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Attachment, Social Information Processing, and Friendship Quality of Early Adolescent Girls and Boys

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Abstract

Sixth-graders (N = 223; 109 girls) completed questionnaires assessing their attachment security with their mothers and fathers, their social information processing (*SIP*) when faced with ambiguously caused hypothetical negative events involving a close friend, and the quality of the relationship with that friend. Aspects of more maladaptive *SIP* were significantly related to lower levels of security. The overall pattern of results did not provide strong evidence for mediation, although boys' anger did tend to mediate the relation between attachment to mother and friendship quality. Results are consistent with attachment theory and suggest that the mechanisms connecting attachment and friendship are specific with regard to the relationships boys and girls have with their fathers and mothers.

Keywords

attachment; early adolescence; friendship; social information processing

According to attachment theorists, the quality of the parent-child relationship should have an impact on the qualities of children's other close relationships. Indeed, empirical findings have supported a link between the quality of the child-parent attachment relationship and children's peer relationships, especially close friendships (e.g., Schneider, Atkinson, &

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Tardif, 2001). An important question that has yet to be fully addressed, however, concerns the mechanisms through which representations of parent-child attachment relationships influence qualities of children's friendships. What exactly is it about feeling secure in one's relationships with one's parents that leads to having better quality friendships? In the present study, we explored whether children's representations of their relationships with their parents influenced the ways in which they processed social information pertaining to their close friendships. We also examined if variation in social information processing was related to the quality of the child's relationship with a best friend.

Attachment and Friendship

Attachment theorists have long argued that representations of attachment relationships, or internal working models (*IWM*s), are carried forward into new, extra-familial relationships (Berlin, Cassidy, & Appleyard, 2008). According to attachment theory, infants form representations of their relationships with their parents based on their experiences with them. These beliefs and expectations, especially regarding parental availability and responsiveness to distress, influence the development of self-representations, specifically regarding the infant's worthiness of care (Bowlby, 1973; 1982). Attachment theory posits that experiences in extra-familial relationships are seen through the lens of these representations, such that children interpret relational experiences in a manner that is consistent with their *IWM*s (Bowlby, 1973; Sroufe & Fleeson, 1986). Moreover, it is posited that extra-familial relationship experiences are sought that will match expectations and beliefs regarding the self and relationship partners, leading to "continuity and coherence to close relationships over time" (Sroufe & Fleeson, 1986, p. 58). Thus, the quality of the primary relationship engenders a set of internalized relationships expectations that affect the initiation and maintenance of extra-familial (e.g., peer) relationships.

Despite attachment theory's emphasis on close relationships, the vast majority of the initial studies exploring relations between the parent-child attachment relationship and children's peer relationships focused on such general indicators as peer acceptance (see Berlin, Cassidy, & Appleyard, 2008, for a review) and not on close dyadic relationships (e.g., friendship). Consistent with the premises of attachment theory, however, the relations between attachment and friendship are generally stronger than the relations between attachment and peer relationships (Schneider et al., 2001). In one of the first studies investigating attachment and friendship, Park and Waters (1989) reported that friendship dyads consisting of two securely attached four-year-olds were more harmonious, less controlling, more responsive, and happier than those dyads in which one child was insecurely attached. Similarly, Youngblade and Belsky (1992) found that insecurely attached infants were more likely than secure infants to have negative and asynchronous friendships at five years of age. Freitag, Belsky, Grossmann, Grossmann, and Scheurer-Englisch (1996) found that children who had positive early relationships with their parents were more likely to have a close friend at age 10 years. In addition, results of studies examining both attachment and friendship at later ages, from elementary school through high school, indicate significant associations between attachment security and friendship quality (e.g., Bauminger, Finzi-Dottan, Chason, & Har-Even, 2008; Kerns, Klepac, & Cole, 1996; Rubin, Dwyer, Booth-LaForce, Kim, Burgess, & Rose-Krasnor, 2004). These relations between

security of attachment and friendship quality are consistent across methods of friendship quality assessment (self reports, e.g., Lieberman, Doyle, & Markiewicz, 1999; objective observations, e.g., Weimer, Kerns, & Oldenburg, 2004). Thus, with increasing age, as children form more friendships and these friendships become more meaningful (Rubin, Bukowski, & Parker, 2006), researchers have reported consistent associations between attachment and friendship quality.

Focusing on the role of representations, researchers have addressed the manner in which *IWM*s of different relationships are related to one another. For example, several researchers have found that self-reported attachment to parents and friends are related to one another among older adolescents (e.g., Markiewicz, Doyle, & Brendgen, 2001). Furthermore, Furman, Simon, Shaffer, and Bouchey (2002) found significant links between high-school students' self-reported relational styles with parents in general and friends in general, between their *IWM*s of relationships with parents and friends as assessed with the Adult Attachment Interview (*AAI*), and between perceptions of support in relationships with mothers, fathers, and friends. In addition, Zimmermann (2004) found relations between *IWM*s, as assessed with the *AAI*, and the manner in which adolescents conceptualize their friendships. Finally, Hodges, Finnegan, and Perry (1999) found that preadolescents' conceptions of their relationships with their mothers and fathers were consistent with their conceptions of their relationships with their best friends. Self-reported use of preoccupied coping strategies (or "relationship stance") with mother and father was correlated with preoccupied coping with the best friend, and similarly, avoidant coping with mother and father was correlated with avoidant coping with the best friend. It is noteworthy that there was concordance across relationships even though the ties that children and younger adolescents have with one another are not expected to be attachment bonds (Ainsworth, 1985).

These links among representations of relationships, however, do not fully explain the correlation between attachment and friendship quality. In this regard, the role of mediators may help us to better understand the processes involved linking representations of the relationship with parents and representations of friendship. Several mediators may be involved including how children process social information, self-esteem, emotion regulation, and communication skills (Booth-LaForce, Oh, Kim, Rubin, Rose-Krasnor, & Burgess, 2006; Booth-LaForce, Rubin, Rose-Krasnor, & Burgess, 2005). In the present study, we focused on the role played by social information processing in linking the quality of the parent-child attachment relationship with the quality of a best friendship.

The Mediating Role of Social Information Processing

Social information processing

Social information processing (*SIP*) models have been used to understand the manner in which individuals assign meaning to social cues, generate or access strategies, and evaluate and select strategies to resolve interpersonal problems. The premise is that each step involved in the processing of social information can be isolated, deficiencies/biases can be identified, and these deficiencies/biases can be linked with specific behavioral patterns (Crick & Dodge, 1994; Lemerise & Arsenio, 2000). For example, it has been demonstrated

that aggressive children often attribute hostile intent to peers who have caused negative events to happen to them when cues regarding intent are ambiguous (Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Socially withdrawn children attribute negative events to stable, internal causes; that is, when negative events befall them, they blame themselves (Rubin & Krasnor, 1986; Wichmann, Coplan, & Daniels, 2004). Interestingly, although Crick and Dodge (1994) proposed that a database of memories, schemas, and access rules influence (and is influenced by) each step of the process, few researchers have examined the development of individual differences in these memory databases.

Attachment and social information processing

From an attachment perspective, it is thought that *IWM*s form the database of rules that guide the processing of information in social situations, particularly close relationships. According to Bowlby (1973), *IWM*s "determine what is perceived and what ignored, how a new situation is construed, and what plan of action is likely to be constructed to deal with it" (pp. 368–369). Furthermore, Main, Kaplan, and Cassidy (1985) defined the *IWM* as "a set of conscious and/or unconscious rules for the organization of information relevant to attachment and for obtaining or limiting access to that information, that is, to information regarding attachment-related experiences, feelings, and ideations" (pp. 66–67). These definitions clearly lend themselves to Crick and Dodge's (1994) *SIP* model in that they describe not only the steps but also the contents of the database that Crick and Dodge propose to be central to their model.

The database of memories, schemas, and access rules that are proposed to guide processing in the *SIP* model may be influenced indirectly, as well, by children's levels of social involvement. Rubin and Rose-Krasnor (1992) proposed that securely attached children, confident in the availability and responsiveness of attachment figures, are more likely to explore their social milieus; they posited that exploration of the social environment generates opportunities to play, develop social strategies for resolving social dilemmas, and form friendships. Insecurely attached children, however, view the world as comfortless and unpredictable and may approach peer interactions with either anxiety or belligerence (Bowlby, 1973; Rubin & Rose-Krasnor, 1992). Those insecurely attached children who avoid peer interactions lose the opportunities to develop social competencies and positive relationships. Those insecurely attached children who are belligerent in their peer interactions engage in aggression which leads to rejection and ultimately to the loss of opportunities to develop social competencies (Rubin & Rose-Krasnor, 1992). In short, Rubin and Rose-Krasnor (1992) posited that the repertoire of skills in an insecurely attached child's database will be more limited than that of a securely attached child.

Several researchers have examined the relations between attachment and the processing of information regarding peer relationships. In each study, assessment of *SIP* involved asking the child to think about hypothetical situations in which a peer with ambiguous intent had caused a negative event to happen to the child. In response to a provocation by a hypothetical peer, children classified as securely attached in infancy have been found to suggest more positive behavioral responses at 3-½ years (Cassidy, Kirsh, Scolton, & Parke,

1996) and to attribute less hostile intent at five and six years of age (Wartner, Grossmann, Fremmer-Bombik, and Suess, 1994) than their less secure counterparts. In terms of the contemporaneous associations between attachment and *SIP*, Cassidy et al. (1996) have reported that securely attached kindergartners and first-graders have more positive representations regarding peer intent and peer feelings than their insecure counterparts, and that fourth- and fifth-graders who report more maternal and paternal rejection attribute hostile intent more often than children reporting less parental rejection (Cassidy et al., 1996). Finally, in one of very few studies examining *SIP* and attachment to both mothers and fathers, Simons, Paternite, and Shore (2001) found that sixth-graders who were less secure with their mothers (but not their fathers) attributed more negative intent to a hypothetical peer than did more secure children.

Note that, in each of these studies, the hypothetical situation involved an unspecified peer, rather than a close friend. However, according to attachment theory, *IWM*s of relationships with parents should most directly influence the manner in which children think and feel about their interactions and relationships with close friends (Booth et al., 2005). Thus, in the present study, we assessed children's security in their relationships with their parents and asked about their attributions, emotions, and coping strategies regarding hypothetical situations in which a specific close friend with ambiguous intent had caused a negative event to happen to the child. Consequently, we were able to more directly examine the relations between attachment and the processing of information regarding close friendships. We hypothesized that attachment security would be negatively associated with maladaptive attributions, emotions, and coping strategies. Specifically, we expected that higher levels of security would be associated with less frequent endorsement of both external and internal blame; more frequent endorsement of feeling fine ("okay") and less frequent endorsement of feeling sad, angry, and embarrassed; and less frequent endorsement of seeking revenge on their friends, doing nothing in response to the provocation and yet feeling upset about it, and avoiding the friend and/or the situation.

Attachment, SIP, and friendship

In addition to examining the association between attachment and *SIP* with respect to a close friend, we were interested in explicitly exploring whether *SIP* mediates the link between attachment and friendship quality. Thus, we also asked children about the quality of the friendship with the same close friend named in the hypothetical situations. Based on attachment theory and research, we expected that higher levels of security would be positively related with positive qualities of the friendship relationship, including companionship and recreation, validation and caring, help and guidance, intimate disclosure, and conflict resolution, and negatively related to such negative qualities of the friendship relationship as conflict and betrayal.

There is less theory or research upon which to base hypotheses regarding children's *SIP* in the context of close friendships or the impact of *SIP* on the quality of children's friendships. In general, we know from the *SIP* and social cognition literature that more biased processing is associated with negative social outcomes, such as aggression and social withdrawal (e.g., Orobio de Castro et al., 2002; Wichman et al., 2004). Recently, aggressive and withdrawn

fifth- and sixth-graders were found to exhibit more maladaptive processing skills (e.g., external blame, anger, avoidant coping) than typical children in provocative situations involving unspecified peers. Moreover, they demonstrated more adaptive processing (e.g., prosocial attributions, neutral emotions) in provocative situations with their close friends than with unspecified peers (Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006). Thus, we hypothesized that more biased, or negative, processing, such as attributions of external and internal blame, would be associated with lower friendship quality (and likewise, that less biased processing would be associated with higher friendship quality). Based on evidence that greater instances of positive affect are associated with higher friendship quality (Berry, Willingham, & Thayer, 2000), we hypothesized that children with higher quality friendships would more frequently endorse positive affect (e.g., feeling fine), as well as less frequently endorse such negative emotions as anger and sadness, in response to friendship provocations. We hypothesized that more frequent endorsements of revenge, avoidance, or becoming emotionally upset, also examples of biased processing, would be associated with poor friendship quality.

Finally, because we believed that *SIP* is the mechanism through which attachment to parents is linked with friendship quality, we hypothesized that the specific attributions, emotional responses, and coping strategies would mediate the associations between attachment security and friendship quality.

Parent and Child Gender

Two additional "third variables" were of interest: parent gender and child gender. We explore the relations they may have with attachment, *SIP*, and friendship quality here.

Child gender

In terms of gender differences in attachment, there is little reason to expect that boys or girls, on the whole, feel more or less secure regarding the availability and responsiveness of their parents. Yet, the manner in which attachment needs are communicated may vary across genders, as children are socialized to understand that which is appropriate or inappropriate to express (Dwyer, 2005). For example, it may be less acceptable for boys to express sadness than for girls to do so (Leaper, 2002). In addition, expectations of autonomy and independence for boys and girls may influence the circumstances under which attachment needs are activated and satisfied (Dwyer, 2005). Parents may encourage self-control and emotion regulation to a greater degree in their sons than in their daughters (Leaper, 2002). Indeed, although few researchers report having examined gender differences in attachment in middle childhood or early adolescence, differences have been reported in two studies. Granot and Mayseless (2001) found that boys were categorized as avoidant and disorganized more often than were girls, whereas girls were categorized as secure or ambivalent more often than were boys. Likewise, Verschueren and Marcoen (2005) found that girls reported feeling more secure with their mothers (although not their fathers) than did boys.

Evidence for gender differences in *SIP*, particularly attributions, emotional responses, and coping strategies, comes from several sources. First, studies of hostile attribution bias have demonstrated that boys are more likely than girls to attribute hostile intent to the peer when

presented with hypothetical situations in which a peer with ambiguous intent has caused a negative event to happen to the child (e.g., Burgess et al., 2006; Dorsch & Keane, 1994; Simons et al., 2001). In terms of the emotional response to provocation, boys have been shown to select angrier facial expressions when asked what sort of facial expression they would have in response to videotaped, anger-provoking vignettes, suggesting that girls may mask their anger (Underwood, Coie, & Herbsman, 1992). Conversely, in response to hypothetical sadness-provoking situations, girls report that they are more likely than boys to express their sadness (Zeman & Garber, 1996). Finally, given girls' greater concern about peer evaluation (Rose & Rudolph, 2006), it has been reported that girls are more likely than boys to report feeling embarrassed in response to hypothetical provocation (Burgess et al., 2006). In terms of strategies to cope with provocative social situations, boys tend to generate more aggressive solutions than girls (Dorsch & Keane, 1994; Feldman & Dodge, 1987), whereas girls respond in a more prosocial manner (Rose & Rudolph, 2006). Moreover, boys are more likely than girls to endorse goals that promote their self-interest, including seeking revenge, whereas girls are more likely than boys to endorse goals related to the maintenance of relationships and resolution of peer problems (Rose & Rudolph, 2006). In addition, it has been shown that girls are more likely than boys to cry or use other purely affective strategies to convey negative emotions, whereas boys are more likely than girls to use aggressive behavior for the same purpose (Zeman & Garber, 1996; Zeman & Shipman, 1996).

Finally, differences in girls' and boys' friendships are well documented (see Rubin, Bukowski, & Parker, 2006, for a review); girls' best friendships tend to be characterized by greater self-disclosure, closeness, affection, nurturance, trust, security, acceptance, and enhancement of worth than are boys' best friendships.

Given the discussion above regarding gender differences in attachment security, it may be that a gender-related process (e.g., emotion socialization) drives the variation in attachment security, which drives the variation in attributions, emotions, and coping strategies, and these, in turn, drive the variation in friendship quality. On the other hand, it may also be that something about being a boy or a girl is related to attachment security, *SIP*, and friendship quality, regardless of the relation between attachment and *SIP* or between *SIP* and friendship quality. Because the relation between attachment and *SIP* and the mediating role of *SIP* in linking attachment and friendship quality were, in fact, the relations of interest in the present study, we explored them separately for boys and girls.

Parent gender

We also explored the potential impact of parent gender. In the first place, it has been suggested that fathers may become increasingly influential as children get older and form more relationships outside the home (Lewis & Lamb, 2003). In addition, attachment theorists have suggested that children's *IWM*s with multiple attachment figures may influence social and emotional development in a number of ways. It may be that *IWM*s regarding primary attachment figures (usually mothers) are most predictive, that *IWM*s regarding specific attachment figures influence specific outcomes, or that *IWM*s regarding multiple attachment figures are integrated and make a collective impact (Howes, 1999). There is little empirical evidence regarding these suggestions, especially for this age group.

On the one hand, Simons et al. (2001) found significant correlations between sixth-graders' hostile attribution biases and attachment with respect to mother but not with respect to father. On the other hand, Rubin and colleagues (2004) found that attachment to father was related to a number of adjustment outcomes among fifth-graders, whereas the relations were less clear for attachment to mother. Given the lack of extant research, we examined children's attachments to both their mothers and fathers but did not have specific expectations regarding the differential impact of attachment to mother versus attachment to father.

The Present Study

The first goal of the present study was to examine boys' and girls' social information processing in the context of a close friendship as it relates to security with the mother and father. Second, we sought to explore *SIP*'s mediating role in linking attachment with friendship quality. Towards these ends, questionnaire data were collected from sixth-graders (mean age of 11 years) regarding their attachment to each of their parents, their *SIP* with regard to hypothetical situations involving a close friend, and the perceived quality of their friendship with the same close friend. Attachment was operationalized as the level of security indicated by children's responses to questions regarding their confidence in the availability and responsiveness each parent. *SIP* was operationalized as the attributions, emotional responses, and coping strategies selected by children from a range of options presented after descriptions of the hypothetical situations. Finally, friendship quality was operationalized in terms of the degree of positive and negative relationship characteristics indicated by children's responses to questions regarding their relationships with a close friend.

Method

Participants

Participants were drawn from a larger sample of sixth-grade students taking part in a longitudinal study. All students with parental consent in three public middle schools in the Washington, D.C., metropolitan area completed two school assessments: friendship nominations (Bukowski, Hoza, & Boivin, 1994) and a measure of peer-nominated behavioral status (*Extended Class Play*; Burgess, Rubin, Wojslawowicz, Rose-Krasnor, & Booth, 2003). For the purpose of this study, these two measures were relevant only for the identification of the sample. Based on mutuality of friendships and behavioral status (i.e., aggressive, withdrawn, both, neither), pairs of students were invited to visit the university and completed an additional battery of questionnaires, including those related to the present study. The sample described in this study ($N = 223$; 109 girls) is made up of those young adolescents in this selected laboratory sample who had complete data relevant to this study. The mean age of the sample was 11.39 years. Of those providing ethnicity information, 53% were White, 9.4% were Black, 5.8% were Latino/Hispanic, 17% were Asian, and 10.3% identified themselves as being from more than one ethnic group; 4.5% of the sample did not provide ethnicity information.

Procedures

As described above, participants were invited to come to the laboratory in pairs to complete additional questionnaires, including those described below. Both members of the friend dyad completed the questionnaires, and the order was counterbalanced throughout the administration. The entire visit, which included questionnaire administration, other activities not relevant to the present study, and breaks, lasted approximately 1–1/2 to 2 hours. Participants received monetary compensation for their time.

Measures

Security Scale. (Kerns et al., 1996)—The *Security Scale* is a 15-item self-report measure of children's perceptions of security in their relationships with their mothers and fathers. Grounded in attachment theory, the measure was developed specifically for school-aged children. In short, because attachment behavioral systems are more complex and cognitive and regulatory abilities more advanced, it is generally considered infeasible to assess attachment security using behavioral measures, such as separation-reunion procedures, beyond early childhood; conversely, because cognitive abilities are yet still limited, researchers do not generally attempt to assess constructs related to adult attachment, such as "state of mind with respect to attachment" or attachment style, until late adolescence (see Kerns & Richardson, 2005, for complete discussion). The *Security Scale* was designed to tap three major components of attachment security in middle childhood: (i) the belief that a particular attachment figure will be responsive and available if needed (such as when frightened, upset, or sick), (ii) the tendency to turn to the attachment figure when distressed, and (iii) ease and interest in maintaining communication with the attachment figure (Kerns et al., 1996). The reliability and validity of this measure have been demonstrated in several previous studies (see Dwyer, 2005, for a review).

Following a procedure developed by Harter (1982) to encourage a broad range of responses to items for which social desirability may be a factor, each item consists of two statements, and children are instructed to first pick the statement that best describes them and then to select whether that chosen statement is "sort of true" or "really true" for them. Responses are later numerically scored. For example, one item presents the following two statements: *"Some kids find it easy to trust their mom" BUT "Other kids are not sure if they can trust their mom."* Children are first instructed to decide whether they are the type of kid who finds it easy to trust their mom or if they are the type of kid who isn't sure if they can trust their mom. If they choose the first statement, which indicates greater security, they must then decide whether that statement is "really true" (scored as a 4) or "sort of true" (scored as a 3) for them. Likewise, if they choose the second statement, which indicates lower levels of security, they must then decide whether that statement is "sort of true" (scored as a 2) or "really true" (scored as a 1). Scores for each item range from 1 to 4, with higher numbers indicating greater security. The same 15 questions were asked about the mother and the father. Items were averaged to create a mother security scale (*alpha* = .85) and a father security scale (*alpha* = .87).

Attributions and Coping Questionnaire-Part 2. (ACQ; Burgess, et al., 2006)— This questionnaire consists of five hypothetical vignettes describing social situations with a

close friend. Each story involves a situation which ends in a negative outcome caused by the close friend, but the intention of the friend is ambiguous. An example story is *"Imagine that you are sitting in the lunchroom at school. You look up and see your friend _____ coming over to your table with a milkshake. You turn around to eat your lunch, and the next thing that happens is that he/she spills the milkshake all over your back. The drink gets your shirt all wet."* Children were instructed to pretend that they were part of the story, and the name of their close friend was placed in the story.

Following each story, attributions, emotions, and coping strategies were assessed via a forced-choice method, which permitted us to focus on a particular range of options that have been previously shown to indicate particular adjusted and maladjusted ways of processing information from ambiguous social situations. Children were provided with four choices for attribution intentions: i) prosocial (e.g., *"My friend slipped on something"*), ii) external blame (e.g., *"My friend wanted to make fun of me"*), iii) internal blame (e.g., *"I must have done something to make it happen"*), and iv) neutral (e.g., *"My friend wasn't looking and didn't see me"*). Children were then asked to indicate how they would feel after the situation and were given four choices of emotion (*"okay," "sad," "angry," "embarrassed"*). Finally, children were asked how they would handle this situation if it happened and were given a number of possible coping strategies: i) avoidance (e.g., *"I'd leave the lunchroom"*), ii) adult intervention (e.g., *"Ask the teacher to get a towel or something"*), iii) revenge (e.g., *"Pour a drink on my friend's back the next day"*), iv) emotional (e.g., *"I would do nothing, but I'd be upset"*), and v) appeasement (e.g., *"Tell my friend that it's okay because these things happen to everyone"*). For all questions, the responses were coded as present (did select the answer) or absent (did not select the answer) within each story and were then averaged across all five vignettes. Thus, scores ranged from 0–1 such that a 0 indicated the child never selected that response choice in any of the five stories and a 1 indicated that the child selected that response choice in all five of the stories.

Two attributions (prosocial and neutral) and two strategies (adult intervention and appeasement) were excluded from analyses for conceptual reasons. Because previous research regarding social information processing focused on biased processing, specifically the predictors of biased processing and the associations between biased processing and behavior, we wished to focus on the attributions, emotions, and strategies that clearly represented biased processing. Furthermore, in the case of attributions, we recognized that there was overlap between the prosocial and neutral categories. In the case of strategies, we recognized that the adult intervention category included responses in which children asked for adult help but not necessarily help with the social situation, and similarly, we recognized that the appeasement category included responses that could be seen as competent and not necessarily reflective of appeasement. Concerned about the validity of these scales and wishing to focus clearly on biased processing, we excluded prosocial and neutral attributions and the strategies of adult intervention and appeasement from our analyses.

Friendship Quality Questionnaire. (FQQ; Parker & Asher, 1993)—This 40-item questionnaire was used to assess children's perceptions of the quality of their close friendships. The name of the child's close friend was inserted into each item, and this was the same name used in the *ACQ* vignettes. Children responded on a 5-point Likert-type

scale, ranging from “not at all true” to “really true,” about how the statement corresponded to their friendship. The reliability and validity of the measure have been demonstrated in previous research (Furman, 1996; Parker & Asher, 1993). For this administration, one item was dropped from the original questionnaire (*“_____ and I always play together at recess”*) because the participants’ schools did not have recess. All other items and subscales were identical to those of the original measure. The items were averaged to create six subscales: companionship/recreation (e.g., “*_____ and I do fun things together a lot;” alpha* = .68), validation/caring (e.g., “*_____ and I make each other feel important and special”; alpha* = .82), help/guidance (e.g., “*_____ often helps me with things so I can get done quicker;” alpha* = .85), intimate disclosure (e.g., “*_____ and I are always telling each other about our problems;” alpha* = .86), conflict resolution (e.g., “*_____ and I always make up easily when we have a fight;” alpha* = .52), and absence of conflict/betrayal in which all items are reversed scored (e.g., “*_____ and I get mad at each other a lot;” alpha* = .74). Note that some children had difficulty responding to the three items assessing conflict resolution if they also reported low levels of conflict/betrayal in their friendships. Therefore, some caution is warranted in interpreting results regarding this particular subscale.

Results

Descriptive Statistics and Overview of Analyses

Descriptive statistics for all study variables are presented, for the entire sample and separately for boys and girls, in Table 1. On average, the children in the sample were well-adjusted in their relationships with their mothers, fathers, and friends, with relatively high mean scores on attachment to both parents and positive friendship qualities. However, it is noteworthy that there was variation across the sample on all scales. The mean scores on the measures of *SIP* that reflected biased processing were quite low, indicating that these responses were not commonly selected. However, as with the measures of attachment and friendship quality, there was variation across the sample. It is worth noting that, due to the forced-choice response format of the *ACQ*, the sum of the means across all categories of emotions is 1. This is also the case for attributions and coping strategies, although not all categories not represented in the table, as two attributions (prosocial and neutral) and two strategies (adult intervention and appeasement) were dropped from analyses.

Results of predictive analyses are reported below in two sections. First, we present the results of correlation analyses which address our main hypotheses regarding the links between attachment and aspects of children’s *SIP*. Second, we present the results of path analyses, which address our hypotheses regarding the mediating role of *SIP* in linking attachment with friendship.

Attachment and SIP

Attributions—Regarding the relation between attachment and attributions, we had hypothesized that less secure children would make more attributions of both external and internal blame. As indicated in Tables 2 and 3, for boys, there was a significant, negative correlation between attachment to father and attributions of internal blame; for girls, there was a significant, negative correlation between attachment to father and attributions of

external blame. Attachment to mother was not significantly correlated with attributions of external or internal blame for girls or boys.

Emotions—In terms of emotional responses, we hypothesized that lower levels of security would be associated with more frequent reports of feeling sad, angry, and embarrassed and with less frequent endorsement of feeling okay. As shown in Table 2, for boys, there was a significant, negative relation between attachment to mother and feeling angry, but contrary to the hypothesis, a significant, positive relation between attachment to mother and feeling sad. Boys who were less secure with their fathers were also more likely to endorse feeling embarrassed. There were no significant correlations between attachment and emotional responses for girls.

Coping strategies—We expected that lower levels of security would be associated with more frequent endorsement of revenge, emotional responses, and avoidance. As shown in Table 3, for girls, there was a significant, negative relation between attachment to mother and revenge. There were no significant correlations between attachment and coping strategies for boys.

Attachment and Friendship Quality: The Mediating Role of SIP

For all instances where attachment was found to be significantly correlated with a component of *SIP*, we examined whether the *SIP* variable was also correlated with aspects of friendship quality. If the latter was true, we tested for mediation, following Baron and Kenny's (1986) standard procedure. A summary of the mediation analyses is presented in Table 4.

The "mediators" column lists all *SIP* variables that were found to be significantly correlated with attachment to mother or attachment to father in the first set of analyses *and* were also significantly correlated with one or more of the friendship qualities. For example, the attribution of internal blame and the emotional response of embarrassment are not listed for boys, even though they were both significantly correlated with attachment to father. These variables were not included because neither was significantly correlated with any index of friendship quality. The values in the next column to the right reflect the path coefficients when the mediators were regressed on the predictors.

The "outcomes" column lists all friendship qualities that were found to be significantly correlated with the selected social information processing mediators (see Tables 2 and 3). The values in the next column to the right reflect the path coefficients for the paths from the mediators to the outcomes when the outcomes and mediators were together regressed on the predictors. A significant value indicates that the mediator affects the outcome after controlling for the effect of the predictor, and at least partial mediation is established (Baron & Kenny, 1986).

For cases in which mediation was indicated, the amount of mediation, or the indirect effect, was calculated. The values in the "total effect (β)" column represent the path coefficients when the outcomes were regressed on the predictors. Significant values indicate that there is an effect that may (or may not) be mediated. The values in the "direct effect (partial β)"

column reflect the path coefficients for the paths from the predictors to the outcomes when the outcomes and mediators were together regressed on the predictors. The values in the "indirect effect (Δβ)" column represent the reduction in the effect of the predictor on the outcome, calculated either by subtracting the direct effect from the total effect or by multiplying the predictor-to-mediator and mediator-to-outcome path coefficients. Significance levels for the indirect effects were determined with Sobel tests, calculated using the interactive calculation tool developed by Preacher and Leonardelli (2003) to test for mediation.

Attributions—In terms of attributions, recall that for *girls*, there was a significant, negative correlation between attachment to *father* and attributions of external blame. The follow-up question was whether attributions of external blame mediated the relation between attachment to father and friendship quality. As indicated in Table 3, the proposed mediator of external blame was significantly correlated with five friendship qualities: companionship/recreation, validation/caring, help/guidance, conflict resolution, and absence of conflict/betrayal. Therefore, hypotheses regarding mediation were tested with external blame hypothesized to link child-father attachment to each of these aspects of friendship quality. As indicated in Table 4, after controlling for attachment to father, the attribution of external blame had an effect, at a trend level, on the degree of validation/caring, help/guidance, conflict resolution, and conflict/betrayal girls reported regarding their friendships. None of the indirect effects was significant, however.

Emotions—In terms of emotional responses, recall that, for *boys*, there was a significant, negative relation between attachment to *mother* and feeling angry. The follow-up question concerned whether the emotional response of feeling angry mediated the relation between attachment to mother and friendship quality. As indicated in Table 2, the proposed mediator of feeling angry was significantly correlated with help/guidance, intimate disclosure, conflict resolution, and absence of conflict/betrayal. Thus, hypotheses regarding mediation were tested with the emotional response of feeling angry posited to link child-mother attachment to each these aspects of friendship quality. As indicated in Table 4, after controlling for attachment to mother, the emotional response of anger still had a significant effect on the degree of help/guidance, intimate disclosure, conflict resolution, and conflict/betrayal boys reported regarding their friendships. In addition, the indirect effects of attachment to mother on help/guidance and absence of conflict/betrayal – through the mediating effect of anger – neared significance.

Coping strategies—In terms of coping strategies, recall that, for *girls*, there was a significant, negative relation between attachment to *mother* and revenge. The follow-up question in this case was whether the coping strategy of revenge mediated the relation between attachment to mother and friendship quality. As shown in Table 3, the proposed mediator of revenge was significantly correlated with absence of conflict/betrayal. Thus, hypotheses regarding mediation were tested with revenge hypothesized to link child-mother attachment to the absence of conflict/betrayal. However, as indicated in Table 4, the path from revenge to absence of conflict/betrayal was not significant after controlling for attachment to mother. Thus, there was no evidence for the mediating role of the coping

strategy of revenge in linking girls' attachment to their fathers and the qualities of their friendships.

Discussion

The primary purpose of the present study was to examine children's social information processing in the context of a close friendship and its mediating role in linking attachment with friendship quality. The findings not only support prior research suggesting that attachment and *SIP* are related, but also extend the research to suggest that how children think about challenging situations, specifically with their closest friends, is related to the security they feel with their mothers and fathers. This study provides evidence for the database in Crick and Dodge's (1994) *SIP* model, which suggests that children's *IWM*s may play a role in how they think about potentially conflictual situations. As hypothesized, some of the more maladaptive attributions, emotions, and coping strategies were found to be significantly related to higher levels of insecurity. We also found some preliminary indication, at the trend level, that *SIP* mediated the relation between attachment and friendship quality. Evidence for gender differences also emerged. Overall, the results did not support the primacy of *SIP* as a mechanism linking children's relationships with their parents and with close friends, but indicate that this hypothesized link is worth further study.

Attachment and SIP

Attributions—The findings supported those of previous researchers who have shown that higher insecurity is linked to more negative attributions (e.g. Simons et al., 2001; Wartner et al., 1994). More specifically, we found that insecure boys attributed more blame *to themselves* following a provocative situation involving their closest friend, whereas insecure girls were quick to blame their friend for the negative outcome. These findings pertained to boys' and girls' relationships with their fathers, not mothers. It may be that how children think and feel about their relationships with their fathers influences how they interpret their social interactions and relationships with school-mates, supporting the notion that *IWM*s regarding specific attachment figures influence outcomes in specific domains and contexts (Howes, 1999).

An insecure relationship with the father also appeared to have a differential impact on boys and girls with reference to how they think about interpersonal dilemmas involving a best friend. For girls only, there was a significant relation between attachment security and attributions of external blame, whereas there was a significant relation between attachment security and attributions of internal blame for boys only. Perhaps boys and girls who have insecure relationships with their fathers come by these relationships in different ways. That is, fathers may help develop felt security by behaving in different ways with their sons and daughters. The moderating impact of child and parent gender on children's attributions may be more clearly revealed in future studies by also incorporating such processes as coaching and modeling.

Emotions—Our results were consistent with the hypothesis that children who were less secure in their parent-child relationships would report more negative emotional responses to negative events caused by a best friend. Surprisingly, however, the results suggested that

attachment security was related to the emotional reactions of boys, not girls. Insecure boys reported more anger and embarrassment and less sadness in response to friend provocation. This pattern suggests that when confronted with a difficult situation with their best friend, insecure boys may have difficulty regulating the appropriate emotion. Existing literature does suggest that there is a negative association between attachment security and emotion regulation (Hagekull & Bohlin, 2004) and that the role of emotion regulation in *SIP* is important (Lemerise & Arsenio, 2000). Here, we have shown that the ability to choose an adaptive emotion may be difficult for boys who have an insecure relationship with their fathers. Insecure girls, on the other hand, appear to choose more adaptive emotions during a potentially challenging situation with their friend, suggesting that they have more diverse emotional responses that have been characterized of more secure individuals (Mikulincer & Shaver, 2005). Perhaps the interactions between girls and their fathers that lead to an insecure attachment may impact specific social and emotional processes, but not all. This is a conjecture that should be examined in future research.

Contrary to our expectations, sadness in response to friend provocation was *positively* associated with attachment security for boys. It may be that responding with sadness to a negative event that was caused by a best friend may be entirely appropriate, especially if the expressed emotion engenders an understanding and appropriate response by the best friend. In addition, boys who have secure relationships with their mothers may feel secure in displaying sadness in the company of their male friends; they may be less inclined to demonstrate such an intimate emotion with male peers in general.

Keeping in mind that significant relations only emerged for boys, it is of note that attachment to mother and attachment to father were related to different emotional responses to friend provocation. The relationship a son has with his mother seems to be related to his primary emotional response to provocative situations in close relationships: boys who felt less secure in their relationships with their mothers reported feeling more anger and less sadness. The relationship that a son has with his father, on the other hand, seems to be related to a more self-conscious emotional response (Lewis, 2000); boys who felt less secure in their relationships with their fathers reported feeling more embarrassment in response to friend provocation. As with the findings regarding attributions, this result supports the idea that the role of the father-child relationship differs from that of the mother-child relationship.

Coping strategies—In terms of coping strategies, there was some evidence that attachment security was related to the strategies children endorsed as ways to cope with provocative situations, although the finding was specific to girls' attachment to their mothers and to a particular coping strategy. That is, less secure girls more often chose revenge as a way to cope with a difficult provocation with their friend. This gender-specific finding is consistent with the results of Kliewer, Fearnow, and Miller (1996), who found that parent-child relationship quality was associated with girls' but not boys' coping behaviors. Yet, it remains unclear why the strategies that boys choose in a provocative situation with their close friend do not appear to be related to how secure they are in their attachment relationships. One possibility is that dyadic relationships are more salient to girls, and boys' social skills are influenced to a greater degree by other factors, such as modeling and direct coaching.

The Mediating Role of SIP

In the present study, we also sought to examine whether the previously reported relation between attachment security and friendship quality (Schneider et al., 2001) is mediated by *SIP*. Whereas the overall pattern of results provides little evidence for mediation, two trend-level results are worth noting. Specifically, for boys, the emotional response of anger to friend provocation partially mediated the relation between attachment to their mothers and the quality of their friendships, although the indirect effects were significant at a trend level and, thus, should be interpreted with caution. Boys who were less secure with their mothers also reported greater sadness and embarrassment, but these more subtle, discreet emotions may have less of an impact than anger on the relationship with the friend. As for girls, the results do not suggest that *SIP* mediates the link between their attachment security with their mothers and the qualities of their close friendships. Rather, the relation between attachment to mother and friendship quality may be mediated by other processes, such as emotion regulation, communication skills, or self esteem (Booth et al., 2005).

Results also suggest that different processes may be involved in linking attachment to father with friendship quality. For both girls and boys, attachment to father was related to some qualities of their close friendships, yet there was little evidence that *SIP* was the linking mechanism. Girls who were less secure with their fathers felt that their closest friends were to blame for the hypothetical negative events. In turn, the attribution of external blame predicted best friendships that were characterized by unresolved conflicts and betrayal and few positive provisions of friendship. However, the indirect effect was not significant, suggesting that attribution regarding blame does little to explain the relation between girls' attachment with their fathers and the qualities of their close friendships. Boys who were insecurely attached to their fathers tended to blame themselves for the negative events, but this attribution was not related to friendship quality. Although internal blame is considered maladaptive, it may not actually interfere with the maintenance of high quality friendships. Rather, internal blame may be more strongly related to individual outcomes, such as internalizing problems.

Limitations and Areas for Future Research

One limitation of our study was its reliance on self-report for all measures. We believe that the most accurate information regarding an individual's thoughts and feelings are best derived from that individual. To a degree, however, the exclusive use of self-report measures resulted in a study that is analog in nature. Moreover, the correlations among measures may have been strengthened by our use of one method and one reporter. In future studies, researchers might consider incorporating other types of measures of attachment, *SIP*, and friendship quality. For example, there are several interview and narrative protocols and scoring systems that may be used to assess aspects of attachment in middle childhood (Dwyer, 2005); used in conjunction with the self-report measure of attachment security, these would provide researchers with a more complete picture of children's *IWM*s. In addition, observations of friendship dyads may provide an objective measure of friendship quality that could complement the self-report measure. An important benefit of incorporating multiple measures would be the capability to specifically model the effects of method and reporter using latent variable analyses, thereby isolating the relations among the

constructs. Finally, it would be of use to know whether children act in provocative situations in ways that are consistent with their *SIP*. It is noteworthy that, even on the self-report measure used, some children were willing to endorse the more maladaptive or inappropriate attributions, emotions, and coping strategies. Yet, additional information could be obtained by directly observing children reacting to situations similar to those described at a hypothetical level in the self-report measure.

We also offer several suggestions for future research regarding the mediating role of *SIP* in linking attachment security and friendship quality. First, a larger sample size would obviously increase power to detect small effects, as well as reduce the chance of Type I error. In addition, the mediation results may be stronger with more precise measurement (e.g., multiple measures) of all constructs. Finally, it would behoove the researcher to consider including additional "third variables," such as parent behaviors or current parent-child interactions that may influence children's attachment security, the way they think about social situations, and how they perceive their closest friendships.

Finally, it should be noted that, whereas we hypothesized a mediating role for *SIP* in linking attachment and friendship, other explanations for the correlations among variables are possible. It is feasible that children involved in low-quality friendships are more negative in their attributions, emotional responses, and coping strategies based on their relationship histories with their friends, rather than with their parents. Given the amount of time that sixth-graders spend in the company of peers, it is also possible that experiences in highly conflictual, low-quality friendships carry over to relationships at home, rather than the reverse. These explanations would be inconsistent with attachment theory, but are not unreasonable and would be indicative of the power of peer relationships. Longitudinal and experimental research is needed in order to shed more light on the direction of effects.

In sum, the results of the present study demonstrate that, consistent with attachment theory, the relationship a child has with his or her parents is related to the way in which he or she thinks and feels about another specific close relationships, and this, in turn, is related to the quality of that relationship. These initial findings also suggest that the mechanisms connecting attachment and friendship are specific with regard to the relationships boys and girls have with their fathers and mothers. Our findings can be used by future researchers to formulate specific predictions regarding the relations among attachment security with mothers and fathers, aspects of social information processing, and the qualities of boys' and girls' friendships. Finally, the results of the present study add to the body of literature that may be accessed by practitioners interested in helping young adolescents to form positive relationships with their peers.

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Table 1

Descriptive Statistics for All Study Variables

	Entire Sample			Boys			Girls		
	N	***Mean***	***SD***	***N***	***Mean***	***SD***	***N***	***Mean***	***SD***
Attachment									
Attachment to Mother	223	3.24	0.48	114	3.24	0.48	109	3.24	0.49
Attachment to Father	215	3.14	0.55	110	3.20	0.51	105	3.08	0.59
Friendship Quality									
Companionship/Recreation	223	3.87	0.84	114	3.85	0.82	109	3.88	0.87
Validation/Caring	223	4.13	0.56	114	4.06	0.52	109	4.21	0.59
Help/Guidance	223	3.81	0.71	114	3.74	0.65	109	3.89	0.76
Intimate Disclosure	223	3.60	0.92	114	3.28	0.87	109	3.93	0.86
Conflict Resolution	222	4.17	0.77	114	4.14	0.79	109	4.19	0.75
Absence of Conflict/Betrayal	223	4.39	0.54	114	4.42	0.46	109	4.36	0.61
SIP – Attributions									
External Blame	223	0.06	0.14	114	0.05	0.12	109	0.08	0.16
Internal Blame	223	0.09	0.14	114	0.12	0.15	109	0.07	0.13
SIP – Emotions									
Okay	223	0.52	0.29	114	0.57	0.27	109	0.46	0.30
Sad	223	0.15	0.18	114	0.14	0.18	109	0.16	0.19
Angry	223	0.23	0.22	114	0.21	0.21	109	0.25	0.24
Embarrassed	223	0.10	0.14	114	0.08	0.12	109	0.13	0.16
SIP – Coping Strategies									
Avoidance	223	0.05	0.12	114	0.04	0.11	109	0.06	0.12
Revenge	223	0.03	0.12	114	0.03	0.14	109	0.02	0.09
Emotional	223	0.05	0.12	114	0.04	0.10	109	0.06	0.13

Table 2

Two-Tailed Correlations among All Study Variables: Boys Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Attachment																
1. Attachment to mother																
2. Attachment to father	.58***															
Friendship Quality																
3. Companionship/recreation	.09	.24**														
4. Validation/caring	.22*	.21*	.32***													
5. Help/guidance	.12	.12	.41***	.63***												
6. Intimate disclosure	.07	.10	.40***	.57***	.59***											
7. Conflict resolution	.25**	.18	.23*	.58***	.48***	.39***										
8. Absence of conflict/betrayal	.21*	.09	.04	.40***	.22*	.23*	.25**									
SIP – Attributions																
9. External blame	−.12	−.04	.14	−.13	.08	−.05	−.03	−.05								
10. Internal blame	−.15	−.32***	−.11	−.01	.05	.01	−.04	.00	−.01							
SIP – Emotions																
11. Okay	.08	.13	.07	.08	.17	.09	.11	.23*	−.01	−.25**						
12. Sad	.19*	.05	−.11	.07	.01	.04	.05	.07	−.07	.10	−.47***					
13. Angry	−.21*	−.11	−.02	−.15	−.25**	−.20*	−.24*	−.29**	.11	.20*	−.60***	−.27**				
14. Embarrassed	−.13	−.20*	.04	−.02	.03	.07	.06	−.12	−.04	.08	−.52***	.04	.06			
SIP – Coping Strategies																
15. Avoidance	−.09	−.01	.01	−.12	.01	−.07	−.07	−.11	.12	.03	−.33***	.24**	.12	.18		
16. Revenge	−.11	−.02	.14	−.04	.08	−.04	.04	.01	.77***	−.09	.06	−.14	.10	−.09	−.01	
17. Emotional	−.05	−.01	−.08	.03	.03	−.07	−.11	−.22*	.02	.31***	−.24**	.20*	.09	.11	−.01	−.07

*$p < .05$

**$p < .01$

***$p < .001$

Table 3

Two-Tailed Correlations among All Study Variables: Girls Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Attachment																
1. Attachment to mother																
2. Attachment to father	.40***															
Friendship Quality																
3. Companionship/recreation	.08	.16														
4. Validation/caring	.22*	.19*	.50***													
5. Help/guidance	.17	.19*	.59***	.73***												
6. Intimate disclosure	−.03	.14	.63***	.60***	.66***											
7. Conflict resolution	.23*	.23*	.36***	.50***	.52***	.37***										
8. Absence of conflict/betrayal	.40***	.26**	.15	.51***	.25**	.10	.23*									
SIP – Attributions																
9. External blame	−.02	−.26**	−.22*	−.20*	−.23*	−.14	−.21*	−.20*								
10. Internal blame	−.09	−.10	−.05	.06	−.08	−.06	−.12	−.02	−.06							
SIP – Emotions																
11. Okay	−.09	.10	−.01	.04	.05	−.01	.04	.12	−.27**	.00						
12. Sad	.04	.03	.00	.04	.05	.08	.00	.04	−.05	−.08	−.45***					
13. Angry	.06	−.12	−.05	−.06	−.13	−.07	−.06	−.19*	.42***	.03	−.61***	−.23*				
14. Embarrassed	.07	−.03	.10	−.04	.02	.03	.05	.01	−.09	.08	−.43***	.01	−.09			
SIP – Coping Strategies																
15. Avoidance	.08	−.17	−.25**	−.17	−.20*	−.23*	−.16	−.07	.44***	.01	−.39***	.06	.41***	.04		
16. Revenge	−.23**	−.14	−.11	−.13	−.14	−.08	−.08	−.20*	.52***	−.06	−.13	−.18	.40***	−.14	.29**	
17. Emotional	.09	.02	.13	.04	.05	.09	.06	−.10	.24**	.11	−.32***	.08	.29**	.06	.12	−.02

*$p < .05$

**$p < .01$

***$p < .001$

Table 4

Summary of Mediation Analyses

	Predictor (X)	Mediators (M)	Path X to M (β)	Outcomes (Y)	Path M to Y, controlling for X (partial β)	Total effect (β)	Direct effect (partial β)	Indirect effect (Δβ)
Boys	Attach to mother	Anger	−.21*	Help/guidance	−.24*	.12	.08	.05†
				Intimate disclosure	−.19*	.07	.03	.04
				Conflict resolution	−.20*	.25**	.21*	.04
				Abs of conflict/betrayal	−.26**	.21*	.16†	.05†
Girls	Attach to mother	Revenge	−.23*	Abs of conflict/betrayal	−.10			
	Attach to father	External blame	−.26**	Companionship/recreat	−.16			
				Validation/caring	−.17†	.19*	.15	.04
				Help/guidance	−.19†	.19†	.14	.05
				Conflict resolution	−.17†	.23*	.18†	.04
				Abs of conflict/betrayal	−.17†	.26**	.22*	.04
		Avoidance	−.17†	Companionship/recreat	−.22*	.16	.12	.04
				Validation/caring	−.13			
				Help/guidance	−.17†	.19†	.16†	.03
				Intimate disclosure	−.21*	.14	.11	.04

†$p < .10$

*$p < .05$

**$p < .01$

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