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Risk Models of Dating Aggression Across Different Adolescent Relationships: A Developmental Psychopathology Approach

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The present study examined physical dating aggression in different adolescent relationships and assessed linear, threshold, and moderator risk models for recurrent aggressive relationships. The 621 participants (59% girls, 41% boys) were drawn from a 1-year longitudinal survey of Canadian high school youths ranging from Grade 9 through Grade 12. Approximately 13% of participants reported recurrent dating aggression across 2 different relationships. Using peer and dyadic risk factors from Time 1 of the study, the authors confirmed a linear risk model, such that adolescents in 2 different violent relationships had significantly more contextual risk factors than did adolescents in 1 or no violent relationship. Further, structural equation modeling assessing moderation of contextual risk factors indicated that, for adolescents with high acceptance of dating aggression, peer aggression and delinquency significantly predicted recurrent aggression in a new relationship. In comparison, for adolescents with low acceptance of dating aggression, negative relationship characteristics significantly predicted recurrent aggression. Acceptance did not moderate concurrent associations between risk factors and aggression in 1 relationship. Results support a developmental psychopathological approach to the understanding of recurrent aggression and its associated risk factors.

Keywords: dating aggression, adolescence, developmental psychopathology

During adolescence, youths become involved in dating relationships that provide important contexts for the development of intimate relationship skills. It is an unfortunate reality, however, that physical aggression occurs in a significant minority of adolescent relationships (see reviews by Lewis & Fremouw, 2001, and Wekerle & Wolfe, 1999). Cross-sectional studies have demonstrated that dating aggression can occur at one point in time for many youths, but few studies have examined recurrent patterns of dating aggression over time (e.g., Gray & Foshee, 1997; Hanson, 2002; O'Keefe, 1997). In contrast to the research efforts afforded to patterns of domestic aggression in adulthood, few studies have examined how recurring patterns of aggressive behavior emerge and are maintained within formative adolescent dating relationships. In the present study, which followed a developmental approach to understanding psychopathology, we utilized a 1-year longitudinal survey to examine risk models for recurring dating aggression across different adolescent relationships.

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The scarcity of longitudinal studies examining continuity in dating aggression may reflect the assumption that adolescents find it easy to leave violent relationships for healthier nonviolent alternatives. Some adolescents, however, may disengage from one violent relationship but find themselves repeating the same patterns of behavior with new partners, perhaps due to poor conflict resolution skills or to assortative dating practices (Kim & Capaldi, 2004). To date, recurring patterns of adolescent dating aggression have been examined only in the context of the same dating relationship (O'Leary & Slep, 2003). In this study, approximately 8% of boys and 15% of girls were persistently aggressive with the same partner (O'Leary & Slep, 2003). Adolescence, however, is a developmental period in which relationships are typically brief and courtship behaviors are initiated and tested with different partners over time (Collins, 2003; Connolly, Craig, Goldberg, & Pepler, 2004). Thus, it is developmentally salient for us to examine patterns of aggression as they emerge across different dating relationships. For the purposes of the current study, we narrowed our focus to physical aggression and did not include assessment of psychological aggression.

In adolescence, physical dating aggression is predominantly bidirectional in nature, with similar risk factors often found for boys and for girls (Capaldi & Crosby, 1997; Gray & Foshee, 1997; Riggs & O'Leary, 1996). Similarity in boys' and girls' reports of dating aggression during this period in development has been attributed to the fact that the aggression is typically minor and results from an escalation of conflict rather than an imbalance in power characteristic of more gender-specific aggression (Capaldi

& Gorman-Smith, 2003; Walker, 1984). For these reasons, our examination of dating aggression in the current study focused on physical aggression reported by both boys and girls; gender differences were assessed but were not anticipated.

There are many features of the developmental psychopathology model that make it appropriate for assessing dating aggression. This model blends clinical knowledge of atypical behavior within the full context of human development (Cicchetti & Cohen, 2006). Research guided by this perspective aims to increase comprehension of both the course and dimensions of maladaptive behavior and the relevant risk factors from a developmental framework (Cicchetti & Toth, 1998). A defining goal for those using the model is to understand the causal pathways of various risk factors over time that influence maladaptive behaviors and increase the likelihood of psychopathology (Cicchetti & Cohen, 2006; Rutter & Sroufe, 2000).

Investigations into risk factors associated with current aggressive relationships highlight the importance of contextual influences that are developmentally salient during youth, namely, characteristics of the peer group and the dating dyad (e.g., Bookwala, Hanson, & Grote, 1994; Connolly, Pepler, Craig, & Taradash, 2000). Many researchers have shown that general peer violence and delinquent behaviors are strongly associated with aggression in dating relationships (Connolly et al., 2000; Jessor & Jessor, 1977; Kim & Capaldi, 2004). This is not surprising, as peer environments foster and support emerging dating dyads (Brown, 1999; Connolly & Goldberg, 1999). Aggressive and delinquent peer involvement facilitate aggression training among adolescents, and processes such as hostile talk or modeling in turn influence romantic interactions, specifically, dating aggression (Capaldi, Dishion, Stoolmiller, & Yoerger, 2001; Dishion, Spracklen, Andrews, & Patterson, 1996; Shortt, Capaldi, Dishion, Bank, & Owen, 2003). Characteristics of the dating relationship are also important to our understanding of the context in which early intimate aggression occurs. Adolescents who report dating aggression often describe concurrent conflict and less satisfaction with that partner (Bookwala et al., 1994; Marcus & Swett, 2002; Riggs & O'Leary, 1989). Less attention, however, has been given to the predictive role of negative qualities in previous dyadic relationships and their impact on aggression in subsequent relationships. Prior dating experiences and dating selection patterns can significantly impact future romantic involvement; therefore, it is likely that characteristics of past relationships carry over into new dyads (Capaldi & Gorman-Smith, 2003; Collins, 2003; Connolly et al., 2004). Taking these facts together, we hypothesized that both peer and dyadic risk factors would predict continuation of aggression in future relationships.

An important step for dating aggression research is explanation of how contextual risk factors are specifically associated with the outcome of recurring dating aggression in different relationships. Two models of cumulative risk are suggested from prior research. One model suggests a threshold effect, whereby, after a certain number of risk factors are experienced, a dramatic increase in problem behavior occurs in a quadratic fashion, such that the combined effect is far worse than is a summation of separate effects (Greenberg, Speltz, DeKlyen, & Jones, 2001; Rutter, 1979). The second model suggests that risk factors impact developmental outcomes in a linear or additive fashion, whereby the greater the number of risks, the greater the prevalence and severity of maladjustment (Sameroff, 2000; Sameroff, Siefer, & Bartko, 1997). Because the number and severity of risks influence the probability and maintenance of problem behavior, it is likely that elevated risk profiles are associated in a linear fashion, with recurrent aggressive relationships associated with the highest estimates of cumulative risk, followed by single aggressive relationships and nonviolent dyads, respectively. A caveat to this approach is that both models examine only simplistic associations between risk and outcome. Nevertheless, they offer an estimation of how risk factors operate together to underlie patterns of maladjustment.

To further examine how these contextual risk factors might be associated with recurrent aggression, we investigated a moderator model. This model assessed how a specific individual attitudinal risk factor (acceptance of dating aggression) altered the association between peer and dyadic risk factors and recurrent dating aggression. Attitudes that support aggression as a justifiable solution to conflict among couples have often been linked to reports of dating aggression (O'Keefe, 1997; Riggs & O'Leary, 1989). However, in comparison with the strong influence of antisocial peer involvement and the proximity of dyadic characteristics to dating aggression, the relationship between attitudes and aggressive behavior is more modest (Bookwala et al., 1994; Cano, Avery-Leaf, Cascardi, & O'Leary, 1998; Foo & Margolin, 1996; Riggs & O'Leary, 1996; Schumacher & Slep, 2004; Slep, Cascardi, Avery-Leaf, & O'Leary, 2001). Thus, although it is unlikely that attitudes represent a mediating role between contextual influences and dating aggression, we hypothesized that attitudes would alter or moderate the influences of peer and dyadic characteristics.

A moderator model may be particularly relevant to the longitudinal prediction of recurrent dating violence, because attitudes may accentuate existing contextual risks and thus foster the continuation of aggression into new relationships. More accepting attitudes of dating aggression may make adolescents more susceptible to, or influenced by, negative interactions among aggressive peer environments. Alternatively, negative couple exchanges might be preeminent risk factors among adolescents with less accepting attitudes. Aggression between these partners may be more likely to arise from conflictual or hostile interactions as an escalation of frustration that leads to behavior incongruent with espoused attitudes. Thus, characteristics of previous relationships may be influential in the continuance of aggressive response to conflict within a new dating relationship.

In the present study, we employed a longitudinal design to accomplish two objectives. The first objective was to compare linear and threshold contextual risk models of physical dating aggression across two different dating relationships. In this model, we hypothesized that contextual risk factors would operate additively to distinguish adolescents who reported aggression in one and two different relationships. The second objective was to assess a moderation model that predicted recurrent dating aggression across two different relationships by testing the hypothesis that adolescents' acceptance of aggression would moderate the association between recurrent dating aggression and contextual (peer and dyadic) risk factors.

Method

Participants

The participants for this study were drawn from a 1-year longitudinal survey of adolescents who were attending eight Canadian

high schools. Data collection occurred yearly. To maximize sample size, as recurrent dating aggression was presumed to be infrequent, we combined participants involved in the study at Times 1 and 2 (n = 1,301, 44% boys, 56% girls, mean age = 15.23 years, SD = 0.97) with participants who joined the study at Time 2 (n = 385, 53% boys, 47% girls, mean age = 15.62 years, SD = 1.08) and followed up in the subsequent year.

Of the 1,686 adolescents who completed surveys at any time (45% boys, 55% girls, mean age = 15.32 years, SD = 1.00), a total of 1,477 adolescents (88% retention rate, 47% boys, 53% girls, mean age = 15.27 years, SD = 0.97) completed surveys at Times 1 and 2. Attrition analyses compared adolescents who were part of the longitudinal sample with the participants who were in the 1st year only. There were no significant differences between the two groups for gender, $\chi^2(1, N = 1{,}686) = 2.46$, *ns;* ethnic background, $\chi^2(6, N = 1{,}680) = 7.44$, *ns*; family composition (two-parent versus one-parent families), $\chi^2(1, N = 1{,}686) = 4.22$, *ns*; or socioeconomic status, $F(1, 1685) = .001$, *ns*. Participants who were dating at Time 1 but who were not in the longitudinal sample reported similar relationship quality (conflict and hostility) but higher frequency of dating aggression, $F(1, 1321) = 12.69$, $p < .001$, than did participants who were in the longitudinal sample.

Final sample. Among the longitudinal sample, 621 participants, constituting approximately 44% of the longitudinal sample, reported involvement in different dating relationships at Times 1 and 2 and completed the dating aggression measure.[1] To examine aggression across different relationships, we retained these participants for the final sample. The final sample did not differ from the larger longitudinal sample on demographic variables or key study variables. The 621 participants (44% boys, 56% girls) ranged from 14 to 19 years of age (M = 15.35 years, SD = 0.94) at the initial data collection. All participants attended the same school for the duration of the study. The majority of students were Euro Canadian (70%), followed by Asian Canadian (10%), African/Caribbean Canadian (7%), multiethnic (7%), Latin American Canadian (3%), and Native Canadian (3%). Most of the participants lived in two-parent families (62%). Of the parents, 24% had graduated from high school and 57% had achieved some postsecondary education.

Procedure

The current study was conducted in compliance with the research ethics boards of the universities of the chief investigators, as well as the respective board of education for each school involved. Trained research assistants administered the questionnaires in high schools during regularly scheduled class periods. Students under the age of 18 years who had letters of personal and parental consent were allowed to participate in the study. Students 18 years of age and older were allowed to participate with personal consent only. The questionnaire included a box to be checked off by students if they wanted to discuss any of the issues raised in the survey.

Missing data. Retention in the final sample (N = 621) was contingent on participant completion of measures of dating aggression and dating relationship characteristics. Prior to analyses, missing values were screened. Approximately 2% of participants (n = 11) had missing data on either the peer aggression or the acceptance variable. No differences were observed on the key study variables (dating aggression and characteristics) between participants with complete or with incomplete data. Subsequent analyses assessed models with and without missing participant data. Because there were no differences, the results are based on the full sample.

Measures

Dating aggression. We assessed experiences of dating aggression at Times 1 and 2 using the participant responses to seven items adapted from the Conflict Tactics Scale (Straus, 1979). These items included "pushed, grabbed, or shoved"; "slapping, kicking, or biting"; "physically twisting"; "throwing, smashing, hitting, or kicking something at you/your partner"; "slamming or holding against a wall"; "hitting or trying to hit with an object"; and "choking, punching, or beating." We included two additional items, "spitting" and "pulling hair or scratching," to capture potentially more typical adolescent violent behaviors (Gray & Foshee, 1997). Participants were asked to respond according to only their current or most recent relationship and to indicate how often their dating partner had done each of these things to them (victimization) as well as how often they had done these things to a dating partner (perpetration) within the last 6 months. Responses were rated on a 5-point Likert-type scale (0 = *never,* 1 = *rarely,* 2 = *sometimes,* 3 = *often,* and 4 = *always*). Consistent with previous research, the mean score of participant responses to the nine items was calculated separately for frequency of victimization and perpetration (e.g., Connolly et al., 2000; O'Leary, Smith Slep, & O'Leary, 2007). Cronbach's alphas for victimization and perpetration, respectively, were .91 and .90 at Time 1 and .95 and .94 at Time 2.[2] Because the modal frequency response was 0, in reflection of the low frequency among this sample, we included an index of severity to capture the level of aggression reported. To create severity scores, we dichotomized each of the physical aggression variables to reflect whether the participant ever reported that aggressive act (0 = *never,* 1 = *ever*). Severity was coded according to the highest act of aggression endorsed, with a range from least severe (1 = *pushing or shoving*) to most severe (9 = *choking*).

Dating partner status. At Times 1 and 2, participants were asked to name their current or most recent boyfriend or girlfriend. Reports over the two assessments (approximately 1 year apart) were compared to verify if the participant was involved with a different dating partner. If the name was not provided, participants who indicated that their relationships were less than 1 year old on the Dating Questionnaire (Connolly et al., 2004) were coded as being in a different relationship each year. Approximately 50% and 58% of participants reported being in a current relationship at

[1] Of the participants, 188 (14% of longitudinal sample) reported being in the same relationship across the two data collection periods. No significant differences were found between the two groups on demographics or on key study variables other than age, with older adolescents more likely to report being in the same relationship over time.

[2] We averaged scores across all aggression items to yield an extent of any aggression score. This scoring strategy, initially proposed by Straus (1990), was chosen over summing items, because it incorporated both the variety and the frequency of aggressive acts in a more balanced way and came closer to the construct of extent or amount of aggression perpetrated or received.

Times 1 and 2, respectively. Dating status (current vs. recent partner) did not vary by reports of dating violence over time: Time 1, $\chi^2(1, N = 621) = 5.57$, *ns*; Time 2, $\chi^2(1, N = 621) = 4.57$, *ns*. Peer and dyadic risk factors, as well as reports of dating violence acceptance, did not vary between participants in current or recent relationships.

Time 1 Peer and Dyadic Risk Factors

Peer aggression and delinquency. At Time 1, to assess reports of peer aggression, participants rated how often a peer (other than their dating partner) had done each of the nine physically violent acts to them (as described above) and how often they had perpetrated each of the nine acts toward a peer (not including their dating partner). Separate mean frequency scores were created for peer victimization and perpetration; Cronbach's alphas were .87 and .86, respectively. Adolescent self-reported delinquency was measured with the Shortened Peer Delinquency Scale (Moffitt & Silva, 1988). Participants responded to 16 items covering a range of deviant acts. No items assessed dating aggression in this measure. Participants were asked to indicate how often they had engaged in each of the acts in the last 6 months. Examples of items include "Running away from home" and "Stealing." Response alternatives were 0 (*never*), 1 (*once or twice*), and 2 (*three or more times*). A mean score of the participant responses was calculated across the 16 items; higher scores reflected more delinquent behaviors. Cronbach's alpha for this score was .86.

Dating conflict and hostility. The Conflict and Hostility subscales of the Network of Relationships Inventory (Furman & Buhrmester, 1992) were utilized at Time 1. These subscales were each composed of three items. A sample item from the Conflict scale is "My boy/girlfriend and I disagree and quarrel." A sample item from the Hostility scale is "My boy/girlfriend and I get annoyed at each others' behaviors." Response alternatives ranged from 1 (*never true*) to 5 (*always true*). Mean scores were calculated on participant responses to these items. Higher scores reflect more hostility or more nonphysical conflict within the relationship. Cronbach's alphas were .88 for the Conflict subscale and .81 for the Hostility subscale.

Time 1 Moderator Factor

Acceptance of aggression. The Romantic Relationship Attitudes Scale (Chamberland & Laporte, 1999) was administered to measure participant acceptance of dating aggression at Time 1. Participants were asked to rate aggression acceptability in nine gender-specific situations in which a boy or girl is violent to his or her dating partner. This approach is consistent with previous research that supported gender-specific assessment of attitudes about dating aggression and focused on specific situations (Slep et al., 2001). Examples of these situations include "Because his/her partner became too clingy" and "Because she/he was violent to him." Response alternatives ranged from 1 (*totally unacceptable*) to 5 (*completely acceptable*). Mean scores of participant responses to the nine items were calculated separately for situations of male aggression and of female aggression, so that higher scores represented higher acceptance of dating aggression. Cronbach's alphas for these scores were .95 (male perpetrated aggression) and .92 (female perpetrated aggression). Male and female participant attitudes toward dating aggression did not vary by the gender of the perpetrator, $F(1, 620) = .175$, *ns*.

Demographics

The socioeconomic status of the occupation of the participant's parent or parents, as reported by the participant, was coded according to the Blishen scale. This scale assigns socioeconomic codes to the occupations listed in the *Canadian Classification and Dictionary of Occupations* (Blishen, Carroll, & Moore, 1987). For participants with two parents, the socioeconomic status codes of the parents were averaged.

Results

Overall, 13% of participants ($n = 82$, 47 girls, 35 boys) reported dating aggression (victimization, perpetration, or both) in two different dating relationships. Of the remaining participants, 55% reported no dating aggression in either relationship at Time 1 or Time 2, and 32% reported dating aggression in only one of their relationships at either Time 1 or Time 2. Participants who reported aggression in only one relationship were grouped together.[3] As shown in Table 1, at both times of data collection, frequency was low (most participants reported that acts occurred "rarely") and severity was minor ("pushing, grabbing, or shoving"). Among participants who reported aggression at both data collection points, frequency was higher in the second relationship: frequency, $F(1, 81) = 4.95$, $p < .05$; severity, $F(1, 81) = 6.60$, $p < .05$. Bidirectional aggression, in which the participant reported being both a perpetrator and a victim, was indicated by the majority of participants (Time 1 = 66%, Time 2 = 79%) and did not vary by number of violent relationships, $\chi^2(1, N = 280) = 0.69$, *ns*; or by gender, $\chi^2(1, N = 280) = 2.36$, *ns.*

Objective 1: Linear Versus Threshold Risk Model

To examine a cumulative risk factor model, we included a test of linear versus quadratic trend in a multiple logistic regression (to test the three-level outcome of no aggression, one violent relationship, or two violent relationships). We computed a cumulative risk score by summing dichotomous (above and below one standard deviation of the mean) peer and dyadic contextual risk variables. Number of risks ranged from zero to five (two dyadic, three peer risk factors). Age and gender were entered and found to be nonsignificant. The cumulative risk score contributed significantly to the model, $\chi^2(2, N = 621) = 82.02$, $p < .001$. The quadratic term (cumulative risk score squared) was found be nonsignificant, $\chi^2(2, N = 621) = 2.85$, *ns*. Relative risk ratios differentiated adolescents in two violent relationships from adolescents in one violent relationship ($\beta = .46$, Wald = 12.00, $p < .001$) as well as

[3] To assess concurrent risk factors of one violent relationship, we employed Time 2 variables for participants who reported a violent dating relationship at Time 2 only. The three groups (no aggression, one violent relationship, and two violent relationships) did not vary by gender, $\chi^2(1, N = 621) = 1.14$, *ns;* age, $F(2, 619) = .65$, *ns;* mean length of the first dating relationship, $F(1, 620) = .48$, *ns;* or mean length of the second dating relationship, $F(1, 620) = .64$, *ns*. Average length of dating relationship was approximately 4 months in Time 1 and 6 months in Time 2.

Table 1
Means and Correlation Matrix of T1 Risk Factors With T1 Dating Aggression and Recurrent Dating Aggression at T2

Variable (range)	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. T1 perpetration frequency (0-4)	0.10	0.29	—														
2. T1 victimization frequency (0-4)	0.13	0.33	0.82	—													
3. T1 perpetration severity (0-9)	1.88	2.97	0.78	0.62	—												
4. T1 victimization severity (0-9)	2.01	3.08	0.64	0.80	0.68	—											
5. T2 perpetration frequency (0-4)[a]	0.50	0.64	0.38	0.37	0.30	0.30	—										
6. T2 victimization frequency (0-4)[a]	0.51	0.62	0.41	0.44	0.31	0.35	0.86	—									
7. T2 perpetration severity (0-9)[a]	5.02	3.32	0.36	0.37	0.34	0.33	0.86	0.79	—								
8. T2 victimization severity (0-9)[a]	5.91	2.89	0.35	0.39	0.33	0.38	0.74	0.86	0.86	—							
9. Acceptance of male dating victimization	1.84	0.86	0.16	0.11	0.20	0.11	0.19	0.19	0.18	0.20	—						
10. Acceptance of female dating victimization (1-5)	1.91	0.92	0.19	0.12	0.21	0.13	0.20	0.20	0.18	0.21	0.89	—					
11. Relationship hostility	2.31	0.94	0.16	0.21	0.14	0.18	0.17	0.15	0.14	0.12	0.07	0.07	—				
12. Relationship conflict (1-5)	2.47	0.97	0.15	0.18	0.16	0.19	0.13	0.10	0.13	0.12	0.05	0.04	0.81	—			
13. Peer victimization (0-4)	0.30	0.47	0.57	0.61	0.40	0.44	0.32	0.35	0.27	0.31	0.11	0.11	0.10	0.07	—		
14. Peer perpetration (0-4)	0.32	0.49	0.65	0.55	0.49	0.41	0.33	0.36	0.28	0.32	0.15	0.15	0.05	0.06	0.84	—	
15. Delinquency (0-2)	0.21	0.25	0.44	0.42	0.35	0.33	0.26	0.29	0.22	0.24	0.15	0.13	0.10	0.11	0.46	0.54	—

Note. T1 = Time 1; T2 = Time 2.
[a]Means for T2 dating aggression presented for recurrent violent group only.
*R*s < .07 are significant at $p < .05$. *R*s < .10 are significant at $p < .01$. *R*s < .15 are significant at $p < .001$.

from youths in no violent relationships ($\beta = .78$, Wald = 103.88, $p < .001$). Follow-up analysis of variance confirmed the linear nature of risk and recurrent dating aggression, $F(3, 618) = 339.54$, $p < .001$, $\eta^2 = .36$. Post hoc Tukey tests confirmed that adolescents on recurrent trajectories had the highest Time 1 cumulative contextual risk scores ($M = 1.61$, $SD = 1.49$), followed by adolescents in one violent relationship ($M = 0.78$, $SD = 1.01$) and by adolescents in nonviolent relationships over time ($M = .19$, $SD = 0.53$).[4]

Objective 2: Moderator Models of Dating Aggression in One and Two Relationships

We used structural equation modeling (SEM) to assess two moderation models. The first model examined associations between concurrent risk factors and aggression in one relationship. The second model assessed longitudinal pathways to recurrent dating aggression in new relationships. Our goal in this investigation was to assess moderation of the relationships between contextual risk factors (aggressive peer contexts and negative relationships) and recurrent dating aggression by acceptance of dating aggression. The first model was cross-sectional and used all participants. In the second, longitudinal model, all participants who reported dating aggression at Time 1 ($n = 280$) were used to test the moderator model longitudinally for recurrent dating aggression at Time 2. Pathways to perpetration and victimization were tested simultaneously in each model. Given their anticipated significant association, these outcome constructs were covaried.

Prior to conducting the SEM analyses, we assessed the validity of the dating aggression, peer aggression, delinquency, and relationship characteristics by measuring underlying latent constructs. All factor loadings between the measured indicators and their factors were significant and provided evidence of an adequate assessment model.[5] Next, we conducted correlation analyses of all risk factors and the separate indices of dating aggression. Correlations, means, standard deviations, and ranges of all variables are presented in Table 1. As shown in this table, dating aggression indices in the first relationship shared a moderate association with dating aggression in the second relationship, and there was a strong association between reports of perpetration and victimization across time. Peer aggression and delinquency variables shared moderate-to-strong correlations with dating aggression variables,

[4] Results were replicated by separate testing of dyadic risk scores, $F(3, 618) = 8.64$, $p < .001$, and peer risk scores, $F(3, 618) = 152.26$, $p < .001$.

[5] Factor loadings for latent variables: Time 1 dating victimization (frequency = 0.97, severity = 0.83); dating perpetration (frequency = 0.99, severity = 0.82); peer aggression and delinquency (perpetration = 0.98, victimization = 0.86, delinquency = 0.55); negative relationship characteristics (conflict = 0.95, hostility = 0.87); acceptance of dating aggression (male aggression = 0.93, female aggression = 0.97); Time 2 dating victimization (frequency = 0.99, severity = 0.84); dating perpetration (frequency = 0.96, severity = 0.87). Factor loadings on factors other than the identified factor were all below 0.20.

whereas relationship characteristics, as well as acceptance of dating aggression, shared small associations with the dating aggression variables (J. Cohen, 1988). This pattern of correlations was consistent with our hypotheses and justified proceeding with the SEM models, as outlined.

The SEM analyses were conducted with AMOS 7.0 (Arbuckle & Wothke, 1999). Incomplete data were treated using the maximum likelihood approach available through the AMOS software (Byrne, 2001). AMOS uses full information maximum likelihood estimation with missing data, which results in unbiased parameter estimates and appropriate standard errors when data are missing at random. The method also assumes continuous, multivariate normal measures but is robust to violations of this assumption (Hu & Bentler, 1995). Covariances were included between all predictor latent variables and between victimization and perpetration. Age and socioeconomic status were included as covariates but were nonsignificant and were not presented in the final models.

Moderation by acceptance of aggression. We tested moderation by creating two interaction latent exogenous variables (acceptance by peer context and acceptance by negative relationship characteristics). As outlined in Kline and Dunn (2000), creation of interaction terms through the use of latent factors with continuous variables involved cross multiplying centered original variables of each latent factor.

Moderation by gender. After assessment of moderation by acceptance of aggression, we assessed each model for fit by gender. For each of the models, we followed the multisample approach for moderation involving a dichotomous variable (Rigdon, Schumacker, & Wothke, 1998). In this approach, two models are computed: one where the parameters in question are constrained to be equal across the groups and the other where the parameters are allowed to differ. A nonsignificant chi-square difference suggests that the equality constraints are consistent with the data and, thus, that an interaction effect between groups does not exist.

Concurrent Model of Dating Aggression in One Relationship

There were no significant structural coefficients from the interaction variables to dating victimization or perpetration in the concurrent model (βs = −.01 to −.08). The model was reassessed without the interaction terms and with the inclusion of acceptance as an additional risk factor. To assess differences among boys and girls, we allowed the multisample SEM that constrained the structural paths to be equal across gender fit and the model in which these paths were free to vary across gender, $\Delta\chi^2(8) = 11.70$, *ns*. The final model fit the data well, $\chi^2(36, N = 621) = 75.73$, $p < .001$, goodness of fit index (GFI) = .98, adjusted goodness of fit index (AGFI) = .96, root-mean-square error of approximation (RMSEA) = .042, 90% confidence interval (CI) = .029–.055. The standardized weights for the hypothesized pathways are shown in Figure 1. Specifically, negative relationship characteristics and aggressive peer content were significantly related to aggression in dating relationships at Time 1. In this concurrent model, acceptance was associated only with perpetration of aggression. The paths between aggressive peer context and dating aggression were significantly stronger than were the paths between dating aggression and acceptance: perpetration, $t(621) = 12.63$, $p < .0001$; victimization, $t(621) = 11.67$, $p < .0001$. They were also significantly stronger than were the paths between dating aggression and negative relationship quality: perpetration, $t(621) = 13.40$, $p < .0001$; victimization, $t(621) = 8.05$, $p < .0001$.

Longitudinal Model of Recurrent Aggression Across Two Relationships

The results of the second model showed that there were significant structural coefficients from the interaction constructs to recurrent victimization and perpetration (βs = .18–.22). In addition, poorer fit indices showed that the model as specified did not fit the

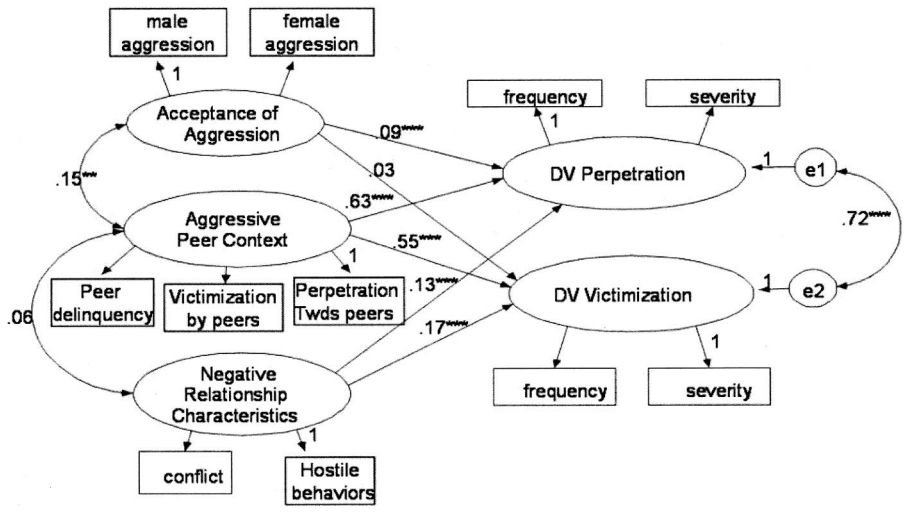

Figure 1. Structural equation model of concurrent risk factors of dating aggression in one relationship. Numbers represent standardized weights for the hypothesized pathways. DV = dating violence. *e1* and *e2* are error variance terms. $^{**}p < .01$. $^{***}p < .001$.

data well (GFI = .69, AGFI = .61, RMSEA = .188, 90% CI = .180 to .195). The next step was to understand the nature of the significant interaction terms. The 280 cases were divided into two groups: those with low scores on aggression acceptance ($n = 206$) and those with high scores on aggression acceptance (1 standard deviation above the mean; $n = 74$). The high acceptance group was characterized by scores of 3, 4, or 5, whereas the low acceptance group was predominantly characterized by scores of 1 or 2. We then employed simultaneous multisample SEM to compare the model constraining the structural paths to be equal across group with a model in which these paths were free to vary across group. Comparison showed that the SEM constraining the structural paths to be equal across group, $\chi^2(43, N = 280) = 61.00$, $p = .091$, GFI = .94, AGFI = .90, RMSEA = .035, 90% CI = .009–.056, did not fit as well as did the model in which these paths were free to vary across group, as indicated by the test of fit difference across the models, $\Delta\chi^2(4) = 11.4$, $p < .025$.The final model, in which the paths were free to vary across group, fit the data well, $\chi^2(43, N = 280) = 49.63$, $p = .294$, GFI = .96, AGFI = .93, RMSEA = .019, 90% CI = .000–.046. We then employed multisample SEM separately on the two groups (low and high acceptance) to test fit of the model across gender. For both groups, the multisample SEM that constrained the structural paths to be equal across gender fit the data as well as did the model in which these paths were free to vary across gender: low acceptance, $\Delta\chi^2(4) = 6.9$, *ns;* high acceptance, $\Delta\chi^2(4) = 7.4$, *ns*. Final models are shown in Figure 2. For adolescents in the low acceptance group, negative relationship characteristics were associated with recurrent perpetration and victimization. For adolescents in the high acceptance group, peer aggression and delinquency were associated with recurrent perpetration and victimization. The paths between aggressive peer context and dating aggression were significantly stronger than were the paths between negative relationship quality and dating aggression: perpetration, $t(621) = 3.055$, $p < .01$; victimization, $t(621) = 4.57$, $p < .0001$.

Discussion

The present study demonstrated two conceptual risk models for understanding recurrent dating aggression across different relationships. First, our results supported a linear model of contextual risk factors for recurrent aggression, in which number of risk factors differentiated recurrent aggression from both isolated patterns of aggression and nonviolent relationships. Second, a moderator model indicated that acceptance of dating aggression moderated the association between peer and dyadic risk factors in the longitudinal prediction of recurrent dating aggression.

Thirteen percent of adolescents in this sample reported aggression across two different relationships. This finding extends emerging longitudinal evidence of stability in intimate aggression during adolescence. However, few adolescents reported severe acts of injurious violence, and most adolescents responded that the acts occurred only on rare occasions. Nonetheless, even at these reported low levels, aggression remains a concern due to its stability, its increasing nature across different relationships, and the subsequent risk of negative sequelae in new dyads. Our results suggest that relationship aggression may be stable for some individuals and that it is not just something that happens in isolated dating situations.

In the current study, equivalent numbers of boys and girls reported aggression across different dating relationships. This finding extended previous findings of mutual partner aggression in cross-sectional studies of intimate aggression (e.g., Foshee, 1996; O'Keefe, 1997). Although these results appear inconsistent with traditional views of domestic aggression, studies of adolescents often find profiles of both partners perpetrating and sustaining aggression (Avery-Leaf, Cascardi, O'Leary, & Cano, 1997; Foshee, Linder, MacDougall, & Bangdiwala, 2001). It is possible that dating aggression may differ in meaning for adolescents compared with adults, perhaps due to the status or commitment of the relationship as well as to salient co-occurring developmental processes, such as individuation and increased autonomy. Adolescent dating aggression represents an important juncture in the developmental pathway to partnerships in adulthood. Future research is needed to increase our understanding of the meaning of intimate aggression during this transition.

Trajectories of recurrent dating aggression were supported by both contextual and attitudinal risk factors, as highlighted in the risk models assessed. A linear risk model was supported, such that the number of contextual risks predicted an increased probability of recurrent dating aggression in adolescence. Cumulative risk

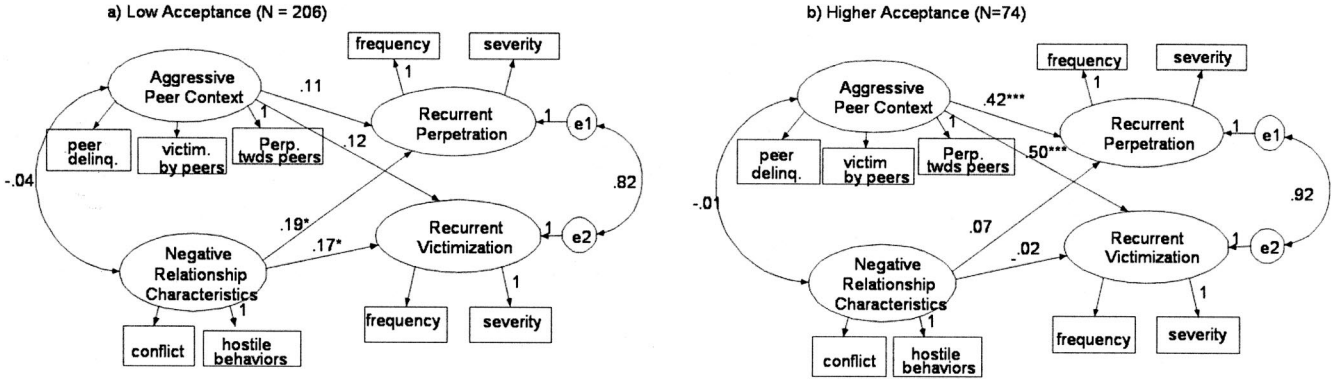

Figure 2. Structural equation model of longitudinal risk factors of recurrent dating aggression in a different relationship. Numbers represent standardized weights for the hypothesized pathways. *e1* and *e2* are error variance terms.

scores varied in a stepwise fashion, and, as anticipated, adolescents involved in two violent relationships reported the highest cumulative risk. Clearly, these findings highlight an at-risk sample of youths on trajectories of increased problems in their peer and dyadic relationships. Although adolescents who experience more risk factors are at increased risk for recurrent dating aggression, the nonsignificant quadratic effect suggests that there may be no particular threshold beyond which outcomes become significantly worsened. Our findings suggest that every risk factor reduced is meaningful to an adolescent's functioning and that, therefore, intervention services can be targeted successfully at youths who demonstrate varying levels of risk (Appleyard, Egeland, van Dulmen, & Sroufe, 2005). However, we must acknowledge the limitations of this amalgamated approach, the most notable of which is that risk factors may be misunderstood as interchangeable. Additionally, it is possible that the low level of problem behavior in this sample precluded a proper test of the quadratic model of risk. If delinquency and peer aggression are very low, no individuals may evidence sufficient behavior of this kind to surpass what could be considered a threshold of risk.

Our results also supported a moderator longitudinal model, in which the contribution of contextual risk factors was contingent on the level of individual acceptance that adolescents reported. This difference between the concurrent and longitudinal models suggests that associations among risks vary according to the persistence of the problem behavior. Continued involvement in dating aggression may operate differently from episodic experiences. Specifically, these longitudinal results suggest two different trajectories of risk associated with continuing relationship aggression.

The strong link between accepting attitudes, peer aggression, and delinquency as precursors to both concurrent and recurrent aggression suggests a "delinquency trajectory" that supports continuing aggression across different romantic relationships. Attitudes and deviant peer contexts are often mutually reinforcing, such that attitudes both shape and are influenced by aggressive and delinquent activities shared with peers (G. Cohen & Prinstein, 2006). Additionally, these individuals may couple with similarly aggressive partners within their larger peer context (Krueger, Moffitt, Caspi, Bleske, & Silva, 1998; Quinton, Pickles, Maughan, & Rutter, 1993). Specific peer interaction processes, such as hostile talk about partners, may reinforce recurrent patterns of aggression. Given the consistency in their attitudes and behaviors, these youths, without significant intervention efforts, will likely continue along this deviancy trajectory. Therefore, for adolescents with neutral or more accepting attitudes toward dating aggression, interventions targeting parallel changes in attitudes and peer selection are warranted.

In comparison, among adolescents with less accepting attitudes toward dating aggression, prior relationship conflict and hostility was the sole predictor of aggression with a new partner. The fact that previous relationship negativity shared a small but significant relationship with continued aggression in a new relationship illustrated a different pathway of risk involving pervasive difficulty in resolving conflict and hostility. These adolescents may have conflictual interaction styles that are brought forward into new relationships, where they result in increased probability of arguments that escalate into aggression (Shulman, Tuval-Mashiach, Levran, & Anbar, 2006). Such adolescents may be increasingly susceptible to elevations in overt distress that are triggered by relational arguments and negativity. These adolescents could also be more sensitive to rejection or be enmeshed in their relationship and thus could perceive conflict as a heightened threat (Downey & Feldman, 1996; Downey, Freitas, Michaelis, & Khouri, 1998). The dissonance between the attitudes of these adolescents and their behaviors brings into question the appropriateness of traditional interventions that aim to change attitudes (Festinger, 1957; Schumacher & Slep, 2004). It is possible that the discord between behavior and attitudes may resolve toward more adaptive functioning and involvement in future nonviolent relationships (Schumacher & Slep, 2004). Alternatively, these adolescents may resolve their attitudes and achieve greater consistency in their aggressive behavior, with a resulting higher acceptance of interpersonal aggression.

Overall, the current findings support a clinical approach that reflects cognizance of the linear nature of peer and dyadic contextual risk factors and of the moderating role of an adolescents' acceptance of aggression. Our findings suggest a potential two-pronged approach that addresses the influence of contextual risk factors differentially by adolescents' attitudes. Many intervention projects are meant to increase knowledge about dating aggression in order to challenge and change attitudes that justify or support dating aggression (e.g., Avery-Leaf et al., 1997; Foshee et al., 1998; Jaffe, Sudermann, Reitzel, & Killip, 1992; Macgowan, 1997; Pittman, Wolfe, & Wekerle, 1998). Although many of these programs are successful in educating youths about dating aggression, very few track or target peer context characteristics. School-based interventions obviously target entire peer groups; however, researchers should incorporate more peer-focused interventions and attitudinal targets in an effort to reduce recurrent aggression among youths along general delinquent and aggressive pathways. Due to the dangers of treatments that group deviant youths together (Dishion et al., 1996; Fo & O'Donnell, 1975), current directions for interventions that target adolescents on problematic peer pathways include multimodal approaches, such as family involvement, skills training for youths, schoolwide behavior management, and exposure of youths to peers on nondeviant trajectories (Dodge, Dishion, & Lansford, 2006).

Many intervention programs include a conflict management component (Avery-Leaf et al., 1997; Foshee et al., 1998, 2000; Macgowan, 1997; Wolfe et al., 2003), yet fewer programs consistently show improvements in interpersonal skills and use of constructive communication (Foshee et al., 1998, 2000). Future intervention and clinical work may benefit from building on current theories of relationship conflict (i.e., Gottman, 1991; Shulman et al., 2006). These theories acknowledge that conflict is inevitable among couples and can be beneficial to relationships when accompanied by constructive responses. Adaptive strategies include respect for balance between needs of the individual and those of the dyad (Shulman, 1995). Interventions among youths need not focus exclusively on minimizing conflict among dating partners but can stress the importance of minimizing associated negative affect and hostility as an effort to decrease the probability of escalation to aggression (Gottman, 1991; Shulman, 1995; Shulman et al., 2006).

Although this study demonstrated significant pathways between all risk factors and dating aggression, the strength of associations varied. Pathways between aggressive peer contexts and dating aggression were consistently stronger than were the paths between dating aggression and negative relationship characteristics across

models, as well as acceptance of aggression in the concurrent model. This difference is interesting and informative in terms of further support for the developmental transmission of aggression through the peer arena, and it also has implications for intervention in a time of limited resources. Our findings strongly suggest that, to prevent aggression from transcending multiple contexts, interventions are perhaps most saliently justified, at least initially, at the peer system.

As anticipated, our models of dating aggression fit the data well for both boys and girls, and predictors were similarly associated with reports of both victimization and perpetration. This finding is most likely due to the high overlap in experiences of victimization and perpetration reported by both boys and girls. Although gender differences have been previously documented, they pertained to differing strengths of association (e.g., attitudes more strongly associated with boys' aggression than with girls') or of variables not assessed in the current study, such as family-of-origin aggression, race, and drug or alcohol use (Foshee et al., 2001; Riggs & O'Leary, 1996). It should be noted that our study examined the longitudinal prediction of continuing aggression among boys and girls. This approach is distinct from that of previous examinations of concurrent or longitudinal prediction of any reported dating aggression (Foshee et al., 2001; Riggs & O'Leary, 1996).

Some limitations of the present study should be noted. First, utilization of participants who were attending school across a 1-year time frame may have caused loss of more at-risk youths who may have dropped out of school. This sampling strategy may, in fact, have led to an underestimation of the prevalence of recurrent dating aggression, as suggested by the higher frequency of dating aggression among nonlongitudinal participants. The relatively infrequent and minor severity of the aggression reflected in this sample also decreases the generalizability of these findings. Second, our assessment of dating aggression was limited, as this study lacked information from both dating partners, relied exclusively on self-report, and assessed aggression using two, noncontiguous 6-month periods, in which aggression was assessed with current or most recent partner. Subsequently, the partner's perspective is not acknowledged, nor do we know how many other relationships may have contained aggression over the entire year. Additionally, as participants were asked only about their current or most recent relationship, variation in relationship length may have influenced estimates of aggression frequency. Third, although the Conflict Tactic Scale (Straus, 1979) is by far the most widely used instrument for assessment of dating aggression, critics note its inattention to associated physical consequences or underlying motivations (i.e., self-defense; Dobash, Dobash, Wilson, & Daly, 1992; White, Smith, Koss, & Figueredo, 2000). Finally, given that the participants were predominantly middle-class youths from two-parent households of European background, the findings are not generalizable to youths from more diverse backgrounds.

Despite these limitations, our findings illustrate the importance of studying variation and stability in dating aggression across different relationships, so that we may identify youths on continuing maladaptive trajectories of aggression. Researchers should now examine trajectories of dating aggression among younger adolescents to see how early patterns of aggression may be reinforced or rejected during the initial stages of romantic development. Additionally, future investigation of relationships during the transition from late adolescence to early adulthood would provide information about how trajectories of aggression extend to more committed relationships in adulthood. Such efforts will better inform prevention and intervention services to divert youths from maladaptive pathways before intimate relationship styles consolidate and carry forward into marital and family aggression.

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