

## Emotional Reactivity and Emotional Regulation Strategies as Predictors of Social Behavior with Peers During Toddlerhood<sup>1</sup>

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### **Abstract:**

Fifty-six mothers and their 24-month-old toddlers were observed on two occasions in a series of laboratory procedures designed to assess relations between emotional functioning (emotional reactivity and emotion regulation) in an individual assessment and social behavior with a same-sex peer. Emotional reactivity was assessed using two frustration tasks designed to elicit distress. Emotional regulation was assessed by examining the child's behaviors (venting, distraction, focal-object focus, self-orientation, and mother-orientation) when confronted by the two distress-eliciting tasks. Peer play behaviors were coded for social participation and peer-directed conflict (aggressive) behavior. The results indicated that both emotional reactivity and emotion regulation were important predictors of at least two types of social behavior: conflict and cooperation. Distress to frustration, when accompanied by high venting or high focal-object focus, was significantly related to conflict with peers but not when accompanied by distraction, mother-orientation or self-focused behaviors. These findings are discussed in terms of the adaptive value of emotion regulation skills in early development, and the importance of identifying the causal relations between child regulation and early social competence. Keywords: Emotional regulation; temperament; toddlerhood; social play

### **Article:**

Recently, the display of socially competent behavior with peers has been used as a marker of successful psychosocial adaptation (Parker & Asher, 1987). Although social behavior and social competence are traditionally studied in school-age children, with good predictability to later adjustment (Kupersmidt, Coie & Dodge, 1990), it is clear from the developmental literature that the skills that support social competence are acquired well before the child enters school. For example, once toddlers have acquired language and locomotion, they become capable of many of the behaviors that define social interaction and social competence, such as cooperating with others, conversing, engaging in pretend play and establishing friendships (Eckerman & Stein, 1982, Ross, 1982). Although there is a clear developmental progression across the first few years of life in the acquisition of skills that reflect social competence, there are also individual differences in the quality of children's peer-directed behavior. By early childhood, children

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display patterns of social, solitary, anti-social, or socially withdrawn behavior that appear to be quite stable (see Rubin & Coplan, 1992 for a review).

A number of studies have examined and characterized the early play behaviors of toddlers. Eckerman and colleagues (Eckerman, Whatley & Kutz, 1975) examined the emergence of social play using a cross-sectional sample of children and found that over the course of the second year of life, social play increased to the point where it exceeded the time children spent in solitary play. However, mere social interaction with a peer may or may not include cooperative social play, a hallmark of the third year of life. Howes (1988) studied the development of social competence in children with early out-of-home childcare experiences and found that, although complimentary and reciprocal play emerges during the third year of life, it did not comprise a majority of children's play with peers. Eckerman & Stein (1982) observed that cooperative play among two-year-olds is relatively infrequent, and some dyads of children may never engage in such play. In short, although two-year-olds may have considerable skill in some aspects of cooperative play, and although such skills enable a child to engage in a form of play that allows for further opportunities for social and cognitive development, this form of play may emerge over the course of the preschool years (Howes, 1988). Moreover, early emerging individual differences among children in the display of social play, cooperative play and social competence appear to be moderately stable (Howes, 1988).

An important issue with regard to individual differences in the display of early social competence concerns their predictors and correlates. There have been investigations aimed at understanding why some children are socially competent, whereas others are aggressive or spend a great deal of time in solitary play (Eisenberg et al., 1993; Eisenberg, Fabes, Nyman, Bernzweig & Pinuelas, 1994; Fox, Schmidt, Calkins, Rubin & Coplan, 1996). One promising direction in these inquiries has focused on the role that emotions may play in social versus non-social (withdrawn, solitary or aggressive) behavior with peers. Typically, studies of social competence in school-age children are approached from a social-information processing perspective (c.f. Dodge, 1986). However, it is clear that a critical component of social interaction also consists of affective processes. Factors such as emotional display, emotional regulation and emotional understanding contribute to the nature and course of social behavior and social interactions among children (Crick & Dodge, 1994; Denham, McKinley, Couchoud & Holt, 1990; Dodge, 1991, Eisenberg, Guthrie, Fabes & Reiser, 1997; Fabes & Eisenberg, 1992; Murphy & Eisenberg, 1996).

Eisenberg and colleagues (Eisenberg et al., 1993, 1994, 1995, 1996 a & b; Fabes & Eisenberg, 1992) have been studying two dimensions of emotional functioning that may play a role in successful social interaction: emotional reactivity and emotional regulation. Eisenberg has argued that individual differences in emotional responding in the context of social situations, particularly in terms of emotional reactivity and regulation, may influence the kind of social behaviors in which children engage (Eisenberg et al., 1996a). Recently, several researchers have begun to investigate individual differences among young children in these two dimensions of emotional responding and, to a lesser extent, their relations to early social behavior and social competence. The results of this work suggest that important differences exist among children on both dimensions of emotional functioning and that studies of the role of emotional functioning and social behavior should examine both the independent and interacting contributions of these

dimensions (Fox & Calkins, 1993; Rubin, Coplan, Fox & Calkins, 1995; Stifter & Braungart, 1995).

Emotional reactivity is often conceptualized as a dimension of temperament and refers to an individual's characteristic threshold, intensity and duration of affective arousal (Rothbart & Derryberry, 1981). For example, a child may be referred to as being at the extreme on a dimension of negative emotional reactivity if the child displays frequent, intense and rapid distress responses to situations that are frustrating. Presumably, the child's tendency to display negative reactivity may be observed in both social and non-social situations. In the context of a social interaction, such a characteristic response may be elicited and displayed in situations where the child is provoked, threatened, asked to share, or must respond to any of a number of other normally-occurring social demands. Thus, it is of interest to investigate the role that the child's characteristic level of temperamental or emotional reactivity plays in social behavior and social interactions. Support for such relations exists in the behavior problem literature. Problems such as aggression are often accompanied or precipitated by temperamental factors such as difficulty (Bates, Bayles, Bennet, Ridge & Brown, 1991; Campbell, 1990; Maziade, Cotes, Bernier, Boutin, & Thivierge, 1989).

A second body of emotion research focusing on relations to social competence are studies examining emotion regulation and social behavior (Eisenberg et al., 1994, 1995, 1997; Rubin et al., 1995). Emotion regulation refers to efforts on the part of the individual to manage, modulate, inhibit and enhance emotions (Cicchetti, Ganiban, & Barnett, 1991; Kopp; 1982; 1989; Thompson, 1994). By definition, reactivity and regulation are not independent of one another, and some behaviors that are indicative of regulation may, in fact, be a part of the emotional response itself. Importantly, though, strategies such as self-comforting, help-seeking, and distraction may assist the child in managing early frustration and fear responses. Approach behaviors and gaze aversion may assist in the modulation of joy and pleasure. These kinds of behavioral strategies begin to develop early in the first year of life. Recent research suggests that failure to acquire the skills needed to manage emotional responses and emotional arousal may lead to difficulties in such areas as social interaction (Calkins, 1994; Cicchetti, Ackerman & Izard, 1995; Eisenberg et al., 1993, 1994; Rubin et al., 1995a). For example, children who display aggressive behaviors toward their peers may do so because they have developed inappropriate strategies for regulating anger affect (Eisenberg et al., 1993, 1994; Fabes & Eisenberg, 1992).

Fabes and Eisenberg (1992) hypothesized that reactivity and regulation exert their effect on social behavior by interacting with one another. Such a hypothesis has been proposed by others to account for both shy and aggressive behavior with peers (Fox & Calkins, 1993; Rubin et al., 1995). For example, Fox and Calkins (1993) argue that the influence of the child's characteristic emotional arousal or reactivity on social behavior will depend on the extent to which the child engages in behaviors that enable him or her to manage emotional reactivity in a constructive manner. In addition, children who experience extreme arousal or emotional reactivity may have difficulty regulating those experiences, regardless of the strategies they may attempt to use.

Eisenberg, Fabes & colleagues have investigated these issues with school-age children (Eisenberg et al., 1993, 1994; Fabes & Eisenberg, 1992) and found that individuals who are highly emotional in response to anger-inducing events and poor at regulation are likely to display

aggression in social situations. Eisenberg hypothesized that this relation is observed because the experience of intense anger results in a loss of behavioral control. Strategies such as attentional control (focusing on an object other than that which may be arousing), avoidance (turning away from an arousing stimulus) and instrumental coping (working with the situation) may be useful in dealing with anger (Eisenberg et al., 1993, 1994). Children who fail to use such strategies tend to vent their emotions and may become aggressive. These findings demonstrate that both emotional reactivity and emotional regulation are related to anger reactions and conflict behavior in social situations. Moreover, there are important implications of anger display and the regulation of anger for peer relationships. Highly emotional children (those displaying frequent and intense anger displays) who were low on regulatory skills were found to have poorer social skills and lower sociometric status (Eisenberg et al., 1993, 1994). These findings indicate that the ability to cope with anger allows the child to maintain social relationships with peers even when conflict and disagreement occur, an outcome that contributes to the development of social competence.

In sum, it appears that both the tendency to display modulated affect and the ability to utilize appropriate affect regulation skills enhances the development of social skills (Rubin et al., 1995). However, despite this recent focus on emotions and social behavior among children, few attempts have been made to study the role of emotional processes in the social interactions of toddlers and preschool children. Although emotional processes seem likely to play a role in social interactions during most phases of development, their study during toddlerhood may be especially important, given the young child's newly-emerging independent ability to manage emotions and behavior (Kopp, 1982, 1989; Thompson, 1994), their increased engagement in the social world of peers (Howes, 1988), and their developing capacity for cooperative social play (Eckerman et al., 1975). For example, a toddler who develops a pattern of withdrawal from a stimulus that arouses fear may use this kind of strategy in a social situation that produces anxiety, and come to display more socially withdrawn behaviors (Thompson & Calkins, 1996). A child who tends to vent or act out when angered may use such a strategy when with peers and engage in more conflict with peers as a consequence. Because these emotion regulation behaviors are just becoming part of the child's emotional repertoire, their use may generalize from situations that occur at home with parents and siblings, to situations that occur in the peer group. One gap in the current literature is that there are few studies of the role of both emotionality and emotion regulation, or coping, in very early social behavior, and virtually no studies have examined the relation between children's actual emotion regulation behavior in emotionally-arousing situations and social behavior with age-mates.

The goal of the present investigation was to examine the relation between two facets of emotional functioning (emotional reactivity and emotion regulation) and early social behavior with peers. First, the study examined whether the tendency to display negative affect in response to frustrating or anger-inducing situations would be related to the display of socially competent (cooperative and simple social play) versus incompetent (withdrawal, aggression and conflict) behavior in a peer setting. Based on the temperament research of Bates et al. (1991), Graham, Rutter and George (1973) and others, which indicated that temperamental difficulty was modestly related to the later display of externalizing-type behavior problems, it was expected that there would be a modest main effect of distress during a frustrating situation as a predictor of aggressive behavior with peers. A second issue addressed in this study was the relation between

emotion regulation strategies in response to frustration and peer play behavior. Based on the work of Eisenberg and colleagues with older children, it was hypothesized that children who used more potentially constructive strategies when confronted by frustration (engaging in distraction, self-soothing, for example) would be likely to display more social behavior (conversation, social play) whereas children who display other less appropriate strategies (venting) would be more likely to engage in conflict behavior with peers. It is important to note, however, that if a child appears well-regulated, it may be because he or she has not been aroused by a given situation. Moreover, factors such as the context and goals of the child may determine what is considered an appropriate strategy.

The third question addressed the role of emotion regulation behaviors as moderators of frustration distress. Consistent with the recent findings of Eisenberg and colleagues (Eisenberg et al., 1997) with older children, it was hypothesized that there would be an interaction of emotional distress to frustration and regulation behaviors during a frustrating task in the prediction of conflict behavior. It was hypothesized that children who were likely to become upset when confronted by the frustrating tasks, but who could engage in emotion regulation behaviors to lower the level of distress or alter the experience of the situation, would be less likely to engage in conflict and more likely to engage in social interaction with a peer than a child whose response to the frustration task was not to engage in adaptive emotion regulating behaviors. In sum, the aim of this study was to try to clarify the role of early emotion management skills in the display of types of socially competent and incompetent behavior during toddlerhood.

## METHOD

### *Sample*

Sixty-five 24-month-old toddlers (32 females, 24 males) and their mothers from a small southeastern city were the subjects in this study. These families were participating in a larger longitudinal study. At the start of the longitudinal study, recruitment letters were sent to a large number of families with 12-month-old infants whose names were obtained from local birth records. Families were excluded if there were any prenatal or perinatal complications or if gestational age was less than 38 weeks (pre-term). The families were primarily caucasian (4 African American) and middle class (mean Hollingshead (1975) Four-Factor Index score 43.24, range 13 to 66, with the majority in the medium business/professional category or the skilled craftsmen/clerical category). For the current study, families were contacted by telephone and asked to come to the laboratory for an individual assessment within two weeks of the child's 24-month birthday and for a follow-up peer play assessment. Of the 65 families who participated in the individual visit, 56 participated in the peer play assessment. There were no differences between the children who returned for the follow-up and those who did not on any study measure. Due to data loss that occurred during one of the individual visit tasks (discussed below), 51 children had acceptable data for both sessions. The procedures from these assessments that are applicable to the present investigation are described below.

**Procedures: Individual Assessment.** During the first visit to the laboratory, the children were assessed individually during a series of affect-eliciting and mother-child interaction tasks. Of importance for the present investigation were two tasks designed to elicit frustration and regulatory behavior on the part of the child.

**Frustration task #1: Barrier.** The experimenter gave the child an attractive electronic musical toy with which to play for one minute. Then the experimenter took the toy away, placed it in a clear plastic box that the child was unable to open, and put the box on the table in front of the child. The mother sat nearby and was asked to respond normally to the child, but not to initiate interaction. This episode lasted for two-minutes.

**Frustration task #2: High chair restraint.** The experimenter placed the child in a high chair and told the child to wait for the experimenter to return to the room with a special toy. The mother sat nearby and was asked to respond normally to the child but not to initiate interaction. This episode lasted for 5 min. If the child displayed a hard cry (sobbing, screaming) for twenty consecutive sec, he or she was removed from the chair.

These two emotion tasks are considered appropriate for use with young children, and are typically used to elicit measures of temperament and regulation (c.f. Goldsmith & Rothbart, 1993; Grolnick, Bridges & Connel, 1996; Vaughn, Kopp & Krakow, 1984). The tasks were separated in time by brief mother-child interaction tasks (freeplay and pretend play, for example) to minimize carry-over effects. Videotaped behavior was examined across the two episodes and the derivation of measures is described below.

**Maternal report of temperament.** At the end of the laboratory assessment, mothers were given the Toddler Behavior Assessment Questionnaire (Goldsmith, 1987) and asked to complete it within seven days and return it in a postage-paid return addressed envelope. Of particular interest was the summary score reflecting anger, as this was the scale which was hypothesized to reflect distress to frustrating events, and soothing, as this was the subscale thought to best reflect regulation (Rubin et al., 1995a). These subscales were used primarily as a check on the validity of the frustration tasks to elicit the child's characteristic level of emotional reactivity and emotional regulation (see Results). Fifty-two of the fifty-six mothers completed and returned the questionnaires.

**Procedures: Peer Play Assessment.** During the second assessment, the children were assessed in pairs with a second child (from the sample) of the same sex whose birthdate was within three months of the child. The children and their mothers returned to the laboratory for the second assessment within two to three months of the individual assessment. Each mother-child pair was met by a research assistant and taken to a private room for informed consent. Following informed consent, each mother-child pair was brought to the playroom and introduced. Mothers were asked to sit on a sofa in the playroom and read magazines while the children played. They were asked not to initiate interaction with the children, but to respond to the children as they normally would. The mothers were told that they could interact quietly with one another if they wished. The experimenter left the room after placing the materials for each task in front of the children. Among the tasks in which the children were observed were:

**Freeplay.** A set of identical age-appropriate toys was placed in front of each child and the children were encouraged by the experimenter to play with the toys. This episode lasted for 10 min.

**Freeplay with limited resources.** A single set of toys (a subset of the original two identical sets) was placed in front of the children and they were encouraged by the experimenter to play with the toys. This episode lasted for 6 min.

**Cooperation Tasks.** Additional tasks were used to try to elicit cooperation between the two children (riding a teeter-totter and passing a train back and forth). However, it was often difficult to keep both children on task and maternal facilitation and encouragement, which were scored for all tasks, occurred during one-third or more of the coding intervals for these episodes (in contrast to maternal facilitation during the freeplay tasks which occurred in less than 15 percent of the coding intervals). These cooperation tasks were untested in prior research and may have been beyond the abilities of the young children in our sample. Additionally, mothers should have been given stronger admonitions not to interfere during the tasks. During the train task, we observed virtually no cooperative behavior between the children. In the teeter-totter task, despite a great deal of maternal intervention, there was a high amount of cooperation. Thus, this task remained in the analyses.

**Teeter-totter.** During the teeter-totter task, the experimenter placed a large plastic teeter-totter in the room and encouraged the children to ride together on the toy. This task lasted for 6 min.

### *Measures*

Of particular interest from the individual and peer assessment were frustration distress and regulatory behavior during the frustration tasks (barrier and restraint) that were administered during the individual visit, anger and soothability as rated by the mother using the TBAQ, and types of social, solitary and conflict behaviors from the peer play assessment. For the three groups of behavioral measures (frustration distress, regulation, and play behavior), the approach to the data reduction process involved creating summary scores of measures that were conceptually and statistically related (Coplan et al., 1994; Stifter & Braungart, 1995). The creation of these summary scores is described below.

Two coders were involved in the scoring of the play data, whereas two different coders were involved in the scoring of the reactivity and regulation data. The coders trained to reliability by working together on 10% of the videotaped sessions, and independently scoring an additional 10% of the videotapes for the purpose of calculating reliability. Reliability is reported below for each set of behavioral measures.

**Frustration Distress.** Emotion measures (distress and regulation) were scored from the videotaped episodes using a computer-based coding system (Observational Coding System (OCS), Triangle Research Corporation, Chapel Hill, NC). This system allows the coder to specify behaviors that will be scored by assigning a key to each code. The videotape is viewed and the key onset and offset times indicate the latency, frequency and duration of particular behaviors. The videotapes were scored at separate times for distress and regulation.

Following from Rothbart (Rothbart & Derryberry, 1981) and Stifter and Fox (1990), measures of distress were operationalized as (1) the latency to fuss or cry (in sec) and (2) the total duration of fussing or crying in sec. Descriptive statistics for these two measures for the two frustration tasks appear in Table 1.

Reliability for these four measures, across the two tasks, was computed using Pearson correlations, and ranged from  $r = .87$  to  $r = .95$ . The frustration tasks are similar to those used by temperament researchers and others to elicit anger and frustration in infants and young children (Goldsmith & Rothbart, 1993; Matheny & Wilson, 1981). However, it is possible that emotions other than anger (sadness, fear) could be elicited during the tasks. As a result, the term 'distress' was used to characterize the vocal affective responses of the children.



**Table 1. Descriptive Statistics for Distress and Regulation Measures for Individual Frustration Tasks**

		<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<b>Frustration task: Container Barrier</b>	Distress Measures (in sec)	75.35	50.80	1	120.00
	Latency to fuss/cry				
	Duration of fuss/cry	14.70	24.76	0	95.00
	Regulation Measures (proportion of time)	.01	.01	.00	.05
	Venting				
	Distraction	.22	.15	.01	.57
	Object-focused	.24	.23	.00	.79
	Mother-orientation	.08	.06	.00	.21
	Self-oriented	.20	.22	.00	.81
<b>Frustration task: High Chair Restraint</b>	Distress Measures (in sec)	103.44	113.06	1	300.00
	Latency to fuss/cry				
	Duration of fuss/cry	59.73	56.99	0	198.00
	Regulation Measures (proportion of time)	.02	.03	.00	.15
	Venting				
	Distraction	.33	.15	.00	.74
	Object-focused	.28	.10	.06	.52
	Mother-focused	.27	.13	.07	.61
	Self-oriented	.10	.07	.04	.56

To generate by-task indices of distress, summary scores reflecting the measures of distress (latency, duration) were computed. Summary scores were computed by standardizing and summing the reversed latency measure (total time of task minus the latency to fuss or cry) and the duration of fussing/crying measure for the two tasks. These measures were correlated  $r$  greater than .27,  $p < .01$  for all measures. The alpha reliability for the distress score .70, with a  $M$  of 0 and a  $SD$  of 1.58 (range:  $-2.22$  to  $4.04$ ). High, or positive, scores on the index indicated that the child was very reactive to the frustrating tasks (short latency to cry and long duration crying). Low scores on the dimension of distress indicated that the child was not reactive to the frustration tasks.

**Regulatory Behaviors.** Following from the work of others examining the regulatory behaviors of infants and young children (Braungart & Stifter, 1991; Eisenberg et al., 1993, 1994, 1995; Stifter & Braungart, 1995), several behaviors reflective of regulatory efforts were scored during the two frustration tasks. The duration (in sec) of the following behaviors was scored: (1) self-orienting—thumbsucking, hairtwirling, or other automanipulative behavior, visually examining self; (2) motherorientation—reaching to mother, asking mother for help, talking to or playing with mother, pulling on mom; (3) distraction—attending to or manipulating an object other than the box or high chair; (4) aggression/venting—banging, kicking, throwing, hitting the object of frustration (box or high chair); (5) orienting to focal object—staring at or manipulating the barrier or the high chair. Reliability for the scoring of these five behaviors ranged from .84 (orienting to focal object) to .96 (distraction). Descriptive statistics for these five measures for the two frustration tasks appear in Table 1. There was cross-episode consistency in terms of the tendency to use some of these behaviors during the two tasks. Cross-episode stability was defined as a significant correlation ( $p < .05$  or less) across the two tasks. Venting during the barrier task and the high chair task was correlated  $r = .42$ ,  $p < .001$  and orienting toward the focal object in both tasks was correlated  $r = .32$ ,  $p < .01$ . Because not all five behaviors showed such stability, we computed a mean for each strategy and used that mean score in subsequent analyses. Cross-episode stability in terms of regulation measures has been reported as modest to poor by other researchers and the averaging procedure is often used to allow for collapsing across episodes (Grolnick et al., 1996; Shaw, Keenan & Vondra, 1994 ; Stifter & Braungart, 1995;).

The relations between frustration distress and regulatory behaviors were examined across the two tasks. Distress was significantly and positively related to both aggression/venting,  $r = .59$ ,  $p < .001$  and focal object focus,  $r = .28$ ,  $p = .03$ . And, distress was modestly and negatively related to both mother-orienting,  $r = -.26$ ,  $p < .05$  and distraction  $r = -.24$ ,  $p = .07$ . Self-focused behavior was not related to distress during the frustration task.

There was a mixed pattern of modest correlations among the regulation measures: venting was negatively correlated with mother-focus and focal-object orientation was negatively correlated with distraction and self-orienting. To reduce these data, the variables were entered into a factor analysis with a varimax rotation. There was not a single factor solution to this analysis; the two factor solution accounted for only 65% of the variance and was not clearly interpretable. Thus, these regulation variables were examined independently in subsequent analyses.

**Play Behaviors.** The children's behaviors during the freeplay with ample resources and freeplay with limited resources were scored for several types of play. In particular, we were interested in

behaviors that have been demonstrated in prior research to be related to emotion regulatory behaviors. Thus, we focused primarily on types of solitary behavior (Coplan et al. 1994; Rubin et al. 1995; Thompson & Calkins, 1996), social behaviors (Fox et al., 1996) and conflict or aggressive behavior (Eisenberg et al., 1994, 1995). Coding criteria were similar to those used by Howes (1988) and Rubin (1989) for these broad categories of behavior, and are briefly described below. These play behaviors were mutually exclusive. The behaviors were scored from the videotapes in ten-second intervals. For the first freeplay, this resulted in 60 coded intervals. For the second freeplay and the teeter-totter task, the scoring was done on 36 intervals. Summary scores for these play behaviors reflected the proportion of 10 sec intervals during which the behavior was observed.

- (1) *Parallel Play*. The child and peer are in proximity to one another and engaged in the same or similar activity, but do not communicate with one another.
- (2) *Simple social play*. The children are engaged in play and talk or smile, but are not necessarily responding contingently or sharing a goal or activity. Included in this category were: simple social play and active social play (running around the room, not engaged in a particular game or activity).
- (3) *Cooperative play*. The children are engaged in the same activity and are taking turns or responding positively or contingently to the behavior or conversation of the other child. Pretend play was included in this category.
- (4) *Reticent behavior*. Following from Coplan et al. (1994), this category of behavior included onlooker behavior (e.g., the child is observing the activity of the other child, but is not involved in the activity nor focused on play) and unoccupied behavior that is characterized by a lack of focus or intent. Included in this category were staring into space and wandering the room.
- (5) *Solitary passive play*. The child is engaged in quiet constructive or exploratory play, but is not in proximity to the other child, nor engaged in conversation with the other child.
- (6) *Solitary active play*. The child is engaged in active dramatic or functional play, but is not in proximity to the other child, nor engaged in conversation with the other child.
- (7) *Conflict/aggressive behavior*. This category of behavior included several types of aggression, including hostile aggression (the target child has physically harmed another child for no particular purpose other than to express some negative emotion), instrumental aggression (the target child has physically harmed another child in the service of obtaining a desired object or goal), verbal aggression (insults, taunts), and physically stopping the action(s) of the other child. This definition of conflict differs slightly from that used by Hay and Ross (1982) primarily because it does not include behaviors that caused distress in the other child if that behavior was not aggressive or physically intrusive. Moreover, Hay and Ross focused their analyses on episodes of conflict that involved the dyad and thus reflected the dynamics of the interaction. The current definition allows a focus on an individual child's behavior, which is important given the individual difference focus of this inquiry.

In addition to the main play behaviors of interest, three other types of child behavior and two types of maternal behavior were scored. These behaviors were not mutually exclusive from one another or from the play behaviors scored above.

(8) *Conversation*. The child is talking to the peer, whether engaged in play with the peer or not.

(9) *Interacts with Mother*. The child is in proximity to mother and playing, talking to, or touching her.

(10) *Mother encouragement*. The child's mother intervenes in the interaction by verbally encouraging play or instructing child to engage in an activity.

(11) *Mother facilitation*. The child's mother intervenes in the interaction by physically encouraging play (taking the child by the hand to the peer, placing the child on the teeter-totter).

(12) *Mother correction*. The child's mother intervenes to correct or discipline the child.

Reliability was computed on the play behaviors and the mean Cohen's kappa across all play categories was .80 (range from .70 to .86). Descriptive statistics for these behaviors for the freeplay tasks and the cooperation task appear in Tables 2 and 3.

To reduce the number of variables in subsequent analyses, we examined the cross-episode correlations for freeplay behaviors. These correlations ranged from  $r = .45$ ,  $p < .01$  (reticent) to  $r = .60$ ,  $p < .001$  (solitary passive) for all but solitary active play,

**Table 2. Descriptive Statistics (Proportion of Time) for Play Categories for Peer Assessment for Freeplay 1 and Freeplay 2**

		<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<b>Freeplay 1</b>	Solitary active play	.00	.01	.00	.03
	Solitary passive play	.60	.22	.03	.95
	Reticence	.21	.17	.02	.75
	Cooperative social play	.01	.03	.00	.12
	Simple social play	.06	.08	.00	.30
	Parallel play	.05	.07	.00	.43
	Conversation	.06	.10	.00	.52
	Conflict	.01	.02	.00	.15
	Interacts with Mother	.19	.16	.00	.96
	Motor encourages	.01	.02	.00	.08
	Mother facilitates	.12	.10	.00	.56
	Mother corrects	.01	.02	.00	.10
<b>Freeplay 2 Limited Resources</b>	Solitary active play	.01	.03	.00	.14
	Solitary passive play	.52	.23	.00	.95
	Reticence	.17	.18	.00	.97
	Cooperative social play	.07	.17	.00	.82
	Simple social play	.09	.09	.00	.32
	Parallel play	.03	.08	.00	.85
	Conversation	.10	.14	.00	.61
	Conflict	.01	.04	.00	.19
	Interacts with Mother	.17	.13	.00	.61
	Mother encourages	.02	.03	.00	.14
	Mother facilitates	.14	.13	.00	.56
	Mother corrects	.03	.05	.00	.28

**Table 3. Descriptive Statistics (Proportion of Time) for Play Categories for Peer Assessment During Cooperation Task (Teeter-Totter)**

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Solitary active play	.01	.04	.00	.22
Solitary passive play	.17	.19	.00	.78
Reticence	.15	.17	.00	.68
Cooperative play	.25	.25	.00	.87
Simple social play	.25	.32	.00	.75
Parallel play	.01	.02	.00	.11
Conversation	.12	.13	.00	.57
Conflict/Aggression	.02	.05	.00	.27
Interacts with Mother	.19	.16	.00	.15
Mother encourages	.04	.05	.00	.20
Mother facilitates	.29	.16	.03	.67
Mother corrects	.04	.06	.00	.20

which was not stable from Freeplay 1 to Freeplay 2. Summary variables for each play category (except solitary active play) were generated by standardizing and summing corresponding play variables across the two play sessions. The mean score for solitary active play across the two play episodes was used as a summary score.

There were modest correlations from the freeplay episodes to the cooperation episodes for all behaviors except conflict ( $r = .17$ ), cooperative social play ( $r = .10$ ), and solitary active play ( $r =$

.04). Moreover, the descriptive statistics for both types of episodes indicated that the tasks were different in the social demands they placed on the children. Thus, the freeplay scores were examined separately from the cooperation scores.

## RESULTS

The approach to data analysis was to address the questions posed earlier. First, however, we conducted a series of t-test to examine possible sex differences in terms of distress, temperament ratings, regulation and play behavior. No such differences were found on any of these measures. It should also be noted that the analysis of dyadic interaction data typically poses the problem that one individual's behavior drives another individual's behavior. Often this difficulty is dealt with by treating the dyad as the unit of analysis. We opted not to do this for three reasons. First, given the small sample size, this approach would have reduced the power to identify complex interaction effects. Second, the dyad analysis would obscure the individual differences we were attempting to identify. Third, in the current paradigm there are actually four interactants (two children, two mothers), thus reducing the likelihood that one child's behavior was directly predicted by the other child's behavior.

**Relations between behavior during the frustration tasks and maternal report of temperament.** To address the question of whether the children's responses to the frustrating situations in the lab were characteristic of their typical levels of anger and soothability as reported by mother, we examined correlations between these two sets of measures. These correlations appear in Table 4.

**Table 4. Correlations Between Maternal Assessment of Temperament and Distress and Regulation Behaviors During Frustration Tasks (Individual Assessment)**

	Maternal assessment	
	Anger	Soothability
Emotional reactivity:		
Distress	.31*	-.54***
Emotion regulation:		
Venting	.30*	-.36**
Distraction	.13	.24 <sup>+</sup>
Mother-orient	-.36*	.31*
Focal-object focus	-.09	-.31*
Self-focus	.20	.11

\*\*\*\*  $p < .001$

\*\*  $p < .01$

\*  $p < .05$

<sup>+</sup>  $p < .10$

As the table indicates, both emotional distress and venting during the frustration task were significantly positively related to maternal perception of anger and significantly negatively correlated with maternal perception of soothability. Mothers of children who were distressed and vented their anger during the frustration tasks rated their children as more angry and less easily soothed than mothers of low distress, low venting children. Maternal orientation during the frustration task was negatively related to distress and positively related to soothability. Focusing

on the focal object was negatively related to maternal perception of soothability. These data indicate that children's behavior during the frustration task was moderately related to the mothers' perceptions of their children's typical behavior.

To address the questions regarding relations between emotional functioning and play behavior, we conducted separate analyses for the freeplay tasks and the teeter-totter cooperation task. In addition, we examined, as a first step in these analyses, the relation between mothers' behaviors and play behaviors in each situation. This was done to determine whether it was necessary to control for mothers' behaviors in the subsequent analyses. All analyses are reported first for freeplay and then for the cooperation task.

### *1. Analyses predicting freeplay behaviors*

#### **Relations between maternal behavior and freeplay behavior**

To examine whether there was any relation between mothers' behaviors during the freeplay session and children's play behavior, correlations were conducted using these two sets of measures. This analysis revealed that none of the maternal behaviors were significantly related to any of the children's play behaviors. There was a trend for maternal corrective behavior to be correlated with conflict behavior. However, because an examination of the videotapes indicated the mothers' corrective behavior was a response to her child's conflict behavior, this behavior was not controlled for in any analysis predicting behavior during the freeplay situation.

#### **Relations between frustration distress and freeplay behavior**

To address the question of whether there would be a relation between frustration distress and play behavior, we examined the correlations between these two sets of measures. As predicted, distress was significantly correlated with conflict behavior during the peer play session,  $r = .33$ ,  $p < .01$ , and was negatively related to solitary passive play,  $r = -.30$ ,  $p < .03$ . No other significant relations between distress and child play behavior were observed.

#### **Relations between the regulation of frustration distress and freeplay behavior**

To address the question of whether there would be a relation between the regulation of frustration distress and play behavior, we examined the correlations between these two sets of measures (five regulation behaviors and seven play behaviors). These analyses revealed that aggression/venting was, as predicted, significantly correlated with conflict behavior in the peer setting,  $r = .46$ ,  $p < .001$ . Aggression/venting was also modestly correlated with reticent behavior,  $r = .23$ ,  $p = .09$ . Mother-orientation was modestly correlated with cooperative social play,  $r = .27$ ,  $p = .07$ . Self-orienting was correlated with reticent behavior,  $r = .30$ ,  $p = .04$ .

#### **Interactions between distress and regulation as predictors of freeplay behavior**

Given the pattern of findings from the simple correlations and our a priori hypotheses regarding regulation and social competence, we focused our analyses on three specific peer play behaviors: reticence, cooperative social play and conflict behavior. These analyses focused on the interaction of the emotion measures (distress and regulation) as predictors of social behavior. All emotion measures were centered prior to both computing the interaction term and performing the analyses, as recommended by Aiken & West (1991). Hierarchical regression analyses using distress, regulation measures, and the interaction of distress and regulation measures were

conducted separately for each type of regulation behavior. These analyses are reported separately for each type of social behavior.

**A. Distress and regulation as predictors of conflict**

To examine the impact of distress, venting, and the interaction of distress and venting on conflict behavior, we conducted a hierarchical regression analysis using these four measures. Distress was entered on the first step of the equation, followed by venting, and the interaction of venting and distress. In this analysis, distress accounted for, independently, a significant portion of the variance in conflict behavior. This analysis is reported in Table 5.

As the table indicates, the interaction of venting and distress added significantly to the prediction of conflict behavior during the freeplay situation. To explore the nature of this interaction, we used procedures described in Aiken and West (1991). Specifically, simple slopes were calculated to address the impact of distress on conflict behavior at two different levels of venting (by creating two new variables for venting: low, or one standard deviation below the mean and high, or one standard deviation above the mean). This interaction is described in Table 6.

The results of the interaction regression analyses indicated that at a low level of

**Table 5. Separate Hierarchical Regression Analyses Predicting Peer-directed Conflict During Freeplay from Emotional Reactivity (Distress), Regulation Behaviors and the Interaction of Distress and Regulation Behaviors**

	R	B	R2	R2 change	sig of R2 ch
1. Distress	.37	.37	.14	.14	.007
2. Venting	.47	.40	.22	.08	.01
3. Distress * Venting	.72	.74	.52	.30	.001
2. Distraction	.43	-.22	.19	.05	.10
3. Distress * Distraction	.53	-.35	.28	.09	.02
2. Mother-focus	.39	-.11	.15	.01	.40
3. Distress * Mother-orient	.54	-.40	.30	.15	.003
2. Focal object focus	.42	.21	.18	.04	.12
3. Distress * Focal object	.61	.92	.38	.20	.001
2. Self-focus	.42	-.18	.17	.03	.17
3. Distress * Self-focus	.56	-.70	.32	.18	.002



**Table 6. The Impact of Frustration Distress on Peer Conflict Behavior at Low and High Levels of Five Regulation Behaviors (Venting, Distraction, Mother-orientation, Focal Object-focus and Self-focus)**

Distress	Conflict with peers		
	$\beta$	$t$	$p <$
<b>Venting:</b>			
Low	-.31	-2.2	.05
High	.54	5.25	.001
<b>Distraction:</b>			
Low	.79	4.60	.001
High	.03	.21	n.s.
<b>Mother-orientation</b>			
Low	.59	4.12	.001
High	-.07	-.44	n.s.
<b>Focal object focus</b>			
Low	-.03	-.18	n.s.
High	.74	4.74	.001
<b>Self-focus</b>			
Low	.72	4.11	.001
High	-.16	-.70	n.s.

venting, distress is negatively related to conflict with peers and that at a high level of venting, distress is positively related to conflict with peers. Thus, distress in an individual task setting is predictive of conflict with peers when it is accompanied by venting.

As Tables 5 and 6 also indicate, the regression analysis examining the impact of distress, distraction and the interaction of distress and distraction on conflict behavior also revealed that the regulation-distress interaction term was a significant predictor of conflict with peers. Simple slopes again were calculated to address the impact of distress on conflict behavior at two different levels of distraction (low and high). This interaction is depicted in Table 6 and indicates that as the proportion of time that the child engages in distraction during the frustration tasks decreased, the stronger was the relation between distress and the amount of conflict behavior with peers.

The regression analysis examining the impact of distress, mother-orienting and the interaction of distress and mother-orienting on conflict behavior revealed that the regulation-distress interaction term was a significant predictor of conflict with peers. Again, simple slopes were calculated to address the impact of distress on conflict behavior at two different levels of mother orientation (low and high). This interaction is depicted in Table 6 and indicates that as the proportion of time that the child orients toward the mother during the frustration tasks decreased, the stronger was the relation between distress and the amount of conflict behavior with peers.

The regression analysis examining the impact of distress, focal-object-orientation and the interaction of distress and focal object orienting on conflict behavior revealed that the regulation-distress interaction term was a significant predictor of conflict with peers. Simple slopes were calculated to address the impact of distress on conflict behavior at two different levels of focal

object orienting (low and high). This interaction is depicted in Table 6 and indicates that as the proportion of time that the child focused on the object of distress during the frustration tasks increased, the stronger was the relation between distress and the amount of conflict behavior with peers.

Finally, the regression analysis examining the impact of distress, self-orienting and the interaction of distress and self-orienting on conflict behavior revealed that the interaction term was a significant predictor of conflict behavior. Again, simple slopes were calculated to address the impact of distress on conflict behavior at two different levels of self-orientation (low and high). This interaction is depicted in Table 6 and indicates that as the proportion of time that the child orients toward the self during the frustration tasks decreased, the stronger was the relation between distress and the amount of conflict behavior with peers.

### **B. Distress and regulation as predictors of cooperative social behavior**

To examine the relation among distress, regulation and cooperative social behavior, we conducted hierarchical regression analyses using distress, regulation strategy and the interactions of distress and each of the five regulatory behaviors. These analyses revealed no significant interaction effects for distress and any regulation behavior as predictors of cooperative social behavior.

### **C. Distress and regulation as predictors of reticent behavior**

To examine the relations among distress, regulation and reticent behavior, we conducted hierarchical regression analyses using distress, regulation strategy and the interactions of distress and each of the five regulatory behaviors. These analyses revealed no significant interaction effects for distress and regulation as predictors of reticent behavior.

## ***2. Analyses predicting behaviors during the cooperation task (teeter-totter)***

### **Relations between maternal behavior and play behavior during the cooperation task**

To examine whether there was any relation between mothers' behaviors during the teeter-totter session and children's play behavior during that session, correlations were conducted using these two sets of measures. This analysis revealed that both maternal facilitation and maternal encouragement were correlated with cooperative social play,  $r = -.33$ ,  $p < .01$  and  $r = .44$ ,  $p < .001$ , respectively. Thus, in the analyses involving cooperative social play reported below, maternal facilitation and encouragement were entered first into the regression analyses. No other significant relations emerged between maternal behavior and child behavior.

### **Relations between frustration distress and the regulation of distress and play behavior during the cooperation task**

To address the question of whether there would be a relation between frustration distress, regulation and play behavior during the cooperation task, the correlations between these sets of measures were examined. Several significant relations emerged for the three play behaviors that were of interest in the analysis of freeplay behavior (conflict, cooperative play, and reticence). Correlations for these measures are presented in Table 7. As the table indicates, there were modest relations between conflict during the cooperation task and venting and mother-orientation during the frustration tasks. And, cooperation was predicted by a number of measures: it was related to less distress, less venting, less distraction and more mother-orientation during the frustration task. Finally, reticence was predicted by greater self-focus dur-

ing the frustration tasks. No other significant relations between distress and regulation and child play behavior were observed.

**Table 7. Correlations Between Emotional Reactivity and Emotional Regulation and Measures of Cooperative and Noncooperative Play During Teeter-Totter Task**

	Conflict	Cooperation	Reticence
Emotional reactivity:			
Distress	.08	-.40**	.06
Emotional regulation:			
Venting	.34**	-.26 <sup>+</sup>	.20
Distraction	.11	-.25 <sup>+</sup>	.12
Mother-orient	-.24 <sup>+</sup>	.27*	-.07
Focal-object focus	.20	.13	.12
Self-focus	.05	-.19	.31*

\*\* p < .01

\* p < .05

+ p < .10

### **Interactions between distress and regulation as predictors of play behavior during the cooperation task**

Given the pattern of findings from the simple correlations and our a priori hypotheses regarding regulation and social competence, we again focused our analyses on three specific peer play behaviors: reticence, cooperative social play and conflict behavior. Hierarchical regression analyses using distress, regulation measures, and the interaction of distress and regulation measures were conducted separately for each type of regulation behavior. These analyses are reported separately for each type of social behavior.

#### **A. Distress and regulation as predictors of conflict**

To examine the impact of distress, venting, and the interaction of distress and venting on conflict behavior, we conducted a hierarchical regression analysis using these four measures. Distress was entered on the first step of the equation, followed by venting, and the interaction of venting and distress. This analysis indicated that distress, which was entered on the first step of the equation, did not significantly predict conflict behavior during the cooperation task. Venting, which was entered on the second step did add significantly to the prediction of conflict,  $R = .21$ ,  $p < .002$ ,  $B = .56$ . The interaction of venting and distress demonstrated a trend toward significance in the prediction of conflict behavior during the freeplay situation,  $R = .25$ ,  $R^2$  change = .04,  $p < .10$ ,  $B = -.28$ . Visual inspection of the data to interpret this trend indicated that at high levels of venting, distress was more strongly related to conflict behavior than at low levels.

Additional hierarchical regression analyses involving distraction, mother-orientation self-focus and focal-object focus indicated that none of these measures, nor an interaction of these measures and distress, added significantly to the prediction of conflict behavior during the cooperation task.

#### **B. Distress and regulation as predictors of cooperative social play**

To examine the impact of distress, venting, and the interaction of distress and regulation on cooperative social behavior, we conducted hierarchical regression analyses using these measures. Given the relation between maternal behavior and cooperative behavior, however, the measures of encouragement and facilitation were entered into the analysis first, on the first and second steps of the equations. These analyses indicated that only one regulation measure, mother-orientation, interacted with distress to predict cooperative behavior. This analysis is reported in Table 8.

In this analysis, distress was entered on the third step of the equation, followed by mother-orientation, and the interaction of mother-orientation and distress. Distress accounted for, independently, a significant portion of the variance in cooperation behavior. And, as Table 8 indicates, the interaction of mother orientation and distress added significantly to the prediction of cooperation behavior during the teeter-totter situation.

To explore the nature of this interaction, simple slopes were calculated to address the impact of distress on conflict behavior, controlling for maternal encouragement and facilitation, at two different levels of mother-orientation (low and high). At low levels of mother orientation, distress was significantly and negatively related to

**Table 8. Hierarchical Regression Analyses Predicting Cooperation During Teeter-Totter Task From Emotional Reactivity (Distress), Mother-orientation Behaviors and the Interaction of Distress and Mother-orientation**

	R	$\beta$	R2	R2 change	sig of R2 ch
1. Maternal facilitation	.27	-.27	.07	.07	.05
2. Maternal encourage	.56	.50	.32	.25	.001
3. Distress	.60	-.22	.36	.04	.08
4. Mother-orientation	.60	.04	.36	.00	.76
5. Distress * Mother-orient	.67	.34	.46	.10	.01

cooperative behavior ( $B = -.31$ ,  $t = .24$ ,  $p = .02$ ). At high levels of mother orientation, however, distress was unrelated to cooperative behavior. Thus, whether there was a negative relation between frustration distress and cooperative play behavior was predicted by how much time the child engaged in the regulatory behavior of mother-orientation.

### C. Distress and regulation as predictors of reticence

Hierarchical regression analyses involving distraction, mother-orientation, self-focus and focal-object focus indicated that none of these measures interacted with distress to add significantly to the prediction of reticent behavior during the cooperation task.

## DISCUSSION

The goal of the present investigation was to examine the relations between emotional reactivity and regulation and social behavior in two-year-old children. Toddlers' responses to two events aimed at eliciting frustration and anger were examined in relation to social behaviors in freeplay and cooperation situations with an unfamiliar peer. Previous research examining these issues has relied almost exclusively on parent and teacher reports of child behavior. Importantly, emotional functioning in this study was assessed independently of social behavior and consisted of observations of the child's behavior, with confirmatory information provided by mothers. Based

on prior research examining temperamental precursors of problem behavior, in particular aggressive, acting-out problem behaviors, and studies of emotional coping in older children, it was hypothesized that both emotional reactivity to these distressing events and the behaviors that children engaged in response to the frustration task would be related to social behaviors, and in particular to behaviors indicative of social competence or lack of competence (reticence, aggression, and cooperative social play).

In examining the incidence of particular types of social behaviors during the two tasks, it was clear that children were engaging in relatively little social play (cooperative or simple). This may have been partially a function of the way the two freeplay sessions were conducted. During the first session, the children were given their own set of identical toys, a situation that may have inhibited their willingness to venture into their partner's territory. During the second freeplay, the children also engaged in relatively little social play, although the situation of playing with limited resources was planned to increase the likelihood of interaction between peers. Perhaps some instruction from the experimenter to play together may have been helpful in eliciting more social behavior during the freeplay. The incidence of conflict behavior was also relatively low, though given the limited social interaction of the two children, this is not surprising. Thus, it is important to consider the different task demands when evaluating the findings from the freeplay versus the cooperation task.

The first issue addressed in the study was the relation between frustration distress and cooperative social behavior. Based on a series of earlier studies examining temperamental difficulty and social maladjustment, particularly those of an externalizing nature (Bates et al., 1991; Campbell, 1995), it was hypothesized that there would be a direct, though modest, relation between frustration distress and aggression or conflict behavior with peers, and perhaps a negative relation between distress and socially appropriate behavior (conversation, social and cooperative play). The data revealed that there was a modest relation between distress and conflict and a trend for a relation to reticence, although only during the freeplay situations. Distress was related directly and inversely to cooperative social behavior, though only during the cooperation task. During this task, though, there was considerably more cooperation than during the freeplay. Thus, distress, or negative emotionality, in response to frustration was related to potentially problematic types of social behavior, and inversely related to at least one type of social behavior that may be indicative of social competence (cooperative social play).

The second question addressed in this study was whether there would be a direct relation between several types of emotion regulating behaviors during the individual emotion tasks and particular types of social behaviors during the play tasks. The findings indicated that one behavior in particular, venting, was related to conflict behavior with peers during both freeplay and the cooperation task. In general, though, there were relatively few significant relations between regulation and play, especially given the large number of measures that were examined. More modest relations existed between self-orientation and reticence, and between mother-orientation and cooperative social behavior. However, contrary to our predictions, distraction, the behavior considered to be most appropriate and perhaps useful during a distressing situation, was not related to any of the social behaviors with peers. Eisenberg has hypothesized that control of attention, in ways that serve to decrease the level of emotional arousal, is adaptive in social interaction with others. Distracting oneself from the source of frustration was hypothesized to be

a strategy that should decrease frustration, and by extension, serve the adaptive social purpose Eisenberg has proposed. In the present study, there is limited evidence that this type of regulation is related to types of social behavior. Perhaps, with development, children come to both realize that the strategy is effective and to exert more control over its use. Alternatively, perhaps the conceptualization of distraction was too narrow in this context; orienting toward the mother may in fact be a distraction technique that is related to social competence.

The final set of analyses examined the main hypothesis of the study—that emotional distress interacts with emotion regulation strategy use to predict three types of social behaviors of interest (cooperative, reticent and conflict). These analyses indicated that the interactions were significant for all five of the regulation-distress interactions as predictors of conflict behavior during the freeplay, and for one of the regulation behaviors and distress during the cooperation task. Specifically, the data indicated that when children were distressed and engaged in high amounts of venting (banging, hitting, kicking during the task), they were more likely to engage in conflict behavior with an unfamiliar peer during both a freeplay situation and during a more constrained cooperation task. In contrast, when children were distressed, but engaged in little venting, they were unlikely to display aggressive behavior with peers during freeplay. One explanation for this finding is that these children may have been far more distressed than their counterparts who engaged in other sorts of behavior. Or, the distress that was accompanied by venting could be characterized as anger, whereas distress that was not accompanied by venting may have been fear. Alternatively, their behavioral repertoire might not have included behaviors that would be more effective in this situation. The data also indicated that high focal object focus interacted with distress to predict conflict behavior. Children who were distressed and tended to focus on the barrier or the high chair tended to be more aggressive with peers than children who were distressed but engaged in other sorts of regulatory behaviors. For very young children, instrumental strategies may not be very effective, especially when there is little that they can do which will effect the outcome of the situation. It is important to note, as well, the difficulty of disentangling regulation from reactivity; the two are clearly somewhat dependent on one another. Perhaps alternative measures, such as psychophysiological indicators of emotionality and emotion regulation, might provide a way to separate these constructs from one another.

As a complement to these findings, we also found that there was a consistent interaction effect of distress and more adaptive regulatory behaviors (distraction, self-soothing, mother-orientation). Perhaps these behaviors altered either the perception or experience of the situation, such that children who were distressed and engaged in low amounts of these behaviors were more likely to be aggressive with peers during a freeplay situation. This may be due to the probability that, if the child was not engaged in a constructive behavior, they were engaged in a less constructive behavior such as venting or ruminating on the focal object.

The analyses that included the interaction of distress and regulation to predict reticent behavior (onlooker and unoccupied) behavior revealed no significant interaction effects. There may be two reasons for this null finding. First, the emotion tasks that were used to elicit reactivity and regulation focused only on frustration distress and its regulation. A more suitable task for the prediction of reticence may involve a fear-eliciting situation. Moreover, perhaps a broader sampling of emotion regulation behaviors in the context of multiple and varied affect elicitors would provide a more differentiated picture of the way that emotionality and emotion regulation

behaviors are related to particular kinds of play. For example, the regulation of positive affect is likely to be an important part of successful social interaction. Assessment of a child's responses to emotionally charged, but positive, experiences might be related to social competence as well. A second reason for the null finding between regulation and reticence is that the situation of meeting another peer for the first time likely elicits a great deal of onlooker and unoccupied behavior in most young children, which may make it difficult to distinguish well-regulated children from less well-regulated children.

The analyses that included the interaction of distress and regulation to predict cooperative social behavior revealed one significant interaction effect. Distress, when accompanied by less mother-orientation, was related to less cooperative behavior during the teeter-totter task. This suggests that the failure to use a strategy that may serve to decrease distress that has a social component (interacting with, looking at or talking to mom) may be linked to socially appropriate behavior. One explanation for this finding may be that children who orient to mom when distressed are more social and that this sociability is evident in the cooperation task. Or, orienting to mother may, in fact, be a variation on the strategy of distraction. There is some evidence that emotion regulation may moderate the effects of emotionality on children's social behavior, and, in particular, their tendency to engage in behaviors indicative of social competence.

Given the importance of the toddler period in emerging social competence and social skills (Eckerman et al., 1975; Howes, 1975), and given the stability in individual differences in social behavior, and in particular, social competence (Howes, 1988), it is useful to think about the emotional and social domains as linked in important ways early in development. The findings from this study suggest that, by the age of two years, modest associations may be observed between regulatory behavior and social behavior. However, this relation is strongest when predicting aggressive and conflict-oriented behavior, and when it includes the role of regulation as a moderator of negative emotionality. Such a hypothesis has been proposed by others (Eisenberg et al., 1997; Fox & Calkins, 1993; Rubin et al., 1995a), however, to date, few data have emerged that support such relations, particularly for samples of young children, whose behavior may be more directly driven by emotion-based processes and less by cognitively-mediated processes (Eisenberg et al., 1997).

The data from this study suggest that there are likely to be important social implications of the development and use of certain kinds of emotion regulation behaviors such as venting in situations when children are frustrated. Children who have developed the ability to manage their own emotional reactions, either on their own or with the help of particular caregiving practices, are likely to be more successful in social interactions with their peers than those children who have not developed such skills (Rubin et al., 1995a). As our data indicate, the outcome for anger/frustration-prone children lacking emotion regulation skills is that they may display more conflict-oriented behaviors in early interactions with peers. This early pattern of behavior may lead to more severe difficulties later in childhood (Campbell, 1995). A child who has established a pattern of behavior lacking in restraint or control in both social and non-social situations may continue to initiate conflict and use hostile, aggressive tactics in interactions with peers and may risk becoming rejected from the peer group.

There are some clear limitations to this study that must be acknowledged. First, some of the behaviors in the study, venting and aggression in particular, occurred relatively infrequently in the assessments conducted in this study, which can be expected in a normal middle-class sample. Nevertheless, some indication of the precursors, causes or correlates of these behaviors is a useful addition to our understanding of early social processes. It is difficult to know, as well, how representative these behaviors are of the child's typical behavior. Second, there were a large number of null findings that still leave unanswered the question of how regulation behaviors that are often thought of as more appropriate or adaptive (distraction, for example) are related to behavior indicative of social competence. The problem of how to separate emotional reactivity and emotion regulation empirically also make it difficult to know whether the distress/venting interaction was indicative of an extreme emotional reaction or an inappropriate regulation strategy or both. Third, the data are generated by a small middle class sample in two brief laboratory visits, thus limiting their generalizability to other situations and other populations. Future research is needed to both replicate these relations among very young children who are just beginning to acquire the skills and strategies to manage their emotionally driven behavior and to clarify the role of emotion regulation in other types of potentially maladaptive behaviors that may be manifest in social contexts (such as reticence, which has been linked to internalizing problems (Rubin et al., 1995b)), as well as to clarify the role of emotion processes in socially appropriate behavior.

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