Adolescent Relations with Their Mothers, Siblings, and Peers: An Exploration of the Roles of Maternal and Adolescent Self-Criticism

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The main purpose of the present study was to investigate self-criticism as a potential mediating factor in the link between mother–adolescent relationships with aggression and perceptions of social competence. The sample consisted of 888 older ($M = 14.3$ years) and younger ($M = 11.6$ years) adolescent children from the same family. Maternal self-criticism strongly corresponded to the quality of relationships with children, and an intergenerational similarity in levels of self-criticism, particularly for older children, was found. Mother–adolescent relationships and adolescent self-criticism were significantly related to aggression and perceptions of social competence. In addition, results supported the hypothesis that self-criticism in adolescents mediates the link between mother–adolescent relationships and social competence.

The impact of the mother–child affectional bond on the child’s social competence and behavioral organization across childhood and adolescence has been well documented by attachment researchers (see Erel, Oberman, & Yirmiya, 2000, for a meta-analysis). The impact of these bonds on self-evaluations and personal schemas also is well established (e.g., Baldwin, Fehr, Keedian, Seidel, & Thomson, 1993). Considered together, these two perspectives would suggest that although mother–child relationships are likely to have a direct impact on the developing child’s social behavior in other relationships and perceptions of social competence, a potential intervening link between mother–child relationships and perceptions of social competence are self-evaluations. One form of self-evaluation, or self-criticism, is a likely candidate as a mediating variable as it originates with a mother’s unavailability and lack of nurturance (Blatt & Homann, 1992), or maternal behaviors also implicated in undermining social competence (e.g., Mongrain, 1998). A major purpose of this investigation was to study self-criticism, in both mothers and their adolescent children, in relation to qualities of the mother–adolescent relationships and the adolescents’ experiences in their social relationships and perceptions of social competence (Figure 1).

Although the major focus of the present investigation was on a self-evaluation that was generally negative, or self-criticism, our assessments of the mother–adolescent relationship quality included both a positive (i.e., warmth) and negative quality (i.e., power assertiveness), in order to more fully understand the effects of self-criticism on this relationship captured multidimensionally. In characterizing the adolescent’s social functioning we focused on aggression in their peer and sibling relationships. We also included the adolescents’ perceptions of their overall social competence, as yet another way of characterizing...
socioemotional adjustment, and in pursuing an understanding of the potential for mother or adolescent self-criticism in either promoting or undermining this critical aspect of development.

ASSOCIATIONS BETWEEN SELF-CRITICISM AND THE QUALITY OF MOTHER–ADOLESCENT RELATIONSHIPS

Self-criticism is a negative cognitive style or personality trait characterized by the negative evaluation of the self; self-dissatisfaction; and an ongoing sense of inferiority, inadequacy, hopelessness, and self-doubt (Blatt, 1974; Blatt & Homann, 1992). Given this definition, parents high in self-criticism may be likely to suffer from a lack of confidence in their parenting ability and lack sufficient coping skills for managing parenting stress and anger, resulting in less optimal parenting and relationships with their children characterized by their negativity. Stated broadly, parental self-schemas play a central role in parents' appraisals of child behavior, which in turn impact parental responses. Self-representations further serve as a basis for determining attitudes about appropriate parental response to child behavior (Azar, Nix, & Makin-Byrd, 2005). In support of this assumption, Thompson and Zuroff (1998) demonstrated that self-criticism in mothers was associated with giving more explicit commands and negative feedback to their adolescent daughters. Zuroff, Koestner, and Powers (1994) found that self-criticism during adolescence predicted dissatisfaction with one's own parenting ability during adulthood. Drawing from this research, we expected that maternal self-criticism would be negatively related to maternal warmth and positively related to maternal power assertion as described in interactions with young adolescent children.

Although a variety of theories have been advanced to account for the impact of parent–child relational qualities and processes on children's own self-schemas, attachment theory proposes that experiences of negative or less optimal parent–child interactions are internalized by the adolescents as their own negative mental representations of relationships and of themselves (i.e., self-criticism; Bowlby, 1969, 1973). That is, early relationships with parents lay down representations or schemas that serve to interpret, evaluate, appreciate, and respond to social situations and impact self-understanding (Thompson & Raikes, 2003). Empirical work supports this contention whereby poor maternal care was found to be associated with high self-criticism in adolescents (Cheng & Furnham, 2004). Young adolescents who reported distant relationships with their parents were also vulnerable to self-criticism (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Moreover, restrictive parenting was prospectively associated with self-criticism above and beyond the effect of child temperament (Koestner, Zuroff, & Powers, 1991). Therefore, we predicted that maternal warmth would be negatively and maternal power assertion would be positively related to adolescent self-criticism.
Self-criticism may be transmitted transgenerationally because parents and children are likely to share a set of inherent personality traits (McGue & Lykken, 1992). Alternatively, a child may incorporate his or her parent’s cognitive style, such as a negative evaluation of the self, through observational learning (Bandura, 1977). In addition, parental expression of emotion (e.g., hostility or anger) influences children’s socioemotional competence through mechanisms such as shaping children’s feelings about themselves, others, and the social world (Eisenberg, 1998). Thus, we expected that maternal self-criticism would be positively linked to adolescent child self-criticism.

Because significant associations among maternal self-criticism, mother–adolescent relationships (i.e., maternal warmth and power assertion), and adolescent self-criticism were expected, we further hypothesized that mother–adolescent relationships would mediate the association between maternal and adolescent self-criticism. That is, the mother’s negative self-evaluations would be most effectively transmitted through her interactions with the child as reflected in the qualities of those relationships. The proposition that the parent–child relationship serves as the conduit for the transmission of the parent’s characteristics to the child, beyond the influence of their shared genetic makeup, is fundamental to much of the literature on parenting (Vondra, Sysko, & Belsky, 2005) and central to attachment theory. Our goal was to test mediation statistically, but the data analyzed were all collected at one point in time. Mediation implies causality, which assumes a temporal association (see Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). Therefore, interpretation of the results would be limited to determining if the mediated associations revealed were consistent with the theoretically based assumptions. To clarify, we were interested in mediation as opposed to moderation, assuming that maternal self-criticism would act as a catalyst or potentiator of parenting characterized by its assertiveness, and thus this relationship quality plays a meditational role in promoting more negative self-representations among young adolescents, even young adolescents in the same family.

ASSOCIATIONS AMONG MOTHER–ADOLESCENT RELATIONSHIPS, AGGRESSION, AND PERCEPTIONS OF SOCIAL COMPETENCE

To understand the contribution of the quality of mother–adolescent relationships to aggression and perceptions of social competence, attachment theory is relevant again. Specifically, attachment theory argues that parenting characterized as unresponsive, aloof, and cold is likely to produce maladaptive internal working models that lead to unfavorable developmental outcomes, such as aggression and incompetent social behavior (Bowlby, 1973; Gomez & McLaren, 2007).

Although there has been a relative dearth of empirical research on the association between mother–child attachment relationships and sibling aggression, a small body of research has shown that an insecure mother–child attachment (Teti & Ablard, 1989) or maternal rejection (MacKinnon-Lewis, Starnes, Volland, & Johnson, 1997) are positively related to aggression between siblings. In addition, sibling aggression is significantly related to peer aggression even after controlling for maternal rejection (MacKinnon-Lewis et al., 1997). Drawing upon theory and the empirical evidence, we predicted that qualities of mother–adolescent relationships would play a critical role in adolescent children’s aggression toward siblings and peers and their perceptions of social competence.

Previous studies have produced mixed findings regarding the link between aggression and peer social competence. The results of meta-analyses, however, showed that peer aggression is positively associated with peer rejection and negatively associated with social preference (i.e., acceptance minus rejection scores), but the latter pattern tends to wane with age (Card & Little, 2006). With regard to the association between aggression and peer acceptance, a firm conclusion cannot be drawn because of insufficient evidence on these relations (Card & Little, 2006). Given the seemingly inverse relations between peer aggression and social competence, we cautiously hypothesized that higher levels of peer aggression may be linked to poorer perceived social competence.

ASSOCIATIONS BETWEEN ADOLESCENT SELF-CRITICISM AND AGGRESSION/SOCIAL COMPETENCE

Positive self-evaluations are described as capable of fostering more prosocial and less aggressive behavior (Bowlby, 1973; Gomez & McLaren, 2007). In contrast, negative representations or schemas of self shaped by distant and even aversive parent–child relationships are likely to set the stage for anger and hostility and prone to elicit aggressive behavior. In further support of this view, researchers have consistently shown that self-critical adolescents exhibit higher levels of externalizing problems including aggression (Kuperminc, Blatt, & Leadbeater, 1997; Leadbeater et al., 1999). More important, Kuperminc, Leadbeater, and Blatt (2001) demonstrated that self-criticism in adolescents predicted externalizing problems including aggression and delinquency 1 year later, even after controlling for prior
levels of externalizing behavior. We therefore expected that adolescent self-criticism would be positively associated with both sibling- and peer-directed aggression.

As described earlier, negative parenting experiences have a detrimental impact upon one’s mental representations of self and others. Self-critics who have a history of aversive and controlling parent–child interactions are likely to suffer from social and interpersonal difficulties. Thus, these self-critics tend to generally display social avoidance and disengagement due to the intense fear of being rejected, abandoned, and ridiculed (Blatt & Zuroff, 1992; Zuroff & Fitzpatrick, 1995). Zuroff et al. (1994) reported evidence that self-criticism in children predicted later social disengagement in high school. Self-criticism in young adolescents was found to be related to poorer social skills and lack of bonding with peers (Fichman, Koestner, & Zuroff, 1994; Kuperminc et al., 1997). In a related vein, self-criticism was positively related to loneliness among Israeli college students (Wiseman, Mayseless, & Sharabany, 2006). It was also reported that self-critical college students did not feel a sense of belonging and acceptance within a social network and did not rely on others for help, and their peers were less likely to know these self-critical students and described them as being less expressive (Mongrain, 1998). We predicted, therefore, that adolescent self-criticism would be associated with lower perceived social competence.

In summary, self-schemas are believed to originate in experiences with caregivers, which then subsequently serve to assist individuals in experiencing and interpreting the social world. These schemas, working models, or mental representations of the self are acquired and serve as filters or catalysts in awareness of subsequent social interactions predicting to future social behaviors and perceptions of social skills. Thus, the direct relationship between mother–adolescent relationships and adolescent adaptive behavior is largely mediated through the adolescent’s cognitive schema. We therefore hypothesized that adolescent self-criticism, a self schema, would mediate the link between qualities of the mother–adolescent relationships and sibling-/peer-directed aggression or social competence. The prediction of mediation was again based on assumptions highlighted in attachment perspectives (Bowlby, 1969, 1973) as well as other emergent models involving cognitions about the self and consequences for social relations (Kupersmidt & DeRosier, 2004).

OLDER VERSUS YOUNGER SIBLINGS

Although the central aim of this study was not to test differences between older and younger siblings, it is worth considering how older and younger siblings differ in their self-criticism and its potential correlates. Koestner et al. (1991) found that self-criticism was substantially stable from early adolescence to young adulthood for women, but the same was not true for men. Fichman et al. (1994), however, reported that adolescent self-criticism tended to decrease over the high school years. Generally, younger siblings tend to be more vulnerable to negative maternal behavior than older siblings partly due to their age or relative status in the family (e.g., Yu & Gamble, 2008). At the same time, younger siblings are more likely than older siblings to receive effective parenting and have harmonious parent–child relationships owing to parents’ childrearing experiences and increased understanding of adolescent children (Whiteman, McHale, & Crouter, 2003). Thus, the content of self-evaluations and their subsequent impact may be undergoing a variety of changes during adolescence, yet the specific information about self-criticism related to older versus younger siblings is sparse.

THE PRESENT STUDY

Whereas previous researchers have individually tested each relationship between the variables in the model, we sought to extend earlier work by considering simultaneously adolescents’ relationships with their mother, sibling, and peers, as well as self-criticism as a central mediator by bringing them all together into a single inquiry. That is, the present study is the first to examine the associations among the variables in the single model using multiple informants to provide a more complete knowledge of direct and indirect effects of maternal and adolescent self-criticism. In particular, our study attempted to investigate important but relatively untested theoretical assumptions about a crucial role for adolescent self-criticism as a nexus between mother–adolescent relationships and adolescent adjustment.

We addressed the following research hypotheses to examine direct and indirect relationships among variables:

1. Maternal self-criticism would be negatively linked to maternal warmth and positively linked to maternal power assertion.
3. Maternal warmth and power assertion would be negatively and positively, respectively, related to adolescent self-criticism.
4. Mother–adolescent relationships (i.e., maternal warmth and power assertion) would function as a mediator between maternal self-criticism and adolescent self-criticism.
5. Maternal warmth and power assertion would be negatively and positively, respectively, associated with sibling- and peer-directed aggression. In a similar fashion, maternal warmth and power assertion would be positively and negatively,
respectively, related to perceptions of social competence. In addition, sibling aggression would be positively related to peer aggression, which in turn would be negatively associated with perceptions of social competence.

6. Adolescent self-criticism would be positively linked to sibling- and peer-directed aggression but negatively linked to perceptions of social competence.

7. Adolescent self-criticism would mediate the links between mother–adolescent relationships and sibling-/peer-directed aggression or perceptions of social competence.

METHOD

Participants

The sample consisted of 444 triads consisting of mothers and their older and younger adolescent sibling children. To be eligible for participation, each family had to have a mother (M age = 40.2, SD = 6.7), a child in fifth, sixth, or seventh grade (M age = 11.6, SD = 1.8), and his or her older sibling closest in age (M age = 14.3, SD = 2.1). Of 1,051 mothers who initially were interested in the survey, 42% of those and two of their children completed the survey questionnaires. We selected for these analyses only those families who had complete data from all three family members. The mothers whose data were analyzed were not different from those mothers whose adolescent children had not responded in terms of household income, education, ethnicity, marital status, or employment status. The families included in the final sample resided in more than 40 states in the United States and responded to online surveys. There were approximately equal numbers of boys (younger siblings, n = 237; older siblings, n = 216) and girls (younger siblings, n = 207; older siblings, n = 218). Most mothers (83.1%) identified themselves as European American, 5.5% as African American, 4% as Hispanic, 3.9% as Asian American, 1.8% as Native American, and 1.7% as belonging to the other ethnic groups. Approximately 65% of mothers attained some postsecondary education, 12% reported some graduate school training or a graduate degree, 22% completed high school, and 1% reported having less than high school education. The median annual household income fell between $60,000 and $69,999. Most mothers (84.6%) were married, and the remainder were single heads of households.

Procedure

Data were collected from families who completed online Web-based surveys. Global Market Insite, an offline and online panel provider, recruits and retains interested families from across the nation. Families received compensation for participating in this study through Global Market Insite. Both the mothers’ and siblings’ surveys began with information regarding their rights and responsibilities as research participants. Prior to proceeding to the questions, each respondent was asked to read that information describing the purpose of the study and their role in the study. The participating families were assured that all information collected would be secure and confidential and that it would be used exclusively for scientific purposes. Information on how to contact the principle investigator was provided for all potential participants (i.e., mothers) to encourage them to discuss any concerns or ask any questions about the study. All participants completed the online consent form prior to taking the survey. This study was reviewed and approved by a university Institutional Review Board. A pilot study was conducted to ensure that survey questions were understandable and to estimate the total amount of time required to complete the surveys prior to collecting data via Global Market Insite.

Measures

Participating mothers answered the questions regarding mother–adolescent relationships and children’s social competence for their older and younger children, respectively. Except for the measures of peer aggression and mothers’ perceptions of the social competence of their children, representative items for the remaining variables were selected from the original scales to help avoid respondent fatigue and low response rates. We summed and averaged responses to the items of each subscale. Reliability was checked using both Cronbach’s alpha and the corrected item-total correlation (i.e., the correlation between an item and the composite score of all the items forming the same set). Alpha values greater than .70 (P. Kline, 1993) and a corrected item-total correlation value of .30 or more (Nunnally & Bernstein, 1994) were deemed acceptable. All the measures showed acceptable levels of reliability for all respondents.

Self-criticism. Mothers, older siblings, and younger siblings completed the Self-Criticism subscale (four items) from the Depressive Experiences Questionnaire–Adolescent Version (Blatt, Schaffer, Bers, & Quinlan, 1992). Sample items read, “There is a big difference between how I am and how I wish were” and “Usually I am not satisfied with what I have.” Responses were solicited using a 4-point scale, ranging I (not true for me) to 4 (very true for me). Cronbach’s alpha was .71 for mothers, .76 for older siblings, and .71 for younger siblings.

Maternal warmth. We asked mothers and adolescents independently to complete four items from the Warmth subscale (e.g., “How much do you and this child
love each other?”) from the short version of the Parent–Child Relationship Questionnaire (Furman & Giberson, 1995). Items were rated on a 5-point scale anchored at 1 (little or none) and 5 (the most). Cronbach’s alphas were as follows: older children (.82, mother; .91, child) and younger children (.80, mother; .90, child).

**Maternal power assertion.** Mothers and adolescents responded to the Power Assertion subscale (six items; e.g., “How much do you yell at this child for being bad?”) from the short version of the Parent–Child Relationship Questionnaire (Furman & Giberson, 1995) using a 5-point scale, ranging 1 (little or none) to 5 (the most). Cronbach’s alphas for mothers (older/younger child), older, and younger siblings were .92/.90, .90 and .90, respectively.

**Sibling aggression.** We assessed both the adolescent’s self-reported perpetration of aggression against the sibling and his or her sibling’s self-reported victimization of aggressive acts to capture the dyadic quality of this behavior in the relationship. For example, to measure aggression by older siblings against younger siblings, we included both older siblings’ reports of their own perpetration against their younger siblings and younger siblings’ victimization by their older siblings. Similar data were collected to reflect the younger siblings’ behaviors. Both older and younger siblings rated four items on their own perpetration of aggression (e.g., “I hit and push around my sister or brother”). Duncan (1999) modified the Peer Relations Questionnaire (Rigby & Slee, 1993) to reflect sibling aggression, and we adopted these items. Responses were scored on a 4-point scale ranging from 1 (never) to 4 (often). Cronbach’s alphas for older and younger siblings were .87 and .89, respectively. In addition, the adolescents reported victimization by their siblings (four items; e.g., “My sister or brother hits me and pushes me around”) on a 4-point scale, ranging 1 (never) to 4 (often). Cronbach’s alphas for older and younger siblings were .87 and .89, respectively.

**Peer aggression.** Adolescents completed the Tendency to Bully subscale (six items; e.g., “I enjoy upsetting wimps”; Duncan, 1999). Duncan modified the Peer Relations Questionnaire (Rigby & Slee, 1993), which was designed for Australian youth, to make it more understandable for American youth. Items were rated on a 4-point scale, ranging 1 (never) to 4 (often). Cronbach’s alpha was .96 for older siblings and .97 for younger siblings.

**Perceptions of social competence.** To measure perceptions of social competence, the adolescents completed the Social Competence subscale (four items; e.g., “I have a lot of friends”) from the Perceived Competence Scale for Children (Harter, 1982). Response options ranged from 1 (not true for me) to 4 (very true for me). Cronbach’s alpha was .72 for older siblings and .71 for younger siblings. The adolescents also responded to five items (e.g., “Your classmates like the way you are”) from the Level of Classmate Approval subscale (Robinson, 1995) on a 5-point scale, ranging 1 (not at all) to 5 (definitely). Cronbach’s alphas for older and younger siblings were .82 and .80, respectively. In addition, to measure mothers’ perceptions of the social competence of their children, we adopted four items (e.g., “In general how good is your child at making friends?”) from Wave 4 of the Michigan Study of Adolescent and Adult Life Transitions (Eccles et al., 1989). Responses were scored on a 5-point scale ranging from 1 (not very good) to 5 (very good). Cronbach’s alpha was .92 for older siblings and .89 for younger siblings.

**Analysis Plan**

Our data analysis proceeded through five steps. Unless otherwise specified, all analyses were done separately for older and younger siblings because mothers reported on their own self-criticism once. First, we computed zero-order correlations to gain preliminary insight into the associations among the observed variables. Second, paired t-tests were conducted to compare the older and younger siblings’ responses or mean scores. Third, the hypothesized model in Figure 1 was tested using structural equation modeling (SEM). Fourth, multi-group analyses were conducted to test for measurement equivalence/invariance (ME/I) and structural invariance across gender. Fifth and finally, mediation models were tested with SEM.

**RESULTS**

**Preliminary Analyses**

Descriptive statistics (means and standard deviations) and bivariate correlations for all variables by birth order are shown in Table 1. All correlations were in the expected direction and were similar for older and younger siblings. The mean differences in the observed variables between older and younger siblings were tested by paired sample t tests. Results indicated that older siblings reported higher self-criticism, \( t(440) = 2.27, p < .05, d = .13, \) and lower sibling victimization, \( t(430) = 2.82, p < .01, d = .13, \) than younger siblings did. Mothers reported lower maternal warmth, \( t(441) = -3.01, p < .01, d = -.09, \) and higher maternal power assertion, \( t(441) = 2.64, p < .01, d = .08, \) toward older than younger siblings. Although statistically significant, its clinical significance may be negligible because of the small effect sizes.
the diagonal (the number ranged from 430 to 444). MR

12. Classmate Approval–AR

8. Sibling Victimization–SR .24

7. Sibling Aggression–AR .32

5. Power Assertion–AR .40

2. Warmth–MR .68 .62 .81 .90 .99 .66 .67 .63 .64 .66 .83 .79

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<td>4.32</td>
<td>2.38</td>
<td>2.44</td>
<td>1.96</td>
<td>1.63</td>
<td>1.64</td>
<td>1.27</td>
<td>3.15</td>
<td>3.91</td>
<td>3.71</td>
<td></td>
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</tr>
<tr>
<td>SD</td>
<td>0.68</td>
<td>0.62</td>
<td>0.81</td>
<td>0.90</td>
<td>0.99</td>
<td>0.66</td>
<td>0.67</td>
<td>0.63</td>
<td>0.64</td>
<td>0.66</td>
<td>0.83</td>
<td>0.79</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Correlations for older siblings appear above the diagonal (the number ranged from 430 to 444) and those for younger siblings appear below the diagonal (the number ranged from 430 to 444). MR = mother report; AR = adolescent report; SR = sibling report.

\( p < .10 \). \( \ast p < .05 \). \( \ast \ast p < .01 \). \( \ast \ast \ast p < .001 \).

### Structural Equation Models (SEM)

We conducted SEM with Amos 6.0 via full information maximum likelihood (Arbuckle, 2005) to investigate relationships among the variables. Confirmatory factor analysis was used to study the relationships between a set of observed variables and a set of latent variables for older and younger siblings, respectively. Models were evaluated on multiple criteria. Although a nonsignificant chi-square value indicates a good fitting model, the chi-square is affected by sample size (R. B. Kline, 1998). Thus, we also examined other fit indices such as comparative fit index (CFI), incremental fit index (IFI), and root mean square error of approximation (RMSEA). Acceptable model fit is indicated by CFI and IFI values above .90 (Hoyle, 1995; R. B. Kline, 1998) and RMSEA values less than .08 (Browne & Cudeck, 1993). The measurement model for older siblings provided an acceptable fit to the data, \( \chi^2(21) = 78.16, p < .001 \) (CFI = .95, IFI = .95, RMSEA = .078, confidence interval [CI] = .060–.097). In addition, the factor loadings were all significant (greater than .67, \( p < .001 \)). The measurement model for younger siblings yielded a similar fit to the data, \( \chi^2(21) = 84.55, p < .001 \) (CFI = .95, IFI = .95, RMSEA = .083, CI = .065–.101) with significant factor loadings (greater than .52, \( p < .001 \)) for all observed variables.

Having been satisfied with the overall fit of measurement models, we tested the hypothesized structural model (see Figure 1). The structural model for older siblings showed a fair fit, \( \chi^2(41) = 149.48, p < .001 \) (CFI = .94, IFI = .94, RMSEA = .077, CI = .064–.091). (See Table 2 for unstandardized path coefficients and standard errors.) The structural model for younger siblings also proved to be a fair fit, \( \chi^2(41) = 139.30, p < .001 \) (CFI = .95, IFI = .95, RMSEA = .074, CI = .060–.087). Although similar patterns were observed among the variables, some noticeable discrepancies were observed. That is, maternal self-criticism was not significantly associated with younger sibling self-criticism, nor was there a significant link between younger sibling self-criticism and peer aggression. Unlike the nonsignificant relation between maternal power assertion and peer aggression among older siblings, there was a significant and positive association between them among younger siblings.

### Multigroup Analyses

Multigroup analyses were performed to further examine the robustness of the models described above across gender. Tests of measurement equivalence/invariance (ME/I) between groups included the following: configural invariance, metric invariance, scalar invariance, and invariance of latent means (Cheung & Rensvold, 2002). The model for older siblings was tested first. With configural and metric invariance established, scalar invariance was then tested by additionally imposing the intercepts of the factor loadings to be equivalent. Although the model fit was acceptable, the increase in the chi-square statistic was
highly significant, $\Delta\chi^2(14) = 42.55$, $p < .001$, and the decline in CFI was also substantial ($\Delta$CFI = -.024). Thus, partial scalar equivalence was estimated by successively relaxing the parameter constraints, resulting in a significant improvement in fit as compared to the full scalar invariance model, $\Delta\chi^2(5) = 29.07$, $p < .001$ ($\Delta$CFI = .021). This final partial scalar invariance model also did not differ statistically from the configural invariance model, $\Delta\chi^2(9) = 13.48$, $p > .10$ ($\Delta$CFI = -.003). A lack of full scalar invariance was due to five intercepts: mothers’ reports of warmth (male, $B = 4.23$, $t = 94.64$; female, $B = 4.26$, $t = 105.50$), aggression toward siblings (male, $B = 1.74$, $t = 41.44$; female, $B = 1.57$, $t = 44.67$), social competence (male, $B = 3.12$, $t = 67.00$; female, $B = 3.22$, $t = 77.20$), mothers’ reports of social competence (male, $B = 3.85$, $t = 58.45$; female, $B = 4.02$, $t = 67.78$), classmate approval (male, $B = 3.59, t = 69.99$; female, $B = 3.88, t = 77.49$).

Levels of constructs were then compared by fixing the latent means for boys (i.e., reference group) to be zero except for the latent mean of peer relations under partial scalar equivalence (e.g., Millsap & Kwok, 2004). Results revealed that latent means of maternal power assertion and aggression toward siblings in girls were lower than those of boys by .22 ($t = -2.81, p < .01$) and .15 ($t = -2.49, p < .05$) respectively. In addition, the variances of these two latent variables were found to be homogeneous. Cohen’s (1992) $d$ was computed using these common standard deviations. The small effect size (Cohen’s $d$) of -.30 for maternal power assertion and -.31 for sibling aggression was calculated. Inspecting $\Delta\chi^2$ and $\Delta$CFI compared to the final partial scalar invariance model, $\Delta\chi^2(0) = 1.15$ ($\Delta$CFI = -.001) or the configural invariance model, $\Delta\chi^2(9) = 14.62$, $p > .10$ ($\Delta$CFI = -.004) indicated no significant deterioration in model fit.

After achieving an acceptable measurement model between boys and girls, we tested structural invariance by comparing a model where the paths are freely estimated with a full structural invariance model. Although the differences in chi-square between these models were significant, $\Delta\chi^2(16) = 27.04, p < .05$, the $\Delta$CFI (.007) was less than the critical threshold, suggesting that gender did not moderate the associations among variables in the model for older siblings. We also evaluated ME/I,
as well as structural invariance across gender among younger siblings, using the same procedures described above. However, no significant differences were found between boys and girls.

Mediation Analyses

To test our mediation hypotheses, we used the bias corrected bootstrap procedures based on 5,000 bootstrap resamples. This method produces the most accurate CIs and adequate statistical power, randomly selecting n cases with replacement from the existing data (Cheung & Lau, 2008). We set our CI at 95%. CI not containing zero indicates statistical significance of mediation effects (see Table 2). Bootstrap results showed that maternal power assertion significantly mediated the associations between maternal and adolescent self-criticism. In addition, adolescent self-criticism significantly mediated the link between maternal power assertion and perceptions of social competence.\(^2\)

DISCUSSION

The overarching goals of the study were to examine the associations between mother–adolescent relationships and self-criticism and how these relationship qualities and self-schemas were directly or indirectly related to sibling-/peer-directed aggression and perceptions of social competence among young adolescents using data collected via Web-based surveys. The hypothesized associations tested were derived mainly from attachment theory. Thus, the links examined were grounded in theory, but this study represents a first test of multiple paths simultaneously. Although the correlational nature of this study precluded definitive statements about causal relationships among the variables, the use of multiple informants generally helped to rule out artifacts of shared method variance and led to greater confidence in the findings.

\(^2\)Apart from mediation analyses, moderated SEM was performed to assess possible significant interaction effects between the various risk factors and to bolster the case for mediation versus moderation (Kraemer et al., 2001). Five latent product variables with three indicators (Maternal Self Criticism × Maternal Power Assertion, Maternal Self-Criticism × Maternal Warmth, Maternal Power Assertion × Adolescent Self-Criticism, Maternal Warmth × Adolescent Self-Criticism, and Adolescent Self-Criticism × Sibling Aggression) and one manifest product variable (Adolescent Self-Criticism × Peer Aggression) were created by first centering the indicators from latent variables and the manifest variables and then multiplying one variable by another. These cross-product terms were then added to the models sequentially. We also examined the interaction effects with all manifest product variables. Although some of the paths from the interaction variables to the endogenous variables were significant, all of the models provided a worse model fit than the ones with no such interaction effects based on the Akaike information criterion (Akaike, 1987); thus, moderation was not found in SEM.

Mothers who were self-critical had adolescent children who also were more self-critical. This finding confirms existing work demonstrating intergenerational linkages in self-criticism (Besser & Priel, 2005). Mothers who are highly self-critical are more likely to be psychologically unavailable, and self-criticism further seriously disturbs or impairs mothers’ capacities to parent in a variety of ways (Blatt & Homann, 1992). Corroborating these claims, we found that maternal self-criticism was negatively linked to maternal warmth and positively linked to maternal power assertion; patterns of associations that were similar across two different children. These findings cannot be interpreted as demonstrating causality but provide support for expectations that a causal path may ultimately be identified, whereby maternal self-criticism is a risk factor that forecasts less maternal responsiveness, less positive engagement, and more negative affect in interactions with their children, thereby disrupting mother–adolescent relationships (Kraemer et al., 2001).

As has been richly supported by the large body of attachment theory literature, distant and hostile mother–child relationships are central in contributing to children’s distorted and disturbed self-schemas. The present findings extend this tenet. As discovered here, maternal power assertion partially mediated the link between mother’s and child’s self-criticism. In other words, maternal self-criticism appears to be directly and indirectly associated with their child’s self-criticism through maternal power assertion. Thus, the present analyses demonstrate that separate sets of puzzle pieces appear to fit together. These results are consistent with expectations and evidence the hypothesized direct associations, as well as indirect linkages, which confirm existing theoretical postulations. Of particular note, these analyses revealed that maternal self-criticism was associated with less warmth in the mother–adolescent relationship. Parental self-criticism has been linked to hostile and rejecting parenting, but it apparently can also undermine positive interaction patterns. In a similar fashion, we found that maternal warmth was negatively associated with adolescent self-criticism, although we failed to find statistical significance of the mediating role of maternal warmth. Although most existing research identifies the origins of child self-criticism as parental hostility or rejection, the possibility that parental warmth and affection reduce levels of child self-criticism has rarely been explored. In this respect, these findings contribute to a greater understanding of the inverse link between positive aspects of mother–adolescent relationships and self-criticism.

Consistent with existing research showing the robust impact of the quality of mother–child attachment on later social functioning, we found that mother–adolescent relationships assumed a critical role in adolescents’ aggressive behaviors and perceptions of social
The significant paths in the present model reveal a pattern whereby more power assertion in mother–adolescent relations translated into increased levels of aggression in both peer and sibling relationships. Likewise, in contrast to other examinations of these issues that have focused only on negativity in the caregiver–child relationships, these results highlight the power of warmth, as reported by both members of the dyad, as a contributor to perceptions of social competence.

We did not find a significant link between peer aggression and social competence, as hypothesized. One possibility for this finding centers upon the unavailability of information from peers and teachers who are reliable reporters of social competence, resulting in capturing only a partial picture of phenomena. On a related note, adolescents high on perceived popularity are not necessarily sociometrically popular (Parkhurst & Hopmeyer, 1998). Regardless of the underlying reasons it, it appears that aggression and peer social competence are not mere opposite ends of a continuum.

Consistent with predictions emanating from attachment theory, the results provide support for the assumption that a higher level of self-criticism, rooted in less warm and more power assertive mother–adolescent relationships, is likely to promote aggression toward siblings and peers. These findings are in line with an array of research showing that low global self-esteem or feelings of inferiority predict later aggressive behavior (e.g., Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005). Our results revealed that, compared to the positive link between self-criticism and sibling-directed aggression, self-criticism was a less robust correlate of peer-directed aggression. Most of all, it appears that because sibling-directed aggression might explain most of the variance in peer-directed aggression, self-criticism was not even significantly associated with peer-directed aggression among younger siblings. It also may be because the measure of sibling aggression was not equivalent to that of peer aggression.

The empirical literature consistently has documented that self-critics are less likely to form and maintain intimate relationships with peers. We similarly found that higher self-criticism in young adolescents was related to perceptions of less adequate social functioning with peers in the present study. Although causality is difficult to establish because these data were collected at one point in time, it appears that self-criticism stemming from less warm and more controlling mother–child relationships serves to undermine perceptions of social competence. A significant role of self-criticism in understanding perceptions of social competence was further buttressed by the finding on self-criticism as a mediator between maternal power assertion and peer social competence. Thus, these results provide important support for the role of self-evaluations or schema as the conduit through which poor relationships with caregivers are subsequently translated into perceptions of lack of social competence.

A difference in observed model associations emerged depending on the adolescent’s relative birth order. A noticeable difference between older and younger siblings was the pathway from maternal to adolescent self-criticism. Whereas maternal self-criticism was significantly linked to older child self-criticism, there was no such link between maternal and younger child self-criticism. Given no rigorous test for ME/I and a significant bivariate correlation between maternal and younger child self-criticism, it would be premature to conclude that maternal self-criticism would be differently associated with adolescent self-criticism depending on their birth order. However, a plausible explanation for this finding centers around improved maternal nurturing and competency in caring for later-born children (e.g., Whiteman et al., 2003). Firm conclusions should be reserved for future researchers using more sophisticated methodological approaches.

Several limitations to the present study should be considered in interpreting results. First, data collected at one point in time from a sample undermine the credence of directional pathways, albeit theory and empirical research assisted our development of causal relationships among the variables. Future studies should adopt longitudinal designs to fully establish causality among the parameters. Second, the sample characteristics (i.e., adolescents from relatively well educated European American Web-literate families) may limit the ability to generalize findings to other populations. On the positive side, our study seems to support the potent role of self-criticism in understanding the impact of the qualities of mother–adolescent relationships and adolescent social adjustment even among adolescents from families with relatively high socioeconomic status. The present findings await replication with more diverse samples. Third, we attempted to minimize shared method variance by using multiple sources of information whenever possible, but self-criticism and peer aggression were rated by a single informant. Fourth, although we relied on attachment theory in this study, we did not directly tap into the attachment domain. Future researchers may want to assess mother–adolescent attachment in a direct way and further to take advantage of the strengths of qualitative methods (e.g., behavioral observation) to provide deep and rich insight into mother–adolescent attachment and the complexity of the phenomenon.

Despite these limitations, our results clearly suggest that maternal self-criticism is a correlate of adolescent self-criticism, qualities of the mother–adolescent relationships, and an adolescent’s aggressive behavior and social competence in peer relations. Furthermore, the critical role of the mother–child relationships and
resulting self-schemas are persistently and robustly maintained during adolescence in a number of interrelated ways. That is, the mother–adolescent relationship serves as a pivotal resource that cultivates the adolescent’s social competence within and outside the family in a direct manner. Our findings further support a critical role for adolescent self-criticism as a central mediator between mother–adolescent relationships and adolescents’ social competence including aggressive behavior and perceptions of social competence. These latter results provide empirical evidence for the role of self-evaluations, and in this case self-criticism, as a nexus between parental and other social relationships.

**Implications for Research, Policy, and Practice**

This study has important implications for the prevention or treatment of aggressive behavior and social competence during adolescence. First, because our findings suggest that helping adolescents decrease their self-criticism or improve their self-evaluations may decrease aggression and improve their interpersonal skills, practitioners should carefully consider the potential impact of adolescent self-criticism on optimal social development and supplement prevention or intervention programs to provide sufficient training and practice to enable youth to relax self-criticism and build a healthy self-image. For example, practitioners may want to help self-critical adolescents evaluate concerns and any fears that they may have about the likely consequences of being less self-critical as objectively as possible, suggest benefits of less self-critical attitudes, and further help them gradually adopt less stringent standards for themselves. Second, because maternal self-criticism tends to compromise mother–adolescent interaction and strengthen adolescent self-criticism, prevention and treatment programs that focus on decreasing maternal self-criticism and helping parents develop more appropriate parenting skills is likely to be useful in reducing adolescent self-criticism, thereby minimizing risk of aggression and promoting peer social competence. For example, it can be important for mothers to provide specific feedback to adolescents on their progress in a positive and constructive manner.

**REFERENCES**


YU AND GAMBLE