MOTHERS' STRATEGIES FOR REGULATING THEIR TODDLERS' DISTRESS

Wendy S. Grolnick
Carolyn O. Kurowski
Jannette M. McMenamy
Clark University

Inna Rivkin
University of California – Los Angeles

Lisa J. Bridges
University of California – Riverside

Though theories of emotion regulation acknowledge the important roles of caregivers, few studies have examined parents' strategies for helping children regulate distress. In this study, 140 mothers' strategies were coded during a situation in which their toddlers (12-, 18-, 24- and 32-month-olds) were required to wait (parent-active). Children were also observed in a delay situation in which they regulated distress independently (parent-passive). Mothers initiated less active engagement with their older as compared to younger toddlers, and there were age-related increases in children's initiation of play activities with their mothers. Verbal strategies increased from 12 to 18 months and thereafter decreased. Controlling for children's levels of distress in the parent-active situation, mothers who were more active had children who were more distressed when regulating independently. Results suggest that parents tailor their regulatory strategies to their children's capacities and that children require opportunities to autonomously regulate emotions to develop regulatory skills.

emotion regulation mother strategies toddlerhood

This research was supported by a grant from the National Institute of Mental Health (R01 MH 44449-03). We would like to thank Melissa Vance and Michelle King for their expert coding.
• **Wendy S. Grolnick**, Ph.D., Frances L. Hiatt School of Psychology, Clark University, 950 Main Street, Worcester, MA 01610-1477; e-mail: wgrolnick@vax.clarku.edu.

INFANT BEHAVIOR & DEVELOPMENT 21 (3), 1998, pp. 437–450 ISSN 0163-6383
Copyright © 1998 Ablex Publishing Corporation All rights of reproduction in any form reserved.

INTRODUCTION

In recent years, researchers have become increasingly interested in emotion regulation. The development of emotion regulation skills is now considered a primary developmental task crucial to participation in a wide array of cognitive and social endeavors. Several conceptualizations suggest that emotion regulation is a developmental phenomenon influenced both by emerging capacities within the child, such as attention direction, and by caregiver interaction (Kopp, 1989; Thompson, 1990). Conceptualizations of individual differences in emotion regulation typically focus on factors within the child, most typically temperament, as well as caregiver effects (e.g., Calkins & Fox, 1992; Gunnar, Mangelsdorf, Larson, & Hertsgaard, 1989). Notably, in both developmental and individual difference studies, emphasis has been more on the child's contribution to emotion regulation and less has been devoted to caregiver contributions. Thus, this study had three goals. The first was to identify and code strategies mothers use to help regulate their children's distress. The second goal was to examine age-related change in mothers' use of these strategies. A third goal was to address caregiver contributions by examining relations between strategies caregivers use and children's distress levels.

We define emotion regulation as the set of processes involved in initiating, maintaining, and modulating emotional responsiveness, both negative and positive (Bridges & Grolnick, 1995; Grolnick, Bridges, & Connell, 1996). Emotion regulation processes include emotional responsiveness and expressiveness as well as the strategies used to modify those experiences.

A few studies have provided descriptive information about the strategies toddlers use to regulate their emotional expressions. Braungart and Stifter (1991) described people-oriented strategies (e.g., looking at mother), and object-oriented strategies (e.g., looking at toys) used by 12-month-olds in the strange situation. Self-comforting and toy exploration were also identified. Grolnick, Bridges, and Connell (1996) identified strategies 2-year-olds used in mildly stressful situations (delay and separation) ranging from more passive, stimulus-bound to more active strategies. These included active engagement with substitute objects, passive use of objects, physical and symbolic self-soothing, other-directed activities such as comfort seeking, and focusing on the potentially distress-provoking elements within the situation. Active engagement with substitute objects was the strategy most frequently used among 2-year-olds.

We conceptualize the development of emotion regulation processes as movement from more passive or other-regulated strategies to more active, autonomous regulation (Grolnick, Cosgrove, & Bridges, 1996) and recent evidence supports such changes with children's age. Bridges and Grolnick (1995) demonstrated that 12- and 18-month-olds were less likely to actively engage with substitute objects, either alone or with a caregiver, during delay and separation situations relative to 24- and 32-month-olds. Conversely, older children were less likely to use other-directed strategies. Mangelsdorf, Shapiro, and Marzolf (1995) found that, relative to 6- and 12-month-olds, 18-month-olds were more likely to attempt to direct interactions with strangers during separations while 12-month-olds were more likely to self-soothe than 18-month-olds. Parritz (Hornik, 1989; Parritz, 1996) found that 18-month-olds were more likely to attempt to control "challenging" situations with various behavioral strategies, such as moving the stimulus, than 12-month-olds. These findings stress the developmental nature of these processes.

Interestingly, however, while this developmental movement is evident, children display their most active regulatory attempts in the presence of their caregivers. For example, Grolnick, Bridges, and Connell (1996) found that active engagement with objects was most frequent when an adult was available and participatory relative to when she was absent or present but nonparticipatory. To date, very few

studies have investigated the key role that parents likely play in emotion regulation.

In order to identify potential strategies parents might use, we draw on previously discussed categories used to code children's regulatory strategies as well as conceptual literature on parents' roles in children's emotion regulation. For example, Miller and Green (1985) describe behaviors caregivers might use during stressful events such as focusing the child on the experience, distracting the child, or limiting knowledge of potentially upsetting information. We developed a set of six a priori strategies which we organized from those that reorient the child away from the distressing stimulus to those that focus attention on the stimulus. Intermediate are strategies that focus the child on their emotions, such as reassurance and physical comforting. Such strategies have reorienting components (i.e., away from the stimulus) but do not focus the child away from their own distress. Thus, most reorienting were active attempts to engage children in substitute activities. Somewhat less reorienting was distraction without such active engagement. Verbal strategies such as reassurance, where the parent reassures the child that he or she will receive the desired object, and following or reflecting the child's distress were also included as was physical comforting. Least reorienting was focusing the child on the desired object. This was included as a strategy since some parents have been observed using this behavior in distressing situations. While it seems contextually less adaptive here, it may be an adaptive strategy in other situations, such as one in which the problem can be solved. We also noted when the parent was passive.

These strategies were coded during a delay situation in which the child had to wait and mothers were free to act in any way they wished (parent-active). Children were also observed in a second delay in which their mothers were more passive (parent-passive). This session was included to examine children's levels of distress when maternal assistance in emotion regulation is greatly reduced.

Changes in mothers' use of the aforementioned strategies may in part be a function of changes in children's capacities over the toddler period. Young infants are primarily able to vary arousal by shifting visual control (Tronick & Weinberg, 1990), thus allowing caregivers to use visual distraction as a soothing strategy (Thompson, 1994). Children's developing linguistic abilities during the second year (Ridgeway, Waters, & Kuczaj, 1985) may provide caregivers with more opportunities to engage in language-based strategies. Increases in motor capabilities and the fact that attention mechanisms become more flexible and object oriented (Gunnar et al., 1989) may allow the caregiver to engage the child in more active, sustained play.

Although changes in caregivers' strategies are likely to be linked to children's capacities, we do not assume that caregivers are simply responding to their children's emerging abilities. Instead, we maintain that caregivers strive to create an environment in which children are challenged to engage in strategies that are just above their current abilities. This perspective, consistent with the Vygotskian notion of the "zone of proximal development" (Vygotsky, 1962), emphasizes that through such challenging interactions with others, children will increasingly internalize or take on the strategies that they practice with those others. Thus, we predicted that with age there should be a transition from mother-initiated to child-initiated strategy use. Support for this notion comes from a study examining the initiation of positive affect displayed by children (Grolnick, Cosgrove, & Bridges, 1996). In this study, 12-month-olds' expressions of positive affect were more frequently preceded by mothers' positive affect expressions than the affect displays of older toddlers. Displays of positive affect initiated by the children were more frequent among the older toddlers. In our study, we examine this transition by coding whether certain strategies mothers engage in are initiated by mothers or children.

In addition to differences in mothers' use of strategies with age, gender may contribute to

mothers' use of various strategies. Parents of girls expect to be physically and emotionally closer to them than do parents of boys. They tend to leave sons alone more (Fagot, 1974) and provide more comforting to girls (Brooks-Gunn & Mathews, 1979). To date, no studies have examined possible gender differences in mothers' use of strategies with their young children.

Recent conceptualizations of temperament focus on emotion expression and reactivity as temperamental characteristics (Goldsmith et al., 1987; Goldsmith & Campos, 1982). Conceptualized in this manner, such individual differences in emotional expressivity, which may be biologically based and cross-contextually consistent (Goldsmith et al., 1987), may explain mothers' use of different strategies. While not examining caretaker strategies per se, support for the importance of levels of distress in children's use of various strategies was found by Braungart and Stifter (1991) who demonstrated that children who were more upset displayed a more passive focus on objects and engaged less frequently in active toy play than those who were less distressed. Grolnick, Bridges, and Connell (1996) found that distress was negatively related to children's active engagement with substitute objects and positively related to children's focus on the delay object during a waiting situation. Similar to children's strategies, mothers' strategies may reflect children's levels of distress. Thus, when examining relations between strategies mothers use to help their children and children's ages, we control for children's distress.

Though recent theories recognize the role caregivers play in facilitating children's emotion regulation, few studies have examined which caregiver strategies are associated with more effective emotion regulation. Holden (1983), in a naturalistic study of grocery shopping, found that children of mothers who preempted opportunities for conflict by actively distracting the children (proactive) were less distressed than those of mothers who waited for the child to misbehave (reactive). In a follow-up laboratory study in which children had to wait, proactive strategies elicited the most compliance (Holden & West, 1989). However, this study did not examine the effects of actively distracting versus more passively responding on children's abilities to self-regulate without assistance. The current study thus adds to the literature by examining how strategies mothers use with their children relate to children's distress when regulating independently.

In order to conceptualize this issue, we draw on self-determination theory which stresses the importance of the child's activity in taking on and internalizing regulatory strategies (Deci & Ryan, 1985). According to this theory, children will be most likely to internalize aspects of the social surround when there are opportunities for them to autonomously initiate and maintain behavior. Thus, while recognizing the importance of parents responding to children's distress and structuring their environments to facilitate adaptation, we suggest that parents who are too active and do not provide opportunities for autonomous regulation will likely undermine children's capacities to self-regulate.

Support for this position was provided by a study conducted by Silverman and Ragusa (1990) in which children participated in compliance (e.g., clean-up) and delay tasks. Mothers who were more active in the compliance situations had children who performed more poorly on the delays, even controlling for performance on the compliance tasks. Further, mothers' tendencies to encourage independence, as assessed through questionnaire measures, were associated with better delay performance. Nachmias, Gunnar, Mangelsdorf, Parritz, and Buss (1996) found that children of mothers who were more intrusive with their wary children in a novel situation had more regulatory difficulties. Results of these studies suggest that parents who allow autonomy facilitate their children's activity in regulating their own behavior.

Based on the above research, we developed several hypotheses. First, we expected age-

related change in the strategies mothers use with their 12- through 32-month-old children. Strategies mothers engage in were predicted to be less likely to be mother-initiated and more likely to be child-initiated or ongoing in older versus younger children. Mothers of older children were also expected to initiate less active distraction and more verbal strategies.

We also expected, controlling for distress in the parent-active situation, that use of more active strategies would be associated with greater distress on the part of the child in the parent-passive situation. More passive episodes in the parent-active situation were expected to be associated with less distress in the parent-passive situation. Finally, we expected mothers to use more active strategies with their daughters than their sons, controlling for children's distress.

METHOD

Participants

140 mother-child dyads (75 boys, 65 girls) participated. Of this number, 39 were 12 months old (M = 52.4 weeks, SD = 1.3), 35 were 18 months old (M = 78.7 weeks, SD = 2.2), 35 were 24 months old (M = 104.4, SD = 1.5) and 31 were 32 months old (M = 137.1, SD = 2.1). Each subject was seen twice, once at the aforementioned ages and once within one month later. In one session, the delay procedures described below were followed (delay session) and in the other a set of procedures involving a separation was followed. Order of visits was counterbalanced. Participants were recruited through newspaper advertisements and through records from prenatal exercise classes which included the due dates of mothers. Four percent of mothers had graduated from high school, 13% had received some college education, 41% had graduated from college, and 42% had received graduate or professional training. Approximately two-thirds of the children were first born. Five of the 140 participants were African American, 4 were of Hispanic origin, and the rest (over 90%) were European-American.

Design

Dyads began the visit with 10 min of free play and then participated in two delay procedures separated by 10 min of free play. In one of the delay procedures children waited to open a gift and in the other to eat some snacks. In one of the delays the mother was instructed to behave in any way she would like (active). In the other, she was instructed to be relatively passive (passive). The order of the two delays (active and passive) and desirable object (food, gift) were counterbalanced yielding four conditions (gift/passive – food/active, food/active – gift/passive, gift/active – food/passive, and food/passive – gift/active).

Delay Procedure

In each delay, the stimulus was placed on a shelf within view but out of the child's reach. The child was unable to obtain it before the delay period was completed.

At the end of the free-play period, the experimenter came into the room and gathered all but a few moderately interesting toys (e.g., a shape sorter, blocks, a soft ball, a small doll). After these toys were placed in the middle of the room, the experimenter asked the mother to sit on a chair. The mother was told that her child was going to have to wait to have something. The mother then received either the parent-passive or parent-active guidelines. Finally, the experimenter brought in one of two objects: an attractive gift or a plate of food.

Procedure for Attractive Gift

The gift task was adapted from a procedure developed by Block and Block (1980) and later used by Vaughn, Kopp, and Krakow (1984). The experimenter brought a brightly wrapped present into the room and let the child look at it. After doing so, the experimenter said, "Oh,

I forgot something outside. I'm going to put the present away until I get back. When I get back you can have your present. I'll be right back." The experimenter then placed the gift on the shelf and left the room for 6 min, after which she returned and gave the gift to the child.

Procedure for Food Delay

In this procedure, a modification of that used by Golden, Montare, and Bridger (1977), the experimenter showed the child a plate of goldfish crackers and raisins (all children liked at least one of these foods). She then ate a cracker in front of the child and said, "Mmm, that tastes good. These are for later. I need to do some things outside. I'm going to put them away for a little while and when I get back, you can have them. I'll be right back." She then placed them on the shelf and left for 3 min, after which she returned, gave the child one raisin or cracker, and then left for a second 3 min. She then returned and gave the child the snacks. Thus, this delay situation also lasted for 6 min.

Instructions to Parents: Passive and Active Conditions

In the parent-passive condition, the mother was asked to remain in the chair and to not initiate interaction with the child during the waiting period. She was, however, told that she should feel free to respond to the child's initiations when necessary. In the parent-active condition, the mother was told she could interact with the child in any way she wanted, as long as she did not get the toy or food for the child.

Coding of Mothers' Regulatory Strategies

The presence of six maternal strategies was coded from videotapes of the parent-active situation in 5-second intervals by two independent raters. Coding of up to three strategies in each interval was possible. For two strategies, which could be initiated by mother or child, active engagement and physical comfort, raters also coded whether the strategy was initiated by mother (e.g., mother initiates a game with the child, mother picks up child without request), child (e.g., child initiates a game in which mother engages, child gestures to be picked-up), or was ongoing (e.g., game or play is continued from a previous interval, mother continues to hold child). The interval was coded as passive if the mother did not interact or remained passive with respect to the child for the full interval. Finally, the interval was coded as "other behavior" if the mother was not passive but did not use a regulatory strategy. Examples of behaviors coded as "other" included comments irrelevant to the task and picking up and examining objects in the room in a non-game-like manner.

The six strategies were as follows:

- *Active game-like engagement* involved intervals in which the mother actively played with the child or engaged in game-like activity.
- *Redirection of Attention* involved behaviors by the mother to distract the child or direct the child's attention away from the desired object. Examples included pointing out objects in the room and making suggestions for activities.
- *Reassurance* involved the mother reassuring the child that he/she would soon get the desired object. For example, the mother might say "she'll be right back" or "you can eat the crackers when she gets back." If the statement simply restated what the child said, it was coded in the next category (following).
- *Following* involved the mother reflecting, extending or elaborating upon the child's distress or preoccupation with the desired object. For example, if the child points to the object and cries, the mother might say "I know you want the cracker" or "yes, crackers taste good."
- *Focus on desired object* involved the mother focusing attention on the object

without instigation by the child. For example, when the child was playing the mother might say "look at that gift."

- *Physical comfort* behaviors involved the mother hugging, kissing, or picking up the child to give comfort.

Coding of Emotional Distress

Emotional distress in the two delays was coded, again from videotapes, in 5-second intervals by two independent raters. These two raters were different individuals from those who coded mothers' strategies and were, in fact, located in a different part of the country. Distress was coded using scales developed by Thompson (Thompson & Lamb, 1984) which assess expressed affect from positive to negative using two measures; a facial measure which ranged from 1 (bright smile) to 8 (cry-face), and a vocalization measure which ranged from 1 (intense delight) to 14 (hyperventilated cry). During intervals in which the infant did not present his or her face to the camera, or did not vocalize, affect was not coded. The facial and vocal scales were highly correlated (r = .84) and were averaged to form one score.

Reliability

Interrater reliability for mothers' strategy ratings was extremely high. For a random sample of 28 subjects, agreement between two independent raters using Cohen's Kappa (Cohen, 1960) was .97. Kappas for individual strategy ratings ranged from .8 to 1.0. Reliabilities for emotion ratings, also using Cohen's Kappa, for a random sample of 20 subjects, were for vocal and facial emotion, respectively, parent-active = .92, .77; and parent-passive = .94, .85.

RESULTS

Order Effects

In order to examine whether dyads receiving the delay session or separation session first differed in terms of children's emotional distress or mothers' strategies, ANOVAs with order as the independent variable and emotion and strategy use as the dependent variables were conducted. No significant effects emerged. Similar ANOVAs conducted to examine whether there were effects of the order of the two procedures (active or passive first), also revealed no significant effects.

Strategy Use

In order to determine whether mothers used each of the strategies at least some of the time, we computed the mean number of intervals which included one of the six strategies as well as those in which the mother was passive or engaged in other, nonstrategy behavior. Means, standard deviations, and ranges for each of the strategies are presented in Table 1.

The results indicated that all of the strategies were used at least some of the time, though use of the different strategies varied considerably. The most frequently used strategy was ongoing active engagement (M = 16.88) and the least used was child-initiated physical comfort (M = .79). The results also reveal great variability in mothers' use of strategies, as indicated by the large standard deviations. Mothers tended to use an average

TABLE 1
Means (Standard Deviations) and Ranges of the Number of Intervals Including Each Strategy

Strategy	*M*	*Range*
Active Engagement		
Mother-initiated	10.36 (10.72)	0-59
Child-initiated	1.55 (2.14)	0-11
Ongoing	16.88 (15.41)	0-60
Redirecting Attention	6.32 (7.64)	0-44
Reassurance	3.49 (5.21)	0-33
Following	5.08 (6.22)	0-30
Physical Comfort		
Mother-initiated	1.57 (3.17)	0-28
Child-initiated	.79 (1.56)	0- 8
Ongoing	4.72 (10.34)	0-56
Focus on Object	1.05 (4.04)	0-29
Other Behavior	12.67 (10.24)	0-52
Passive	12.54 (11.89)	0-66

of 4.0 different strategies (SD = 1.1) over the session.

Preliminary Analyses—Emotion and Strategy Use

Before examining age-related and gender differences in mothers' use of strategies, correlations were used to examine whether the strategies varied with the emotional distress of the children. Further, we sought to determine whether there were age differences in distress during the delay situation which might account for any differential use of strategies by mothers.

Table 2 presents correlations between mothers' strategy use and distress in the parent-active delay. Both positive and negative correlations were found. Mothers tended to use more redirecting of attention (r = .50, $p < .001$), and to provide more reassurance ($r = .50$, $p < .001$) when their children were more distressed. While mothers tended to initiate more active-engagement when their children were more distressed (r = .19, $p < .05$), active engagement of an ongoing nature was less frequent with more distressed children ($r = -.32$, $p < .001$). In addition, the children themselves initiated less active engagement when they were more distressed (r = -.23, $p < .01$). Further, mothers used less nonstrategy (other) behavior when children were more distressed ($r = -.23$, $p < .01$). Thus, mothers did appear to be tailoring their strategy use to the levels of distress of their children.

TABLE 2
Correlations Between Children's Distress and Mothers' Regulatory Strategies

Mothers' Regulatory Strategies	
Active Engagement	
Mother-initiated	.19*
Child-initiated	-.23**
Ongoing	-.32***
Redirecting Attention	.50***
Reassurance	.50***
Following	-.08
Physical Comfort	
Mother-initiated	.09
Child-initiated	.14
Ongoing	-.07
Focus on Object	.11
Other Behavior	-.23**
Passive	-.09

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

We also examined age differences in level of distress in our parent-active delay situation. ANOVA results indicated a significant effect, $F(1,139) = 4.94$, $p < .003$. Mean levels of distress for each age group were: 12 months = 4.14; 18 months = 4.35; 24 months = 4.05; 32 months = 3.63. Post-hoc Tukey tests indicated that 32-month-old children were significantly less distressed than 12- or 18-month-olds. No other group comparisons were significant.

Given the relations between emotional distress and strategy use, and between age and level of distress, we controlled for distress in all analyses examining age-related differences in mothers' strategy use.

Age-related Differences in Strategy Use

In order to examine age-related change in mothers' use of regulatory strategies, a MANCOVA was first conducted with age, sex, and the age by sex interaction as independent variables, distress as the covariate, and the set of maternal strategies as dependent variables. Results of the MANCOVA revealed a main effect for age, Wilks Lambda (3,42) = 3.62, $p < .0001$, a significant age by sex interaction, Wilks Lambda (1,42) = 1.44, $p < .04$), but no significant main effect for sex, Wilks Lambda (1,14) = 1.31, $p < .21$.

To further examine the significant effects indicated by the MANCOVA, ANCOVAs were conducted for each maternal strategy. In these analyses, age, sex, and their interaction were independent variables and distress was the covariate. Linear trend analyses for age were also conducted for each strategy. Results, depicted in Table 3, revealed a number of significant effects.

First, for all three active engagement strategies there were significant age effects and lin-

TABLE 3
Analyses of Covariance (and Linear Trends for Age) for Maternal Strategies with Age, Sex, and the Age by Sex Interactions as Independent Variables and Distress as Covariate

				Distress		
Strategy	*Age F*	*Sex F*	*Age x Sex F*	*F*	β	*Linear Trend t*
Active Engagement						
Mother-initiated	8.30***	.74	2.75*	.62	.07	-4.80***
Child-initiated	4.55**	.01	1.72	4.54*	-.19	2.62**
Ongoing	7.16***	2.41	.12	11.72***	-.29	3.25**
Redirecting Attention	7.02***	4.31*	3.97**	31.23***	.43	-.22
Reassurance	11.65***	3.64*	6.21***	31.73***	.41	.38
Following	4.36**	.05	.89	.53	.06	1.32
Physical Comfort						
Mother-initiated	1.71	.78	.49	.28	.05	-1.08
Child-initiated	.65	.14	1.19	.39	-.06	-1.01
Ongoing	1.00	.00	.70	2.28	.15	-.94
Focus on Object	2.31	.01	.78	1.42	.11	.17
Other Behavior	7.96***	3.09	.56	1.70	.11	1.77
Passive	5.31**	7.91**	3.20*	.46	-.05	-2.32*

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

ear trends. As expected, mother-initiated active engagement decreased with age while child-initiated engagement increased. Active engagement that was ongoing from previous intervals also tended to increase with age.

Results for the attention redirection strategy were more complex, with age, sex, and interaction effects, but no significant linear age trends. T-tests for least squares means indicated an increase in mothers' use of redirection between 12 and 18 months ($p < .02$) and a decrease in the use of this strategy between 24 and 32 months ($p < .01$). Thus, mothers of the youngest and oldest children used the least redirection. The gender effect indicates that mothers of girls ($M = 7.49$) used more redirection ($p < .05$) than mothers of boys ($M = 5.67$). Finally, the interaction modifies this conclusion in that the gender effect was accounted for by mothers of 18-month-olds. Specifically, the mothers of 18-month-old girls used significantly more redirection of attention than the mothers of all other children except the mothers of 24-month-old girls ($p < .07$).

The pattern for reassurance was similar to that for redirection of attention, with significant age and interaction effects, but no significant linear trends. The presence of an age effect, but lack of linear trend, is accounted for by a sharp increase in mothers' use of reassurance between 12 and 18 months ($p < .006$) and the subsequent decrease in the use of this strategy for the two oldest age groups. The age by sex interaction indicates that mothers of girls showed the described sharp increase from 12 to 18 months ($p < .001$) and a decrease to 24 months ($p < .001$) Boys also increased from 12 to 18 months ($p < .03$) but then remained stable.

A significant age effect, but no significant linear trend, was also found for mothers' following their children's references to the desired object. For this strategy, there was an increase from 12 to 24 months ($p < .001$) and a decrease from 24 to 32 months ($p < .02$).

No significant age, sex, or interaction effects were found for physical comfort strategies.

There was a significant age effect for other nonstrategy behavior, with the greatest use being at 32 months ($M = 17.55$). This behavior decreased significantly between 12 and 18 months ($p < .009$) and subsequently increased from 18 to 32 months ($p < .001$).

Finally, a significant age effect and linear trend for passive intervals emerged, with the greatest number occurring at 12 months

($M = 17.40$). This strategy decreased significantly between 12 and 18 months ($p < .003$) and remained consistent among the older ages. The significant sex effect indicated that mothers were passive more with their sons ($M = 14.25$) than with their daughters ($M = 9.12$). The interaction effect indicated that these sex differences were most apparent at the two younger ages. Significant differences were found between the 12-month-old boys and girls ($p < .001$) and the 18-month-old boys and girls ($p < .02$), but not between the 24-month-olds or the 32-month-olds.

Maternal Strategies Related to Distress in Parent-Passive Delay

In a final set of analyses, we examined the relationship between the strategies mothers used to regulate children's distress and children's levels of distress when required to regulate on their own. First, we conducted zero-order correlations between maternal strategies in the parent-active delay and distress in the parent-passive delay. Next, we computed partial correlations between these variables, controlling both for level of distress in the parent-active delay and for the ages of the children.

The partial correlations provide a strong test of the importance of maternal strategies for two reasons. First, zero-order correlations between maternal strategies in the parent-active delay and distress in the parent-passive delay may be a function of the consistency in children's levels of distress between the passive and active situations rather than of the relationship between strategy use and self-regulation. In this study, the correlations between the two indices of distress (parent-active and parent-passive) was .52, ($p < .001$). Given this consistency in emotionality, apparent in other studies as well (e.g., Bridges & Connell, 1991), we controlled for distress in the parent-active situation. Thus, we believe the partial correlations more accurately address whether mothers' strategies are related to children's self-regulation. Second, since mothers' strategies were related to children's age and children's age was related to distress, it was necessary to examine whether relations between maternal strategies and distress might be a function of age. Thus, we also controlled for age in our partial correlations.

TABLE 4
Zero-Order and Partial Correlations (Controlling for Children's Distress in Parent-Active Delay and Age) Between Maternal Strategies and Children's Distress in Parent-Passive Delay

Strategy	*Zero-Order*	*Partial*
Active Engagement		
Mother-initiated	.28**	.13
Child-initiated	-.17	.01
Ongoing	-.06	.24**
Redirecting Attention	.28**	.01
Reassurance	.29***	.06
Following	.10	.12
Physical Comfort		
Mother-initiated	.17*	.13
Child-initiated	.03	.05
Ongoing	.17*	.10
Focus on Object	.00	-.06
Other Behavior	-.32***	-.22*
Passive	-.20*	-.26**

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

Results of our analyses (see Table 4) indicated several zero-order correlations between maternal strategies and children's distress in the parent-passive delay. Mothers who initiated more active engagement, used more redirection of attention, more reassurance, and more physical comforting had children who tended to be more distressed in the parent-passive delay. Conversely, mothers who tended to be more passive and to exhibit more other non-strategy behavior had children who tended to be less distressed when required to regulate independently. In the partial correlations, controlling for both age and levels of distress in the parent-active delay, though several of the aforementioned relations were no longer significant, there were still three significant correlations (though these correlations were notably low in magnitude): mothers who used more ongoing engagement had children who were *more* distressed when required to regulate independently. In addition, mothers who remained more passive had children who were

less distressed in the parent-passive situation. Finally, mothers who used more other nonstrategy behavior also had children who were less distressed in the parent-passive situation.

DISCUSSION

Though mothers are often thought to play important roles in their children's development of emotion regulation strategies and skills (e.g., Kopp, 1989; Thompson, 1994), the nature of these roles has yet to be examined empirically. In this study we sought to increase understanding of these roles by 1) identifying strategies mothers use to help their children regulate their emotions, 2) examining differences in the strategies mothers use with their children of different ages, and 3) exploring whether the strategies mothers use are associated with their children's distress levels when required to regulate their emotions independently.

With regard to the first goal, a set of six strategies, active game-like engagement, redirection of attention, reassurance, following, physical comfort and focusing on the desired object, were developed and used to code mothers' behaviors. These a priori categories are organized from those that are more redirecting to those that are more stimulus-bound.

Descriptive analyses revealed that the strategies included in our a priori scheme were used at least some of the time by the mothers during the mildly stressful situation. Mothers most often engaged in active game-like engagement, otherwise they were frequently passive or used other nonstrategy behaviors. At the same time, there was a large degree of variability in the frequency with which mothers engaged in different strategies.

As expected, children's levels of emotional distress were associated with the strategies engaged in by mothers. When children were more distressed, mothers attempted to involve them in playful behaviors or distract their attention. Mothers of more distressed children also tended to respond to their children's emotional states by providing more reassurance, and by engaging less in nonstrategy behavior. Conversely, mothers' engagement in ongoing and child-initiated game-like activities tended to decrease as distress increased. Thus, it appears that when interacting with distressed children, mothers become more active partners, both in the strategies that they use and in their initiation of those strategies. Given the strong relations between children's emotional distress and mothers' strategies, the remaining analyses controlled for children's levels of distress.

In terms of the second goal of this study, it was hypothesized that mothers' strategies would vary with the age of their children. Specifically, we predicted that there would be age-related decreases in mothers' and age-related increases in children's initiation of emotion regulation strategies. The use of the active game-like engagement strategy followed this pattern. This finding is consistent with the idea that the responsibility for emotion regulation shifts from the mother to the child over the course of early childhood. Initially, the children are recipients of their mothers' interventions, and only over time do they begin to actively elicit their mothers' assistance. Given the correlational nature of these findings, there are two equally plausible explanations for how this shift occurs. On the one hand, by initiating fewer interactions with their older children, mothers may be encouraging their children to become more active social partners and initiators. On the other hand, it is possible that as children become more active initiators, their mothers tend to decrease their number of initiations. We would argue that the shift we are describing is most likely a transactional process, in which the behaviors of both the mother and the child influence the direction of development.

The results for redirection of attention, reassurance, and following indicated the presence of age effects, but not in the predicted manner. Though we predicted increased use of these verbal strategies with age, pairwise analyses indicated that mothers' use of these strategies

increased between 12 and 18 months, and then decreased over 18, 24 and 32 months of age. In interpreting these interesting trends, we note that these three strategies rely upon verbal communication between the mother and her child. Children begin to use and comprehend emotion-descriptive language around 18 months of age (Ridgeway, Waters, & Kuczaj, 1985). Thus, it is possible that the mothers in this study were not using these strategies with their 12-month-olds because of their children's lack of linguistic skills. Then, at around 18 months, when children are developing some measure of verbal acuity, mothers increase their use of redirection of attention, reassurance, and following. Still, the decrease in mothers' use of these strategies between 18 and 32 months is inconsistent with our predicted increase in verbal strategies over time.

Though mothers responded to the distress of their sons and daughters, we predicted and found that mothers tended to use active emotion regulation strategies, such as redirection of attention and reassurance, more often with their daughters, and remained more passive with their sons. It is important to note that these differences are not due to daughters being more emotional than sons, as level of distress was controlled for in these analyses. Consistent with previous findings in other areas (Brooks-Gunn & Mathews, 1979; Fagot, 1974), these patterns suggest that mothers may facilitate independent emotion regulation more with their sons than with their daughters by providing their sons with more opportunities to regulate their emotions autonomously. Interestingly, these gender differences were most apparent at 18 months, a finding consistent with those of Fagot and Hagen (1991).

The final goal of this study was to determine if the strategies mothers employed when helping their children to manage distress were associated with the children's distress when required to regulate independently. In doing this, we recognized that there could be relations between mothers' strategy use and children's distress during the parent-passive situation because of consistency in the children's levels of distress across the two situations. In fact we did find a strong correlation between distress in the two contexts. This suggests a possible temperamental component in the children's emotional responses consistent with current conceptualizations of temperament as tendencies to display emotion (Goldsmith & Campos, 1982). We also recognized that children of different ages were differentially distressed. Thus in our final analyses we controlled for age as well as distress in the parent-active situation.

Drawing upon self-determination theory, we expected that mothers who provided their children with opportunities to self-regulate would have children who were less distressed when in a situation in which they had to regulate their emotions independently. After controlling for age and distress, three indices of mothers' behaviors in the parent-active situation were found to be related to children's distress in the parent-passive situation: ongoing active engagement and number of episodes in which mothers were passive or engaged in nonstrategy behavior. Mothers' use of ongoing active engagement was *positively* associated with children's distress. At the same time, children whose mothers were more passive and engaged in more nonstrategy behaviors were *less* distressed.

In some ways these results may seem inconsistent with prior research that has shown positive effects for active engagement and distraction on children's levels of distress, but in fact, those studies examined the effectiveness of such strategies when mothers were assisting their children, and did not consider how these behaviors might influence children's distress levels when required to regulate independently. These findings indicate that when mothers take responsibility for regulation or are active when their children are less distressed, their children are less able to regulate their emotions independently. On the other hand, when mothers interact with their children in a more autonomous manner, those children appear to be more able to regulate their emotions independently. One possible inter-

pretation given the nondirectional nature of the data is that parents who are more active with their children are trying to head off episodes of upset that, from experience, they know will be forthcoming. Another explanation is that the children of the more active mothers were more upset in the parent-passive situation because their mothers' behavior was simply more discrepant from what they were used to. Though this is a potentially plausible explanation, and its refutation would require further data, we do note that all children are at times exposed to situations in which their mothers are temporarily unavailable. Thus it would not be completely discrepant or unfamiliar to be presented with a mother who was temporarily nonresponsive. Therefore, we believe it is more likely that children of the more active parents did not have effective strategies available to use on their own.

It is interesting to note that it was not mothers' initiation of active engagement that was associated with children's abilities to self-regulate, but rather their use of ongoing active engagement. We interpret this to mean that mothers' responsiveness to their children's distress does not negatively relate to children's self-regulation. Rather, mothers who maintain engagement in a strategy after their children no longer need the assistance undermine their children's own attempts at regulation.

In concluding, we acknowledge several limitations of our study. Most notable is the correlational nature of the study which does not allow us to definitively address the direction of causality between mothers' strategies and children's distress. While not bypassing this problem, we used a conservative strategy in analyzing our data to control for continuity in children's distress which might influence mothers' use of strategies. One useful analytic technique that might be used in future studies is sequential analysis which can help to establish directionality in patterns of ongoing interaction.

Another limitation is the cross-sectional nature of the study. Our conclusions would be strengthened if supported by longitudinal data. Finally, the study examined only mothers. Fathers' strategies for helping their children manage distress may also contribute to children's regulatory capacities. Nevertheless, the findings of this study support the important role that mothers play in children's regulation of distress and suggest that caretaker influences on emotion regulation is an area meriting further inquiry.

REFERENCES

Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the organization behavior. In W.A. Collins (Ed.), *Minnesota Symposium on child psychology* (Vol. 13, pp. 39–101). Hillsdale, NJ: Erlbaum.

Braungart, J. M., & Stifter, C. A. (1991) . Regulation of negative reactivity during the strange situation: Temperament and attachment in 12-month-old infants. *Infant Behavior and Development, 14,* 349–364.

Bridges, L. J., & Connell, J. P. (1991). Consistency and inconsistency in infant emotional and social interactive behavior across contexts and caregivers. *Infant Behavior and Development, 14,* 471–487.

Bridges, L. J., & Grolnick, W. S. (1995). The development of emotional self-regulation in infancy and early childhood. In N. Eisenberg (Ed.), *Review of personality and social psychology* (Vol. 15, pp. 185–211). New York: Sage.

Brooks-Gunn, J., & Mathews, W. S. (1979). *He and she: How children develop their sex role identity.* Englewood Cliffs, NJ: Prentice Hall.

Calkins, S. D., & Fox, N. A. (1992). The relations among infant temperament, security of attachment, and behavioral inhibition at twenty-four months. *Child Development, 63,* 1456–1472.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20,* 37–46.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum.

Fagot, B. I. (1974). Sex differences in toddlers' behavioral and parental reaction. *Developmental Psychology, 10,* 554–558.

Fagot, B. I., & Hagan, R. (1991). Observation of parent reactions to sex-stereotyped behaviors:

Age and sex effects. *Child Development, 62,* 617–628.

Golden, M., Montare, A., & Bridger, W. (1977). Verbal control of delay behavior in two-year-old boys as a function of social class. *Child Development, 48,* 1107–1111.

Goldsmith, H. H., & Campos, J. J. (1982). Toward a theory of infant temperament. In R.N. Emde & R.J. Harmon (Eds.), *The development of attachment and affiliative systems* (pp. 161–193). New York: Plenum.

Goldsmith, H. H., Buss, A. H., Plomin, R., Rothbart, M. K., Thomas, A., Chess, S., Hinde, R. A., & McCall, R. B. (1987). Roundtable: What is temperament? Four approaches. *Child Development, 58,* 505–529.

Grolnick, W. S., Bridges, L. J., & Connell, J. P. (1996). Emotion regulation in two-year olds: Strategies and emotional expression in four contexts. *Child Development, 67,* 928–941.

Grolnick, W. S., Cosgrove, T. J., & Bridges, L. J. (1996). Age-graded change in the initiation of positive affect. *Infant Behavior and Development, 19,* 153–157.

Gunnar, M. R., Mangelsdorf, S. C., Larson, M., & Hertsgaard, L. (1989). Attachment, temperament, and adrenocortical activity in infancy: A study of psychoendocrine regulation. *Developmental Psychology, 25,* 355–363.

Holden, G. W. (1983). Avoiding conflict: Mothers as tacticians in the supermarket. *Child Development, 54,* 233–240.

Holden, G. W., & West, M. J. (1989). Proximate regulation by mothers: A demonstration of how differing styles affect young children's behavior. *Child Development, 60,* 64–69.

Hornik, R. (1989, April). *Infant coping strategies during exploration of novel events.* Paper presented at the meetings of the Society for Research in Child Development, Kansas City.

Kopp, C. B. (1989). Regulation of distress and negative emotions: A developmental view. *Developmental Psychology, 25,* 343–354.

Mangelsdorf, S. C., Shapiro, J. R., & Marzolf, D. (1995). Developmental and temperamental differences in emotion regulation in infancy. *Child Development, 66,* 1817–1828.

Miller, S. M., & Green, M. L. (1985). Coping with stress and frustration: Origins, nature and development. In M. Lewis & C. Saarni (Eds.), *The socialization of emotions* (pp. 263–314). New York: Plenum.

Nachmias, M., Gunnar, M., Mangelsdorf, S., Parritz, R. H., & Buss, K. (1996). Behavioral inhibition and stress reactivity: The moderating role of attachment security. *Child Development, 67,* 508–522.

Parritz, R. H. (1996). A descriptive analysis of toddler coping in challenging circumstances. *Infant Behavior and Development, 19,* 171–180.

Ridgeway, D., Waters, E., & Kuczaj II, S. A. (1985). Acquisition of emotion-descriptive language: Receptive and productive vocabulary norms for ages 18 months to 6 years. *Developmental Psychology, 21,* 901–908.

Silverman, I. W., & Ragusa, D. M. (1990). Child and maternal correlates of impulse control in 24-month-old children. *Genetic, Social and General Psychology Monographs, 116,* 435–473.

Thompson, R. A. (1990). Emotion and self regulation. In R. A. Thompson (Ed.), *Nebraska Symposium on Motivation, Vol 36: Socioemotional development* (pp. 367–407). Lincoln: University of Nebraska Press.

Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. In N. Fox (Ed.), The development of emotion regulation: Biological and behavioral considerations. *Monographs of the Society for Research in Child Development, 59,* (2–3, Serial No. 240).

Thompson, R. A., & Lamb, M. (1984). Assessing qualitative dimensions of emotional responsiveness in infants: Separation reactions in the strange situation. *Infant Behavior and Development, 7,* 423–445.

Tronick, E. Z., & Weinberg, M. K. (1990, April). *Stability of coping and emotions in 6-month-olds.* Paper presented at the International Conference of Infant Studies, Montreal.

Vaughn, B., Kopp, C., & Krakow, J. B. (1984). The emergence and consolidation of self-control from eighteen to thirty months of age: Normative trends and individual differences. *Child Development, 55,* 990–1004.

Vygotsky, L. S. (1962). *Thought and language.* Cambridge, MA: MIT.

11 March 1997; Revised 17 October 1997 ■