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Mother-Child Attachment and Social Anxiety Symptoms in Middle Childhood

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Abstract

Literature suggests that parent-child attachment and anxiety symptoms are related. One purpose of the present study was to assess whether attachment patterns relate differentially to social anxiety aspects (fear of negative evaluation, social anxiety and distress in new situations, and generalized anxiety and distress). The second purpose was to investigate these links both longitudinally and concurrently in middle childhood. Children in grades 3 and 5 ($N = 74$) completed measures of secure, ambivalent, and avoidant attachments with mothers and a measure of social anxiety symptoms in grade 5. Longitudinal analyses showed that ambivalent attachment was most consistently related to social anxiety. Concurrent measures of attachment and social anxiety showed that lower attachment security and higher ambivalent attachment were most consistently related to higher social anxiety. Concurrent attachment predicted variance in social anxiety after controlling for earlier attachment. Findings suggest that anxiety interventions might target attachment.

Keywords

Attachment; Social anxiety; Middle childhood; Longitudinal analysis

1. Introduction

Although transitory fears, worries, and anxieties are part of normal development in childhood, some children experience high and stable levels of subclinical and clinical anxiety. Social anxiety, also referred to as social phobia, is the most common anxiety disorder affecting adults and adolescents (Ollendick & Hirshfeld-Becker, 2002). La Greca and Stone (1993) conceptualized three aspects of social anxiety symptoms: fear of negative evaluation by others, social avoidance and distress in new situations, and generalized social avoidance and distress. Fear of negative evaluation refers to children's subjective worries regarding negative evaluation from peers, while the other two aspects make a distinction between children's feelings of social avoidance and distress in new situations and those that are more generally experienced (La Greca & Stone, 1993; La Greca, 2001). Although the average age of onset for social anxiety diagnosis is early to mid-adolescence, studies show that children as young as 8 years are diagnosed with social anxiety and that subclinical levels of social anxiety are quite common among children aged 5 to 18 years (Beidel & Turner, 1998; Bell-Dolan, Last, & Strauss, 1990).

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Since social anxiety is related to problematic cognitive, behavioral, and social-emotional outcomes, it is important to understand factors that contribute to the development and maintenance of social anxiety symptoms. Socially anxious children tend to endorse high levels of negative cognitions (Spence, Donovan, & Brechman-Toussaint, 1999), perceive ambiguous situations as threatening and report threat perception abnormalities (Muris, Merckelbach, & Damsma, 2000), and underestimate their cognitive competence and social performance (Beidel, 1991; Rapee & Lim, 1992). Research also suggests that socially anxious children often experience low levels of peer acceptance (e.g., Greco & Morris, 2005; Inderbitzen, Walters, & Bukowski, 1997; La Greca & Stone, 1993) and low levels of intimacy and support in close relationships (e.g., La Greca & Lopez, 1998; Vernberg, Abwender, Ewell, & Beery, 1992). Therefore, it is important to delineate factors that may play a role in exacerbating or mitigating social anxiety symptoms.

One theoretical framework, attachment theory, suggests that the quality of attachment between children and parents is one factor that may influence social anxiety (Vertue, 2003). According to Bowlby (1969, 1973), securely attached children use the attachment figure as a safe haven from which to explore and to return to in time of distress. Daily repeated experiences with attachment figures enable children to forecast the availability of their caregivers. Securely attached children perceive their caregivers as caring, responsive, and available. In contrast, insecurely attached children cannot count on the availability and responsiveness of attachment figures. Uncertainty about the availability of attachment figures increases the probability to respond with fear when experiencing alarming situations and “the person concerned is often referred to as suffering from free-floating anxiety” (Bowlby, 1973, p. 196). When a child is confident that attachment figures are readily accessible, s/he will be less prone to develop feelings of fear and anxiety than a child who makes negative predictions regarding the caregivers' availability (Bowlby, 1973).

Based on separation and reunion procedures in the Strange Situation task, Ainsworth, Blehar, Waters, & Wall (1978) identified two types of insecure relationships. Ambivalent children, also referred to as preoccupied children (Finnegan, Hodge, & Perry, 1996), use a heightening strategy (i.e., excessive attachment behavior such as exaggerated display of negative emotions) when seeking caregiver's attention and comfort as a way to overcome inconsistent parental availability and intrusive care (Cassidy, 1994). Their limited exploratory behavior may impede their adjustment in social situations (Ainsworth et al., 1978; Cassidy & Berlin, 1994) and unpredictability of the attachment figure may promote anxiety. Avoidant children do not manifest overt distress when the attachment figure is not available and instead employ an excessive self–reliance strategy (Main & Solomon, 1986) as a consequence of frequent rejection experienced when seeking support from attachment figures. Their inability to use the caregiver to cope with negative emotions may lead avoidant children to experience anxiety. Thus, in both cases of insecure attachment, children lack the trust that the attachment figure will function as a safe haven and help them to alleviate distress. Built up and maintained through repeated daily experiences with attachment figures, the effects of ambivalent and avoidant patterns of attachment may manifest in how children interact in social settings as well as in the expectations and feelings they experience in social interactions.

Two alternative hypotheses have been proposed regarding the association between attachment and anxiety. One hypothesis proposes that lack of security leads to the development and maintenance of anxiety, which places children with ambivalent or avoidant attachments at risk for anxiety symptoms. Generally, studies show that children who form insecure relationships with their caregivers are at greater risk for developing internalizing symptoms than children who form secure relationships with their caregivers (Kerns, in press). Other studies, although not specifically investigating social anxiety, found that attachment insecurity poses a risk for the development of anxiety symptoms. For example, Bosquet and Egeland (2006) reported that

insecure attachment history in infancy contributed to emotion regulation difficulties in preschool years, and such difficulties were associated with anxiety symptoms in middle childhood. An insecure relationship in infancy was also associated with negative peer relationship representations in preadolescence, which were associated with increased anxiety in adolescence. In Bosquet and Egeland's sample, children with ambivalent and avoidant attachments were not examined separately. Roelofs, Meester, Huurne, Bamelis and Muris (2006) found that insecurely attached 9-12 year old children displayed higher scores on self-reported anxiety than securely attached children. Other studies, assessing specific patterns of insecurity, have shown that both ambivalently and avoidantly attached children are at greater risk for developing anxiety and/or internalizing symptoms than securely attached children (e.g., Shamir-Essakow, Ungerer, & Rapee, 2005). Thus, there is substantial support for the hypothesis that children who form secure attachments with their caregivers are at lower risk for anxiety symptoms than children who form insecure attachments with their caregivers.

An alternative hypothesis is that only some insecure attachment patterns may elevate the risk for the development of anxiety symptoms. Specifically, some researchers have proposed that anxiety is more strongly related to ambivalent attachment than to avoidant attachment. Indeed, some studies indicate that ambivalent children, who tend to worry about their mother's availability (Cassidy & Berlin, 1994), are at greater risk for anxiety symptoms. Warren, Huston, Egeland, & Sroufe (1997) studied adolescents who had been assessed with Ainsworth's strange situation task at 12 months of age. Of the adolescents who were diagnosed with an anxiety disorder, more than one-third met criteria for social phobia. Among children with anxiety disorders, most of them were classified as ambivalent in infancy, while most children with other disorders were classified as avoidant. The risk of developing an anxiety disorder was doubled in the case of children classified ambivalent as infants. Ambivalent attachment was a unique predictor of adolescent anxiety after controlling for the nonsignificant influence of maternal anxiety and child temperament. Nevertheless, all three types of attachment (secure, avoidant, and ambivalent) were represented among the adolescents with anxiety disorders.

Not all study findings, however, are consistent with the hypothesis that ambivalent attachment is most strongly associated with anxiety symptoms. Other studies have found that avoidantly attached children have elevated internalizing symptoms. For example, Goldberg, Gotowiec, and Simmons's (1995) study of healthy and chronically ill children showed that children classified as avoidant in infancy received higher scores on internalizing problems than those who were classified as ambivalent. Lyons-Ruths, Easterbrooks, and Cibelli (1997) report that children classified as avoidant as opposed to secure in infancy displayed more internalizing symptoms at the age of 7. The ambivalent pattern of attachment was not included in the analyses. Notably, more than 50% of the mothers of the children in this study scored above the cutoff for depression. Although not studies of anxiety per se, these studies suggest that avoidant children may be at risk for anxiety problems. It should also be noted that the link between avoidant attachment and internalizing symptoms was found in samples in which children experienced significant stressors (children were chronically ill or had depressed mothers), suggesting that avoidant attachment may lead to anxiety only in these contexts (e.g., Goldberg et al., 1995). Most of the research has investigated the links between attachment and anxiety symptoms in general. Because of its implications for the nature of children's interactions and relationships (Schneider, Atkinson, & Tardif, 2001), attachment may be especially relevant to the understanding of anxiety in social interactions. Three studies have tested whether attachment is specifically related to social anxiety. In a longitudinal study, Bohlin Hagekull, and Rydell, (2000) assessed attachment security in infancy and at age 9, and evaluated social anxiety at age 9. Children who had been secure as infants or at age 9 reported less social anxiety than children who had been insecurely attached. After controlling for early attachment, later security predicted social anxiety, although early attachment did not relate to social anxiety after controlling for concurrent attachment. No differences between avoidant and ambivalent

children were found. Papini, Roggman, and Anderson (1991) reported that higher security was related to less social anxiety in early adolescence. Papini & Roggman 's (1992) study of sixth graders followed at three time points showed that higher security with mother correlated with lower levels of social anxiety at all time points.

Given the long term impairments experienced by socially anxious children, the established association between attachment and anxiety symptoms, and the hypothesized importance of attachment for social relationships, the scarcity of studies addressing the relationship between attachment and social anxiety is surprising. While attachment in infancy might be defined by safety seeking behaviors and directly inferred from overt behaviors, in middle childhood and adolescence the focus of attachment is perception of the availability of the attachment figure (Kerns, Klepac, & Cole, 1996). Peer relationships also take on increasing importance at this age, and children face changes with interactions in larger groups, disruption in previous friendships, and new friendships (Hardy, Bukowski, & Sippola, 2002). In addition, social anxiety emerges in middle childhood. These changes may make some children more prone to manifest social anxiety symptoms. Thus, social anxiety may be a developmentally salient aspect of anxiety in middle childhood, an important age at which to investigate links between attachment and social anxiety.

The present study tested whether children's perceptions of attachment relate to social anxiety symptoms in middle childhood. As noted earlier, there are two general hypotheses regarding links between attachment and anxiety symptoms. First, it has been proposed that securely attached children are less at risk for anxiety symptoms than insecurely attached children. Second, it has been proposed that, among insecurely attached children, ambivalently attached children may be at higher risk for anxiety symptoms than avoidantly attached children. A longitudinal design examined both concurrent and earlier perceptions of attachment as predictors of social anxiety symptoms in middle childhood. Attachment theory and research predicts that attachment should show some consistency over time. A meta-analysis of longitudinal attachment studies (Fraley, 2002) revealed that attachment shows moderate stability from infancy to any later point in time (average $r = .39$). Because attachment may change over time in response to changes in life circumstances (see Waters, Hamilton, & Weinfield, 2000), it is important to consider how both current and earlier attachment quality may relate to social anxiety symptoms.

The present study extends the previous literature in two ways. First, we examined the relation between attachment patterns and different clusters of social anxiety symptomatology, as conceptualized by La Greca and Stone (1993). More precisely, we examined which attachment dimensions are uniquely and consistently related to each dimension of social anxiety. The literature on mother-child attachment suggests that children securely attached to their mothers are more socially competent and form high quality friendships with their peers (e.g., Kerns et al., 1996; Schneider et al., 2001; Sroufe, Carlson, & Shulman, 1993), although attachment security is less consistently related to children's interactions with unfamiliar peers (Belsky & Cassidy, 1994) or to measures of sociability (Schneider et al., 2001). We therefore expected that more securely attached children would report less anxiety regarding negative evaluation from peers, but had no specific hypotheses regarding social avoidance and distress in general or specific situations. Cassidy and Berlin (1994) suggested that, because ambivalent children are preoccupied with maintaining and gaining proximity to the attachment figure, they are poorly prepared to organize their interactions outside the parent-child relationship and show limited exploratory behaviors in a variety of situations, including peer related circumstances. They manifest fearfulness in social situations such as playing with peers, are less likely to negotiate social offers, and tend to be dependent and submissive. Their limited familiarity with the environment may contribute to fear of negative evaluation from their peers and feelings of anxiety and distress when facing new social situations or social interactions in general. We

therefore expected that all three aspects of social anxiety would be related positively to greater ambivalent attachment. Whereas some studies have found that avoidant attachment is associated with elevated internalizing or anxiety symptoms (e.g., Goldberg et al., 1995; Lyons-Ruth et al., 1997), other studies have contradicted these results (e.g., Moss, Parent, Gosselin, Rousseau, & St. Laurent, 1996; Vondra, Shaw, Swearingen, Cohen, & Owens, 2001). Because of these mixed previous findings, we did not have a specific hypothesis regarding the relation between avoidant attachment and aspects of social anxiety.

Second, we evaluated whether the three aspects of social anxiety are related to earlier or concurrent attachment. Except for a few studies (e.g., Bohlin et al., 2000; Bosquet & Egeland, 2006), most studies have measured attachment and anxiety at the same point in time, precluding conclusions about the predictive power of earlier versus later attachment. We examined whether concurrent attachment has a significant influence on social anxiety symptoms beyond what is predicted by earlier attachment.

2. Method

2.1. Participants

The children (51 girls and 53 boys) and their mothers first participated in the current study when the children were in the third grade. The final sample included children who returned to the lab when they were in the fifth grade. Seventy-seven families from the original sample participated at Time 2 (36 girls and 41 boys) and we retained for the analyses only the 74 participants who completed all measures at both times. The mean (*SD*) age at Time 1 was 9.1 (.45) years and at Time 2 was 10.96 (.42) years. Sixty-eight (91.9%) identified themselves as European American, 4.1% (3) African American, 1.4% (1) Hispanic, and 2.7% (2) other. Family status included two-parent intact families (63.5%), two-parent blended families (10.8 %), and single-parent families (25.7%). The initial and the follow-up samples were compared on demographic (child sex and ethnicity, parent education and employment) and attachment variables using chi-square analyses and *t*-tests. European American children were more likely to return for the study (78%) than were minority children (46%), but otherwise there was no evidence of selection effects for the demographic and attachment variables.

2.2. Procedure

As part of a larger project, the children and their parents participated in two 2-hour laboratory sessions at the University scheduled approximately two years apart. At Time 1 they completed questionnaires related to mother-child attachment. At Time 2, children filled out the same attachment measures and they also completed the social anxiety questionnaire.

2.3. Measures

***2.3.1. Security Scale* (Kerns, Aspelmeier, Gentzler, & Grabill, 2001)—**The Security Scale is a self-report measure consisting of 15 items that assess children's perceptions of a particular attachment relationship during middle childhood. In the current study, children's perceptions of their attachment with mothers were assessed. The items were administered using Harter's format in which children are presented information about two types of kids and asked to decide which one is most like them, and then to indicate whether they are "*really like*" or "*sort of like*" that type of kid. The questionnaire includes items such as "some kids find it easier to trust their mom, but other kids are not sure if they can trust their mom." Each item was scored from 1 to 4, with a higher score representing greater security. The scale provides scores on a single, continuous dimension of security, based on the average of the item scores, with the average score ranging from 1 - 4. Previous research has demonstrated good psychometric proprieties of this measure in that it has good internal consistency and test-retest reliability and security scores correlate with maternal behavior and children's social and emotional adjustment

and (Kerns, Schlegelmich, Morgan, & Abraham, 2005). Internal consistency for the present study was .64 at Time 1 and .82 at Time 2.

***2.3.2. Coping Strategies Questionnaire* (Finnegan et al., 1996)—**The Coping Strategies Questionnaire measures preoccupied and avoidant coping, as dimensions of insecurity, in relation to a caregiver in middle childhood. The questionnaire was initially intended to capture coping styles or key feelings and behaviors specific to preoccupied and avoidant attachments, and initially was not interpreted as a direct measure of insecure attachment (Hodges, Finnegan, & Perry, 1999; Finnegan et al., 1996). However, Perry and colleagues recommend that the scales be interpreted as reflecting forms of attachment insecurity and that the preoccupied and avoidant coping scales be included as assessments of ambivalent and avoidant attachment, respectively, in middle childhood to supplement other instruments assessing security (Younger, Corby, & Perry, 2005). This recommendation is based on evidence that the scales are associated with parenting as suggested by attachment theory. Specifically, Younger et al. (2005) report that more preoccupied fourth and fifth grade children perceive their mothers to be overprotective and to discourage autonomy and exploration, whereas more avoidant children perceive their mothers as unavailable when needed, unloving, uninterested and aversive. In addition, these scale scores accounted for children's adjustment (e.g., internalizing and externalizing problems, and self-worth scores) over and above perceived parenting.

In the present study, children answered the questions about preoccupied (ambivalent) and avoidant styles of relating to their mothers. The items on the preoccupied scale capture the child's distress if the mother is not available, whereas the items on the avoidant scale indicate that the child does not rely on the mother during a stressful situation. Items were presented using the same format as the measure of secure attachment. For example, one of the items assessing avoidant attachment presents a hypothetical situation of the mom being away for a few days, but she is coming home later in that day. The child first chose between “some kids would not care if she is coming home” and “other kids would look forward to seeing her”, and then decided if she is “*really like”* or “*sort of like”* that type of kid. An example item assessing preoccupied/ambivalent attachment presents the participant with the scenario of being upset one day. After talking with her mother about it for a while, her mother says that she needs to stop talking because she has to go do something else. The child has to decide between “some kids would calm down after taking to their mother” and “other kids would still be upset and would try to get their mother to talk to them some more with them” and then has to decide if she is “*really like”* or “*sort of like”* that type of kid. Following Finnegan et al.'s (1996) procedure, each item was scored as 0, 0, 1, or 2, based on response options indicating that the self was: a) *really like* children who would endorse nonpreoccupied response, b) *sort of like* children who would make nonpreoccupied response, c) *sort of like* children who would make preoccupied response, d) *really like* children who would give preoccupied response. A score of 0 was assigned to both nonpreoccupied/nonambivalent options, and scores of 1 and 2 were given to lesser and greater preoccupied/ambivalent responses. Items on the avoidant scale were scored in the same way. Based on the average of the items of each scale, total scores of preoccupied and avoidant coping style were computed.

Finnegan et al. (1996) reported alphas of .86 for the preoccupied scale and .84 for the avoidant scale, and test-retest correlations of .83 and .76 for the two scales, respectively. At Time 1, children completed the entire measure (18 items per scale). At Time 2, a shorter version of the Coping Strategies Questionnaire, consisting of 20 items (10 for each scale), was used due to time constraints. Items selected for the shorter measure were those that showed high item total correlations at Time 1. Analyses based on Time 1 data indicated that scores calculated from the short and long version of the questionnaire were highly correlated (*r*s > .95). Therefore, to make the results based on Time 1 and Time 2 comparable, the shortened version of the measure

was analyzed at both times. Internal consistency estimates for the shortened preoccupied/ambivalent and avoidant subscales were .84 and .71 at Time 1 and .74 and .80 at Time 2. Some of the correlations among attachment patterns were significant. At both Time 1 and Time 2, avoidant attachment scores were significantly correlated with secure attachment scores, *r*s = −.33 and −.51 for Times 1 and 2 respectively, and were correlated with ambivalent attachment scores, *r*s = −.25 and −.32 for Times 1 and 2 respectively. Ambivalent attachment was not significantly associated with secure attachments scores at Time 1 (*r* = .07) or Time 2 (*r* = .15).

2.3.3. Social Anxiety Scale for Children-Revised **(SASC-R; La Greca & Stone, 1993)—**SASC-R is an 18 item self-report measure designed to assess children's social anxiety in middle childhood. Children rated how much they felt each item was true for them using a scale from 1 to 5 (1 = not at all, 2 = hardly ever, 3 = sometimes, 4 = most of the time, 5 = all the time). The scale yields three factors: Fear of Negative Evaluation from Peers (FNE, 8 items), Social Avoidance and Distress Specific to New Situations (SAD-N, 6 items), and Generalized Social Avoidance and Distress (SAD-G, 4 items). The factors were obtained based on the mean of item scores; therefore, a higher score indicates higher social anxiety. Items include statements such as “I worry about being teased” (FNE), “I get nervous when I talk to new kids” (SAD-N), and “I am quiet when I am with a group of kids” (SAD-G). La Greca & Stone (1993) reported acceptable internal consistency (all alphas .69 - .86). Alpha coefficients for the current study were .88 for *Fear of negative evaluation* subscale, .82 for Social avoidance and distress specific to new situation subscale, and .70 for *Generalized social avoidance and distress* subscale. Pearson product-moment correlations computed to assess the interrelations among subscales were all significant (range = .50 −.69). Thus, although the subscales were correlated, the associations were not so high as to preclude examining individual subscales.

3. Results

3.1. Preliminary analyses

Descriptive statistics are presented for all the variables in Table 1. Preliminary *t*-test analyses indicated that girls reported greater SAD-G than did boys, $t(72) = -.2.44$, $p < .05$, *M*s (*SD*) = 1.99 (.81)and 1.55 (.73) respectively. Girls reported higher scores for secure attachments than did boys at Time 1, $t(72) = -.2.34$, $p < .05$, *M*s (*SD*) = 3.55 (.39) and 3.36 (.31), respectively. In addition, girls reported higher scores for ambivalent attachments than did boys at Time 2, $t(72) = -2.19$, $p < .05$, *M*s *(SD)* = .54 (.36) and .36 (.36), respectively. Also at Time 2 boys reported higher avoidant attachments than did girls, $t(46.96) = 3.61$, $p < .01$, *Ms* (*SD)* = .32 (.39) and .08 (.13), respectively.

3.2. Associations between social anxiety and attachment dimensions

To test whether social anxiety was related to lower secure attachment scores or to higher levels of particular forms of insecure attachment, we first calculated correlations between social anxiety variables and scores for each attachment pattern. Time 1 correlations reflect cross-time associations, that is, the correlation between attachment measures assessed at grade 3 (about 9 years) and social anxiety measures assessed at grade 5 (about 11 years old). Time 2 correlations reflect concurrent associations between attachment and social anxiety dimensions (both assessed at grade 5).

The zero-order correlations in Table 2 show that children who reported higher FNE at Time 2 were higher in ambivalent attachment at Time 1 and less secure at Time 2. Children who reported more SAD-N at Time 2 were higher in ambivalent attachment at both time points and less avoidant at Time 2. Finally, children with higher SAD-G scores at Time 2 were higher in ambivalent attachment at both time points.

3.3. Multivariate prediction of social anxiety dimensions

Three regression analyses were used to assess how the three attachment patterns collectively and uniquely predicted each of the three social anxiety dimensions (Fear of Negative Evaluation from Peers, Social Avoidance and Distress Specific to New Situation, and Generalized Social Avoidance and Distress). In each case child sex was entered at Step 1 to control for this factor. Time 1 attachment scores were entered in Step 2, and Time 2 attachment scores were entered at Step 3. The findings of these analyses are presented in Table 3. All R^2 values reflect adjusted R^2 change. These analyses tested whether concurrent attachment predicts each of the social anxiety dimensions after controlling for earlier attachment. To examine whether earlier attachment predicts social anxiety dimensions after controlling for concurrent attachment, we also summarize the results of three additional regression analyses in which Time 2 attachment scores were entered at Step 2, and Time 1 attachment scores were entered at Step 3.

***3.3.1. Predicting fear of negative evaluation* (FNE)—**Results of the hierarchical multiple regression investigating the degree to which attachment patterns predict children's fear of negative evaluation (FNE) from peers, after controlling for child sex in Step 1, are presented in the left column of Table 3. The test for change in R^2 was significant at Step 2, with attachment variables assessed at Time 1 explaining 8% of the variance in children's fear of negative evaluation, $F(3, 69) = 3.05$, $p < .05$. As can be seen in the center of the left portion of Table 3, Time 1 (earlier) ambivalent attachment uniquely predicted later fear of negative evaluation ($\beta = .30$, $p < .05$). Scores for Time 1 secure and avoidant attachments were not significant predictors of later fear of negative evaluation. Time 2 (concurrent) attachment scores, entered at Step 3, explained an additional 12% of the variance in children's levels of fear of negative evaluation, $F(3, 66) = 4.36$, $p < .01$. As the lower left portion of Table 3 shows, concurrent secure attachment, but not ambivalent and avoidant attachment, was uniquely (negatively) associated with children's levels of fear of negative evaluations. Because this analysis controls for security at Time 1, it shows that increase in security over time was linked to less FNE at Time 2.

To test whether early attachment added to the prediction of FNE after controlling for concurrent attachment, we reversed the entry of Time 1 and Time 2 attachment variables. That is, Time 2 scores for secure, ambivalent and avoidant attachments were entered as predictors of FNE following child sex, prior to Time 1 attachment measures. The Time 1 (earlier) assessments of attachment were entered as predictors on the last step. The test for change in R^2 was significant at Step 2 of this analysis, indicating that concurrent Time 2 attachment measures accounted for an additional 20% of variance in FNE after controlling for sex, $F(3, 69) = 6.96$, $p < .001$. The test for change in R^2 was not significant at Step 3 (when Time 1 attachment scores were entered), indicating that earlier attachment did not add to the prediction of FNE after controlling for concurrent attachment.

3.3.2. Predicting social anxiety and distress in new situations (SAD-N)—As can be seen in the center section of Table 3, neither child sex nor earlier Time 1 attachment scores were significant predictors of social anxiety and distress in new situations (Fs = *ns*). However, the concurrent Time 2 attachment scores, entered at Step 3, predicted children's social anxiety and distress in new situations, explaining an additional 13% of the variance after controlling for sex and Time 1 earlier attachment, $F(3, 66) = 3.37$, $p < .05$. This was due to the association of Time 2 avoidant attachment scores with lower social anxiety and distress in new situations (see lower center section of Table 3).

In the regression analysis in which Step 2 and Step 3 were reversed (Time 2 concurrent attachment was entered as a predictor at Step 2, following child sex, and Time 1 earlier

attachment was entered as a predictor of SAD-N at Step 3), the test for change in R^2 was significant at Step 2. Concurrent attachment variables accounted for an additional 13% of variance in SAD-N after controlling for child sex, $F(3, 69) = 4.50$, $p < .01$. Earlier attachment, entered at Step 3, did not add to the prediction of SAD-N after controlling for concurrent attachment.

3.3.3. Predicting generalized social anxiety and distress—Finally, the results of the regression analysis examining whether attachment scores predict generalized social anxiety are presented in the right column of Table 3. This analysis revealed that child sex at Step 1 explained 6% of the variance in SAD-G scores, $F(1, 72) = 5.94$, $p < .05$ and earlier Time 1 attachment patterns introduced at Step 2 did not improve the model fit. However, concurrent attachment entered at Step 3 explained an additional 13% of the variance in children's levels of generalized social anxiety, $F(3, 66) = 4.89$, $p < .01$. Children who reported higher levels of secure attachment with mother at Time 2 indicated less generalized social anxiety and distress (note the significant negative weight in lower right portion of Table 3), whereas children with higher ambivalent attachment scores evidenced higher levels of generalized distress (note significant positive weight in lower right portion of Table 3). Thus, generalized social anxiety and distress at Time 2 was uniquely predicted by Time 2 concurrent security and ambivalence.

When Step 2 and Step 3 were reversed in the regression analyses, concurrent attachment entered at Step 2 accounted for an additional 18% of the variance in SAD-G after controlling for child sex. Adding earlier attachment at Step 3 did not improve the model fit as the test for change in R^2 was not significant.

4. Discussion

Although there is a small literature on the association between anxiety and attachment (e.g., Bosquet & Egeland, 2006; Warren et al., 1997), our study is among the first to investigate the associations of attachment patterns with different dimensions of social anxiety. While we did not have any *a priori* hypotheses regarding links between avoidant attachment and social anxiety, we hypothesized that higher levels of ambivalent attachment and lower levels of secure attachment would be related to greater fear of negative evaluation. In addition, we expected that greater ambivalent attachment would be associated with higher social avoidance and distress in new situations and higher generalized social avoidance and distress. The results partially supported hypotheses. As expected, earlier ambivalent attachment predicted all three aspects of social anxiety, although tests for R^2 change, which included controls for child sex, were significant only for participants' reports of fear of negative evaluation. When concurrent associations between social anxiety and attachment were examined among the fifth graders, correlation analyses again showed that ambivalent attachment was related to SAD-N and SAD-G, as hypothesized, but it did not relate to fear of negative evaluation (FNE). In addition, our hypothesis of a link between attachment security and fear of negative evaluation was also confirmed. Contrary to our expectations, we also found that children who reported greater avoidance with their mothers indicated that they experienced less social anxiety in new situations.

Our findings expand upon the previous literature by showing that attachment patterns relate differentially to social anxiety dimensions, depending on the social context in which anxiety arises. Fear of negative evaluation was most strongly related to concurrent security. It is important to consider what mechanisms might account for this relation. For example, peer competence and emotion regulation processes may mediate or explain the link between security and social anxiety dimensions. Research suggests that securely attached children have higher levels of perceived social competence, and higher quality relationships with peers and friends (Bosquet & Egeland, 2006; Kerns et al., 1996; Schneider et al., 2001; Sroufe et al., 1993).

Children with more secure attachments are also better at regulating their emotions, using more constructive coping strategies such as problem solving and seeking support from others, than are less secure children (Cassidy, 1994; Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000; Thomson, 2001). Peer relationships and emotion regulation have also been linked to anxiety. Studies have highlighted that socially anxious children have poor peer relationships (e.g., La Greca & Stone, 1993; Greco & Morris, 2005; Inderbitzen et al., 1997). Anxiety symptoms have also been linked to children's difficulty in identifying and regulating their emotions (see Suveg & Zeman, 2004). Despite these connections, no study has investigated whether peer competence and emotion regulation processes explain the connection between attachment and social anxiety. Future studies are needed to investigate further whether secure attachment promotes adaptive peer competence and emotion regulation processes, which in turn may protect children from developing anxious feelings when interacting with peers.

For the most part, correlations and regression analyses yielded consistent patterns. There were two differences in results. Ambivalent attachment was correlated with SAD-N, but did not uniquely predicted this social anxiety dimension in regression analyses; and attachment security was not correlated with SAD-G, but did uniquely predict this aspect of social anxiety after controlling for sex, earlier attachment, and concurrent insecure attachment dimensions. The latter pattern suggests a suppression effect (Tabachnick & Fidell, 2001) in that security was related to this social anxiety aspect only after controlling for the variance accounted for by ambivalent and avoidant attachment dimensions. An explanation for the suppression effect is that security ratings may capture aspects of the security-insecurity dimension that are not related to ambivalence or avoidance (e. g., disorganization, Main & Solomon, 1986).

Consistent with some previous research (e.g., Warren et al., 1997), ambivalent attachment signaled a greater risk for some aspects of social anxiety symptoms than either secure or avoidant attachment, as the only pattern associated in the same direction with all of the social anxiety dimensions. That is, earlier ambivalent behavior toward mothers poses a risk for developing later fear of negative evaluation, perhaps because children with ambivalent attachment are less likely to capitalize on opportunities to explore peer relationships. In addition, concurrent ambivalent attachment relates positively to children's anxiety in new and general situations. Explanations for the latter effects may need to consider the role of temperament. Although attachment has not always consistently related to temperament, there is some evidence that ambivalent children are more difficult, distressed, and socially inhibited than secure or avoidant children (e.g., Cassidy, & Berlin, 1994). Research has also shown connections between these aspects of temperament and social anxiety symptoms (e.g., Lonigan, & Phillips, 2001). Despite such connections, few studies have examined the associations between ambivalence, temperament, and anxiety and none investigated the potential role of temperament (particularly behavior inhibition) as a possible explanation for the link between the ambivalent attachment pattern and social anxiety symptoms. Future studies of the relations between attachment, different aspects of temperament, and social anxiety dimensions may be particularly relevant for understanding pathways from ambivalent attachment to social anxiety. To clarify the direction of influence, it is especially important to study these constructs over time.

Contrary to some previously reported results (e.g., Bohlin et al., 2000) differences between ambivalence and avoidance were found. Interestingly, children who reported higher levels of avoidance at Time 2 also reported less social anxiety in new situations, indicating that avoidance may serve an adaptive function in some contexts. Some previous studies reported similar results. For example, Finnegan et al. (1996) found that for boys, avoidance was associated with fewer rather than more internalizing problems in a sample of 229 grade three to seven children. One explanation was that avoidant children may not report their distress because of their tendency to suppress their affect. Thus, denial of anxiety may keep the

attachment system deactivated. However, this explanation does not account for why avoidance was related to only one dimension of social anxiety.

Alternatively, children with avoidant attachments may have fewer anxieties in social situations that do not require intimacy. Future studies should further investigate whether insecure attachment patterns serve different functions depending on the social situation. For example, it is possible that higher avoidance with mother permits greater adaptability when encountering unfamiliar, low intimacy social situations, but interferes with forming close friendships or romantic relationships and may contribute to the development of social anxiety when more intimate aspects are considered. A third possibility is that avoidant attachment are related to anxiety symptoms only in the context of other stressors such as parental depression (Lyons-Ruth et al., 1997) or chronic illness (Goldberg et al., 1995).

Findings relevant to the second purpose of the study, to examine whether these three dimensions of social anxiety are related to earlier or later attachment, revealed that earlier attachment accounted for significant variance only when predicting subsequent fear of negative evaluation from peers, with ambivalent attachment as the major predictor, a finding consistent with previous literature showing that earlier experiences influence later development (Sroufe, Egeland, & Kreutzer, 1990). However, the model based on concurrent (time 2) attachment was significant for all three aspects of social anxiety. Furthermore, when entered in the third step of regression after sex and earlier attachment were controlled, concurrent (later) attachment enhanced the relative predictive power of the model. In contrast, when earlier attachment was added in the regression after sex and later attachment, it did not explain any additional variance of the social anxiety variables, suggesting that the associations of earlier attachment with social anxiety dimensions were mediated or explained by concurrent attachment. These findings are consistent with those reported by Bohlin et al., (2002), although the present study differed from the previous one in its investigation of the contribution of earlier versus later attachment on different aspects of social anxiety.

Contrary to some previous studies (e.g., Inderbitzen et al., 1997; La Greca & Lopez, 1998; La Greca & Stone, 1993), our results indicated no sex differences regarding fear of negative evaluation from peers and social anxiety and distress in new situations. It is possible that age was a relevant factor and sex differences appear at later ages, or that the smaller sample of the present study precluded capturing sex differences previously reported in the literature. The higher rate of reported generalized social anxiety and distress among girls than boys observed in the present sample is consistent with results reported in the literature. Although child sex was not a focus of the present study, these findings warrant further investigation.

Some limitations of this study should be considered when drawing inferences from the findings and planning future research in this area. First, reliance on questionnaires to assess both attachment and social anxiety introduced shared method variance, which may increase the estimates of the associations between the two types of measures. When questionnaire attachment measures are employed, it would be beneficial to include reports of social anxiety symptoms from other reliable sources (e.g., parents, teachers) or to use diagnostic interviews or behavior observation measures. Future studies could also incorporate attachment interviews such as story-stem tasks or script analysis of attachment narratives to examine the consistency of the results across attachment measures (Kerns et al., 2005). Second, the homogeneous nature of our sample limits generalization of these findings. It is important to replicate these results in more ethnically and economically diverse samples. Third, we examined the relations between social anxiety aspects and attachment with mothers only. Research has shown that attachment with fathers plays a role in enhancing the social skills involved in peer interaction (e.g., Verschueren & Marcoen, 2005). Studies should investigate further the unique and combined effects of attachment with both mothers and fathers on social anxiety symptoms. In

addition, given the increasing importance of peer relationships in middle childhood (e.g., Booth-LaForce, Rubin, Rose-Krasnor, & Burgess, 2005), studies should examine the relative influence of poor quality of peer relationships on social anxiety symptoms in comparison with effects of parental attachment. Finally, this study examined associations between social anxiety aspects and both earlier and later attachment patterns, but prior social anxiety was not investigated or controlled. Studies investigating both attachment patterns and social anxiety symptoms at multiple time points are necessary to disentangle possible bidirectional effects of attachment and social anxiety. Findings of our study do suggest that future research should explore how each aspect of social anxiety relates differently to varied attachment patterns, and consider factors that may mediate these links.

These results have direct implication for case conceptualization, treatment processes, and prevention programs when working with social anxious children. In general, successful treatments addressing social anxiety symptoms focus on changing children's negative cognitions (e.g., Kendall, 1994) or teaching parents to work better as a team while providing positive modeling and encouraging non-anxious behaviors (see Weisz, 2004). Because children with ambivalent attachments are at higher risk for social anxiety, early interventions or preventive programs may also focus on assessing the attachment relationship between caregiver and child and enhancing its quality, while reducing the struggle and dependence of the child. Secure attachment was negatively related to social anxiety, thus parenting programs may emphasize the importance of availability and consistency in the caregiver-child dyad. In addition, attachment patterns observed later in the child's life were more strongly related to social anxiety than earlier attachment measures. Thus, interventions may be more efficacious and effective when aiming to enrich the present mother-child attachment relationship as well as focusing on children's negative cognitions or parents' behavior. Further, intervention studies that assess whether enhancing security in parent-child relationships can lessen children's social anxiety symptoms could provide an opportunity to study whether attachment plays a causal role in the development of social anxiety. Intervention studies focusing on decreasing social anxiety symptoms could also test whether social anxiety influences the quality of parent-child relationships.

In summary, this study highlighted the importance of considering multiple aspects of both social anxiety and attachment. The findings are consistent with the hypothesis that the nature of social anxiety symptoms may depend on the particular attachments children form with their mothers. There are several lines of research that need to addressed in future studies. It is important to consider whether attachment with one's mother enhances prediction of social anxiety symptoms when considering other family relationships, such as attachment with fathers (Verschueren & Marcoen, 2005), and/or relationships outside the family, such as peer relationships (Booth-LaForce et al., 2005). In addition, follow-up studies that test specific factors that may mediate the relation between attachment patterns (security, ambivalence, and avoidance) and social anxiety aspects (FNE, SAD-N, and SAD-G) are important to an effort to understand and perhaps intervene in addressing experiences and mechanisms that may be responsible for each of these relations. Future studies should explore whether peer competence and emotion regulation processes explain the link between security and fear of negative evaluation. Different aspects of temperament may also play a role in the association between ambivalence and social anxiety aspects. Avoidance may influence some aspects of social anxiety, depending of the degree of intimacy of the situation. Finally, intervention studies could be conducted to assess whether efforts to enhance security in parent-child relationships can alleviate or decrease children's social anxiety symptoms. Intervention studies could thus test whether, as predicted by theory, attachment could play a causal role in the development and maintenance of (social) anxiety.

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Table 1

Mean (*SD*) scores for each variable at Time 1 and at Time 2 (*N* = 74)

Variable	M	SD	*Minimum*	*Maximum*	*Range*
Time 1					
Mother-child attachment					
Secure attachment	3.45	.36	2.33	4	1.67
Ambivalent attachment	.76	.53	0	2	2
Avoidant attachment	.19	.27	0	1.60	1.60
Time 2					
Mother-child attachment					
Secure attachment	3.45	.43	2.07	4	1.93
Ambivalent attachment	.45	.37	0	1.50	1.50
Avoidant attachment	.21	.31	0	1.60	1.60
Social anxiety dimensions					
Fear of Negative Evaluation (FNE)	2.38	.88	1	4.88	3.88
Social Avoidance New Situation (SAD-N)	2.54	.86	1	5	4
Generalized Social Avoidance (SAD-G)	1.76	.79	1	4	3

Table 2

Correlations of earlier (Time 1) and concurrent (Time 2) attachment scores with social anxiety scores (N = 74)

Variable	FNE	SAD-N	SAD-G
Attachment Time 1			
Security	−.08	−.09	.01
Ambivalence	.25*	.23*	.26*
Avoidance	.15	.07	−.04
Attachment Time 2			
Security	−.36**	−.05	−.15
Ambivalence	.19	.34**	.43***
Avoidance	−.05	−.27*	−.15

Note. Avoidant attachment scores were not normally distributed and square root transformations did not change results. Therefore, data presented here are based on the original attachment scores. FNE = Fear of Negative Evaluation, SAD-N = Social Avoidance and Distress in New Situations, SAD-G = Generalized Social Avoidance and Distress.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

Summary of three hierarchical regression analyses predicting three social anxiety dimensions from earlier (Time 1, Grade 3) and concurrent (Time 2, Grade 5) attachment scores (N = 74)

	Social anxiety dimensions					
Predictor	**FNE**		**SAD-N**		**SAD-G**	
	B(SE B)	**β**	***B(SE B)***	**β**	***B(SE B)***	**β**
Step 1						
Child sex	.21(.21)	.12	.33(.20)	.19	.44(.18)	.28*
Adj. ΔR^2	.00		.02		.06	
Step 2: Time 1 attachment scores						
Security	−.16(.30)	−.07	−.31(.30)	−.13	−.17(.27)	−.07
Ambivalence	.49(.19)	.30*	.39(.19)	.24*	.36(.17)	.24*
Avoidance	.72(.40)	.22	.37(.39)	.12	.10 (.35)	.03
Adj. ΔR^2	.08*		.04		.03	
Step 3: Time 2 attachment scores						
Security	−.95(.27)	−.46**	−.43(.27)	−.21	−.58(.24)	−.31*
Ambivalence	.25(.31)	.11	.57(.32)	.25	.90(.28)	.42**
Avoidance	−.71(.39)	−.25	.–90(.39)	−.33*	−.24 (.34)	−.10
Adj. ΔR^2	.12**		.09*		.13**	

Note. FNE = Fear of Negative Evaluation. SAD-N = Social Avoidance and Distress in New Situations. SAD-G = Generalized Social Avoidance and Distress.

* $p < .05$.

** $p < .01$.