

# ATTACHMENT SECURITY, AFFECT REGULATION, AND DEFENSIVE RESPONSES TO MOOD INDUCTION

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Despite disagreeing with important elements of classical psychoanalytic theory, John Bowlby considered many of Freud's ideas about infant-parent and adult-adult relationships to be genuine insights. Among the most important of these

propositions are (1) that infants have a complex social and emotional life, (2) that early experiences can have lifelong implications, (3) that mental representations of early experiences mediate effects on later behavior and development, (4) that defensive processes play a role in affect regulation, and (5) that loss of an attachment figure at any age is an emergency and mourning is a process that serves an adaptive affect-regulation function.

Many of Freud's insights about attachment were rooted more in clinical observation than in formal theory. One of Bowlby's most valuable contributions was recognizing that the value of such observations is independent of the theoretical framework in which Freud cast them. Indeed, he recognized that they could be preserved only by recasting them in a more scientifically respectable theoretical framework. Bowlby's (1969/1982) concept of an attachment behavioral system provided an alternative motivational theory/model that could be expressed in terms of control-systems theory and evolutionary theory. In addition, his working-models concept recast important psychoanalytic insights about mental representation in the language of cognitive psychology.

Attachment theory rests on these two cornerstones: the control-system/secure-base concept and the cognitive/dynamic concepts of attachment representation and defensive processes. On these foundations Bowlby intended to build a comprehensive theory of close relationships and personality development across the life span. A central postulate of Bowlby's theory is that the secure-base phenomenon is the developmental precursor of the cognitive representations and defensive processes

emphasized in his discussions of adult attachment and loss (Bowlby, 1973, 1980). Empirically confirming this postulate and framing a detailed theoretical explanation would represent a milestone in attachment theory. Unfortunately, the link between secure-base phenomena and cognitive representations and defensive processes has not yet been established. Until recently, research on secure-base phenomena centered on the earliest years of life, and research on attachment representations focused on the adult years; this has led some to describe current attachment theory as a theory of infancy and of adulthood, with a great deal in between left to the imagination (Waters, Kondo-Ikemura, Posada, & Richters, 1991).

There are several ways in which we could establish links between secure-base phenomena, cognitive representations, and defensive processes. We could look at longitudinal data relating the secure-base behavior of an individual as an infant to his or her own attachment working models in adulthood. Bowlby's hypothesis would be strongly supported if patterns of secure-base behavior were concordant with the types of cognitive and defensive processes scored in the Berkeley Adult Attachment Interview (AAI; Main & Goldwyn, 1991). Unfortunately, the necessary data are not yet available (see Waters, Merrick, Matas, Treboux, & Crowell, 1995). Of course, a negative result would not disprove the hypothesis that secure-base behavior in infancy and cognitive/representational processes in adulthood are related; it would simply mean that such relations are not evident in long-term Strange Situation/AAI concordance.

Another approach to linking secure-base behavior and cognitive/defensive processes would be to examine both in

the context of adult love relationships. One example of this type of approach is the Current Relationship Interview, developed by Owens et al. (in this volume), which captures, among other things, some aspects of secure-base use in adult love relationships. Owens et al. have found significant relations between representations of adults' relationships to parents (AAI) and functioning in current love relationships. These are promising indications, but a much stronger case could be made by relating direct observations of adult secure-base use to AAI classifications. Again, the necessary data are not yet available.

Bowlby (1960, 1969/1982) defined *infant attachment* as an emotional bond that ties the infant to one or a few figures across time and distance. Anxiety, anger, detachment, and helplessness figured prominently in the clinical phenomena that inspired his early work on children, as did emotion regulation and defensive processes. Bowlby treated emotion as an important source of information in his control-system model of secure-base behavior. Today it plays a role in most methods of assessing secure-base patterns and attachment working models (Ainsworth, Blehar, Waters, & Wall, 1978; Main, Kaplan, & Cassidy, 1985; Waters & Deane, 1985; Oppenheim & Waters, in this volume). For attachment theorists, flags are raised whenever emotion seems unregulated, out of context, disorganized, or absent. The central role of emotion and emotion regulation in theories of secure-base behavior and working models suggests a third approach to relations between secure-base behavior and cognitive/representational processes examining secure-base behavior and cognitive/defensive processes concurrently in infancy or childhood.

Methods for assessing secure-base behavior at this age are well developed. But because subjective states are difficult to assess, especially in infants and children, hypotheses about emotion and defensive processes have seemed untestable (Campos, Campos, & Barrett, 1989). The role of defensive processes in attachment is particularly difficult to study empirically because both eliciting stimuli and subjects' responses are often covert and because scoring defensiveness often involves highly subjective judgments. What is familiar to every therapist has remained largely inaccessible to the experimentalist.

Bowlby's work and recent developmental research suggest that representational/defensive processes might be assessed by using mood-induction procedures to elicit individual differences in emotion regulation processes, especially in relation to attachment- and non-attachment-related mood-induction stimuli. Mood induction has been used extensively with children (Kenrick, Baumann, & Cialdini, 1979; Lay, Waters, & Park, 1989; Potts, Morse, Felleman, & Masters, 1986; Ridgeway & Waters, 1987; Underwood, Froming, & Moore, 1977) and has proved to be a very flexible methodology and to entail little risk of undesirable reactions. Unfortunately, research on relations between attachment and emotion has progressed slowly. Only infant-mother face-to-face interactions and separation protest have been studied in detail, and much of this

work uses emotional expression merely as a means of studying cognitive development. Emotion regulation too has been the subject of many recent studies, often using mood induction to elicit target responses (Dodge, 1989; Masters, Ford, & Arend, 1983; Thompson, 1994). Little of this research, however, has addressed issues in attachment theory. The role of defensive processes in attachment is particularly difficult to study empirically.

From the 1950s to the early 1970s, both emotion and individual differences were out of favor in developmental psychology. That they stayed on the agenda at all was perhaps largely due to psychologists' enduring interest in temperament constructs (e.g., Buss & Plomin, 1975; Thomas, Chess, Birch, Hertzog, & Korn, 1963). Even with emotion and individual differences returning once again to the mainstream of developmental psychology, temperament research remains a major source of data on emotion in infancy and childhood (see Kohnstamm, 1990). A number of recent studies have found significant correlations between attachment security and positive affect (Vaughn et al., 1992). Such data are most often discussed in terms of the attachment measures' discriminant validity (or lack thereof). Equally likely is the possibility that both attachment security and positive affect (Lay et al., 1989) are related to a third factor, namely, harmonious parent-child interaction. There is a great deal of evidence establishing the basic discriminant validity of attachment measures (Sroufe, 1985); nonetheless, individual differences in emotional responsiveness are certain to play an interesting and important role in secure-base behavior.

Taking a more developmental perspective and looking at temperament constructs as possible moderators of the relation between maternal sensitivity and secure-base outcomes opens up new questions. For instance, do infants with different temperament profiles experience insensitive care differently? Can the behavioral structure of insensitive care affect the development of secure-base patterns, or must the infant also experience negative affect? The same questions can be asked in relation to sensitive care and positive affect. As Waters et al. (1991) pointed out, secure-base behavior is learned. A better understanding of the interactions between maternal sensitivity and the parameters of affective response could reveal much about the types of learning involved and about what is learned, and it could also help integrate complex phenomena such as social referencing (Campos & Stenberg, 1981) into attachment theory.

In this study, we employed standardized mood-induction procedures to examine the relation between attachment security and representational/defensive processes in childhood. In previous work with mood-induction procedures (Lay et al., 1989; Ridgeway & Waters, 1987), we have noticed that children sometimes report positive responses to negative stimuli. The precise and coherent manner in which these children state and explain such paradoxical responses makes it clear that they are not errors. Such paradoxical responses served as our measure of defensive response. In order to evaluate the specificity of responses to attachment-relevant stimuli, half the stimuli that

we used portray the mother as the agent, and half do not mention the mother at all.

This is a critically important manipulation many studies relating attachment status to emotional responses are correlational or naturalistic and do not address alternative interpretations. Without appropriate controls we cannot distinguish effects of attachment on emotion from effects of individual differences in emotional responsiveness on attachment (i.e., a "happy baby" hypothesis that purported signs of attachment security reflect only a child's low threshold for positive emotion).

Fortunately, attachment and temperament interpretations of emotion expression lead to very different predictions. Attachment theory predicts that emotional responses (and defensive responses in particular) to attachment and nonattachment stimuli will be very different to different stimuli and across different contexts; temperament theories predict traitlike consistency in emotional response across a wide range of stimuli.

### Method

#### Subjects

The study was conducted in the homes of 48 intact, middle-class families residing in suburban Long Island, New York. We observed 21 boys and 27 girls (mean age = 4.5 years, range = 4-2 to 4-11) and their mothers. The children were ranked on the basis of Attachment Q-Set (AQS; Waters, 1987) security scores (see below), and the 16 most secure and 16 least secure children (five boys and 11 girls in each group) were selected for the study. The secure and insecure groups were comparable in age (secure = 4-4, insecure = 4-5).

#### Materials

*Mood-Induction Vignettes.* In pilot research, we asked mothers of preschool children to list events that had induced feelings of happiness, excitement, pride, anger, sadness, or fear in their 4-year-olds; we asked that they include both mother-involved and other types of events. From these listings we then selected topics for brief (50-100-word) narrative vignettes. The mood-induction stimuli used in the present study consisted of 24 videotaped readings of such vignettes, 12 for positive and 12 for negative moods; each set contained six "mother-involved" and six "mother-not-involved" situations. To avoid prompting a particular affective response, the texts (listed in the appendix to this report) were free of mood-descriptive terms. The ability of 4-5-year-old children to understand such vignettes was assessed during the development of the vignettes and in a small evaluation trial with the final set of vignettes. Ten children were read the vignettes and asked, "How would this make a child your age feel if it happened to them?" All responded in the predicted direction (positive or negative) to at least 22 of the 24 vignettes.

The readings were videotaped in order to standardize their presentation. Each was presented by an adult female

actress who began by saying, "I'm going to tell you about something. Maybe it didn't really happen to you. But I want you to think about it and tell me how you would feel if this really happened to you." In order to minimize carryover from vignette to vignette and to maintain the children's interest, we employed six different actresses, each of whom presented one positive and one negative mother-involved vignette and one positive and one negative mother-not-involved vignette. The camera framed the head and shoulders of the actress, who looked directly toward the camera and spoke in a clear, pleasant voice, adding emphasis where appropriate, but allowing neither vocal tone nor facial expression to suggest either a positive or a negative response to the event. All 24 vignettes were transferred to a single half-inch videocassette. The order of positive and negative and of mother-involved and mother-not-involved vignettes was counterbalanced, with different actresses presenting adjacent vignettes.

#### Procedures

Prior to each home visit, the attachment observation and the mood-induction procedures were explained to the mother over the telephone. Each mother-child pair was visited once for a period of 2-3 hours by three visitors. The mother received a typed copy of the mood-induction vignettes at the beginning of the visit. The format and tone of the visits was informal; mothers were encouraged to go about their activities and to treat the visitors as they would a visiting neighbor, not as guests. At a convenient time during the visit, the mother and child took 15-20 min to bake and frost cupcakes, using ingredients provided by the visitors. Periodically during each visit, the third visitor asked the child to watch videotaped mood-induction vignettes.

*Attachment Assessment.* The observations of secure-base behavior were conducted according to procedures described by Waters, Posada, and Vaughn (1994). After the home visit, two of the observers provided independent Q-sort descriptions of the child's behavior. Interobserver reliability (using the Spearman-Brown formula) across the 90 Attachment Q-set items was computed for each subject, yielding a mean reliability of .78 (range = .54-.89). The two Q-sorts were then averaged. Security scores were computed by correlating the composite Q-sort with the 90-item Q-sort description of the "hypothetical most secure child" (Waters, Posada, & Vaughn, 1994) and this correlation served as the child's attachment security score. The scores of the 16 most secure children ranged from .50 to .70 (average = .56), those of the 16 least secure children from -.12 to .36 (average = .19).

*Mood Induction.* Our goal was to have each child watch and report emotional responses to as many of the 24 vignettes as possible. Promised a choice of colorful paper stickers, most children watched and responded to 6-10 vignettes (a period of 10-15 min) before becoming inattentive or asking to do something else. After 20-30 min, or at some opportune moment, the child was offered another paper sticker and asked to watch a few more

vignettes; most agreed to do so at least twice during the visit. The mean number of vignettes viewed was 18 (range = 11-24). There was no significant difference in the number of stories seen by children in the secure group ( $M = 18.6$ , range = 13-24) and those in the insecure group ( $M = 16.4$ , range = 11-24).

The Attachment Q-sort observers left the room during the mood-induction sessions. The mother was invited to observe the mood-induction procedure from a position behind the child and visitor; few of them watched for more than the first few vignettes.

*Mood Assessment.* Because the children were young, we used a modified version of Ridgeway and Russell's (1985) nonverbal paired-comparison procedure to assess emotional response to each mood-induction vignette. The procedure employs cartoon faces similar to the familiar "happy face" icon that portray seven expressions: very happy, moderately happy, slightly happy, neutral, slightly sad, moderately sad, and very sad. Although older children and adults can assign numerical ratings to these faces, a forced-choice paired-comparison task is more appropriate for younger children. In the complete paired-comparisons task, the subject indicates for each of the 21 possible pairs which of the faces is most like the emotion that he or she feels at the moment. The positive/negative mood dimension is scored by counting the number of comparisons in which the more positive face is chosen.

To allow for the children's very young age and the difficulty of completing multiple trials, we used only two of the 21 possible pairs of comparisons *moderately happy versus neutral and neutral versus moderately sad* to determine the valence of the child's emotional response to each vignette, according to the following rules:

*Positive.* The child preferred the more positive pair in both sets (i.e., moderately positive over neutral and neutral over moderately sad).

*Negative.* The child preferred the less positive face in each pair (i.e., neutral over positive and moderately sad over neutral).

*Neutral.* The child preferred the neutral face in both pairs.

*Mixed.* The child preferred moderately positive over neutral and also moderately negative over neutral.

The entire emotion assessment procedure was audiotaped, and the order and position of the faces in these pairs was counterbalanced. The percentages of positive, negative, neutral, and mixed responses were computed for each type of mood-induction vignette. After the paired comparisons, the child was asked to explain his or her response to the vignette. If during this questioning the child reported both positive and negative responses, the vignette was scored as mixed, regardless of the valence indicated by the initial paired comparisons. After these initial pairs, follow-up pairs (e.g., very sad vs. moderately sad) were administered to quantify the intensity of the response. Follow-up pairs were also administered if a child mentioned a mixed response during the follow-up questioning. Analy-

ses of the valence data and the more thorough quantitative assessment of mood intensity yielded the same pattern of results. Consequently, only the results based on the valence assessments are presented here. (The procedures for administering and scoring the follow-up pairs are available from the authors on request.)

## Results

### Manipulation and Assessment Check

We first examined the effectiveness of the mood-induction procedures and the accuracy of the children's mood reports. As expected, children reported significantly more "purely positive" than "purely negative" responses to positive vignettes ( $t[47] = 18.56$ ,  $p < .0000$ ) and more "purely negative" than "purely positive" responses to negative vignettes ( $t[47] = 11.98$ ,  $p < .0000$ ). The mean proportions of vignettes scored positive, negative, neutral, and mixed are presented in Table 1.2. The high level of discrimination between positive and negative vignettes and the low frequency of purely neutral responses indicate that the mood-induction procedures and the mood assessments worked as intended.

### Individual Differences of Attachment and Mood Induceability

The relations between attachment security and responses to positive and to negative mood inductions were examined in separate 2 (attachment status)  $\times$  2 (mother involved vs. not involved) ANOVAs. The mean proportions of "purely positive" and "negative or mixed" responses to positive vignettes are presented in the top panel of Table 2.

Negative and mixed responses to positive vignettes are termed *incongruent* in order to highlight the fact that, although children this age can comprehend such vignettes, their responses do not match the valence of the vignette.

There was no indication that the most secure children were any more responsive to positive mood inductions than the least secure ones. A 2  $\times$  2 (attachment group  $\times$  maternal involvement) ANOVA on "purely positive" responses to the positive vignette data revealed only a significant main effect of mother involvement ( $F[1, 30] = 4.42$ ,  $p < .05$ ); all children more often responded positively to vignettes that did not involve mother. The relative novelty and concreteness of the mother-not-involved vignettes may have contributed to this result. Neither the main effect of attachment group nor the interaction was significant.

The mean proportions of "purely negative" and "positive or mixed" responses to negative vignettes are presented in the bottom panel of Table 2. Positive and mixed responses to negative vignettes are termed *defensive* in order to highlight the fact that, in addition to their incongruous valence, they potentially allow the child to minimize or avoid the negative affect that these vignettes otherwise induce.

There was no indication that secure children are less affected by, or in any sense resistant to, negative inductions. A 2  $\times$  2 (attachment group  $\times$  maternal involvement) ANOVA conducted on the purely negative responses to negative

TABLE 1  
AFFECTIVE STATE INDUCED BY POSITIVE AND NEGATIVE VIGNETTES: RESPONSES TO A POSITIVE VERSUS A NEUTRAL AND A NEUTRAL VERSUS A NEGATIVE PAIRED COMPARISON

RESPONSE TO INITIAL (+ VS. 0 AND - VS. 0) PAIRED COMPARISONS <sup>a</sup>	RESPONSE DESCRIPTION	VIGNETTE TYPE	
		Positive (%)	Negative (%)
Positive; neutral . . . . .	Purely positive	80 (20-100)	11 (0-33)
Neutral; negative . . . . .	Purely negative	3 (0-50)	59 (0-100)
Neutral; neutral . . . . .	Neutral	2 (0-33)	3 (0-75)
Positive; negative . . . . .	Mixed	16 (0-75)	26 (0-100)

NOTE.—Ranges are given in parentheses.

<sup>a</sup> Subjects' responses to the positive vs. neutral and the negative vs. neutral paired comparisons. The first term indicates the child's response to the positive vs. neutral paired comparison. The second term indicates the child's response to the neutral vs. negative paired comparison. "Positive; neutral" indicates that the child preferred positive to neutral on one trial and neutral to negative on the other. (As indicated in the text, the order of presentation was counterbalanced.)

vignettes revealed no significant main effects. Thus, the data do not support a "happy baby" alternative to the secure attachment concept.

There was also a significant interaction between attachment group and maternal involvement ( $F[1, 30] = 6.14, p < .02$ ). Secure and insecure children respond very differently to negative mother-involved and mother-not-involved vignettes, in a manner that is clarified by examining defensive responses (positive and mixed) to negative vignettes.

#### Defensive Responding: Positive and Mixed Responses to Negative Vignettes

As in our pilot data, and as the results of the negative responses to negative vignettes imply, there was a substantial number of positive and hence paradoxical responses to negative vignettes. As mentioned above, we believe that these were not errors since they were associated with transformations or elaborations that made it possible for the child to focus on positive aspects of the vignettes. Because they reduce the expression or the experience of negative affect, we have tentatively labeled such responses *defensive*. That these may be related to attachment status was suggested by the finding of an interaction in the preceding analysis between responsiveness and negative mood inductions, where the dependent variable was limited to "purely positive" responses.

TABLE 2  
CHILDREN'S RESPONSES TO MOTHER-NOT-INVOLVED (MNI) AND MOTHER-INVOLVED (MI) MOOD-INDUCTION VIGNETTES  
( $N = 16$  in Each Group)

	PURELY POSITIVE RESPONSES TO POSITIVE VIGNETTES (Mean % of Vignettes)			
	Mother-Not-Involved		Mother-Involved	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attachment status:				
Most secure . . . . .	79	18	74	23
Least secure . . . . .	82	24	73	21
	PURELY NEGATIVE RESPONSES TO NEGATIVE VIGNETTES (Mean % of Vignettes)			
Attachment status:				
Most secure . . . . .	44	41	58	38
Least secure . . . . .	63	33	45	31

Because both "purely positive" and "mixed" responses to negative vignettes can be construed as defensive, we performed a 2 (attachment status) 2 (mother involvement) ANOVA including both types of responses in the dependent variable. Neither main effect was significant. The attachment status mother involvement interaction was significant ( $F[1, 30] = 4.95, p < .04$ ). For secure children, the mean percentage of defensive responses was 36 for mother-involved vignettes and 50 for mother-not-involved vignettes. The corresponding mean percentages for insecure children were 51 for mother-involved and 37 for mother-not-involved vignettes. This interaction is illustrated in Figure 1.

**Discussion**

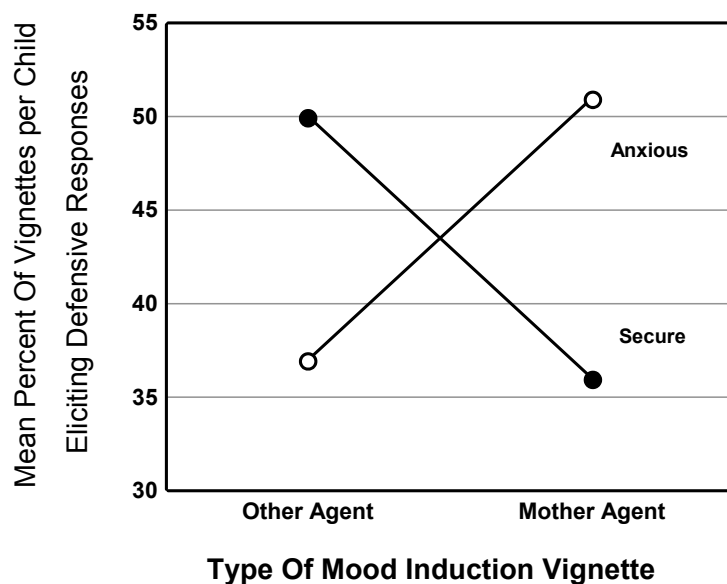
Secure-base behavior is central to the Bowlby/Ainsworth perspective on attachment. Individual differences in infant attachment relationships are conceptualized in terms of the infant's ability to use the caregiver as a secure base and of the caregiver's ability to respond to infant signals and serve consistently as a secure base over time and situations. Critics of attachment theory have suggested that individual differences such as those assessed in the Strange Situation can be interpreted instead in terms of individual differences in affective response parameters (e.g., Kagan, 1984).

We found no support for such alternative interpretations. Secure subjects were no more responsive to positive mood inductions, and no less responsive to negative mood inductions, than insecure subjects. Although secure infants and toddlers tend to display more positive affect during interaction with their mothers (Vaughn et al., 1992), these differences are best explained as a reflection of the more harmonious interactions between secure children

and their mothers. Lay et al. (1989) have demonstrated experimentally that even a minor manipulation favoring harmonious interaction can induce positive affect in preschool-aged children. Surely there are individual differences in affective responsiveness, and to some extent these are traitlike, even heritable (Kohnstamm, 1990). But we should not take temperament explanations for granted. The extent to which stable individual differences in emotion-related responses arise from social experience deserves careful attention. Similar attention should be paid to the role of social relationships in consolidating biases in parameters of affective learning and transforming them into traitlike individual differences.

Our analysis of "defensive" responses revealed a theoretically interesting relation between attachment security and emotion regulation. Although secure and insecure children were equally likely to respond defensively to negative mood inductions, their responses to mother-agent and other-agent vignettes were very different. In the case of the mother-not-involved negative vignettes, the secure child cognitively transforms a potentially aversive experience by such selective attention to the content as minimizes the experience of negative affect. The negative mother-agent vignettes are construed (or appraised) by such a child quite differently. As Freud and Bowlby emphasized, separation or rejection (threatened separation) is construed as an emergency. For the secure child, the level of experienced emotion provides important information that activates a readily available and well-integrated secure-base response system shutting off the emotion in such instances would be counterproductive.

Faced with a mother-not-involved negative vignette, an insecure child is much less able to transform it and attenuate its impact. This is not a traitlike deficit since, when faced



with a negative vignette in which mother is the agent, insecure children show that they can transform the material and redirect attention every bit as well as secure children do in instances of other-agent vignettes. In effect, we propose that, in the case of mother-agent negative vignettes, insecure children are using cognitive mechanisms to prevent the attachment response system from becoming activated. Emotion activates the secure-base system, and secure-base behavior can be ignored or rebuffed. Because the latter is strongly goal oriented, it is understandable that experientially based expectations of maternal unresponsiveness or rejection might engender even stronger negative affect.

Our interpretation has much in common with Lazarus's (1991) cognitive theory of emotion and adaptation. Specifically, our proposition concerning children's use of cognitive processes to transform a potentially aversive vignette into something less aversive parallels what Lazarus calls *short-circuiting of threat*: "Short-circuiting may be thought of as a metaphor ... for the triggering of defense without anxiety having to play a role. The decision about the danger, and the defense against it, was, in effect, made earlier in the person's life as a result of prior learning and contemporaneously only requires the right cue to elicit it" (pp. 164-165).

Our view of the children's differential responses to the mother-agent and other-agent vignettes suggests something similar to Lazarus's (1991) notion of primary appraisal, which he defines as a person's analysis of whether an event is relevant to his or her well-being. The present results suggest that children who differ in their ability to use mother as a secure base from which to explore also appraise mother-involved (and perhaps mother-not-involved) negative situations differently.

One additional parallel between our interpretation and Lazarus's theory is that both focus on appraisal and coping processes that can occur prior to emotion rather than in response to it. Traditionally, attachment theory has assigned the attachment system a central role in emotion regulation. Here we have cognitive processes controlling arousal and thus whether the attachment system is even engaged. In order to understand the relation between attachment and emotion regulation, attachment theory may have to find its place in a broader theoretical framework such as cognitive self theory. The downfall of many theories begins when they try to explain too much.

In an early study of cognitive control over emotion in children, Terwogt, Schene, and Harris (1985) asked 6-year-olds to adopt a detached attitude while listening to a sad story and then interviewed them about their self-control strategies. Although many of their subjects could not describe a specific strategy, denial and maintaining detachment were common, as was imagining themselves somehow involved in the story. Our paradigm was somewhat different in that emotion regulation was spontaneous rather than instructed. The fact that our method had the child imagine experiencing the vignettes may have reduced the likelihood of detachment and hence

partially explain the higher rate of seemingly more sophisticated cognitive coping. The subtlety and sophistication of the children's defensive responses to the negative mother-agent and other-agent vignettes deserve further attention from experts in coping skills and in cognitive development.

Although these are the first experimental data to link secure-base behavior to defensive processes, there are already a number of studies relating attachment status to emotionality and emotion regulation. This literature is reviewed in detail by Cassidy (1994). The present study differs from most of this work in several respects that may prove important for future research. First, we found little of interest in merely quantitative dependent variables defined in terms of intensity or threshold of response. Thus, it may be useful in the future to pay greater attention to context and to cognitive processes. Second, we used a simple self-report method to elicit information about each child's emotional experience after each vignette. Most previous studies have assessed only emotion expression, and, although this index can be quite useful, the relation of emotion expression to emotion is complex and not well understood. Clearly, attachment theory is primarily concerned with emotion per se.

Further research is needed before we can say that secure-base behavior and working models can be incorporated into a unified attachment theory. It seems likely that many important issues will turn on research linking appraisal processes, emotion regulation, and behavior. This report illustrates the viability and some of the advantages of an experimental approach to these issues.

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#### Footnotes

1. The fact that infant Strange Situation classifications tend to be concordant with mothers' Adult Attachment Interview classifications (Ainsworth & Eichberg, 1991; Grossmann, Fremmer-Bombik, Rudolph, & Grossmann, 1988; Levine, Tuber, Slade, & Ward, 1991; Main, Kaplan, & Cassidy, 1985; Sagi, Aviezer, Joels, Koren-Karie, Mays-ess, Sharf, & van IJzendoorn, 1992; van IJzendoorn, Kranenburg, Zwart-Woudstra, van Busschbach, & Lambermon, in press; Zeanah et al., 1993). Fonagy, Steele, and Steele (1991) is often taken as indication that we may be able to link secure-base behavior with phenomena in the cognitive/representational domain. Logically, however, such data only establish a link between secure-base behavior and adult representations if infants of secure mothers grow up to be secure, etc. But data establishing this would be definitive support for the secure-base/adult representation hypothesis. If we had the longitudinal data necessary to support the mother-infant concordance data, we would not need the mother-infant concordance data.
2. The number of negative responses to the positive vignettes is inflated somewhat by the fact that a number of children said that they were frightened by the fish caught in positive, mother-not-involved vignette 4.
3. The italicized words were the ones used in this research. Replace them with the words in brackets to avoid a negative response to this vignette.

## APPENDIX: MOOD-INDUCTION VIGNETTES

Each vignette was introduced by an actress saying, "I'm going to tell you about something. Maybe it didn't really happen to you. But I want you to think about it and tell me how you would feel if this really happened to you." The vignettes follow.

### Mother-Agent Vignettes

#### Positive

1. "One day, you were in school, and you drew a picture. And you took it home and showed it to Mommy. And her eyes just popped open. And she said, 'It is beautiful!' And she hugged you, and she wanted to show the picture to everybody. How would that make you feel?"

2. "One day, you and Mommy were home together, and she said she would read you a story. And so you sat up on the bed, Mommy's big bed. And you sat right next to her and snuggled close to her. And she put her arm around you. And she started to read you the sweetest story. And you sat there together while she read the story. How would that make you feel?"

3. "One day, Mommy's friend was visiting, and you were sitting on Mommy's lap while they talked. And Mommy was telling her friend that you were just the sweetest, best little child any mother could have. And then she smiled at you and said, 'I love you so much!' How would that make you feel?"

4. "One day, Mommy was trying to fix a broken chair, and she just couldn't fix it. And you said, 'It's easy Mommy! All you need is someone to help you!' And so you helped her work on the broken chair. And when one part of the chair was still hard to fix, you saw just how to fix it. And you said, 'Here Mommy, all you have to do is this.' And together you got the job done. And Mommy said, 'Thank you *my helper*.' How would that make you feel?"

5. "One day, you and Mommy were looking at pictures from when you were a little baby. And Mommy told you that you were really cute. And she told you all kinds of cute little things you used to do. And she really liked talking about these pictures. And she told you all the things about when you were a little baby. How would that make you feel?"

6. "One day, Mommy went into the kitchen to make a cake. And you said, 'Can I help?' And she said, 'Well, you are very grown up now. So yes, we can make the cake together.' And she helped you crack some eggs open. And she put her arm on your shoulder while you poured in some milk and cake mix. Then you took turns stirring the cake mix. And Mommy said, 'You are just like me. We are both great cooks!' How would that make you feel?"

#### Negative

1. "One day, you were at home with your mom. She was working in the living room, and you were playing in your room with your toys. And you didn't hear her, but she had to go out of the house. And she forgot to tell you that she was going. And then you went into the living room to find her, and she wasn't there. And you looked all around the house, and she wasn't anywhere. And you didn't know where she was. You were all alone. How would that make you feel?"

2. "One day, Mommy was cleaning up your room and putting your toys away. And there was one toy you really loved. And after she cleaned up, you couldn't find it. And she couldn't find it either. So Mommy said, 'It doesn't matter if it is gone.' How would that make you feel?"

3. "One day, you were at home playing, and after a while you went into the kitchen to find your mommy. And you walked over to sit on her lap and hug her. And she said, 'Don't bother me right now. Go play.' How would that make you feel?"

4. "One day, Mommy was watching TV. And you wanted to watch with her. And she just said, 'No, go away; you're in my way. Only grown-ups can watch this.' And she wouldn't let you watch TV with her. How would that make you feel?"

5. "One day, you came home from school, and you wanted to tell Mommy something really important. And Mommy was talking to her friend. And she wouldn't listen. And you said, 'Mommy, Mommy, I've got to tell you. It's important.' And she said, 'No, no, don't interrupt me.' And you said, 'Mommy, I have to tell you.' She became a little bit grouchy and said, 'I am talking to my friend. Don't tell me now. Tell me later.' How would that make you feel?"

6. "One day, you were at home and drawing pictures. And when you finished your picture, you took it to Mommy. And she said, 'I don't think that's a very good job. Go back, and do it again, better.' How would that make you feel?"

### Other-Agent Vignettes

#### Positive

1. "One day, you were in a grocery store, and a lady said to you that you were the winner of a great big bowl of ice cream. You could choose your favorite flavor, and you got to have as much as you wanted. And she brought up a huge bowl with all kinds of little sprinkles, syrup, and everything you wanted. And she gave you a great big spoon, and you got to eat the whole thing up. How would that make you feel?"

2. "One day, after you waited a long time, it was your birthday. And everybody called you the birthday child. And you had a big party, and all your friends came. And they played games and ate birthday cakes, and you got presents. And you opened them, and they were great. How would that make you feel?"

3. "One day, you were at your friend's house. And your friend had a toy that you really enjoyed playing with. It was different from any toy you had ever owned. When your friend saw how much you liked the toy, he/she said, 'You can take it home, and you can keep it.' And his/her mother said, 'It's OK. You can have it.' So you took it home and played with it for a long time every day. How would that make you feel?"

4. "One day, you went to a big park where there was a big lake. And in the lake were lots of fish. And you had a *fishing pole and some string* (net), and you put the *string* (net) in the water, and all of a sudden you caught a *great big* (beautiful) fish. You had always wanted to catch a fish. And now you had caught the *biggest* (most beautiful) fish ever. How would that make you feel?"<sup>3</sup>

5. "One day you were at your friend's birthday party. And one of the grown-ups said, 'OK, now we are going to have a race. And whoever wins the race will get a great prize!' So all the children lined up, and the grown-up said, '1-2-3-go!' And you ran really fast and won the race. And everyone was cheering and shouting your name and telling you how good you were. And they gave you the prize. How would that make you feel?"

6. "Someday you're gonna grow up, and you're gonna be really big and really grown up. And you're gonna get to first grade. And you're gonna have a class of your own. And a teacher of your own. And books. And you're gonna be really grown up. And you get to go to your school everyday. How would that make you feel?"

#### Negative

1. "One day, some children came to your house to visit, and they played with your most favorite toy. And they liked it so much they wouldn't let you play with it when it was your turn. And they wouldn't let you play with it at all. They just kept it for themselves and played with it. And you didn't get to use it. How would that make you feel?"

2. "You were sleeping one time. And you were having a dream, and in the dream there were some big monsters chasing you, and they wouldn't leave you alone. And they were bothering you. And you were in sleep and didn't know how to get away. How would that make you feel?"

3. "One day, you were walking alone in the woods and on your way to someone's house. Suddenly it got very dark. There were clouds in the sky. And it looked like it was going to rain. And you heard thunder rumbling and lightning cracks. And you saw lightning hit a tree right near you. And the tree fell right down across the path. How would that make you feel?"

4. "One day, you and your class from school went together on a picnic. And everybody brought a snack. And when it was lunchtime, one of your friends had something that looked really good to eat. And you wanted to try it. Your friend said it was OK. But the teacher said, 'No, you may not share food with the other children. You must eat your own food. And do not taste the food from another child. And children you must not give food even to your friends.' How would that make you feel?"

5. "One day, you were in the park. And you just bought a big ice cream cone. And you wanted to walk over to a bench and sit down and eat your ice cream. But on the way the ice cream fell right off the cone and landed on the ground. And it was all dirty. And you could not eat it because it was dirty and melting, and you didn't have any money to buy any more. So you got no ice cream at all. And you really wanted it. How would that make you feel?"

6. "One day, you got a telephone call. It was a friend of yours who lives in another town, and your friend said that they had bought you a beautiful present. And they were sending it to you in the mail. So you should wait by the door until the present comes. And you waited and waited and waited, and it didn't come. And the next day you sat by the door of your house, and you waited, and you waited, and you waited. But the present that your friend had promised never came in the mail. How would that make you feel?"