolescence is associated positively with adolescents' friendship ER and romantic ER during the second half of adolescence.

2. Friendship ER partially explains the prospective association between interparental ER and romantic ER.

3. Female adolescents manifest higher levels of ER to interpersonal conflict (i.e., to interparental, friendship, and romantic relationship conflict), and the associations of ER among relationship contexts are stronger for girls than for boys.

In addition to substantive and theoretical contributions, the current study makes several methodological contributions. Specifically, the study has a strong research design, utilizing six waves of prospective data spanning through adolescence. Furthermore, interparental conflict ER was assessed across three waves, which increases the stability of the construct and content validity (Cui, Conger, Bryant, & Elder, 2002). We also assessed the relationships among interparental conflict ER, friendship ER, and romantic ER while controlling for conflict levels in these relationships. By controlling for concurrent close friend and romantic partner conflict, we were able to more precisely examine emotional reactivity across relational contexts without potential confounds from conflict itself. Finally, we controlled for the effects of a trait-like measure of negative emotions on emotional reactivity to conflict in each of the three relationship contexts. Including a trait measure of negative emotions strengthens our findings regarding the associations among domain-specific emotional reactivity during adolescence.

Method

Sample

This study utilized data from a longitudinal project that examined family processes during the transition from childhood into adolescence. During the first wave of data collection, sixth-grade students in 13 middle schools from a southeastern county completed a questionnaire on family life during school. A subsample of 1,131 eligible families were identified as potential participants in a home interview (two-parent households, no step-children), and 416 of these families agreed to participate (37% response rate). This response rate was similar to that in studies that have included three or four family members and that have used intensive data collection protocols (e.g., National Survey of Families and Households—34%). To assess selection bias, adolescents who agreed to participate in the in-home interview were compared with eligible nonparticipants on 100 study variables that were reported by youths on the school-based questionnaire. There were only two differences between eligible participating youths and nonparticipating youths, suggesting minimal selection bias. Eligible nonparticipating youths had better general adjustment during class and had higher grades than did eligible nonparticipating youths.

At the onset of the study (Wave [W] 1) adolescents were in sixth grade and were roughly 12 years of age ($M = 11.90$ years, $SD = 0.42$). Participants were primarily European American (91%), and 51% were girls. The median level of education for parents was an associate's degree and was similar to European American adults in the county (county mean category was some

college, no degree; U.S. Census Bureau, 2000a, Table P148A of SF4). The median level of household income for participating families was slightly less than $70,000, which is somewhat higher than the median 1999 income for married European Americans in the county ($59,548; U.S. Census Bureau, 2000b, Table PCT40 of SF3; $64,689 inflation-adjusted dollars through 2001). There were fewer partnered African American couples with their own children younger than 18 years of age in this study (3%) than in the county (5%) and in the United States (7.8%; U.S. Census Bureau, 2000c, Table PCT27 of SF4). There were 330 participating families at W4 (74% retention rate of W1 youths). A series of univariate analyses of variance (ANOVAs) were conducted to examine differences between families who participated in W1 and W4 and attrited families. Attrition analyses revealed no differences between the retained and attrited families at W4, suggesting minimal attrition bias.

Procedures

Youths completed a questionnaire during fall of the 2001–2002 school year. During the first four years of data collection, questionnaires also were mailed home to youths, mothers, and fathers. Another brief questionnaire containing particularly sensitive information was completed during a home visit (e.g., marital aggression). The home visit also involved several videotaped family interaction tasks, which included two that were used in the current study. One semistructured interaction session was a problem-solving task that included mothers, fathers, and adolescents and focused on issues of contention identified by family members on the Issues Checklist administered at the beginning of the home visit (Conger et al., 1992). The second task included the mother and father and focused on the marital relationship and coparenting. Each task lasted 20 min. Interaction tasks were based on those developed for the Iowa Youth and Family Project, and data were coded using the Iowa Family Interaction Rating Scales (IFIRS; Melby & Conger, 2001). Trained coders rated the videotaped tasks. To assess reliability of coding, 20% of tasks were coded by an independent rater (i.e., 83 families). In-home assessments (questionnaires and observations) were conducted again 1 year later (W2), 2 years later (W3), and 3 years later (W4). Most adolescents were in ninth grade by W4 ($M = 15.10, SD = 0.65$). Families were compensated $100 for their participation for W1, $120 for W2, $135 for W3, and $150 for W4.

During middle adolescence, youths who participated in W1 of the project were invited to participate in a telephone interview focused on adolescents' relationships with friends and romantic partners if they had begun dating. These W5 telephone interviews took place about 1 year following the families' W4 home assessment and were approximately 20 min in length. A second round of telephone interviews were conducted 1 year later (W6). Three hundred and eight youths participated in the W5 telephone interviews (74% retention rate of W1 families), and 261 participated at W6 (63% retention rate). Most adolescents were in 10th grade at W5 ($M = 16.08, SD = 0.64$) and 11th grade at W6 ($M = 17.08, SD = 0.64$). For purposes of the friendship portion of the interview protocol, adolescents were asked to select a same-sex closest friend to think about when responding to statements because past research suggests that the majority of adolescents report that their closest friends are of the same-sex (>90%), and we expected that

mixed-sex friendships might differ in characteristics compared to same-sex friendships (Cui et al., 2002; Furman, 1998). On average, participants reported that they had been friends with their closest friend for almost 6 years (SD = 3.74 years).

If adolescents were currently involved in a romantic relationship, they also were asked to respond to a series of similar statements regarding their current romantic partner. Two hundred and eleven youths had begun dating by W6, but only 133 youths reported that they were currently in a romantic relationship. On average, youths reported that they had been dating their romantic partner for 9.50 months (SD = 9.49 months). Youths participating in W5 and W6 did not differ significantly from nonparticipating youths who were part of the study at W1 on the interparental conflict or emotional reactivity variables examined in the current study (analyses conducted using ANOVA). Youths who participated in W5 and the W6 dating sample did, however, differ from youths who left the study or who were not dating at W6 such that they were more likely to be girls and parents were slightly more educated. Friendship and romantic relationship constructs were not assessed at W1, and so attrition patterns on these variables using W1 data could not be evaluated. Youths were paid $10 for W5 participation and $10 for W6 participation.

Measurement

Interparental conflict

Interparental conflict was assessed by using both mothers' and fathers' self-reports and observed hostility. Mothers' and fathers' separately completed an 18-item questionnaire measure of overt interparental conflict (i.e., verbal and aggressive tactics) toward their spouse (Buehler et al., 1998; Kerig, 1996). Sample items included "I tell my spouse to shut up," "and "I slap my spouse." The response format ranged from 1 (*never*) to 5 (*always*). Items were averaged within respondent, and higher scores indicated more hostility in the relationship. Cronbach's alpha was .89 for mothers' and fathers' reports.

Two observational rating scales were used from the IFIRS to measure interparental conflict: Hostility subscale (HS) and Antisocial Behavior subscale (AN). Observers rated mom's behavior toward dad and dad's behavior toward mom during the two interaction tasks (i.e., marital task and three-way interaction task with youths). Hostility included the extent to which the mother/father directed hostile, angry, critical, disapproving rejecting, or contemptuous behavior toward their spouse. Antisocial behavior represented behavior that was self-centered, egocentric, acting out, or lack of constraint. All correlations between the HS and AN across the two tasks were significant (observers' ratings of mother = .35–.73; observers' ratings of father = .30–.69). Observer's ratings of interparental conflict of mother toward father and father to mother were correlated (HS r = .53; AN r = .52). Cronbach's alpha was .85 for the observed rating composite. Percent agreement across coders was .79. Interrater reliability between two coders was assessed by calculating single-item intraclass correlation coefficients (ICCs) based on a one-way random

effects ANOVA. The ICC for the different observational rating scales averaged .49 for mothers and .51 for fathers, which is comparable to other studies that have used IFIRS ratings (Melby & Conger, 2001).

Emotional reactivity in response to interparental conflict

To assess emotional reactivity in response to interparental conflict, youth reports on nine items from the Emotional Reactivity Subscale of the Security in the Interparental Subsystem Scale (SIS) were assessed at W1–W4 (Davies et al., 2002). Sample items included "when my parents argue I feel upset," and "when my parents argue I can't calm myself down." Items have a 4-point response format, and higher scores indicate greater emotional reactivity (e.g., W1 α = .86; W2 α = .87; W3 α = .89; W4 α = .86). A latent construct was formed with W2–W4 of emotional reactivity to interparental conflict. W1 emotional reactivity was used as a control variable to aid in controlling for youths' trait like negative emotions.

Emotional reactivity in friendships and romantic relationships

To assess adolescents' affective responses to conflict in friendships, nine items from the Emotional Reactivity Subscale from the SIS (Davies et al., 2002; YR; W5) were adapted to reflect adolescents' emotional reactivity to friendship conflict. Adolescents were asked to evaluate how true certain statements were when they had an argument with their best/closest friend. To assess adolescents' affective responses to conflict in romantic relationships, the same nine items from the Emotional Reactivity Subscale (SIS; Davies et al., 2002; YR; W6) were used, but adolescents were asked to evaluate how true certain statements were when they had an argument with their current romantic partner. Statements included "I feel sad," and "I can't stop thinking about the problem." The response format for this scale ranged from 1 (*not at all true of me*) to 4 (*very true of me*). Higher scores on the Emotional Reactivity Subscale indicated more difficulty regulating behavioral and affective responses when faced with conflict with friends or romantic partners. Cronbach's alpha at W5 for friendship reactivity was .85, and for W6, romantic relationship reactivity was .82.

Friendship and romantic relationship conflict

Adolescents were asked to respond to six items on The Conflict and Antagonism Subscales from the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) to measure frequency of conflict in adolescents' same-sex closest friendship. Participants responded on a scale ranging from 1 (*little or none*) to 5 (*the most*) to questions such as "How much do you and your friend disagree or quarrel." The same six-items were used to assess frequency of conflict in adolescents' romantic relationships but were revised with boyfriend/girlfriend as the referent instead of friend. Higher scores indicated more frequent conflict between friends (α = .78) and between romantic partners (α = .82). These two variables were included as control variables.

Youths' negative emotions

To control for a temperature-based measure of reactivity, a latent construct was created that consisted of mothers', fathers', youths', and teachers' reports on 10 items taken from the Child Behavior Checklist (CBCL, CBCL-TRF, CBCL-YSR; Achenbach, 1991a, 1991b,1991c). The 10 items were chosen because of their similarity to the 10 items on the Negative Affect Scale of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), a commonly used measure of trait negative emotions. Items included the following: worries, unhappy/sad/depressed, feels too guilty, fearful, gets in fights, stubborn/irritable, fears doing bad, nervous/high-strung, nervous movements, and too fearful/anxious. We chose to use reports over four waves of the study, as opposed to report at just one wave, because we were trying to assess a trait-like construct. The use of multiple informants across settings also supported the assessment of a trait-like construct. The measurement model that fit best included mothers' and fathers' reports averaged within wave to create four manifest indicators (r = .38–.55), teachers' reports averaged across W1–W3 to create one manifest indicator (r = .28–.40), and youths' reports averaged across W1–W4 to create one manifest indicator (r = .43–.60). Teacher data were not collected at W4. Response options were 0 (*not true*), 1 (*somewhat or sometimes true*), and 2 (*very true or often true*). Higher scores indicated higher negative emotions (α = .81–.94).

Analytic Strategy

The AMOS 17.0 structural equation modeling program (SEM) was used for data analysis. Model fit for all SEM analyses was examined using the chi-square goodness of fit statistic, the comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA). A nonsignificant chi-square indicated a good model fit. However, because of the large sample size, a significant chi-square was expected, and additional fit indices were examined (Byrne, 2001). CFI values of .95 or higher indicated a good model fit, and RMSEA values below .05 indicated a good model fit (Thompson, 2000). The significance threshold for all models was set at p < .05. For purposes of data analyses, we omitted 50 youths who had not started dating by W6, resulting in a final sample of 366. These youths were omitted due to concerns that findings may not apply to youths who had not yet begun dating. The full information maximum likelihood estimation procedure (FIML) was used to address missing values because FIML produces less biased estimates than does listwise case deletion or mean substitution (Acock, 2005).

We first tested a model that examined the direct effect of interparental conflict ER on romantic ER. We then added friendship ER to the model and examined if the relationship between interparental conflict ER and romantic ER was reduced (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). We expected some reduction of the relationship between interparental conflict ER based on Sullivan's (1953) theorizing about the important role of friendships for experiences in romantic relationships. Sobel's formula was used to test the indirect pathway for statistical significance.

To test for moderating effects of youth gender, a multiple-group SEM analysis was conducted across two groups: girls and boys. Before examining structural invariance across groups, we

tested for metric invariance in which two models were compared—one with all parameters constrained to be equal and the other in which the factor loadings were allowed to vary across the two groups, $\Delta\chi^2(9) = 16.35$, $p > .05$. A fit of the constrained model and the model where factor loadings were allowed to vary across boys and girls differed significantly, but only one of the 12 factor loadings differed (i.e., teacher reports of negative emotions) significantly across boys and girls. This difference was small and thus should not prevent the assessment of, or conclusions drawn from, the moderating analyses of the structural pathways (Byrne, Shavelson, & Muthén, 1989). Two models were then compared, one in which all parameters were constrained to be equal and the other in which the structural loadings were allowed to vary across the two groups. Change in the chi-square was examined for statistical significance at the $p < .05$ level. A significant change in chi-square between the models suggests that gender differences in the freed structural pathways exist, and critical ratios were examined to locate specific, group differences (Byrne, 2001).

All models controlled for trait-like negative emotions, W1 emotional reactivity to interparental conflict, and conflict in the various relationships (i.e., interparental, best friend, and romantic). By controlling for concurrent close friend and romantic partner conflict levels, we were able to more precisely examine emotional reactivity across relational contexts without potential confounds from conflict itself.

Results

Correlations among indicators are presented in Table 1 by gender. Relationships were generally in the expected direction. SPSS uses pairwise deletion to estimate a correlation matrix, which reduced the sample size for the dating variables, and statistical significance was not reached in cases where there was a small but meaningful relationship (e.g., $r = .19$ for W1 interparental ER and W6 romantic relationship ER). In support of the measurement model, the intercorrelations among the indicators for the three latent constructs were moderate to large in magnitude. Measures of relational conflict in peer relationships were included in this study as control variables. As hypothesized, best friend conflict was associated with youths' friendship ER ($\beta = .12$, $p < .05$), and romantic conflict was associated with youths' romantic ER ($\beta = .23$, $p < .01$). These associations are small enough, however, to indicate that conflict and emotional reactivity to conflict are distinct constructs.

Table 1. *Descriptive Statistics and Intercorrelations Between Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. W1 IC: MR Mom to Dad	—	**.54**	**.25**	.15	**.18**	**.18**	.07	.11	.07	**.21**	.11	.11	.08	**.16**	.13	**.17**	.03

2. W1 IC: FR Dad to Mom	**.49**	—	**.29**	**.22**	.08	.12	**.17**	.11	.12	.07	.11	.07	**.23**	**.22**	**.14**	**.17**	.06
3. W1 IC: Observed	**.33**	**.26**	—	.13	.11	.06	**.15**	.02	.01	**.25**	.01	.04	.06	.02	.04	**.18**	.01
4. W1 ER to IC	**.25**	**.28**	**.24**	—	**.49**	**.42**	**.37**	.17	.12	**.22**	.13	.04	.01	.03	.04	**.22**	.07
5. W2 ER to IC	**.39**	**.28**	**.19**	**.62**	—	**.57**	**.51**	**.35**	**.28**	.17	.06	.11	.05	.06	.03	**.21**	.02
6. W3 ER to IC	**.21**	**.28**	**.28**	**.53**	**.60**	—	**.52**	**.28**	**.28**	**.21**	.09	.02	.01	.02	.06	**.25**	.06
7. W4 ER to IC	.06	**.27**	**.30**	**.47**	**.54**	**.61**	—	**.32**	**.29**	.02	.07	.14	.18	.19	.08	**.36**	.05
8. W5 friend ER	.06	.06	.09	.04	.12	**.23**	**.22**	—	**.51**	**.31**	.19	.05	.14	.16	.19	.17	.05
9. W6 romantic ER	.06	.16	**.22**	.19	**.20**	**.22**	**.23**	**.32**	—	.21	**.29**	.12	**.23**	.15	.07	**.23**	**.23**
10. W5 friend conflict	.07	.02	.04	.05	.03	**.24**	**.28**	.16	.05	—	**.39**	.03	.02	.03	.09	.17	.15
11. W6 romantic conflict	.07	.07	.08	.02	.03	.06	.04	.17	**.28**	.13	—	.06	.04	.06	.06	**.25**	**.26**
12. W1 negativ	**.19**	**.20**	.09	.07	.13	**.26**	**.21**	**.19**	.09	.06	.02	—	**.70**	**.65**	**.61**	**.22**	.15

e emotion PR																
13. W2 negative emotion PR	**.24**	**.29**	.11	**.19**	**.38**	**.32**	**.35**	**.21**	.07	**.07**	.03	**.67**	—	**.74**	**.73**	**.33**	.15
14. W3 negative emotion PR	**.29**	**.29**	.13	.13	**.24**	**.29**	**.25**	.06	.17	.07	.06	**.60**	**.67**	—	**.81**	**.45**	**.19**
15. W4 negative emotion PR	**.17**	**.26**	.13	**.16**	**.23**	**.37**	**.27**	.10	.12	.06	.04	**.64**	**.70**	**.69**	—	**.43**	**.22**
16. Negative emotion YR	.11	.09	.12	**.37**	**.43**	**.37**	**.46**	**.23**	.09	.18	.07	**.32**	**.46**	**.43**	**.39**	—	**.25**
17. Negative emotion TR	.01	.06	.02	.11	.07	.07	.07	.02	.02	_	.01	.02	**.34**	**.27**	**.32**	.22 **.39**	—
M	1.7/1.8	1.7/1.7	2.7/2.6	1.6/1.5	1.5/1.5	1.4/1.5	1.2/1.4	1.5/1.9	1.8/2.1	1.4/1.6	1.5/1.5	2.8/2.9	2.4/2.6	2.1/2.6	2.1/2.5	3.5/4.1	1.3/1.3
SD	0.41/0.40	0.39/0.38	1.2/1.2	0.57/0.53	0.52/0.54	0.46/0.53	0.49/0.53	0.44/0.45	0.54/0.50	0.46/0.52	0.43/0.49	2.0/2.1	2.0/1.9	1.9/2.0	2.1/2.2	2.4/2.6	1.3/1.7
n	174/187	174/187	174/187	174/187	151/159	142/143	133/139	124/132	53/80	124/132	53/80	174/187	151/159	143/143	132/139	174/187	174/187

Note. Correlations for girls are below the diagonal, and correlations for boys are above the diagonal. Means and standard deviations are listed first for boys and then for girls. Bold coefficients are significant, $p < .05$. W = Wave; IC = interparental conflict; MR = mother report; FR = father report; ER = emotional reactivity; PR = parent report; YR = youth report; TR = teacher report.

We also estimated the effect of W1 interparental conflict on youths' emotional reactivity W2–W4 while controlling for W1 interparental ER. Although not a central hypothesis in the current

study, W1 interparental conflict predicted increases in youths' emotional reactivity at W2–W4 ($\beta = .15$, $p < .05$). This finding provides support that interparental conflict is associated with increases in interparental ER during early adolescence and that interparental ER is not solely a function of trait-like negative emotions that have been present since childhood.

Finally, all structural equation models controlled for youths' negative emotions at W1–W4. Youths' negative emotions were significantly associated with interparental ER ($\beta = .21$, $p < .01$) but not with friendship ER or romantic ER ($\beta = .09$, $p = .19$; $\beta = .05$, $p = .56$).

Emotional Reactivity Across Interpersonal Contexts

The first hypothesis was that interparental conflict ER during early adolescence is associated with emotional reactivity in a romantic relationship during middle adolescence. This hypothesis was supported. Model fit for this model was adequate, $\chi^2(85) = 164.42$, $p < .01$, CFI = .94, RMSEA = .05. Interparental conflict ER was associated with romantic ER ($\beta = .28$, $p < .01$), controlling for romantic conflict (see Table 2 for confidence intervals). Results from this model suggested that adolescents who reported higher emotional reactivity to interparental conflict were more likely to have reported romantic relationship reactivity several years later.

Table 2. *Direct and Indirect Effects of ER Across Relationship Contexts*

		95% CI	
Effect (path)	Parameter	Lower	Upper
Direct effect of ER interparental conflict on ER best friend	0.23	0.10	0.50
Direct effect of ER interparental conflict on ER romantic	0.21	0.04	0.50
Direct effect of ER best friend on ER romantic	0.37	0.20	0.53
Direct effect of interparental conflict on ER interparental conflict	0.15	0.02	0.42
Direct effect of best friend conflict on ER best friend	0.13	0.01	0.26
Direct effect of romantic conflict on ER romantic	0.23	0.09	0.42
Indirect effect of ER interparental conflict on ER romantic	0.12	0.02	0.18

through ER best friend			

Note. Parameter values represent unstandardized regression weights. Confidence intervals were obtained from Bayesian estimation in AMOS. ER = emotional reactivity.

Friendship ER was added to the model to test the hypothesis that friendship ER partially explains the relationship between interparental conflict ER and romantic ER. Model fit for this model was adequate, $\chi^2(112) = 215.04$, $p < .01$, CFI = .93, RMSEA = .05 (see Figure 1). Interparental conflict ER and later friendship ER were associated ($\beta = .23$, $p < .001$), as were friendship ER and later romantic ER ($\beta = .37$, $p < .001$). This pathway was statistically significant (Sobel's $z = 2.67$, $p < .001$). This pathway existed when controlling for relationship conflict levels, W1 interparental conflict ER, and trait-like negative emotions.
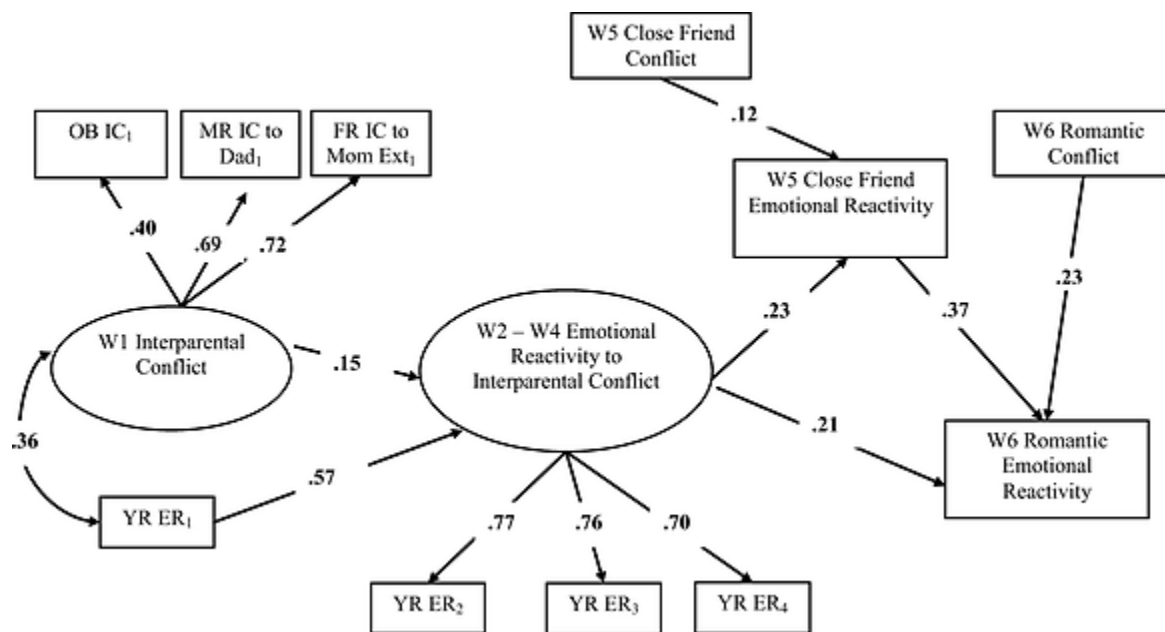

Figure 1. Emotional reactivity across relationship contexts. All pathways in the model are significant. W = Wave; OB = observer rating; IC = interparental conflict; MR = mother report; FR = father report; YR = youth report; ER = emotional reactivity. This model controls for youth trait-like negative emotions, but for parsimony, the control is not included in the figure: $\chi^2(112) = 215.04$, $p < .01$, comparative fit index = .93, root-mean-square error of approximation = .05; N = 366.

Youth Gender

Male and female adolescents differed on the associations between conflict and emotional reactivity but not on the associations among emotional reactivity across relationships. Specifically, results from the omnibus group difference test indicated that there was a significant change in chi-square when the paths were allowed to differ for boys and girls, $\Delta\chi^2(7) = 47.53$, $p < .001$. Critical ratios showed that one of the structural pathways differed across gender.

The association between close friend conflict to friendship ER also was significant for girls ($b = .18$, $p < .01$) but not for boys ($b = .04$, $p = .59$). Furthermore, the association between interparental conflict and interparental ER was significant for girls ($b = .22$, $p < .05$) but not for boys ($b = .14$, $p = .24$). These results suggest that conflict in interpersonal relationships was more strongly related to higher emotional reactivity in girls than boys but that the associations among emotional reactivity across relationships were not different for boys and girls.

Discussion

In a recent review of the field of romantic relationship research, Collins, Welsh, and Furman (2009) recognized that research on adolescents' romantic relationships is still in its infancy, and that we know very little about the continuity and discontinuity of emotions across relationships. Guided by emotional security theory, this study contributes to the small but growing body of research on romantic relationships by testing a model that examines emotional reactivity across important interpersonal contexts during adolescence. Findings suggested connections among domain-specific emotional reactivity across the family-of-origin, close friendships, and romantic relationships. Furthermore, gender differences were found such that girls who experienced more interpersonal conflict in their relationships were more likely to report higher emotional reactivity than that reported by boys. Results underscore the importance of addressing adolescents' emotional reactivity to conflict in the family-of-origin so that reactivity is minimized in later peer relationships, which may ultimately facilitate individual and relationship functioning.

Emotional Reactivity Across Contexts

Emotional reactivity is an important yet understudied construct in adolescents' close relationships. Emotional reactivity has been associated with both intrapersonal (e.g., internalizing behaviors; Harold et al., 2004) and interpersonal development (e.g., relationship behavior; Bartle-Haring & Sabatelli, 1997). Because emotional reactivity has consequences for both individual and relationship functioning, it is important to examine antecedents of emotional reactivity and the generalization of this reactivity across contexts and time. Few studies, however, have examined if emotional security experiences in the family-of-origin is associated with relationships during adolescence. Given that friendships and romantic relationships are two central contexts of development during adolescence, the findings from the current study contribute to the literature by extending emotional security theory beyond the family-of-origin. We believe this extension is critical for understanding the importance of emotional processes in interpersonal relationships as well as how emotional reactivity across relationship contexts is associated with impaired intrapersonal functioning.

Results supported our hypotheses and suggested that emotional reactivity experienced in the family-of-origin is associated with adolescents' reactivity to conflict in later close friendships and romantic relationships. Findings are consistent with previous research that has examined the generalization of behaviors, such as expressed negative affect, from family-of-origin to later

romantic relationships (Capaldi & Clark, 1998; Donnellan et al., 2005; Stocker & Richmond, 2007). Our findings, however, extend this research to suggest that problems in interpersonal relationships are not just the result of behaviors observed in the family. Rather, adolescents' difficulties in peer relationships also may manifest from the internalization of emotional insecurity developed in response to interparental conflict. Our findings also extend previous cross-sectional research that has examined the influence of emotional responses to conflict in the family-of-origin on close friendships and romantic relationships (Bartle-Haring & Sabatelli, 1997; Kinsfogel & Grych, 2004; Simon & Furman, 2010; Stocker & Youngblade, 1999) by examining emotional reactivity across 6 years of adolescence. This period is a critical time to examine the relationships among reactivity in the family and peer domain because youths' emotions regarding parents' interactions might shape the development of new competencies needed in friendships and romantic relationships (Connolly et al., 2000; Linder & Collins, 2005). Future research should continue to examine the continuity and discontinuity of important emotions across salient relationship contexts during adolescence.

It is important to note that although there was continuity in emotional reactivity across interpersonal relationships, emotional reactivity in the family-of-origin only explained a small amount of variance in friendship ER and romantic ER. Thus, it will be important in future research to examine other potential factors that help account for continuity and discontinuity in emotional reactivity across important relationship contexts. In particular, future research should examine how emotional reactivity in parent–adolescent relationships affects the development of interpersonal competencies in romantic relationships (Conger, Cui, Elder, & Bryant, 2000).

Consistent with previous research and theory, we also found that adolescents' friendship ER was associated with romantic ER and that it helped explain the relationship between reactivity developed in the family-of-origin and romantic relationships. This finding supports the proposition that friendships offer a context in which adolescents have the opportunity to refine emotions developed in the family to inform interpersonal development in romantic relationships (Sullivan, 1953). Furthermore, results suggest that interpersonal development is not just a function of modeling relationships observed in the family but that experiences in more reciprocal relationships are necessary for the development of interpersonal skills needed in romantic relationships. Several researchers recognize that adolescents refine interpersonal competencies in close friendships, which are important predictors of experiences in subsequent romantic relationships. Yet, few studies have tested models that examine the extent to which experiences within the family are associated with later romantic relationships through their associations with adolescents' close friendships. Thus, our findings contribute to an important but understudied area of research in adolescent development.

We have interpreted the significant connections among emotional reactivity to interparental conflict, conflict with close friends, and conflict with romantic partners from primarily a socialization perspective steeped in an extension of the emotional security hypothesis (Cummings & Davies, 1996). Alternative interpretations, however, also are possible. Although

several controls were used, it may be that the prospective associations reflect continuity in regulatory capacities that are grounded in biological processes. Cognitive processes also may be more strongly intertwined with emotional reactivity and the current study that did not include cognitive assessments. Biological and cognitive processes need to be examined in future studies of emotional reactivity across contexts during adolescence. The model tested in this study revealed a theoretical gap in the understanding of how emotional reactivity in the family-of-origin may be connected with emotional reactivity in adolescents' close friendships. Clearly, additional theoretical work is needed that addresses several potential mechanisms that include biological, emotional, cognitive, and social learning processes.

Youth Gender

Results partially supported the hypothesis that girls would manifest more emotional reactivity in response to interpersonal conflict and generalize that reactivity across multiple relationship contexts. There was a stronger relationship between interpersonal conflict and emotional reactivity for girls than boys. These findings are consistent with theory and research that suggest girls manifest more emotional distress in response to interpersonal stressors, particularly during adolescence (Rudolph, 2002). Boys and girls, however, did not differ in emotional reactivity to romantic relationship conflict. Although this finding was not what was expected, previous research suggests that romantic relationships may be quite different from close friendships for boys, particularly regarding emotional connection and expressiveness (Bartle-Haring & Sabatelli, 1997). For instance, adolescent boys have reported feeling closer to and more dependent on their girlfriends than anyone in their lives, including friends (Giordano, Longmore, & Manning, 2006). Thus, when boys experience conflict in romantic relations, compared to friendships, they may feel more threatened by the loss of that romantic relationship and manifest as much reactivity in response to that conflict as girls.

We also were surprised to find that boys and girls did not differ in emotional reactivity associations across interpersonal contexts. This finding suggests that although conflict experienced within relationships may have a stronger influence on emotional reactivity for girls, they are not more likely to carry that pattern into future relationships than are boys. Furthermore, this finding suggests that girls may be more intrapersonally affected by conflict than boys, which could ultimately result in intrapersonal problems such as depression (Rudolph, 2002), but that boys and girls do not differ in the extent to which emotional reactivity may have implications for interpersonal development in future relationships. To our knowledge, other studies have not examined gender differences in emotional reactivity across interpersonal contexts. Researchers, however, have found that emotional reactivity developed in the family-of-origin affected later friendships and romantic relationship quality the same for boys and girls (Bartle-Haring & Sabatelli, 1997). Clearly, more research needs to examine gender differences in emotional reactivity to conflict in family, friendships, and romantic relationships as well as the reactivity associations across these interpersonal contexts.

Limitations

This study makes an important contribution to the literature linking experiences within family relationships to interpersonal adjustment in later peer relationships. However, there are important limitations that should be acknowledged and addressed in future studies. Most notably, the current study was not able to control for previous reactivity in friendships and romantic relationships, which limits conclusions regarding causality and directionality. One potential issue is that because we could not control for prior levels of romantic ER and friendship ER, we may be tapping into a trait emotional reactivity that developed during childhood and generalizes across multiple contexts. We minimized this validity threat by controlling for trait-like negative emotions and demonstrating that ER interparental conflict developed in response to interparental conflict during early adolescence and is not just a product of childhood temperament that generalizes across multiple contexts. Although we minimized the threat, not controlling for ER friendship and romantic remains a limitation in the current study, as do the reliance on Achenbach items for the measure of trait-like negative emotions and the lack of a physiological control for stress reactivity.

Furthermore, because we did not control for earlier waves of emotional reactivity in friendships and dating relationships, this study does not meet all the criteria that are needed to test for mediation (Cole & Maxwell, 2003). Thus, the findings are suggestive of mediation, but future research will need to collect data on emotional reactivity in friendships and dating relationships to more adequately test the mediational model. This is the first study, however, to examine the generalization of emotional reactivity over a 6-year period and marks an improvement over related research that has been cross-sectional. Furthermore, the directionality of our findings are consistent with theory that suggests relationships within the family-of-origin affect later romantic relationships, partly as a result of their influence on experiences adolescents have in friendships. A challenge for future studies is that many youths have not begun dating in early adolescence, and thus it is not reasonable to control for prior reactivity in romantic relationships. However, because most youths have begun forming their first intimate relationships with friends, it will be important to control for those experiences.

Findings also are limited by the reliance on adolescents' reports of emotional reactivity. Because we were interested in a construct that is based on the emotional thoughts of adolescents, it was appropriate to rely on self-report. However, the relationships among the emotional reactivity variables may have been inflated due to shared method variance (Shadish, Cook, & Campbell, 2002). This may be a particular problem in the current study because the measure used to assess emotional reactivity across time was also the same across relationship contexts, with only the referent differing. Future studies should employ multiple methods to assess emotional reactivity, including behavioral observations during conflict-discussion tasks and physiological measures of reactivity.

Another limitation is the interrater reliabilities for observed interparental conflict were low, which is a plausible threat to construct validity. However, SEM controls for low reliability by estimating error terms and thus strengthening our confidence that the association between interparental conflict and emotional reactivity to interparental conflict is the result of true variance and not error variance (Cole & Maxwell, 2003). Furthermore, findings from follow-up analyses that excluded observed interparental conflict from the measurement model indicated no differences in model fit or path coefficients.

The current analyses used FIML to handle missing data. There is some concern of using FIML when so much data are missing for the W6 dating sample. Despite this concern, we retained a sample of 366 youths who had begun dating by W6, using FIML, for all analyses. We made this decision because FIML is an appropriate way to handle missing data and provides robust estimates using panel data that have attrition, with up to 75% of missing data (Newman, 2003). Second, the attrition analyses showed few differences between attrited and retained families on study variables. Finally, as an additional post hoc analyses, we estimated SEM models with two separate samples of youths: the dating sample ($N = 133$) and the W5 sample ($N = 308$). The pattern of findings from the analyses with the W5 sample was identical to the findings from analyses using the full sample of 416. Furthermore, the pattern of findings using only the W6 dating sample also was identical to what was found with the full sample, with the exception that the previous significant relationship between ER interparental conflict to ER best friend reactivity was no longer significant ($\beta = .15$, $p = .12$).

Finally, the generalization of the findings may be limited to European American adolescents from married families. Caution should be taken when generalizing to youths from other ethnic/racial groups, and results should be replicated with more racially diverse samples. Findings also are limited to same-sex close friendships and heterosexual romantic relationships.

Conclusion

Despite limitations, the current study contributed to the growing body of research by prospectively examining emotional reactivity across three important relationship contexts through adolescence. This area of research is a critical first step in understanding how conflict experienced within the family context is associated with the development of interpersonal competencies that are important to peer relationships during adolescence. By examining emotional reactivity across important relationship contexts, we have identified a malleable factor that could be targeted to reduce negative experiences within relationships and potentially decrease intrapersonal problems, such as internalizing behaviors.

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