

Summary

Maternal Responses that Predict Children's Negative Emotions and Self-Regulation in a Delay Task

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Self-regulation develops as young children gain increasing control over their impulsive behaviors, emotional reactions, and attentional processes (Brownell & Kopp, 2007). Individual differences in self-regulation predict school readiness, achievement, and social competence (Ursache, Blair, & Raver, 2012). Conversely, children who have difficulty in self-regulation are at increased risk for behavioral problems (Eisenberg, Spinrad, & Eggum, 2010). One widely-used approach to investigate individual differences in children's regulatory competence is the delay of gratification procedure as this task requires children to effectively modulate their emotions and behaviors while resisting to their immediate temptations (Putnam, Spritz, & Stifter, 2002).

Although self-regulatory processes become increasingly differentiated and self-initiated over the toddlerhood years (Brownell & Kopp, 2007), evidence suggests that young children still need caregivers' support to modulate their emotions and inhibit their impulsive behaviors (Brownell & Kopp, 2007). Researchers have identified a number of maternal responses in relation to toddlers' self-regulation. These include maternal warmth (e.g., soothing, verbal assurance, expressive encouragement of feelings), positive control (e.g., stating and explaining the rules, removing the delay object away from the child's reach), and distraction (e.g., shifting child's attention away from the delay object), as well as scolding, ignoring, minimizing, or giving in to child's demands during the delay period (Grolnick, Kurowski, McMenamy, Rivkin, & Bridges, 1998; Lorber & Slep, 2005; LeCuyer & Houck, 2006; Mirabile, Scaramella, Sohr-Preston, & Robison, 2009; Spinrad, Stifter, Donegan-McCall, & Turner, 2004).

A review of the literature suggests that mothers who use more warmth, distraction, and/or exhibit more positive control reactions in everyday interactions have toddlers who are more likely to comply with the delay of gratification task (Calkins, Smith, Gill, & Johnson, 1998;

LeCuyer & Houck, 2006). When mothers were present in the room as toddlers were waiting for a delay object, child distress during the delay task was related to maternal distress as well as to maternal punitive or permissive responses (Lorber & Slep, 2005). It was also documented that during the delay task, mothers were more likely to display positive control following toddlers' noncompliant behaviors (Putnam et al., 2002). On the other hand, distraction was related to children's decreased attention to the forbidden object (Mirabile et al., 2009; Grolnick et al., 1998). Finally, correlational findings have revealed that maternal warmth and distraction were positively related to children's distress (Mirabile et al., 2009) suggesting that mothers may be displaying more distraction and warmth in response to their children's distress in line with the functional model of emotion (Campos, Campos, & Barrett, 1989).

Although evidence suggests that toddlers quickly react with anger, they also display sadness in delay tasks (Buss & Kiel, 2004). However, maternal responses in relation to toddlers' anger and sadness during delay tasks have not been addressed separately in previous research. Furthermore, only a few studies examined how child temperament would moderate the relation between maternal regulatory responses and toddlers' delay ability. For example, mothers' soothing responses were related to toddlers' distraction, but only among temperamentally less reactive toddlers (Mirabile et al., 2009). Finally, little is known about the protective role of temperamental effortful control on nonsupportive maternal responses in delay tasks.

Kağıtçıbaşı (2007) proposed a theoretical family model of "psychological interdependence" that focused on urban, educated, middle-class families within collectivist societies undergoing crucial sociodemographic changes. In this family model, parents place less value on the economic contribution of children to the family. Child rearing goals promote both child autonomy and re-

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latedness. Caregivers' socialization in this family model involves relatedness that entails warmth as well as order-setting control, but avoids harsh control that might undermine children's autonomy. Indeed, research with Turkish families revealed that maternal warmth predicts positive child outcomes (Sümer, Gündoğdu Aktürk, & Helvacı, 2010) and supportive emotion socialization responses (Yağmurlu & Altan, 2010). A recent study has shown that Turkish and Romanian mothers responded to their children's anger by positive control and warmth, yet to alleviate toddlers' sadness, maternal warmth emerged as the predominant approach by Turkish, Romanian, and US mothers (Çorapçı et al., 2018). To date, only one study with Turkish families using direct behavioral observations has revealed that maternal warmth and responsiveness were positively and harsh parenting was negatively related to child compliance in a forbidden toy paradigm (Cebioğlu & Aksan, 2010).

In the present study, the first goal was to examine toddlers' discrete emotions and rule-abiding behaviors during a delay task in the laboratory setting. Given that the delay task involves an experience of frustration as well as a loss of reward, it was expected that toddlers would express anger and sadness in similar frequency and intensity. It was also expected that toddlers' delay ability, conceptualized as the display of neutral affect coupled with rule-abiding behavior, would relate positively to their age and temperamental effortful control but show negative relations with temperamental negative emotionality and surgency.

The second goal of this study was to investigate maternal responses in relation to toddlers' anger and sadness as well as self-regulation. It was predicted that toddlers' expression of anger would elicit and be positively related to maternal warmth, positive control, and permissive responses, while sadness expression would be positively related to maternal warmth and distraction. Furthermore, it was expected that maternal warmth, positive control, and distraction would predict toddlers' delay ability even after controlling for child temperament. Finally, based on previous research (Mirabile et al., 2009), the interactive role of toddlers' temperamental negative emotionality and maternal warmth on self-regulation ability was investigated. It was also anticipated that the effortful control dimension of temperament would buffer the negative effects of nonsupportive maternal responses on toddlers' delay ability.

Method

Participants

A total of 59 mother-toddler dyads (30 girls, 29 boys, mean age = 25.93 mos, $SD = 3.85$, age range =

19-23 mos) participated in the study. Complete observation and questionnaire data were available from 51 dyads because eight mothers did not return questionnaires on child temperament and family demographics. These eight families did not differ from the remaining families with respect to child's age, gender, and observed toddler affect as well as maternal responses (all p -values $> .05$). Mothers' mean age was 33.5 years ($SD = 3.59$). Eighty-six percent of the mothers had a university or a higher education degree, and 86.3% of them were half- or full-time employed. Families were recruited from mother-toddler playgroups and through postings on websites for mothers.

Procedure

All mother-toddler dyads were invited to a research laboratory. Prior to the delay of gratification task, the toddler and mother were seated at a table side-by-side. The experimenter placed a cookie on the table and instructed the mother to complete a questionnaire and respond as she normally would to make her child wait. The child was instructed to wait for the cookie until his/her mother finished her work. The experimenter left the room for 4 minutes. At the end of the task, mothers were given questionnaires about family demographics as well as their children's temperament. The task was videorecorded for later coding. Toddlers' emotions, waiting behavior and maternal responses were independently coded by three coding teams, who were blind to the study hypotheses.

Measures

Toddlers' emotions. Anger and sadness were coded based on toddlers' facial expressions, vocal tones, and postural characteristics (Cole, Wiggins, Radzich, & Pearl, 2007). During each 5-second time interval, the absence/presence and peak intensity of each emotion (from 0 = *Neutral* to 3 = *Intense*) were coded. The number of intervals with anger and/or sadness coded as present was divided by the total number of intervals to obtain frequency scores. For intensity scores, intensity ratings across 48 intervals were averaged. Interrater reliabilities (Cohen's kappa) for anger and sadness expression were .93 and .96, respectively.

Toddlers' waiting behavior. For each 5-second intervals, children's waiting behavior (i.e., reaching towards the cookie, touching, grabbing, or biting) was also observed. The most impulsive behavior in each interval was coded (0 = *Not displayed*, 1 = *Displayed*). The number of intervals with each behavior coded as present was divided by the total number of intervals to obtain proportion scores. Cohen's kappas were .98, .95, and 1.00 for reaching, touching, and grabbing and biting the cookie, respectively.

Maternal responses. Previous research and an initial preview of mothers' video recordings were used to generate a coding system for the maternal responses, which were as follows: (1) Physical comforting, (2) Verbal reassurance, (3) Expressive encouragement, (4) Distraction, (5) Rule statements/explanations, (6) Issuing prohibitions, (7) Giving suggestive commands, (8) Refraining child from cookie, (9) Removing cookie out of child's sight, (10) Ignoring, (11) Scolding, (12) Minimizing, (13) Returning child's attention to cookie, (14) Giving in to child's noncompliance. Proportion scores were computed by dividing the number of intervals of each specific code rated as present by the total number of intervals. Kappas ranged from .55 to .80.

Toddlers' temperament. Mothers completed the 36-item Early Childhood Behavior Questionnaire-Very Short Form (ECBQ-VSF, Putnam & Rothbart, 2006). Items were rated on a 7-point Likert scale ($I = \text{Never}$ to $7 = \text{Always}$) and yielded scores on Negative Affectivity, Surgency/Extraversion, and Effortful Control. Cronbach's alphas ranged from .68 to .80.

Results

Paired samples *t*-test results revealed that there was no significant difference between toddlers' anger ($M = 22.04$, $SD = 22.90$) and sadness frequency ($M = 17.47$, $SD = 25.46$), $t(58) = 1.76$, $p = .08$. Anger and sadness intensity scores were also similar, $t(58) = .71$, $p = .48$. On average, toddlers reached for the cookie, touched, grabbed and took a bite from the cookie 17.05%, 8.73%, 17.52%, and 2.92% of the entire waiting period, respectively. Toddlers' age and gender were not associated with their waiting behaviors. Toddlers' delay ability/self-regulation was measured by identifying the number of intervals in which toddlers displayed neutral emotion along with task-compliant behavior (i.e., no reach, touch, or bite). On average, toddlers displayed self-regulated behavior 36.7% of the entire waiting period. In order to identify potential covariates, associations among temperament, demographic variables, and toddler responses were examined. The relation between toddlers' age and anger frequency was marginally significant, $r = -.23$, $p = .07$. Toddlers' self-regulation was positively correlated with age and the effortful control dimension of temperament, $r = .28$, $p < .05$, and $r = .33$, $p < .05$, respectively.

Of the maternal responses, scolding, minimization, and expressive encouragement were observed infrequently, and the distributions of these variables were highly skewed. Thus, these variables were excluded from the main analyses. Based on the intercorrelations of the remaining maternal responses, four composite scores were derived that represented maternal warmth, positive

control, distraction, and permissiveness. Three hierarchical regression analyses were conducted to examine the predictive role of these maternal behaviors on toddlers' anger and sadness expression as well as their self-regulation. A hierarchical order of entry of the variables was used for each outcome variable, with significant demographic and temperament predictors entered in the first step, followed by four maternal behavior composites in the second step, and the interaction of maternal warmth and ECBQ-Negative Affectivity entered in the third step. The interaction was not significant in any of the analyses; and so it was removed from the regression models. Therefore, only the main effects were reported below.

In the prediction of toddlers' anger frequency, all maternal response composites accounted for 30% of the variance, $F(4, 54) = 5.79$, $p = .001$. Maternal warmth ($\beta = .33$, $p < .01$) and positive control ($\beta = .39$, $p = .001$) made significant contribution to anger frequency. In the prediction of sadness frequency, all maternal response composites in the first step accounted for 40% of the total variance, $F(4, 54) = 8.87$, $p < .001$. Of these variables, maternal warmth was the only significant predictor of toddlers' sadness expression frequency ($\beta = .52$, $p < .001$). In the prediction of toddlers' delay ability, maternal response composites in the second step accounted for an additional 44% of the total variance over and above child's age and effortful control, $\Delta R^2 = .44$, $\Delta F(4, 45) = 10.05$, $p < .001$. Of these variables, positive control ($\beta = -.41$, $p = .001$) and permissiveness ($\beta = -.46$, $p < .001$) were two significant predictors of toddlers' delay ability.

Finally, the potentially protective role of effortful control was also investigated. When toddlers' sadness frequency was the dependent variable, the interaction of effortful control and maternal permissiveness in the last step made a marginally significant contribution over and above the main effects, $\beta = .55$, $p = .07$. For children with high effortful control scores (i.e., 1 *SD* above average), maternal permissiveness and toddlers' sadness was not related. However, for children with average or low effortful control (i.e., 1 *SD* below average), as maternal permissiveness increased, toddlers' sadness expression duration decreased, $b = -.50$, $p = .001$ and $b = -.88$, $p = .001$, respectively.

Discussion

Going beyond previous research, this study examined toddlers' discrete emotions in a delay of gratification task and how mothers' responses varied in relation to toddlers' sadness and anger as well as self-regulation, even after controlling for toddlers' temperament. Consistent with our expectations, toddlers' anger and sadness expressions occurred at similar frequency and severity.

Moreover, as expected and consistent with previous research (Cole et al., 2011; Grolnick et al., 1998), toddlers' self-regulation, assessed as their rule-abiding waiting behavior with neutral emotion, was related positively to their age and effortful control. When maternal warmth, positive control, distraction, and permissiveness were all considered as predictors of toddlers' discrete emotions during the delay task, toddlers' anger expression was positively predicted by maternal warmth and positive control. On the other hand, toddlers' sadness expression was positively predicted by maternal warmth only. Although it is not possible to make a definite conclusion about the direction of the relationship, our findings suggest that children's anger may act to elicit maternal control and warmth, which in return increase children's compliance with the task (Putnam et al., 2002); whereas children's expression of sadness may primarily act to elicit warmth, support, and closeness of mothers (Buss & Kiel, 2004; Hastings & De, 2008). This finding also makes sense with the predictions of the psychological interdependence family model's emphasis on relatedness (Kağıtçıbaşı, 2007). Turkish mothers may rely on positive control and warmth to explain how toddlers should accommodate to the situation by referring to social norms and relying on affective ties. Current findings based on direct behavioral observations are similar to past research findings on Turkish mothers' emotion socialization assessed by using their self-reports (Çorapçı et al., 2018; Yağmurlu & Altan, 2010).

Our results have also revealed that after controlling for children's age and temperamental effortful control, mothers who displayed less controlling and less permissive behaviors had toddlers who were more likely to wait without expressing negative emotions. It is possible that children's self-regulated conduct elicits less controlling (i.e., rule and prohibition statements) and less permissive maternal behavior. Indeed, previous research has shown that mothers increase their positive control contingent to their children's rule violations (Putnam et al., 2002). Yet, this correlational finding also suggests that mothers who more often issue rules and prohibitions as well as act in permissive ways may hinder their children's self-regulated conduct. It is likely that the combination of mothers' controlling behavior with a permissive approach may undermine children's acquisition of autonomy and delay ability. Finally, although it is a preliminary finding, the marginal interaction effect suggested that mothers' permissive responses are related to less sadness expression, but only among children who have average or low effortful control. This finding suggested that mothers who perceive their children as having difficulty with attentional control, are more likely to engage in permissive behavior perhaps in an effort to reduce their toddlers' sadness.

The results of the presents study should be considered within the context of its limitations. First of all, this cross-sectional study does not allow to address the direction of causality between maternal and child-related variables. Secondly, the sample size is small, especially for moderation analyses. Therefore, replication studies using larger samples are clearly needed. Moreover, the families in this sample were from middle to upper-middle class socioeconomic backgrounds. This limits the generalizability of the results. Finally, the assessment of toddlers' delay ability and mothers' regulatory responses was based on a single task of four minutes duration.

Despite its limitations, the present study contributes to the literature by describing Turkish mothers' regulatory responses and the associations between these responses with toddlers' discrete emotions and delay ability. The structured delay task allowed the researchers to elicit sadness, anger, and impulsive behaviors of children toward the delay object; and to observe maternal regulatory responses. The use of direct behavioral observations of mothers and toddlers during a structured delay task in a laboratory setting has been a major strength of this study. Future research that combines multiple assessments in the laboratory with naturalistic observations of daily frustrations is warranted to ensure a more reliable assessment. Future studies should also focus on mothers' distress and emotion regulation capacity during the delay task to illuminate the mechanisms underlying mothers' controlling or permissive responses.