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EMOTION REGULATION: INFLUENCES OF ATTACHMENT RELATIONSHIPS

Jude Cassidy

In his essay in this volume, Thompson discusses several defining features and important components of emotion regulation. One of these addresses the adaptive nature of emotion regulation: the notion that emotions can be regulated as an adaptive means, a strategy, to achieve one's goals within a given context. Given that, according to attachment theory (Bowlby, 1969/1982, 1973, 1980), a centrally important, biologically based goal of the child is maintaining proximity to the attachment figure, then, following Thompson's position, children would be expected to regulate their emotions in order to achieve this goal.

My aim here is to examine ways in which individual differences in emotion regulation may be influenced by children's attachment experiences. Throughout, three themes central to Thompson's definition of *emotion regulation* will be considered: (a) that emotion regulation involves both the suppression and the heightening of emotions; (b) that emotion regulation involves the regulation of attention; and (c) that emotion regulation involves factors both intrinsic (e.g., temperament) and extrinsic to the child (particularly the child's relationships with parents). I begin with a brief theoretical discussion of the ways in which attachment theory converges with Thomp-

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son's view of the adaptive nature of emotion regulation. Ways in which individual differences in emotion regulation may be partly accounted for by attachment relationships are then discussed. Finally, interconnections among attachment, temperament, and emotion regulation are considered.

THEORETICAL PERSPECTIVES

Thompson (in this volume) points out that children are continually faced with many options when choosing how to regulate their emotions. He cites an example of a child who, in the face of peer-instigated conflict, can choose among a variety of emotion regulation responses, including, among others, angry revenge, crying, tattling (with sadness, anger, or whining), and direct assertion. The child is thought to select among these responses in a way that will help her achieve her goals. Her choice is viewed as being a situation-specific strategy, with the effectiveness of any particular strategy varying according to such factors as setting (e.g., home vs. day care) and social partner (e.g., mother vs. father).

Thompson emphasizes the important role of parents and suggests that it is largely within the parent-child relationship that children learn about emotion regulation in the service of attaining their goals. Thus, parents help children learn which of several emotion response options will be effective in attaining both their immediate goal and the more general goal of conforming to social demands: "On the basis of the socialization practices of parents and other authorities, children acquire emotion schemas that, among other things, guide their predictions of the consequences of expressing various emotions in certain situations. . . . For example, on the basis of the verbal . . . and behavioral guidance of socialization agents, they learn the consequences of responding to an aggressive peer by taking revenge, crying, tattling to adults, or asserting themselves. In doing so, they can more thoughtfully evaluate these alternatives in terms of their relative suitability for accomplishing personal goals in particular circumstances" (Thompson, in this volume, p. 39).

Thompson's propositions about the adaptive nature of emotion regulation converge with the thinking of Bowlby (1969/1982, 1973) and of Main (Main, 1990; Main, Kaplan, & Cassidy, 1985; Main & Solomon, 1986) about adaptation in relation to attachment. According to Main, just as many biological systems have evolved to permit adaptation and a flexible response to a range of environmental circumstances, so have infants evolved with the capacity to respond to variations in caregiving environment. Thus, when an infant is faced with a particular type of caregiving and learns from these experiences, she is able to tailor her own behavior accordingly. The manner in which the infant tailors her behavior is referred to as a *strategy*, and the

infant is thought to have the capacity to use one of several strategies; central to Main's thinking is the notion that strategies are used automatically and need not be conscious (Main, 1990).

This notion of strategies is entirely consistent with Bowlby's proposal that individuals can take into account environmental feedback in modifying their biologically driven behavior toward a goal. Main's (1990) framework of "conditional behavioral strategies" emphasizes the adaptive nature of these infant strategies; in accordance with Bowlby's (1969/1982) notion that the infant is biologically predisposed to maintain proximity to the caregiver so as to increase the likelihood of protection, Main proposes that the child's strategy is adaptive in that it helps ensure this proximity in light of a particular caregiving history.

Within Main's scheme, children are thought to develop strategies as a means of responding to the caregiving that they receive: in the service of implementing a strategy, the infant may regulate behavior, feelings, cognition, perception, memory, and attention (Main et al., 1985). In what follows, I focus on the ways in which emotion regulation can be viewed as one means used by the child in implementing a strategy. I suggest that infant emotion regulation can be regarded as part of an adaptive strategy that, in concert with other strategic means and in response to a particular caregiving history, serves the function of maintaining the relationship with the attachment figure. In an attempt to better understand infant emotion regulation, parent emotion regulation is also examined briefly.

The view of emotion regulation presented here draws not only from the theoretical writings of Bowlby and Main but also from Bretherton's (1990) writings about attachment and communication patterns, from Tomkins's (1962, 1963) affect theory, from the functionalist approach to emotions (Barrett & Campos, 1987; Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986), and from family systems theory (Minuchin, 1985). In addition, a foundation for this view is Sroufe and Waters's (1977) conceptualization of individual differences in attachment quality as individual differences in emotion regulation.

INDIVIDUAL DIFFERENCES IN EMOTION REGULATION AS A FUNCTION OF ATTACHMENT HISTORY

Emotion regulation is thought to be influenced by the attachment relationship through the child's expectations ("working models") of the parent's behavior. According to Bowlby, such working models develop during the infant's first year and are based on repeated daily experiences with the parent (Bowlby, 1969/1982, 1973). The secure child is thought to develop an expectation that her emotion signals will be responded to. The insecure

child, on the other hand, is thought to develop expectations that her emotion signals will be attended to only selectively. (On the basis of recent animal research, Hofer, in this volume, extends attachment theory by specifying physiological processes that may be additional mechanisms through which emotion regulation is influenced by attachment relationships.)

In this section, individual differences in emotion regulation are first discussed by examining a flexible style of emotion regulation in which a range of emotions is possible. Next (following Thompson's scheme), two further styles of emotion regulation involving a restricted range of emotions are considered: one in which emotions are systematically suppressed and one in which they are systematically heightened. According to Thompson, "Emotion regulation is undermined when there is a very limited range of response possibilities or, alternatively, when existing options are perceived to lead consistently to undesirable outcomes" (in this volume, p. 38). Thus, these styles are viewed as less satisfactory for the child.

Two assessments of attachment are considered in the following discussion. For infants, individual differences in quality of attachment have been identified and examined using Ainsworth's Strange Situation procedure (Ainsworth, Blehar, Waters, & Wall, 1978). During this widely used 20-min assessment, the parent and a stranger alternately leave and return to the infant, who remains in a toy-filled laboratory playroom. There are two parent-child separations and two parent-child reunions. On the basis primarily of the infant's behavior during these reunions, she is classified into one of three attachment groups: secure, insecure/avoidant, and insecure/ambivalent.¹ The reliability and validity of this procedure have been extensively demonstrated (Ainsworth et al., 1978; Belsky & Cassidy, in press; Bretherton, 1985; Waters, 1983; for a divergent view, see Lamb, Thompson, Gardner, & Charnov, 1985).

A second assessment—the Adult Attachment Interview—taps the adult "state of mind in relation to attachment" (George, Kaplan, & Main, 1985). This semistructured interview probes memories of attachment-related experiences during childhood, such as memories of feeling loved or unloved, memories of being upset or ill, and memories of separations and losses.

¹ More recently, Main and Solomon (1986) have identified the existence of a fourth attachment group: insecure/disorganized. Approximately 12% of infants in white, middle-class American samples are classified in this group (Main & Weston, 1981). Substantially more infants fall into this group in high-risk samples (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Lyons-Ruth, Connell, & Grunebaum, 1990; Speltz, Greenberg, & DeKlyen, 1990; Spieker & Booth, 1988). Relatively little research has yet been conducted using this classification, and it is not considered in this essay. Note, however, that Main and Hesse (1990) have provided a theoretical discussion of the disorganized group as a variant of the basic secure, avoidant, and ambivalent groups, and as such it is possible that no particular pattern of emotion regulation is associated with this attachment pattern.

Subjects are asked to provide general descriptions of their relationships with each parent and to integrate specific memories with these more general descriptions. Discrepancies, contradictions, and the individual's overall coherence of thought are considered when classifying interviews into three attachment patterns that parallel the three infancy patterns: secure/autonomous, dismissing, and preoccupied.

For each style of emotion regulation, several questions will be considered. First, are there children who show a given emotion regulation style within the Strange Situation? Second, what attachment-related experiences might lead to a strategy that would incorporate this style of emotion regulation, and is there evidence that these children have experienced the hypothesized attachment history? Finally, is there evidence of a more pervasive link between this style of emotion regulation and the proposed attachment pattern?

For parents, the state of mind in relation to attachment that is thought to characterize the parents of infants who most typically use a given emotion regulation style is first examined, and the Adult Attachment Interviews of these parents are described. In relation to styles of emotion suppression and heightening, parents' behaviors that might contribute to infant emotion regulation are then further examined. Finally, the signal function to the parent of the infant's emotion regulation is described.

Open, Flexible Emotion Expression

Children and Parents

The notion of open, flexible emotion expression suggests that the child expresses a range of emotions and that none are systematically distorted. This flexibility is thought to arise in part from experiences with a caregiver who responds sensitively much of the time to a range of infant affective signals, without any selective ignoring (Bretherton, 1990; Kobak, 1985, 1987).

Several studies converge to suggest that infants whose mothers respond sensitively to their signals are more likely to be securely attached (Ainsworth et al., 1978; Belsky, Rovine, & Taylor, 1984; Egeland & Farber, 1984). The secure infant's strategy in response to these mothering experiences is to use the mother as a secure base from which to explore when there is no threat from the environment and as a haven when danger arises (Ainsworth et al., 1978; Main & Solomon, 1986). This strategy allows the infant maximum freedom to explore and to respond to the exciting possibilities of the environment, without jeopardizing access to the attachment figure when needed.

Why might flexible emotion expression be part of a strategy aimed at

allowing the infant freedom to explore while assuring her safety? If the infant believes that her emotion signals will be responded to sensitively, she is most likely to signal her wishes directly and freely and to share her emotions with the parent. In most instances, relatively little negative affect is expected from infants who have experienced sensitive caregiving. However, when the secure infant does experience negative affect (as some babies do in the Strange Situation), her strategy involves open, direct, and active expression to the parent; rather than hiding the distress, the child seeks the parent for help in dealing with it. On the other hand, when experiences with a sensitive caregiver give rise to pleasurable feelings, open expressions of joy serve the function of showing an interest in maintaining the relationship. In relation to fear, the secure infant's strategy involves flexible emotion regulation in response to changes in the environment. When an alarming event occurs, the infant moves to the parent; when the parent is present and the situation is not alarming, the infant explores.

The affective communication between child and parent provides the context in which the child comes to understand and organize affective experience. For the secure child, this affective communication is thought to have a positive influence on personality development. Because the parent is sensitive to the child's signals, affects will be experienced as useful in alerting the parent during times of distress. A parent's sensitive response will in turn enhance the child's sense of efficacy in modulating her feeling states (Bell & Ainsworth, 1972). In this type of dyad, the child's experience of negative affects, such as fear and anger, comes to be associated with expectations of the parent's ameliorative response. As a result, the experience of negative affect may be less threatening to the child. The experience of security is based not on the denial of negative affect but on the ability to tolerate negative affects temporarily in order to achieve mastery over threatening or frustrating situations (Kobak, 1985).

The pattern of openness to a range of emotions seen in secure infants is also evident in the Adult Attachment Interviews of most of their parents (who are typically classified as secure/autonomous). If such a parent reports that her own childhood was *secure*, she supports this claim with convincing and coherent memories and can also acknowledge humanly expectable limitations or disappointments within her childhood relationships. If she reports an *insecure* childhood, she has nonetheless come to understand or forgive her parent(s) and acknowledges the importance of attachment relationships.

The notion that an open acceptance of many emotions is associated with secure attachment converges with several theoretical perspectives. One of these is Tomkins's (1962, 1963) affect theory. According to Tomkins, the "most developmentally favorable outcome" is what he calls an "affectively balanced personality," in which no single emotion either dominates or is

suppressed and there is room for balance and a range of emotions. Tomkins proposes that such a positive outcome is associated, not with attempts to suppress the child's negative affect, but rather with the parent's acceptance of negative emotions, with continued engagement with the child during times of anger or sadness, with provision of assistance in dealing constructively with negative emotions, and with the parent's own comfort with negative emotions.

These ideas are also similar to Bretherton's (1990) proposals concerning "open communication." Bretherton makes a convincing case that the flow of communication between partners has important consequences for the security/insecurity of the relationship. She described "open, fluent, and coherent" dyadic communication, in which neither partner is selective about either sending or receiving signals, as characteristic of secure dyads. Her focus is on the importance of communication signals, and these are in large part emotion signals.

Stern's (1985) discussions of "affect attunement" as characteristic of sensitive parenting also converge with the ideas presented here. Stern describes the sensitive mother as one who recognizes her infant's affective signals, accepts these signals, and shares in these with her infant. Through these experiences, the infant learns that a variety of emotions are acceptable and that they can be experiences shared within social relationships. According to Stern, difficulties arise when, because of her own needs and perceptual biases, the mother either undermatches or overmatches her infant's emotion signals. These mismatches, in which the mother excessively tries either to dampen or to heighten her infant's affect, are thought to convey to the infant that only some emotions are appropriate.

Empirical evidence of a link between open, flexible emotion expression and secure attachment is contained in later sections where I examine restricted emotion expression.

Minimizing Emotion Expression

Children

There is one group of infants who appear to minimize emotion expression within the Strange Situation: those classified as insecure/avoidant. On reunion with the parent, these infants show little interest in proximity or contact and, in fact, actively avoid the parent. In most American samples, about 20% of babies fall into this group (Ainsworth et al., 1978; Campos, Barrett, Lamb, Goldsmith, & Stenberg, 1983). Such children seem in large part affectively neutral, showing neither overt distress on separation nor pleasure on reunion.

What attachment-related experiences might contribute to a strategy

within which a child minimizes her emotions? Main and Solomon (1986) propose that, when activation of their attachment system has consistently resulted in rejection, infants develop a reasonable strategy of minimizing attention to the attachment relationship, minimizing the importance of the caregiver as a source of comfort and hence their apparent need for her. Results of several studies converge to suggest that insecure/avoidant infants have experienced consistent rejection by their parents, particularly so in times of distress when they had especially wanted comfort—times when their attachment systems had been highly activated (Ainsworth et al., 1978; Grossmann, Grossmann, Spangler, Suess, & Unzner, 1985).

If a strategy of minimizing the attachment relationship serves the avoidant infant well, how could regulation of emotions best be used to this end? Minimizing negative emotions such as anger, sadness, or distress is thought to be a useful component of a strategy to minimize the relationship. Important to this argument is Main's proposition that this minimizing actually permits the infant to maintain sufficient proximity to the caregiver to ensure protection (Main, 1981). Given that the ultimate goal of the insecure/avoidant infant is to maintain proximity to an attachment figure who is known to reject attachment behaviors, the expression of emotions that can be construed as an attempt to elicit care may have dangerous consequences for the child. If she overtly expresses the anger associated with having had her attachment behaviors rejected, she risks alienating the attachment figure; if she increases her demands and becomes more clingy, she risks being rebuffed further. Avoidance and the masking of negative emotion reduce the infant's arousal level (Bowlby, 1980) and thereby prevent the direct, possibly dangerous expression of anger toward the attachment figure.

Owing to the parent's chronic rejection of her attachment needs, the avoidant infant's anger is so intense that it needs to be muted in order not to disrupt the attachment bond. Masking of negative affect simultaneously protects the infant from the rejection that often results from her attempts to seek contact as well as from the painful fear of alienating the attachment figure on whom she depends for survival (Bowlby, 1980; Main, 1981). Minimizing anger also serves the strategy of minimizing the relationship with the attachment figure in another way. Anger can be engaging. To be angry is, in some way, to be invested in the relationship. Within a strategy of minimizing the relationship, such investment is not acceptable.

Minimization of other emotions in the service of minimizing the relationship with the attachment figure is also expected to characterize insecure/avoidant children. For example, joy might be minimized because it signals an openness and a readiness for interaction. As Malatesta wrote, joy "promotes social bonding through contagion of good feeling" (Malatesta & Wilson, 1988, p. 107). Thus, joy can be viewed as reflecting investment in the relationship. Again, such investment is not acceptable within a strategy of

minimizing the relationship. Fear is also minimized with this strategy. According to Main and Hesse (1994), "The infant is thought to respond to mildly alarming events by shifting attention from fear-eliciting cues and from attachment, thereby avoiding or minimizing the disorganization which might well follow an experience of fear in which a caregiver was rejecting."

Does empirical evidence support the expectation that infants who minimize emotion expression are likely to be characterized by an insecure/avoidant attachment pattern? Four studies have shown that a tendency to mask negative affect while interacting with the parent characterizes insecure/avoidant infants. In one of these, observations of the communication patterns of mother-infant dyads during the Strange Situation revealed that avoidant infants communicated directly with their mothers only when the infants were feeling at ease (Grossmann, Grossmann, & Schwan, 1986). Unlike secure infants, when judged to be distressed, these infants tended not to signal the mother directly and did not seek bodily contact. In another, similar study, avoidant infants were found to differ from secure infants in their emotion regulation behaviors on reunion: rather than being mother oriented, the regulatory behaviors of avoidant babies were self-oriented (Braungart & Stifter, 1991). Given that the avoidant infants in this sample showed greater distress during separation than some secure infants (the B1 and B2 infants), this study again provides evidence that, when distressed, avoidant babies do not share their distress with the parent.

A similar connection between infant avoidance and suppression of negative affect emerged from a study by Malatesta and her colleagues in which infants and mothers were observed in face-to-face interactions during the first year and attachment was assessed at age 22 months (see Malatesta, Culver, Tesman, & Shepard, 1989). The authors interpreted their findings as follows: "During stressful situations—when it is more adaptive to communicate one's distress—insecurely attached [avoidant] children, paradoxically, displayed more positive affect (mainly interest) and showed the compressed lips expression more frequently; we interpret these findings as revealing a pattern of emotion suppression and vigilance" (p. 72).

Finally, a recent study that included both behavioral and psychophysiological measures provided data that again suggest a masking of negative affect by avoidant infants (Spangler & Grossmann, 1993). Although heart-rate measures revealed that avoidant infants were as physiologically distressed on separation as the secure babies, and although the post-Strange Situation cortisol levels indicated that the procedure was *more* stressful for avoidant than secure babies, the avoidant babies masked their negative affect: that is, they showed significantly less negative vocalization during the separations than did secure babies. Furthermore, like in the Grossmann et al. (1986) study described earlier, the findings revealed that, unlike secure babies, avoidant babies turned to their mothers, not when they were highly

aroused (as assessed by heart rate), but rather only during times of low arousal.

Although a strategy of minimizing negative affect may be adaptive for avoidant infants in the context of the relationship with the attachment figure, it may be maladaptive in other contexts. In particular, the avoidant individual's lack of expectable affective displays in social and problem-solving contexts may appear inappropriate and be maladaptive. Two studies provide examples of the use of restricted affect in situations not involving the attachment figure by older children classified as avoidant; this restricted affect can be viewed as part of an individual's defensive communication that she is unaffected by others.

In an experimental study, Lutkenhaus and his colleagues analyzed the affect and behavior of 3-year-olds who had been assessed in the Strange Situation with the mother at 12 months (Lutkenhaus, Grossmann, & Grossmann, 1985). An unfamiliar adult visitor played a competitive tower-building game with the children, and the children's affective reactions to winning and losing were analyzed. The avoidant children manifested sadness about losing while they were still engaged in the game, but this affective display ceased when the game was over and the experimenter was available for social communication. In fact, during this phase of "social communicative exchange," there was a tendency for the avoidant children to replace sadness with smiling. In contrast, securely attached children showed their sadness after the game, when the adult was more available. It is not the case that avoidant children simply did not feel (or display) sadness because sad expressions were evident before the game was finished and there was no eye contact between child and experimenter, leading the authors to suggest that greater hesitancy to display sad feelings in social situations characterizes avoidant children. It is striking that such masking of true feelings of sadness is evident as early as 3 years of age, and it is also striking that this pattern of masking emotions is used so readily with a new social partner, someone with whom the child has had no history of social interaction.

Restriction in affective expression among avoidant children also emerged in another study. Six-year-olds participating in the Berkeley Social Development Project were asked to "draw a picture of your family" as part of a longitudinal study of infant attachment (Kaplan & Main, 1985). Children who had been classified as avoidant in infancy tended to draw figures that were carbon copies of each other, with little or no individuality. The bodies were tense and rigid. Family members often had no arms: individuals were independent and were literally unable to reach out to each other. This signaling of "emotional unavailability" (Emde, 1980) is congruent with a style of affective communication organized around the attempt to withhold affect. Another characteristic of this group of drawings was that facial ex-

pressions often involved stereotyped, overemphasized smiles. This exaggeration of positive affect in the drawings, with the accompanying masking of negative affect, parallels the behavior of the avoidant children in the Lutkenhaus study described above.

No research has examined the suppression of positive emotions in relation to attachment patterns. Generally, little positive emotion is thought to be associated with avoidant attachment. There is some empirical evidence that, compared to secure infants, avoidant infants are less likely to express positive emotions (Matas, Arend, & Sroufe, 1978; Pastor, 1981; Waters, Wippman, & Sroufe, 1979) and are more likely to decrease smiling in interaction with the mother over the first year (Malatesta et al., 1989), but in none of these studies is there evidence that suppression is involved.

Parents

A pattern of emotion regulation in which negative emotions are restricted emerges from the Adult Attachment Interviews of the parents of many of the avoidant infants (adults who are classified as dismissing) (Main & Goldwyn, 1984, 1994). Some of these parents use idealization: they deny that their parents or childhoods had any negative characteristics. Others admit negative characteristics but minimize their own negative responses to them.

What factors support the proposition that masking of negative affect is reflected in these adult narratives? First, because no one is perfect (particularly one's parents), no recognition of any flaws at all is likely to involve perceptual and affective distortion. In addition, descriptions of specific experiences of rejection emerge in the narratives of these idealizing adults that are not incorporated into the global portrayals of their perfect childhoods. For example, in Main and Goldwyn's (1984) sample, the mother of an avoidant infant described her relationship with her mother as "fine," yet later told of hiding from her mother when she was injured out of fear of angering her. Given the absence of the negative affect that would be expected to occur in response to such treatment, masking of negative affect is a likely interpretation. This disconnection of the cognitive representation of an event from the normally accompanying emotion is similar to what Anna Freud (1966) called "isolation of affect."

Additional evidence that a minimizing of negative affect occurs in these adult narratives comes from a study of 50 adolescents that included physiological measures (Dozier & Kobak, 1992). The skin conductance scores of individuals who scored high on a repression scale—as is characteristic of individuals classified as dismissing (Kobak, Cole, Ferenz-Gillies, & Fleming, 1994)—were no different from those of others when subjects were re-

sponding to low-stress background questions about their parents and childhoods. However, when asked more stressful questions about their feelings during times of separation, rejection, or threat, these individuals experienced significantly greater conflict than other individuals as evinced by their higher skin conductance scores, even though they claimed to have had no difficulties in their early attachment relationships. Individuals guided by a strategy of shifting attention away from attachment information should experience conflict or inhibition during the interview (as indexed by an increase from baseline skin conductance) because the interview *focuses* attention on this information.

Findings from another study of adolescents also suggest that a minimizing of negative affect characterizes adults with a dismissing attachment pattern (Kobak & Sceery, 1988). Kobak interviewed 53 first-year college students in the fall, collected self-report measures of perceptions of self and others over the course of the first year, and obtained peer ratings of adjustment in the spring. Peer ratings of those in the dismissing group indicated that they were viewed by their peers as less ego resilient, more anxious, and more hostile than secure individuals. However, on self-report measures, the dismissing individuals reported no more self-related distress than did secure individuals. The authors interpreted this combination of findings as indicating a cognitive bias among dismissing individuals toward minimizing acknowledgment of distress or difficulty in adjustment.

In order to maintain their own state of mind in relation to attachment, parents behave in particular ways toward their infants (Main & Goldwyn, 1994). As argued earlier, a parent's rejection contributes to an infant's suppression of negative emotions in a number of ways. But what about any additional ways in which a parent's behavior may contribute to an infant's restriction of negative emotions?

Additional processes through which avoidant infants may learn to mask negative emotions have been identified empirically through observations of mothers' and infants' behavior. Three studies of mother-infant interaction indicated that mothers of insecure/avoidant infants showed a more restricted range of emotion expressiveness than mothers of secure infants (Ainsworth et al., 1978; Main, Tomasini, & Tolan, 1979; Malatesta et al., 1989), suggesting that avoidant infants may learn a style of restricted affect through direct modeling. In addition, a study using a mother-infant free-play situation found that mothers of avoidant infants joined in play when the infant was content but withdrew when the infant expressed negative affect (Escher-Graeb & Grossmann, 1983); such withdrawal during times of negative affect may teach the avoidant infant that such affect is inappropriate (see also Stern, 1985). The pattern was reversed among mothers of securely attached infants, who were more likely to join in play (in a facilitative way) when the infant expressed negative affect.

Furthermore, although it must be viewed as preliminary, a small pilot study (Haft & Slade, 1989) provided convergent data. Mothers with dismissing patterns of attachment were described as follows: "Overall, the dismissing group distorted their babies' affect by misreading it primarily when it was negative. . . . Dismissing mothers were most comfortable attuning to their babies' expression of exuberance, especially in the context of mastery in play . . . [and to their infants'] expressions of autonomy and separateness. . . . On the other hand, they tended to be rejecting of their babies' bids for comfort and reassurance" (p. 168).

Finally, overinvolvement, which was found to characterize mothers of avoidant babies in several studies (Belsky et al., 1984; Isabella & Belsky, 1991; Isabella, Belsky, & von Eye, 1989; Lewis & Feiring, 1989; Malatesta et al., 1989; Smith & Pederson, 1988), may also contribute to infants' reduced negative expressivity. Just as the avoidant infant's own increased activity on reunion in the Strange Situation is thought to decrease activation of the infant's attachment system (Ainsworth et al., 1978) and thereby decrease negative expressivity, so might the mother's relatively high activity during daily mother-infant interactions shift attention away from the infant attachment system and any accompanying negative affect. In an attempt to regulate distance, the infant of an overinvolved mother may respond by withdrawing and minimizing interaction in a variety of ways, one of which involves expressivity.

Just as consideration of the mother's behavior is useful in understanding how minimization of emotion expressiveness may be adaptive for avoidant infants, so is consideration of the parent's state of mind in relation to attachment. Given a mother who dismisses the importance of attachment relationships, the restricted negative emotionality of the avoidant infant can be viewed as signaling to the parent that the infant is cooperating in order to help maintain the parent's state of mind. The avoidant infant's limited negative emotionality may be part of a communicative package that signals that the infant will not make demands for comfort or seek care. (For additional discussion of ways in which the masking of negative emotions in both children and adults may characterize avoidant individuals, see Bretherton, 1990; Cassidy, 1988; Cassidy & Kobak, 1988; and Main et al., 1985.)

Heightening Emotion Expression

Children

In the Strange Situation, extreme distress on separation and difficulty in calming on reunion characterize the group of infants classified as insecure/ambivalent. These infants display angry, resistant behavior toward the parent.

What sorts of attachment-related experiences might contribute to a strategy in which a child heightens her emotions? An infant who has experienced a minimally or inconsistently available parent is thought to develop an understandable strategy of increasing her bids for attention. She develops a strategy of *heightening* the importance of the relationship and exhibits extreme dependence on the attachment figure. Main and Solomon (1986) note that, by increasing "dependence upon the attachment figure, this infant successfully draws the attention of the parent" (p. 112). In fact, results from several studies have shown that insecure/ambivalent babies had experienced their mothers as relatively unavailable in the home (Ainsworth et al., 1978; Belsky et al., 1984; Grossmann et al., 1985; for a review, see Cassidy & Berlin, in press). The pathologically extreme form of mother's unavailability—neglect—has also been found to be associated with the insecure/ambivalent attachment pattern (Youngblade & Belsky, 1990).

If an infant wants to heighten the importance of the relationship and show an interest in remaining close to the attachment figure, how might she regulate her emotions to this end? Heightened negative emotionality can be viewed as a component of the child's strategy to gain the mother's attention. The negative emotionality of the insecure/ambivalent child may be exaggerated and chronic because the child recognizes that to relax and allow herself to be soothed by the presence of the attachment figure is to run the risk of then losing contact with the inconsistently available parent. One reasonable strategy involves fearfulness in response to relatively benign stimuli. Through exaggerated fearfulness, the infant increases the likelihood of gaining the attention of a frequently unavailable caregiver should true danger arise (Main & Hesse, 1990). This heightening strategy can be viewed as adaptive if it serves to gain the attention of an unavailable caregiver. However, according to Bowlby (1973), such a strategy can be dysfunctional if the negative emotionality is so pervasive that it threatens the existence of the relationship. It can also be dysfunctional to the extent that it interferes with other developmental tasks such as exploration.²

How does attention regulation contribute to the heightened emotionality of these children? One process may involve shifting attention toward attachment-eliciting situations; thus, such children may selectively attend to the frightening aspects of the environment, interpreting "an environment

² This strategy of exaggerating negative affect in order to increase care is not restricted to the context of routine parent-child interaction. For instance, it is a strategy commonly used by young children following the birth of a sibling in order to regain the degree of caregiving received before the parent's attention was diverted by the new infant, a tendency long described as *regression* (Dunn, Kendrick, & MacNamee, 1981; Field & Reite, 1984; Trivers, 1974). This strategy is also used by the young of other species; e.g., when their mothers become less available to them during weaning, free-ranging infant baboons dramatically increase their crying (DeVore, 1963).

known at some level to be quiescent as threatening” (Main, 1990, p. 61). Heightened recall of memories that activate attachment-related behaviors and emotions may also occur. Thus, according to Main’s speculations, the infant’s perception (based on previous interactions) of the parent’s probable unresponsiveness is at some level accurate. This *accurate* perception of the parent’s behavior is thought to necessitate a *distorted* perception of the environment, which, by serving to heighten attachment behavior, (usefully) increases the likelihood that the child’s attachment needs will be met.

Because there are so few infants classified in this group (in American samples, roughly 10%), there are few empirical data to permit assessment of the extent to which heightening of negative emotions characterizes insecure/ambivalent infants. Heightened negative emotionality is indeed a marker of this pattern in the Strange Situation (Ainsworth et al., 1978; Braungart & Stifter, 1991; Shiller, Izard, & Hembree, 1986). In addition, there is some evidence that these infants are more fearful than others. Ainsworth (1992) conducted post hoc analyses of her original Baltimore data and reported that insecure/ambivalent infants were overrepresented among those who showed clear-cut fear in the episode of the Strange Situation before the entrance of the stranger (see also Bretherton & Ainsworth, 1974). These infants have also been found to be more fearful than secure infants in laboratory procedures at age 7 months (Miyake, Chen, & Campos, 1985) and at 2 years (Calkins & Fox, 1992). In addition, these infants have been found to be fearful about exploring a new environment (Hazen & Durrett, 1982; Jacobson & Wille, 1986) and to be fearful and withdrawn in interaction with peers (Pastor, 1981; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989).

However, the critical research needed to demonstrate a heightening of negative affect by insecure/ambivalent infants does not exist. With the insecure/avoidant pattern, evidence of minimization of negative affect does exist; infants and adults characterized by this pattern *do* feel negatively aroused, but they suppress expression of such feelings (Dozier & Kobak, 1992; Grossmann et al., 1986; Lutkenhaus et al., 1985; Malatesta et al., 1989). Comparable evidence in relation to the insecure/ambivalent pattern would consist in demonstrating that the insecure/ambivalent individuals show *greater* negative reactivity than they actually feel. The operationalization of “heightening” has not yet been attempted.

Parents

Just as heightened negative emotionality characterizes insecure/ambivalent infants, so does it also characterize their parents. Parents of insecure/ambivalent infants are thought to have a “preoccupied” state of mind in

which the importance of attachment relationships is emphasized to such an extent that autonomy is undermined (Ainsworth & Eichberg, 1991; Benoit, Vidovic, & Roman, 1991; Main & Goldwyn, in press; Ward, Botyanski, Plunket, & Carlson, 1991). This state of mind involves a heightened and often incoherent focusing on relationships. The Adult Attachment Interviews of these parents indicate that they are embroiled in current anger with their own parents that they are unable to resolve or even convincingly analyze. They continue to fight their parents; they may rail angrily at their parents' shortcomings, describing recent arguments in great detail. Their attachment-related narratives have been described as "fearful and overwhelmed; or angry, conflicted, and unconvincingly analytical" (Main & Goldwyn, in press).

What aspects of the parent's behavior other than low or inconsistent availability might contribute to the heightened negative emotionality of these children? One factor may be a parent's failure to help the child regulate emotion. The parent may realize, at an unconscious level, that prolonged negative emotionality keeps the child embroiled with her and prevents the child from moving away to explore the environment. Thus, in order to emphasize the attachment relationship, the parent may use a strategy of failing to help the child effectively regulate negative emotions.

Extensive examination of the parent's role in helping children with such regulation is needed. There is, however, already some indication that mothers of insecure/ambivalent infants may not do what is necessary to resolve negative affect. Even during the first few months of their infants' lives, these mothers are less likely than mothers of secure infants to attempt to soothe their distressed babies (Ainsworth et al., 1978). At the end of the first year, during the Strange Situation, these mothers do not provide physical contact to their distressed infants but rather attempt to reinterest them in play (Ainsworth et al., 1978). This choice of comforting style may contribute to the relatively greater and longer-lasting distress of these babies. Congruent with this picture is the finding that mothers of 6-year-olds classified as insecure/ambivalent have difficulty setting limits on their children's behavior (Solomon, George, & Ivins, 1987), which is in turn a parenting style commonly found in coercive, highly negative families (Baumrind, 1973; Patterson, 1982).

It is important to acknowledge that, as with all attachment groups, both the parent's and the child's behavior can be viewed in ways other than as a strategy. Parents of insecure/ambivalent infants may be relatively unresponsive to their infants' signals not only because of an unconscious strategy aimed at eliciting infant attachment behavior but also because they lack the competence to respond differently. Their own backgrounds may not have provided them with opportunities for learning competent parenting skills. When parents do not help their children regulate emotions, it may be that

they did not learn how to regulate emotions in their own relationships. Such a possibility is underscored by the responses given by these parents during the Adult Attachment Interview that indicate their continuing consuming anger toward their own parents (Main & Goldwyn, in press).

Given a parent who is preoccupied with attachment, the infant's heightened negative emotionality may serve a signal function to the mother, indicating that the child wants to stay close and emphasize the relationship, thus cooperating with the mother's wish to maintain an attachment-preoccupied state of mind. Heightened anger and fearfulness show the mother that the child is involved with her. They reassure the parent that she will continue to be needed and that the child will remain close to her; in other words, they reassure the parent that the child "will not become an adult and leave" (Bacciagaluppi, 1985, p. 371).

EMOTIONS, ATTACHMENT, AND TEMPERAMENT

The proposition that emotion regulation may be influenced by and, indeed, be part of the infant's strategic response to interaction with the caregiver reflects a relationship-based approach that focuses on an environmental explanation of the connection between emotion regulation and attachment pattern. It is important to note, however, that the perspective offered here is fully compatible with Calkins's (in this volume) comprehensive model of the biological, behavioral, cognitive, and caregiving precursors of emotion regulation. My focus has been on the caregiving (specifically attachment) component, which, as Calkins points out, operates in conjunction with other components and is in fact itself influenced by the infant's emotion regulation. In this section, I address the role played by infant temperament in the connection between emotion regulation and attachment pattern.

The notion of infants' attachment-related strategies that I have described incorporates recognition of contributions made by infant temperament. Biological factors are recognized as being the basic structure that social factors influence and as being important contributors to individual functioning. Converging studies suggest the existence of temperamentally based tendencies toward particular patterns of emotion regulation that are both early to appear and stable over time (Bates, 1987; Garcia-Coll, Kagan, & Resnick, 1984; Izard, Hembree, Dougherty, & Spizzirri, 1983). Thus, when an infant's strategic response to a mother's caregiving is considered, two contributions of temperament are acknowledged: (a) the response is likely to fall within a range that is constrained by the infant's temperament; and (b) infants are not only responsive to their mother's caregiving behavior but also contribute to shaping its nature.

The nature of the effect of infant temperament on emotion regulation within particular attachment patterns is particularly complex. It is unlikely that simple, direct connections exist among temperament, attachment, and emotion regulation. Empirical investigations that have examined infant characteristics in conjunction with attachment classification indicate, for the most part, that the two are not directly associated (e.g., Bates, Maslin, & Frankel, 1985; Belsky & Isabella, 1988; Belsky et al., 1984; Crockenberg, 1981; Egeland & Farber, 1984; Gunnar, Mangelsdorf, Larson, & Herts-gaard, 1989; Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990; Vaughn, Lefever, Seifer, & Barglow, 1989; Weber, Levitt, & Clark, 1986) but that they may relate indirectly via moderating factors such as the mother's social support (e.g., Crockenberg, 1981) and her personality (e.g., Mangelsdorf et al., 1990).

Some investigators of links between temperament and attachment have suggested that the patterns of emotion regulation associated with the two insecure attachment patterns have little to do with attachment history but rather reflect temperament-related assessment artifacts of the Strange Situation (Goldsmith & Alansky, 1987; Kagan, 1984). According to this reasoning, it is temperament that accounts for particular forms of emotion regulation, and it is the emotion regulation that leads to the attachment classification.

From this perspective, the classification of children as insecure/avoidant relates to their being low on the temperamental dimension of fearfulness (what Kagan, 1984, calls *inhibition*, the "vulnerability to becoming anxious in an unfamiliar situation" [p. 58]). In this scheme, it is because such children are not distressed on separation that they find nothing noteworthy in the parent's return and so attend little to her, a type of reunion behavior that contributes to classification as insecure/avoidant. This reasoning is based on the assumption that insecure/avoidant infants are less distressed during separations than secure infants.

Research has contradicted this assumption: in three of the four studies that provide relevant data, insecure/avoidant infants have been found to be as distressed as (or even significantly more distressed than) some secure (B1 and B2) infants during separation (Ainsworth et al., 1978; Braungart & Stifter, 1991; Frodi & Thompson, 1985). In the fourth study, compared to secure infants, avoidant infants were less behaviorally distressed on separation; physiological measures, however, revealed them to be equally (assessment of heart rate) or more (assessment of cortisol level) distressed. Thus, extent of separation distress alone cannot account for classification as insecure/avoidant (see also Thompson & Lamb, 1984). Examination of both behavioral and physiological measures will be particularly important in this regard for future research.

Classification of a child as insecure/ambivalent is thought to relate to

temperamental characteristics such as fearfulness or irritability (Goldsmith & Alansky, 1987; Kagan, 1984). Both these characteristics are viewed as making it particularly difficult for the infant to stop crying and be soothed on reunion, a pattern of behaviors that contributes to classification as insecure/ambivalent. Fearfulness is thought to make the separation so traumatic for the child that recovery is naturally more difficult, and, by definition, *irritability* means that the infant is difficult to soothe.

These speculations rest on propositions that can be examined. First, the proposition that fearfulness leads to insecure/ambivalent attachment rests on the assumption that ambivalent infants are more fearful and distressed on separation than secure infants. Two studies provide relevant data. In one, distress on separation was assessed within each 10-sec epoch with a five-point rating scale of negative affect (Braungart & Stifter, 1991). In the other, it was assessed within each 15-sec epoch with a five-point rating scale that included both positive and negative affect and that was used to create a number of composite variables: peak affect expressed, general affect tone, latency to onset of distress, and rise time to peak distress (Frodi & Thompson, 1985). Data from both studies indicated that insecure/ambivalent infants are in fact no more distressed on separation than some secure (B3 and B4) infants. Thus, as was the case with regard to the insecure/avoidant group, fearfulness and separation distress alone cannot account for the classification of infants as insecure/ambivalent.

Certainly, considerably more research examining this issue is needed. Both these studies rely on negative findings, and ambivalent infants may in fact be more distressed than secure infants in ways that were not captured by these assessments. In addition, there may be both temperament- and relationship-based influences on an infant's ability to be soothed following distress.

Second, the proposition that infant irritability leads to classification as insecure/ambivalent rests on the assumption that irritable babies are more likely to be classified in the insecure/ambivalent group than in any other. However, although there is some indication that insecure/ambivalent infants are prone to irritability (Miyake et al., 1985), there is no evidence that most irritable babies become insecure/ambivalent. In fact, two studies have found that large proportions of irritable newborns were not classified as insecure/ambivalent. This was true for 84% of irritable newborns in a study conducted in the Netherlands (van den Boom, 1989) and for 75% of irritable newborns in an American sample (Crockenberg, 1981, personal communication, December 9, 1981). Additional research with samples of irritable newborns is necessary in order to investigate this issue further.

Before closing this discussion of temperamental influences, it may be useful to consider briefly the difference between what infants feel (reactivity) and what they show (expressiveness). Infant reactivity is likely to have

both temperamental and caregiving origins. But what about infant expressivity? There may be some direct temperamental influence on the tendency to express that which is felt, and it is certainly likely that what is expressed is linked to what is felt. Nevertheless, expressivity may be more directly linked to environment than reactivity since it seems likely that the children's expressiveness will be influenced by the responses that significant people have made to their expressiveness. Parents engage in a number of behaviors that serve to regulate their children's emotions, both consciously (via emotion socialization practices; Cole, 1985; Lewis & Saarni, 1985; Miller & Sperry, 1987; Thompson, 1990) and unconsciously (e.g., affect attunement; Stern, 1985). Within the range of the infant's reactivity, these processes of socialization and attunement may provide a means for the parent to influence the child's expressivity.

It is intriguing to note that, during the Strange Situation, it is within the secure group that the widest range of emotion expression is evident: some children are quite distressed during separation; others are not. It is worth considering whether parents of secure infants are more willing to accept the temperamental proclivities of the infant whereas parents of insecure infants more strongly attempt to influence their children's expressiveness to suit their own preferences.

In sum, although it is likely that infant temperament plays a role in regulating attachment behavior and may influence the connection between emotion regulation and attachment pattern, it does not appear that the nature of the relevant mechanisms is yet fully understood.

SUMMARY

Emotion regulation and quality of attachment are closely linked. It has been proposed here that one influence on individual differences in emotion regulation may be a child's attachment history. Individuals characterized by the flexible ability to accept and integrate both positive and negative emotions are generally securely attached; on the other hand, individuals characterized by either limited or heightened negative affect are more likely to be insecurely attached. While acknowledging the role of infant temperament, I have focused on the role of social factors in examining the link between emotion regulation and attachment.

The approach to emotion regulation taken here—that emotion regulation is adaptive in helping a child attain her goals—is essentially a functionalist approach (Bretherton et al., 1986; Campos et al., 1983), consistent with earlier views of emotions as important regulators of interpersonal relationships (Charlesworth, 1982; Izard, 1977). It has been proposed that patterns of emotion regulation serve an important function for the infant: the func-

tion of maintaining the relationship with the attachment figure. Emotion regulation has been described as serving this function in two ways.

First, the function of maintaining the relationship is thought to be served when infant emotion regulation contributes to the infant's more generalized regulation of the attachment system in response to experiences with the caregiver. Infants who have experienced rejection (insecure/avoidant infants) are thought to minimize negative affect in order to avoid the risk of further rejection. Infants whose mothers have been relatively unavailable or inconsistently available (insecure/ambivalent infants) are thought to maximize negative affect in order to increase the likelihood of gaining the attention of a frequently unavailable caregiver. Both these patterns of emotion regulation help ensure that the child will remain close to the parent and thereby be protected.

Second, the function of maintaining the attachment relationship is thought to be served when the infant signals to the parent that she will cooperate in helping maintain the parent's own state of mind in relation to attachment. The minimizing of negative affect of the avoidant infant signals that the infant will not seek caregiving that would interfere with the parent's dismissal of attachment. The heightened negative emotionality of the ambivalent infant signals to the parent that the infant needs her and thus helps maintain a state of mind in which attachment is emphasized.

The approach to emotion regulation presented here is congruent with much work examining the socialization of emotions (Lewis & Saarni, 1985; Thompson, 1990). Thompson (1990, in this volume) provides a thorough discussion of the ways in which social experiences with parents can influence children's emotion regulation and also describes the diverse reasons that adults attempt to regulate children's emotions: "to promote positive social interactions with the child, to make the child's emotion expressions conform to cultural and familial display rules, to support the child's own coping efforts, or to broaden the child's own emotional repertoire" (1990, p. 416). Here, it has been proposed that an additional reason for such attempts at regulation is to help the parent maintain her own state of mind in relation to attachment. Thompson's further observation that parents' regulation "sometimes requires [of the child] a dissociation of the components of emotion experience (e.g., expressing an emotion that is inconsistent with one's internal experiences in order to conform to parental demands)" (1990, p. 417) is consistent with the view presented here that infant emotion regulation may involve emotion displays that are either heightened or minimized versions of actual feelings.

The ideas that I have presented are preliminary, and much additional research is needed to clarify and extend these theoretical notions. It is hoped that this discussion will be useful in the design of future research. In particular, research is needed on the occurrence of minimizing and max-

imizing of true feelings, on parents' responses to a wide range of children's emotions in a variety of contexts, on individual differences in the ways in which parents regulate their own emotions, on the nature of emotion regulation during different developmental periods, and on the extent to which children's emotion regulation is relationship specific as opposed to being generalized across relationships. Future research examining the interplay of both temperament and attachment quality as predictive of emotion regulation will be particularly important.