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# Attachment and Emotional Understanding in Preschool Children

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This study was designed to elucidate the association between attachment and emotional understanding in preschool children. Forty children between the ages of 2.5 and 6 years and their mothers participated in the study. Mothers completed the Attachment Q-set, and children took part at their preschools in both an affective perspective-taking task and a series of interviews concerning naturally occurring incidents of emotions. Overall, age and attachment security predicted a child's aggregate score on the emotional understanding tasks. However, when the score was separated by the valence of the emotion, attachment security and age predicted a child's score for only those emotions with a negative valence (e.g., sadness) and not for those emotions with a positive valence (e.g., happiness). Thus, a secure attachment relationship seems to be important in fostering a child's understanding of emotion, primarily negative emotions.

The ability to understand and infer the emotions of others is an important skill in a child's social repertoire. The comprehension of emotions is important because children frequently rely upon this understanding to guide their behavior in social interactions and because it permits children to discuss their own feelings and those of others (Olson, Astington, & Harris, 1988). In addition, the ability to comprehend and discern emotions in others is often presumed to be necessary to experience empathy (e.g., Hoffman, 1984) and to achieve emotional competence (Saarni, 1990). Furthermore, researchers have suggested that an understanding of emotions may mediate certain types of prosocial behavior (Carlo, Knight, Eisenberg, & Rotenberg, 1991; Eisenberg & Miller, 1987), as well as guilt and the expression of emotion (Denham, 1986). Therefore, it is hardly surprising that high levels of affective perspective taking in children have been found to correlate with positive peer relationships and social competence (Denham, McKinley, Couchoud, & Holt, 1990).

Throughout their preschool years children make enormous strides in their understanding of emotion. During this time, children become increasingly capable of mastering emotional language (Bretherton, 1986), of using emotions in pretend play, and of correctly appraising emotions in other people (Fabes, Eisenberg, McCormick, & Wilson, 1988). In fact, preschool children have even shown some evidence of being able to draw upon emotions for manipulative purposes (Bretherton, 1986). By the ages of 3 and 4, children are capable of articulating both plausible antecedents and consequences of their own and others' emotions (Bretherton, 1986; Denham, 1986; Fabes et al., 1988).

A child's earliest experience with emotions occurs in the context of the family, and as a result, the family plays an influential role in the child's development of emotional understanding. Denham, Zoller, and Couchoud (1994) have emphasized the importance of the parents' socialization of emotion in the child's development of emotional understanding. These researchers found links between preschool children's levels of emotional understanding and their mothers' expressions of emotion, as well as mothers' positive and negative responses to their children's own expressions of emotion. In addition, early understanding of emotion has been linked to other family factors, including discourse about causality and emotions (Brown & Dunn, 1996; Dunn, Brown, & Beardsall, 1991).

Because family experiences offer rich avenues for emotional experiences, it is reasonable to expect that the quality of interaction between parents and children will influence the development of emotional understanding of children. Attachment theorists have long stressed the importance of parent–child attachment in children's learning about self and others. Bowlby (1980) and others (e.g., Bretherton, 1993) have emphasized that young children construct "internal working models" out of the interactions they experience with attachment figures. These internal working models are dynamic representations of the self, caregiver, and relationships in general and are used by children to predict and interpret the actions of partners.

Internal working models (especially those of the self) have also been conceptualized as affective–cognitive filters that influence the way in which children respond to parents and to others and the way in which they view themselves (Bretherton, 1990). Thus, if a caregiver has both comforted and protected the child, as well as respected the child's need for autonomous exploration, that child will construct an internal working model of himself or herself as worthy, lovable, and self-reliant and will respond to partners with warmth and affection. Conversely, if an attachment figure has repeatedly rejected a child's needs for comfort and exploration, the child will construct an internal

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working model of the self as less worthy, lovable, and self-reliant and respond to a partner in an ambivalent or rejecting manner.

Related to children's working models of self that they construct out of their interactions with attachment figures are children's working models of other people, particularly caregivers. Children's daily interactions with attachment figures—including conflict, shared pretend play, humor, emotional management, and discussions about misbehavior—provide a natural laboratory in which children begin to associate overt behavior with internal states (Thompson, 1997) and begin to construct a "theory of mind" (i.e., a psychological understanding of self and others). Especially important in this process are attachment figures, not only because children perceive them as sources of feelings, desires, and knowledge, but also because children are sensitive to those psychological states owing to their close relationships.

Because the security of the attachment between the parent and child is a measure of the harmony and quality of the relationship between them, several good reasons exist to believe that preschool children with secure attachments to their parents will have a more advanced understanding of emotions than children with insecure attachments. First, securely attached children should engage in richer discourse with their parents regarding both emotions and causality, two factors that seem to play a role in the development of emotional understanding. This would be expected because the security of the attachment is the result of the actions of both partners, the parent and the child, and therefore discussion about emotions should be easier between a parent and child who engage each other in more mutually satisfying interactions. This is because communication in general in a secure parent–child dyad should be both more open and fluent (Bretherton, 1990). Although research into this issue is insufficient at this point, several studies tentatively support that communication is better in secure dyads (for a complete review, see Bretherton, 1990). For example, Main, Kaplan, and Cassidy (1985) found that communication patterns between a mother and child following a brief separation and reunion were related to prior attachment classifications. Securely attached dyads were more fluent in their discourse and discussed a wider range of topics upon reunion than did insecurely attached dyads, who were not only restricted in their discourse, but who also tended to avoid personal topics.

In addition to richer discourse about emotions, several other reasons exist to expect children with secure attachments to have a more advanced understanding of emotion. Second, Slade (1987) has shown that mothers of securely attached infants engage them in longer and more mature episodes of pretend play than those with insecurely attached children, and children who engage in elaborate episodes of pretend play have been shown to have more advanced understanding of mental states than those who do not (for a review, see Harris, 1994).

Third, a secure attachment should also facilitate a child's ability to experience other close relationships, and as result, securely attached children should have richer exchanges with others about emotions. Attachment theory implies that young children will generalize their expectations derived from a secure or insecure attachment to other close relationships, and for the most part, research has supported this notion. For example, one study found that sibling dyads with secure attachments to their parents experienced more harmonious interactions than did those with insecure attachments (Teti & Ablard, 1989). In addition, numerous studies have found that securely attached children are more competent in their social interactions than their insecurely attached counterparts, and as a result they experience richer and more congenial interactions with their peers (e.g., Grossmann & Grossmann, 1991; Kerns, 1994; Sroufe, 1983). Therefore, secure children should also acquire a better understanding of emotions as a result of their interactions with other partners.

Finally, researchers (Cassidy, 1994) have argued that mothers of securely attached children are more likely to validate and acknowledge their children's feelings (e.g., by comforting them when upset) than mothers of insecurely attached children. This would seem especially important in a child's development of emotional understanding because in validating a child's feelings, a mother is not only acknowledging the significance of her child's emotional experience but also enhancing her child's management and regulation of emotion.

Relying on attachment theory, however, it is also possible to postulate that securely attached preschool children, when compared with their insecure peers, may not have a more sophisticated understanding of *all* emotions. The internal working models of secure and insecure children are presumed to maintain a world view in accord with the security of the relationship between the parents and children and to evoke experiences in accord with this world view. Thus, the internal working models of children may affect their ability to attend to, remember, and understand emotionally charged exchanges. This is what Belsky, Spritz, and Crnic (1996) found in a recent study in which they had 3-year-old children watch a puppet show containing both positive and negative emotional exchanges. In this study, securely attached 3-year-olds were more likely to remember the positive events, whereas, the insecure children were more likely to remember the negative events. The fact that insecurely attached children were more likely to process and remember negative emotions suggests that they may also show a heightened sensitivity to negative emotions compared with securely attached children. This is because insecurely attached children might be required to cope more often with negative emotions in their interactions with others, and this may contribute to their greater sensitivity to negative emotions than securely attached children.

However, because the Belsky et al. (1996) study focused specifically on children's memories for emotion-laden events and our current study examines emotional understanding, one should be cautious about generalizing the results of Belsky's study to ours. As a result, no definitive hypothesis can be made regarding the relation of attachment and emotional understanding, and we designed this study to clarify that relation. In addition, we designed this study to examine the influence of age and gender on the development of emotional understanding. Although researchers have found consistent increases in emotional understanding across age (e.g., Denham et al., 1994), few researchers have examined the influence of age across diverse aspects of emotional understanding and across the valence of emotion. Furthermore, the empirical evidence supporting the relation of gender to emotional understanding is somewhat in-

consistent (see Gross & Ballif, 1991), and therefore this study was also designed to add evidence to the question of whether or not gender differences exist in the emotional understanding of preschool children.

## Method

### Participants

Forty-one preschool children (21 boys and 20 girls) and their mothers were recruited through four daycare centers/preschools serving primarily middle-class populations. Children ranged in age from 32 to 68 months, with a mean age of 50.4 months ($SD$ = 8.43). Mothers ranged in age from 23 to 41 years, with a mean age of 30.1 years ($SD$ = 5.12). The sample was predominantly Caucasian (95%).

One boy was dropped from the analyses (resulting in $N$ = 40) because he did not understand the puppet interview and because of the highly unusual responses he gave in the interviews concerning naturally occurring incidents of emotion. In the puppet interview, for example, the boy failed to correctly identify any of the emotions depicted on the target faces even after being corrected.

### Overview

Mothers completed two tasks at their homes. First, mothers completed a brief 12-item forced-choice questionnaire (Denham, 1986) that asked them to predict how their child would feel under specific circumstances (e.g., happy vs. sad when going to preschool). Their responses were subsequently used in the design of the 12 nonstereotypical puppet interviews, as described below. In addition, with the guidance of the researcher, mothers also completed the Attachment Q-set (Waters & Deane, 1985).

At their preschools, the children participated in two tasks designed to measure their level of emotional understanding. In an affective perspective-taking task involving a puppet interview, each child sat across a table from a researcher and saw three felt puppets enact 20 vignettes, 12 of which were drawn from the questionnaire that their mothers had completed. At the end of each story, the child was asked to indicate how the same-sex protagonist puppet felt (Denham, 1986).

For the second measure of emotional understanding, the children were interviewed at their preschools about spontaneous, naturally occurring incidents of emotion observed among their peers, based on the work of Fabes et al. (1988).

### Measures

*Attachment.* The security of each child's attachment was assessed by having the mothers complete the Attachment Q-Set (AQS) Version 3.0 (Waters & Deane, 1985). The AQS consists of 90 descriptive statements of a young child's behavior during interactions with primary caregivers. These items were designed to provide a comprehensive description of a child's "secure-base" behavior with caregivers. Similar to most Q-sorts, the AQS is performed by sorting the 90 items into categories using a fixed distribution. The statements printed on index cards are sorted into nine piles based on the relevance of each statement to the child in question. Items extremely characteristic of the child are placed high in the final sort (in Piles 7–9), whereas items uncharacteristic of the child are placed low in the final sort (in Piles 1–3). Items that are neither characteristic nor uncharacteristic of the child are placed in the middle piles.

The AQS has emerged as a psychometrically sound procedure to measure attachment behavior in children beyond infancy (Teti & McGourty, 1996). Although some disagreement exists on whether mothers or trained observers should perform the sort, recent research by Teti and McGourty suggests that because mothers have the most representative sample of their child's secure-base behavior they are the best candidates to perform the sort. However, for this to be the case mothers need to be properly trained, kept unaware of the construct being measured, sent the AQS items to look over in advance, and supervised during their sort in case questions arise.

In this study mothers were chosen to perform the sorts. Following the procedures used by Teti and McGourty (1996), mothers were sent the AQS items approximately 2 weeks in advance of performing the sort and were asked to look them over and to think about how the statements reflected the behavior of their children in the coming weeks. At the time of the sort, consistent with Teti and McGourty's instructions, mothers were told by the researcher that the AQS is an index of their children's current behavior. Each mother was provided with a standard set of instructions before performing the sort, following Teti and McGourty (1996). All mothers performed the 90-item sort at their home with the help of the researcher or a trained assistant who was available throughout the sort to answer any questions they had about the meaning of a statement or about an item placement. Sorting times ranged from about 40 min to 1 hr and 10 min.

*Emotional understanding.* The level of emotional understanding of each child was assessed in two ways. First, children participated in a two-part affective perspective-taking task developed by Denham (1986). In the first part of the task, children's abilities to recognize facial expressions of emotion were assessed. The children examined four felt faces on which the expressions of sad, happy, angry, and afraid were drawn, and the researcher asked each child to pick the face that corresponded to each of the four target emotions (e.g., "show me the happy face"). If a child pointed to the wrong face, the child was corrected at the end of the task and then asked to reidentify any of the faces that he or she missed the first time. The large majority (73%) of the children correctly identified the faces on the first try, and all children (except for the one child whose data were discarded) correctly identified the faces on the second try. Each child received 2 points for the correct identification of each emotion (on the first try) and 1 point for identifying a face with the correct positive–negative valence.

Following this, each child saw hand puppets enact 20 vignettes that were accompanied by vocal and visual cues by the puppet/experimenter, who was blind to the child's attachment status. In 8 of the 20 stories (labeled the *stereotypical stories*), the puppet was shown to feel the same way most people would feel in this circumstance (e.g., fear during a nightmare). In the other 12 vignettes (labeled the *nonstereotypical stories*) the puppet felt the opposite way the child typically would under the same circumstance. Therefore, each of the nonstereotypical puppet interviews was tailored to the child's expected responses. Mothers filled out a forced-choice, 12-item questionnaire (at the time they completed the AQS) that asked them to predict how their child would probably feel in each of the 12 commonplace circumstances portrayed in the nonstereotypical stories, (e.g., happy vs. afraid when seeing a big, but friendly, dog). Overall there was considerable variability in the mothers' responses to each of the 12 nonstereotypical questionnaire items (e.g., 45% of the mothers reported that their children would be afraid and 55% happy when a seeing a big, but friendly, dog). In each of nonstereotypical stories, the puppet was portrayed as feeling in a manner inconsistent with how the mother reported her child would probably feel in that situation (although in a manner that is plausible with the circumstances of the story). For example, if the mother reported that her child would be happy to see a big, albeit friendly dog, the puppet was portrayed (vocally and visually) by the experimenter as being afraid when seeing the dog. Thus, the nonstereotypical puppet vignettes were designed to test whether children could separate their feelings in the situation from those of the story character (i.e., the puppet).

At the end of each of the 20 enactments, each child was asked "How did the puppet feel?" and then asked to affix the proper felt face to the

puppet to indicate the puppet's feeling from the four choices. As in the first task, a child received 2 points for each correct answer (i.e., identifying the emotion that the puppet was *portrayed* as feeling) and 1 point for identifying the correct positive–negative valence (e.g., picking up the sad face rather than the correct angry one).

Second, using a procedure adapted from Fabes et al. (1988), we assessed the emotional understanding of the children in the context of their spontaneous appraisals of emotions in interviews at preschools or daycare centers. Observers who were unaware of the attachment status of the children in the study watched for overt expressions of emotions emitted by any child in the preschool. When an expression was observed, the observer made a quick note of the emotion and its cause. Observers were instructed to record emotions in terms of basic categories (i.e., happy, sad, afraid, mad) and causes in the simplest terms possible (e.g., being tickled, being pushed). Then, the observer approached one of the children (who participated in the study) nearest to the child who expressed the emotion, but who was not involved in any way with provoking it. The child was then asked two questions: "How does [target child] feel?" and afterward, "Why does [target child] feel [emotion named by the child]?" The observer recorded verbatim the answer to these two questions and the child's name. Among the numerous displays of emotion that occurred in the preschool, observers attempted to focus their interviews only on those emotions in which it was most evident that a child in the study observed both the emotion and its cause. Only one child was queried for each display of emotion. If a child failed to give a response, or if the child's response was unclear, observers asked for clarification or, if necessary, reasked the question.

Observers were on-site at the preschools for an average period of 4 weeks until a minimum of five interviews were obtained from each child, including at least one interview concerning a positively valenced emotion and one concerning a negatively valenced emotion. Observers were on-site for 1- to 3-hr periods a day and stayed in the vicinity of a child (or children) in the study for no longer than 20 min before moving into the vicinity of another child in the study. To assess the reliability of the observers, we periodically paired up observers with one person interviewing a child but with both independently recording their observations. Every observer was paired with a second observer on at least three occasions. Reliability data were collected on 49 interviews. Observers agreed exactly for 96% of the assessments on the observed emotion ($\kappa$ = .93) and 92% ($\kappa$ = .84) on the causal antecedents of the emotional incidents. Observers agreed 100% ($\kappa$ = 1.00) of the time on recording verbatim each child's responses to both questions.

To assess each child's level of emotional understanding, we compared a child's appraisal of the emotional event with that of the adult observer and coded for agreement or disagreement (similar to Fabes et al., 1988). For identification of emotions, a child's response was coded from the transcripts as *agreement* if it was the same emotion (or some variant of it) reported by the observer on the transcript from among the basic emotions of happy, sad, afraid, and mad. For example, a child's response of *very good* to the question of "how does ____ feel?" was coded as agreement with the observer's report that "____ was happy." Likewise, for the causal antecedents of emotions, a child's response from the transcripts was coded as agreement if the child reported the same antecedents as the observer or some variation of them. For example, a child's report on the transcript that "____ felt sad, because he hurt his knee" was coded as agreement with the observer's report that "____ felt sad, because he fell on his knee." If the child's report of the emotion or its causal antecedents did not agree with the observer's report or were not some variation of the observer's report, it was coded from the transcripts as disagreement. To assess the reliability of the coding, a second coder recoded 72 of the interviews. The recoding used the same verbatim record of the child's interview responses and the adult's assessment of the target child's emotion and its causes. Coders agreed 100% ($\kappa$ = 1.00) of the time on the coding of agreement/disagreement for the identification of the emotion and 97% of the time ($\kappa$ = .94) on the coding of the causes of the emotions.

## Results

### *Descriptive Data*

From the mothers' AQS sorts, attachment security scores were calculated. This was done by scoring each card for its placement in the sort and then correlating the scores of these cards with the score each card received in the criterion sorts conducted by a panel of experts for the hypothetical "most secure" child. The criterion sorts were devised based on independent ratings by attachment experts (see Waters & Deane, 1985).

On the affective perspective-taking task, the scores on each of the 20 vignettes (the 8 stereotypical and the 12 nonstereotypical) were summed, and following Denham (1986), we added this score to that of the previous task (i.e., identifying the emotions on the faces). To clarify the relation between attachment and emotional understanding, however, it was also necessary to break down the overall score on the affective perspective-taking task into several subscores. Separate scores were thus also calculated for the stereotypical vignettes, the nonstereotypical vignettes, and those vignettes involving positively and negatively valenced emotions. Because the number of positive and negative emotions in the affective perspective-taking task varied for each child (because the nonstereotypical vignettes were tailored to how each child would feel in each circumstance), proportions of correct responses were calculated for these scores across the pertinent stories.

A total of 264 interviews about naturally occurring incidents of emotion were conducted with the 40 children included in the analyses ($M$ = 6.60 per child, $SD$ = 1.37, range 5–11). On average, 3.85 ($SD$ = 1.21, range 1–7) of the interviews per child concerned emotions with a positive valence, and 2.23 ($SD$ = 0.80, range 1–5) of the interviews concerned an emotion with a negative valence. Because the number of interviews varied from child to child, proportions of agreement with the adult observer were calculated for each child, based on the agreement of the child with the adult observer on the emotion and its cause. Again, in order to clarify the nature of the relation between attachment and emotional understanding, separate accuracy scores were calculated for the identification and the causal antecedents of the emotions, and for interviews involving emotions with a positive and negative valence. The means and standard deviations for all of these measures appear in Table 1.

### *Attachment Security and Overall Emotional Understanding*

Because the two measures of emotional understanding (i.e., the total scores on the affective perspective-taking task and in the interviews concerning naturally occurring incidents of emotion) were significantly correlated ($r$ = .69, $p < .001$), the affective perspective-taking task scores and interview proportions were converted to $z$ scores and summed. Age, gender, and attachment security were entered into a hierarchical regression model designed to predict a child's overall ability to understand the emotions of others. Because researchers have found consistent improvements in emotional understanding across age in the pre-

Table 1
*Descriptive Data*

| Measure | *M* | *SD* | Range |
|---|---|---|---|
| Attachment security | 0.48 | 0.15 | .15–.71 |
| Puppet interview | | | |
| Total score[a] | 40.03 | 6.02 | 24–48 |
| Stereotypical stories[b] | 13.40 | 2.49 | 6–16 |
| Nonstereotypical stories[c] | 19.58 | 3.01 | 14–24 |
| Negative emotions[d] | 0.83 | 0.10 | 0–1.0 |
| Positive emotions[d] | 0.84 | 0.29 | .57–1.0 |
| Interview | | | |
| Total score[e] | 0.69 | 0.16 | .36–1.0 |
| Identification of emotions[e] | 0.84 | 0.14 | .60–1.0 |
| Causal antecedents[e] | 0.56 | 0.25 | 0–1.0 |
| Positive emotions[d] | 0.74 | 0.20 | 0–1.0 |
| Negative emotions[d] | 0.59 | 0.35 | 0–1.0 |
| Total emotion score[f] | 0.01 | 1.84 | −4.73–2.93 |
| Total negative emotion score[f] | 0.00 | 1.68 | −4.29–2.87 |
| Total positive emotion score[f] | 0.00 | 1.77 | −6.60–1.85 |

[a] A total score of 48 was possible—8 from identifying the faces + 16 from the stereotypical stories + 24 from the nonstereotypical stories. [b] A total score of 16 was possible. [c] A total score of 24 was possible. [d] This score is the proportion of correct responses. The number of positive/negative emotions in the puppet interviews or interviews surrounding naturally occurring emotions varied from child to child. [e] This score is the proportion of correct responses from the interviews concerning naturally occurring emotions. The number of interviews varied from child to child. [f] These scores are comprised of the summed *z* scores for negative, positive, or total emotion scores from both the puppet interview and the naturalistic interviews.

school years, we entered age into the model on the first step, and because some researchers have also found gender differences in emotional understanding during this period, we entered gender into the model second. We entered attachment security on the final step to determine whether it accounted for a significant amount of variance in emotional understanding beyond that which was explained by age and gender. Interactions between variables were also tested in all analyses, but because no significant interactions emerged, they are not reported here. The results of the hierarchical regression appear in Table 2.

For overall emotional understanding, age accounted for a significant amount of the variance. Not surprisingly, older children outperformed their younger counterparts in overall emotional understanding. Gender, when added to the model, did not lead to a significant increase in the variance accounted for in emotional understanding. The addition of attachment security in the final step, however, did lead to a significant increase in the variance accounted for in emotional understanding. Thus, children with secure attachments scored higher on overall emotional understanding than those with insecure attachments.

### *Attachment Security and the Valence of the Emotion*

To test the idea that attachment security may not predict a greater understanding of all emotions, but rather only positive or negative emotions, attachment security was examined in relation to the valence of the emotion in the emotional understanding tasks. Again, because scores on the affective perspective-taking task and interviews were significantly correlated for emotions with a positive valence ($r = .58$, $p < .001$), the two scores were again converted to *z* scores and summed to form one overall index of emotional understanding for positively valenced emotions. Likewise, for negative emotions, scores on both of the tasks were significantly correlated ($r = .38$, $p < .05$), and therefore these too were converted to *z* scores and summed to provide one index of overall emotional understanding for those emotions with a negative valence. Separate hierarchical regression models were built to predict emotional understanding for those emotions with a positive valence and for those emotions with a negative valence. Age was once again entered into the models on the first step, gender on the second, and attachment security on the final step. The resulting hierarchical regression models for positively and negatively valenced emotions also appear in Table 2.

For emotions with a positive valence, only age accounted for a significant amount of the variance. Older children performed slightly better than younger children in understanding positive emotions. Neither the addition of gender nor the addition of attachment security to the model led to a significant increase in the variance accounted for in the understanding of positively valenced emotions.

For those emotions with a negative valence, age also accounted for a significant amount of the variance. Not surprisingly, older children outperformed younger children in understanding negative emotions. Gender, when added to the model on the second step, failed to increase significantly the variance accounted for by the model. Attachment, entered on the final step, however, increased significantly the variance accounted for by the model. Thus, children with higher attachment security scores performed better than those children with lower security scores on understanding negative emotions.

### *Other Associations*

Age, gender, and attachment security were also examined in relation to a child's separate emotional understanding scores in the stereotypical and nonstereotypical vignettes in the affective perspective-taking task and in relation to the identification of emotions and the causal antecedents behind emotions in the interviews only. For the affective perspective-taking task, scores on the stereotypical and nonstereotypical vignettes were positively correlated ($r = .63$, $p < .001$), and therefore these were converted to *z* scores and summed. However, in the interviews, the separate accuracy scores for the emotional identification and causal determinants were only marginally correlated ($r = .28$, $p = .08$). Once again, to illuminate the relations, separate hierarchical regression models were built, and these appear in Table 3. Following the previous analyses, age was added to the model first, gender was added second, and attachment security was added last.

When we entered age on the first step it accounted for a significant amount of the variance in predicting scores on the affective perspective-taking task. The addition of gender, however, did not lead to a significant increase in the variance accounted for by the model. The addition of attachment security on the final step, however, did lead to a significant increase in the variance accounted for in the stereotypical vignettes. Thus, older children scored higher than younger children, and those

Table 2
*Hierarchical Regression Models for Total Emotional Understanding and Understanding of Negatively and Positively Valenced Emotions*

| Predictor | Adjusted $R^2$ | $R^2$ change | $F$ change | $\beta$ at final step |
|---|---|---|---|---|
| | | Total emotional understanding | | |
| Age | .25 | .27 | 13.84*** | .54*** |
| Gender | .25 | .02 | 1.17 | −.12 |
| Attachment security | .38 | .13 | 8.38** | .37** |
| | | Positively valenced emotions | | |
| Age | .08 | .11 | 4.80* | .35* |
| Gender | .06 | .00 | .00 | .02 |
| Attachment security | .06 | .02 | 0.95 | .15 |
| | | Negatively valenced emotions | | |
| Age | .20 | .22 | 10.51** | .48*** |
| Gender | .20 | .03 | 1.48 | −.13 |
| Attachment security | .33 | .14 | 8.13** | .38** |

* $p < .05$. ** $p < .01$. *** $p < .001$.

with secure attachments scored higher than those with insecure attachments on the puppet interviews.

In the interviews concerning naturally occurring incidents of emotion, age entered on the first step of the model did not significantly increase the variance accounted for in children's identification of emotion. In addition, neither the addition of age nor the addition of attachment security significantly increased the variance accounted for by the model. In contrast, in the model designed to predict children's accuracy in determining causal antecedents of emotion, the addition of age, gender, and attachment security, respectively, all led to significant increases in the variance accounted for by the model. Thus, in determining the causal antecedents of emotions, older children outperformed younger children, boys ($M$ = 0.66, $SD$ = 0.25) outperformed girls ($M$ = 0.45, $SD$ = 0.21), and those with higher attachment security scores outperformed those with lower attachment security scores.

## Discussion

This study sought to clarify the relation between attachment and emotional understanding in preschool children. In the study, attachment security predicted overall performance on the two emotional understanding tasks, which suggests that a secure attachment may facilitate a child's understanding of emotion. However, when the analysis was broken down by the valence of the emotion, attachment security predicted emotional understanding only for those emotions with a negative valence (e.g.,

Table 3
*Hierarchical Regression Models for Stereotypical and Nonstereotypical Vignettes, and Emotional Identification and Causal Antecedents*

| Predictor | Adjusted $R^2$ | $R^2$ change | $F$ change | $\beta$ at final step |
|---|---|---|---|---|
| | | Affective perspective taking | | |
| Age | .21 | .23 | 11.38** | .48** |
| Gender | .19 | .00 | 0.13 | .05 |
| Attachment security | .33 | .15 | 8.87* | .39* |
| | | Interviews—emotional identification | | |
| Age | .02 | .05 | 1.88 | .24 |
| Gender | .00 | .00 | 0.00 | .04 |
| Attachment security | .01 | .05 | 1.79 | .21 |
| | | Interviews—causal antecedents | | |
| Age | .23 | .25 | 12.43** | .49*** |
| Gender | .36 | .15 | 8.98** | −.36** |
| Attachment security | .42 | .08 | 5.09* | .22* |

* $p < .05$. ** $p < .01$. *** $p < .001$.

fear, anger, and sadness) and not for those with a positive valence (e.g., happiness). In fact, except for a weak relation with age, none of the variables examined in this study seemed to account for a child's ability to accurately appraise and understand positive emotions. For the negative emotions, however, both age and attachment security were related to a child's ability to accurately appraise emotions in both the affective perspective-taking task and in the interviews surrounding naturally occurring displays of emotion.

Not surprisingly, age was the strongest and most consistent predictor of emotional understanding across both of the tasks. Older children consistently outperformed their younger counterparts, highlighting the remarkable developments in emotional understanding throughout the preschool years. These developments closely parallel similar increases in overall social–cognitive ability (Thompson, 1997) and therefore are not unexpected.

Even though for the most part no gender differences were found in this study, in the one instance in which there was a gender difference, the difference tended to favor boys. In the interviews concerning naturally occurring displays of emotion, boys were more accurate in determining the causal antecedents of emotion. These findings were somewhat surprising considering that some previous research identifying gender differences has found them in favor of girls (e.g., Brown & Dunn, 1996; Zahn-Waxler, Cummings, & Cooperman, 1984). In addition, several studies have found that in explaining emotional events, girls give qualitatively different responses than boys; girls are more likely to emphasize the interpersonal aspects of a situation when explaining an emotional event (Fabes et al., 1988; Strayer, 1986). However, some researchers have argued that there may be no gender differences in the emotional understanding of children at this age (see Gross & Ballif, 1991), and our research adds some tentative support to their arguments. However, future research should examine different facets of emotional understanding (e.g., determining causal antecedents) that may be related to gender.

That attachment security predicts greater understanding of negative emotions is consistent with certain formulations of attachment theory. As Bretherton (1990) suggested, "secure" relationships should be characterized by open, fluent, and coherent discourse both within the relationship and about the relationship. Therefore, discourse about sensitive issues (especially those surrounding negative emotions) is likely to be both more frequent and more coherent between securely attached children and their mothers. As noted, previous research has shown (Brown & Dunn, 1996; Dunn et al., 1991) that this early discourse seems to be especially influential in the development of emotional understanding, and the view that securely attached mother–child dyads discuss negative emotions with greater ease may account for some of the differences in emotional understanding between the insecurely attached and securely attached children observed in this study. That securely attached children show particular advantages in their understanding of *negative* emotions may derive from both the salience of these feelings in the lives of young children and the fact that negative emotions are more commonly the topic of mother–child discourse (Dunn et al., 1991). By contrast, children with insecure attachments may experience greater difficulty in talking with their caregivers about negative emotion and may also tend to defensively avoid discussion of such events. Of course, whether or not discourse between mothers and their children in a secure dyad is in fact more open and fluent when it concerns incidents of negative emotion in particular remains an empirical question to be answered and a rich area for future research.

Furthermore, attachment theory suggests that a child's internal working models may have consequences for a child's processing and interpretation of events. Thus, children with insecure attachments (especially those who are avoidant) may tend to avoid the active processing of negatively charged experiences because of their threatening nature (Main et al., 1985), and this may also contribute to their poorer understanding of negative emotions. In contrast, children with secure attachments may not experience negative events as threatening because of their confidence in their caregiver's ability to ameliorate the circumstances (Cassidy, 1994). Thus, children's abilities to actively process experiences with negative emotions may lead to their greater understanding of negative emotions.

Although our research raises some provocative possibilities about the relation between attachment security and emotional understanding, its small sample size in relation to the broad age range of children studied warrants caution in interpreting the results. In particular, limited power in the analytic design means that the possibility of an interaction between attachment and age-related variables remains open. Therefore, perhaps more than anything, our findings highlight the need for more research to further elucidate the relation between attachment security and emotional understanding, as well as to rule out other possible explanations for the results observed in this study. In addition, given the continued debate on the connections between children's attachment and their negative emotionality, future research should also examine the possible role that the temperament of children might play in these relations.

In addition, the results of this study highlight several issues in the development and nature of emotional understanding. First, it is clear that the nature of emotional understanding is complex and multidimensional even in preschoolers. Specific influences (e.g., attachment security) that are related to particular aspects of emotional understanding (e.g., in identifying negative emotions) are not necessarily related to other aspects of emotional understanding (e.g., in appraising positive emotions). Labeling emotions is a different skill from identifying their causal antecedents. Therefore, in order to gain a clear picture of the developmental antecedents of emotional understanding, it is important to consider emotional understanding not as one specific skill, but as a combination of many separate skills.

Second, although the results of this study clearly illuminate the importance of early relationships in the socialization of children's emotional understanding, they also highlight the limitations of explaining individual differences in socioemotional development solely with the concept of attachment security. Even though it is clear that there is a relation between attachment security and emotional understanding, it is not clear which elements of this secure relationship facilitate the development of emotional understanding. Therefore, the challenge of future research is to examine in narrower, more specifically defined terms, the aspects of these early relationships (e.g., parent–child discourse) that promote these individual differences in socioemotional development.

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