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The Significance of Early Parent-Child Attachment for Emerging Regulation: A Longitudinal Investigation of Processes and Mechanisms from Toddler Age to Preadolescence

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Abstract

Eisenberg, Spinrad, and Cumberland (1998 a,b) included parent-child attachment as a key dimension of the early emotion socialization environment. We examined processes linking children's early attachment with social regulation and adjustment in preadolescence in 102 community mothers, fathers, and children. Security of attachment, assessed at 2 years, using observers' Attachment Q-Set (AQS, Waters, 1987), was posited as a significant, although indirect, predictor of children's adaptive social regulation at 10 and 12 years. We proposed that security initiated paths to future social regulation by promoting children's capacities for emotion regulation in response to frustration at 3, 4.5, and 5.5 years: Having to suppress a desired behavior, observed in delay tasks, to regulate anger, observed in parent-child control contexts, and a trait-like tendency to regulate anger when frustrated, rated by parents. We conceptualized adaptive social regulation at 10 and 12 years as encompassing regulation of negative emotional tone, observed in diverse parent-child interactions, parent-rated regulation of negativity in broad social interactions, and child-reported internalization of adults' values and standards of conduct. Multiple-mediation analyses documented two paths parallel for mother- and father-child relationships: From security to emotion regulation in delay tasks to internalization of adults' values, and from security to parent-rated trait-like regulation of anger to parent-rated regulation of negativity in broad social interactions. Two additional paths were present for mothers and children only.

Keywords

Attachment; emotion regulation; social regulation; mothers; fathers; longitudinal studies

Over the last 20 years, we have witnessed an explosion of research on emotion regulation and emotion socialization, due, in part, to the notable issue of *Psychological Inquiry*, organized around the highly influential target article by Eisenberg and colleagues (Eisenberg, Cumberland, & Spinrad, 1998a). That article introduced a comprehensive conceptual framework for the study of parenting and parental socialization of children's emotions. The authors viewed children's emotion regulation capacity as one – among several – outcome of Emotion-related Socialization Behaviors (ERSBs). Further, they proposed that children's emotion regulation in specific contexts mediated relations between

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emotion-related parenting and children's broad social behavior, social competence, and adjustment. In response to commentaries, including one in which Thompson (1998) pointed out the role of early relational constructs, such as the quality of the early parent-child bond and attachment organization, Eisenberg, Spinrad, and Cumberland (1998b) expanded their framework. Their expansion included early parent-child attachment as a key dimension of the socialization environment that "sets the stage" for the processes of socialization of emotion and children's emotion regulation capacities. By promoting emotion regulation, early attachment initiates a path to broad adjustment and social emotional outcomes.

This conceptual expansion created a welcome bridge to the large body of literature on early relational experience. The growing research on links between the child's attachment and future emotion regulation generally has supported positive associations between security and children's emotion regulatory capacities and elucidated multiple mechanisms that may account for those links. Parents who foster security typically use adaptive ERSBs (Eisenberg et al., 1998b): They respond to children's emotions, particularly distress, with acceptance, comfort, sensitive support, and warmth, and therefore, scaffold the development of adaptive and flexible regulatory skills that include both effective behavioral strategies and cognitive emotion understanding. Secure children develop expectations that comfort and support will be forthcoming in case of distress, which provides them with confidence in their own coping skills, reduces tension, and frees up their resources for confident exploration and self-regulation (e.g., Abtahi & Kerns, 2017; Bernier, Carlson, Deschenes, & Matte-Gagne, 2012; Cassidy, 1994; Thompson, 2016; Viddal, Berg-Nielsen, Belsky, & Wichstrom, 2017). Secure relationships also promote regulation at the physiological level (Calkins & Fox, 2002; Gunnar, 2017). In turn, effective emotion regulation strategies become important skills that children then deploy in a vast array of contexts, at home and in school, with parents, peers, and teachers (Viddal et al., 2017), building broadly defined social competence (Eisenberg et al., 1998b).

Attachment scholars emphasize that effects of security on development are more accurately conceptualized as nuanced, probabilistic, and indirect, than as simple, unqualified, and direct. Sroufe (Sroufe, 2005, 2016) has argued that although early attachment is an organizing core in development – always integrated with later experience and never lost – it may relate to developmental outcomes probabilistically and as one component of a network of complex developmental processes. Even if long-term, direct, unqualified effects of early attachment may no longer be detected, early relational experience may nevertheless influence development by initiating and/or altering future developmental cascades (e.g., Bernier, Beauchamp, & Cimon-Paquet, 2018; Cox, Mills-Koonce, Propper, & Gariépy, 2010; DeKlyen & Greenberg, 2016; Fearon & Belsky, 2011; Kochanska, Boldt, & Goffin, 2019; Masten & Cicchetti, 2010; Thompson, 2015, 2016). By promoting the child's early adaptive emotion regulation, early security may contribute to the child's adjustment and competence later on in development.

The literature on links between attachment and emotion regulation is abundant (e.g., Bernier et al., 2012; Brumariu, 2015; Calkins & Leerkes, 2013; Cassidy, 1994; Drake, Belsky, & Fearon, 2014; Mikulincer, Shaver, & Pereg, 2003; Thompson, 2013, 2016; Viddal et al., 2017), and several special sections of journals have been published on this topic (e.g., Fox,

1994; Langlois, 2004; Zimmerman & Thompson, 2014). A full review would be beyond the scope of this article. Qualities of early parent-child relationships that promote or undermine emotion regulation clearly remain a key topic in developmental psychology and psychopathology, particularly pertaining to regulation of frustration and anger. Difficulties in early regulation of anger forecast multiple escalating maladaptive outcomes – negativity, oppositionality, hostility, and aggression in relationships with parents, other adults, and peers, disregard for rules, and rejection of social values and standards of conduct (Frick & Morris, 2004; Gartstein, Putnam, & Rothbart, 2012; Kerr & Schneider, 2008; Rothbart & Bates, 2006; Smith et al., 2019; Stifter, Spinrad, & Braungart-Rieker, 1999).

In a recent meta-analysis, Zimmer-Gembeck and colleagues (2017) pointed out several gaps in that important body of work. One is a relative lack of long-term longitudinal studies (all of the studies they examined were limited to two years between the assessments of attachment and emotion regulation). Relatively little is known about attachment, emotion regulation, and social regulation in middle childhood and adolescence, although this work is growing (Brumariu, 2015; Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000; Kerns, Abraham, Schlegelmilch, & Morgan, 2007; Spangler & Zimmerman, 2014; Viddal et al., 2017). There also is little systematic information on links between early security and regulation of emotion – particularly negative emotion – under various conditions (regulating emotion within the parent-child relationship, such as discipline contexts, and beyond the relationship, such as laboratory tasks).

Finally, we know little about differences and similarities between mother- and father-child relationships. Commenting on Eisenberg et al. (1998a), Parke and McDowell (1998) emphasized the key importance of understanding processes of emotional socialization and development of social regulation in both mother- and father-child dyads and pointed out how little was known about the latter. Although the last two decades have seen progress in terms of including fathers in socialization research, our understanding of fathers' role in development still lags considerably behind that of mothers' (Ahnert & Schoppe-Sullivan, 2019; Cabrera, Volling, & Barr, 2018). Attachment scholars increasingly have argued for including both parents in research and indicated possible differences (and similarities) in determinants and implications of father- and mother-child security (Boldt, Kochanska, Yoon, & Nordling, 2014; Brock & Kochanska, 2018; Cabrera, Fitzgerald, Bradley, & Roggman, 2014; Ducharme, Doyle, & Markiewicz, 2002; Steele & Steele, 2005; Williams & Kelly, 2005). Although parental roles continue to evolve, mothers still tend to provide more day-to-day caregiving and comfort whereas fathers engage more in play and exploration. Consequently, although both parents serve as attachment figures, researchers have suggested that mother-child attachment may be associated more with the "safe haven" function, whereas father-child attachment may be associated more with the "secure base" function (Bretherton, 2010; Grossmann & Grossmann, 2019; Verschueren, 2019). This emerging framework may provide a useful lens in interpreting the differential impact of mother- and father-child attachment on children's social and emotional development.

The Current Study

We examined an extended developmental scenario – a 10-year longitudinal path from attachment at 2 years to emotion regulation when coping with frustration in early childhood through preschool age (at 3, 4.5, and 5.5 years), to broad social regulation outcomes in early preadolescence (at 10 and 12 years). Given the methodological challenges in the study of emotion regulation (Adrian, Zeman, & Veits, 2011; Cole, Martin, & Dennis, 2004; Thompson, 2014), we deployed a multi-method strategy: observations of children's regulation of frustration in laboratory delay tasks and in parent-child control contexts (both at three time points), and parents' reports about children's trait-like regulation of frustrating events (at two time points). As Zimmer-Gembeck and colleagues (2017) pointed out, few studies have examined links between early security and children's multiple measures of emotion regulation when facing frustration. As those emotion regulation measures are likely correlated, we used a multiple-mediation approach to examine them together and identify specific attachment-emotion regulation links.

Eisenberg and colleagues (1998a, b) described the long-term developmental outcomes of emotion socialization broadly, as encompassing well-regulated, positive social functioning and social competence and receptivity to parental socialization (Darling & Steinberg, 1993; Eisenberg et al., 1998b; Eisenberg, Spinrad, & Eggum, 2010). Adopting that framework, we conceptualized preadolescent outcomes as general adaptive social regulation. The concept of social regulation, often referred to as self-regulation, is among the most prominent and broad in psychology ("self-regulation universe," Nigg, 2017), with an enormous body of literature. We defined adaptive social regulation in preadolescence as encompassing three broad aspects. One, we observed adaptive regulation of negative emotional tone when interacting with parents across multiple contexts (Allen et al., 2003; Hare, Marston, & Allen, 2011; Sroufe, Egeland, Carlson, & Collins, 2005). Two, we obtained parents' ratings of regulation of negativity in the broad social ecology (disruptive problems, oppositionality, aggression, hostility, bad temper, conflicts, and disregard for others in their interactions with parents, teachers, other adults, and peers). Three, we examined internalization of adults' values and norms for conduct, long implicated as an important marker of successful socialization (Darling, Cumsille, & Martinez, 2008).

Calkins and Leerkes (2013), emphasizing processes rather than simple associations, argued for examining emotion regulation as a mediator of the relations between early attachment and more complex kinds of self-regulation. Consequently, we modeled emotion regulation in response to frustrating events as a key mediator in pathways unfolding from the early parent-child security to broadly conceived social regulation in preadolescence. Given the vast extant research, we anticipated that early attachment security would initiate positive, adaptive long-term developmental cascades toward better social regulation in early preadolescence. We proposed that early secure attachment would promote children's emotion regulation in response to frustration in early childhood and preschool years, presumably providing children with important coping skills, such as regulating and modulating their emotional arousal. Children then recruit those skills later in development, as they navigate an increasingly complex social world in middle childhood and early preadolescence – both the

sphere of the parent-child relationship and a wider sphere of social partners and ecologies (peers, teachers, home, school).

Given the past work on the key importance of early relational experience for long-term development (e.g., Kochanska et al., 2019; Sroufe, 2005, 2016), we expected to document the presence of indirect paths from early security to emotion regulation to broader social regulation in early preadolescence, even in the absence of direct, unqualified effects of attachment. We studied all processes in mother-child and father-child dyads, but given the dearth of the extant research and the mixed nature of the findings, this aspect of our work was exploratory.

Method

Participants

Community families with two biological parents of typically developing infants (most born in 2001) responded to ads in a Midwestern area and volunteered to participate in a longitudinal study. Families' annual income and highest level of education varied. Eight percent earned less than $20,000, 17% earned $20,000 – $40,000, 26% earned $40,000 – $60,000, and 49% earned over $60,000; 25% of mothers and 30% of fathers had no more than a high school education, 54% of mothers and 51% of fathers had an associate or bachelor's degree, and 21% of mothers and 20% of fathers had postgraduate education. In terms of ethnic backgrounds, 90% of mothers were White, 3% were Hispanic, 2% were African American, 1% were Asian, 1% were Pacific Islander, and 3% were Other Non-white; 84% of fathers were White, 8% were Hispanic, 3% were African American, 3% were Asian, and 2% were Other Non-white. In 20% of families, one or both parents were Non-white. Parents signed informed consents and children, after age 7, signed assents (University of Iowa IRB, Developmental Pathways to Antisocial Behavior: A Translational Research Program, 200107049).

Overview of the Design

Families entered the study when children were 7 months old (N = 102). The key measures reported in this article were collected at 25 months (2 years, N = 100), 38 months (3 years, N = 100), 52 months (4.5 years, N = 99), 67 months (5.5 years, N = 92), 122 months (10 years, N = 82), and 147 months (12 years, N = 79). Children participated in two 2 – 4-hour laboratory observational sessions, one with each parent, with one exception: at 3 years, the sessions were at home and in the laboratory, with each parent involved in half of each session. All sessions were conducted by female experimenters (Es) and video recorded.

Children's attachment security with each parent was assessed at 2 years. Measures of children's emotion regulation in response to frustration were obtained at 3, 4.5, and 5.5 years (observed in laboratory delay tasks and in parent-child control interactions) and at 4.5 and 5.5 years (parent-reported child trait-like angry responses to frustration). Measures of children's social regulation outcomes (regulation of negative emotional tone in parent-child contexts, regulation of negativity in social interactions, and internalization of adults' values and standards) were collected at 10 and 12 years. Additionally, mothers' and fathers'

attachment-related measure of parenting (self-reported willingness to serve as an attachment figure), was collected concurrently to the outcomes (10 and 12 years), to serve as a covariate.

All observational data were coded from videos. Reliability was typically established on 15 – 20% of cases, followed by frequent realignments. The descriptions of previously published constructs are abbreviated, and appropriate references provided.

Measures

Children's attachment security, 2 years.—After observing the entire 2.5-hour laboratory session for each parent-child dyad at 2 years, coders performed the Attachment Q-Set (AQS; Waters, 1987). Details are in Boldt et al. (2014). Coders sorted 90 cards into nine 10-card piles, ranging from 1=*most uncharacteristic* to 9=*most characteristic*). The sort was then correlated with the prototypical "secure child." Reliability, ICC, was .85.

Children's emotion regulation in response to frustration.

Regulation of frustration in delay tasks, 3, 4.5, and 5.5 years.: Children participated in well-established, coherent batteries of tasks that called for delaying a desired behavior (eating a candy, opening a gift, choosing a gift). At 3 years, the tasks included Snack Delay, Gift Wrap/Bow, and Dinky Toys; at 4.5 years, Snack Delay, Gift Wrap/Bow, Gift in Bag, Dinky Toys, and Tongue; at 5.5 years, Gift Wrap/Bow and Gift in Bag. In all tasks, higher scores reflected a better ability to delay. Details of the tasks and coding are in prior articles and available on request (e.g., Kim & Kochanska, 2019; Kochanska, Philibert, & Barry, 2009); consequently, the description is abbreviated.

Snack Delay required that the child wait to reach for an M&M candy placed under a cup until E rang the bell. It produced one score that reflected the child's ability to wait (averaged across trials). In Gift Wrap/Bow, we coded child behavior while E was wrapping a gift (having asked the child not to peek) and behavior while waiting for E to bring a bow. Those scores were averaged. In Gift Bag, we coded child behavior while waiting to retrieve a gift from a bag. In both gift tasks, the final scores represented composites of several (standardized) coded behaviors that cohered (e.g., peeking, staying in the seat, touching/opening the gift, as well as latencies to peek at the gift, to open the gift, to leave the seat, etc.). In Dinky Toys, we coded time spent while deliberately choosing a prize from a box filled with small toys. In Tongue, we coded how long the child waited to eat an M&M candy placed on his or her tongue (averaged across trials). Coding reliabilities, kappas, ranged from .71 to 1.00 and alphas ranged from .81 to 1.00. The tasks were inter-related at all ages. At 3 years, for three tasks, rs were .21-.39, all ps < .05; at 4.5 years, for five tasks, Cronbach's alpha was .74, at 5.5 years, for two tasks, r was .74, $p < .001$).

The tasks' (standardized) scores were aggregated at each age. Those composites were longitudinally stable from 3 to 5.5 years, rs .44–.64, ps < .001, and were further aggregated across assessments into a final score of adaptive regulation of frustration in delay tasks.

Regulation of frustration in parent-child control interactions, 3, 4.5, and 5.5 years.: Children's regulation of frustration directed at the parent was observed in control

contexts ("Do," i.e., toy cleanup, and "Don't," i.e., prohibition). In toy cleanups, parents instructed children to perform the mundane chore of putting toys away after play (15 min at 3 years, 10 min at 4.5 years, and 10 min at 5.5 years). In the prohibition contexts, at the outset of the laboratory session, parents instructed children not to touch attractive, off-limit toys on a low shelf and enforced the rule throughout the session. We coded 27 min at 3 years, 65 min at 4 years, and 60 min at 5.5 years; the total coded time across the three ages for each child with each parent was over 3 hours (187 min). The total time coded for each child was 374 min. Children's dysregulated anger, or defiance, was coded for every 30-sec segment of observation (in prohibition contexts, every episode of child being oriented toward the off-limit toys was recorded, and then every 30-sec segment within the episode was coded). We coded defiance when the child displayed highly negative opposition toward the parent, combined with anger, tantrums, kicking, throwing toys, hitting the parent, whining, or screaming. Reliability, kappas (calculated for a broader set of child behaviors), ranged from .65 to .80. At each age, we tallied children's defiance codes and divided by the total number of coded segments with each parent. Those scores were standardized and averaged across the toy cleanup and prohibition contexts into an overall defiance/dysregulated anger score for each age, and further averaged across ages into an overall defiance/dysregulated anger score from 3 to 5.5 years with each parent (*r*s for mother-child dyads, .38 – .58, for father child-dyads, .46 – .59, *p*s < .001). That final score was reversed to reflect the child's adaptive regulation of frustration and anger in control interactions. Details of the coding are in earlier publications (e.g., Kochanska, Barry, Stellern, & O'Bleness, 2009).

Trait-like anger regulation when frustrated, 4.5 and 5.5 years.: Parents completed the 13-item Anger/Frustration Scale from the Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001), rating their child from 1 = *extremely untrue* to 7 = *extremely true*. Cronbach's αs (mothers first, fathers second) at 4.5 years were .83 and .79, and at 5.5 years were .87 and .82. The scores were highly stable across the assessments (*r*s = .79 and .70, *p*s < .001), and were aggregated for each parent. Those scores were reversed, to reflect parents' perception of child trait-like adaptive regulation of frustration across a broad spectrum of situations.

Outcome measures: Children's social regulation.

Regulation of negative emotional tone in interactions with parents, 10 and 12 years.: We observed children's negative emotions toward the parent in multiple interactive contexts (cumulatively 81 min per each mother- and father-child dyad at each age; total of 162 min for the child with each parent, 324 min for each child). In contrast to parent-child interactions at preschool age, these contexts did *not* include parental control. The contexts encompassed affectively charged interactions that targeted typical conflict-eliciting issues of middle childhood and early adolescence, as well as engaging, emotionally positive or neutral interactions (Allen et al., 2003; Hare et al., 2011; Sroufe et al., 2005). Examples included "Campaigns" (designing campaigns to promote physical fitness, mature cell phone use, good nutrition, preventing fights), "Hot topics" (discussing typical disagreements), "Difficult scenario" (discussing a hypothetical difficult decision), or "Seeking advice" (the child

shared a troubling issue), “Snack”, “Plan a holiday” (planning favorite activities), “Puzzle” (assembling an object). Details are in Boldt, Kochanska, Grekin, and Brock (2016).

During each context, children’s negative affect was coded for every 30-sec segment as a neutral negative mood or one or more of discrete negative emotions (anger, sadness, or fear). The discrete emotions that were intense or pervasive were marked. Reliability, kappas (calculated for a broader range of child affect codes), ranged from .72 to .80.

For each context, the total number of each code was tallied and weighted: The tally of neutral negative mood multiplied by 1, that of each discrete negative affect by 2, and that of each intense negative affect by 3. Those scores were summed and divided by total number of segments in each context and then were averaged into a score of negative emotional tone with each parent, at age 10 and at age 12. Those scores correlated across the two ages, $r = .28$, $p < .05$ (child with mother) and $r = .29$, $p < .05$ (child with father), and were averaged into an overall negative emotional tone score for the child with each parent. The final scores were reversed, to reflect child adaptive regulation of negative emotional tone in interactions with parent.

Regulation of negativity in social interactions, 10 and 12 years.: Parents completed the 8-item Oppositional Defiant Disorder (ODD) scale in the Child Symptom Inventory (CSI-4; Gadow & Sprafkin, 2002) at 10 years and the Adolescent Symptom Inventory-4 (ASI-4R; Gadow & Sprafkin, 2008) at 12 years. The items target hostility, opposition, aggression, disregard for rules, and conflicts in multiple ecologies (home, school, peer relations). We used the severity scores, ranging from 0 = *never* to 3 = *very often*. For each parent, and at each age, those scores were summed. Cronbach’s αs at 10 years for mothers and fathers were .85 and .89, respectively; at 12 years, .90 and .88, respectively. The scores correlated across 10 and 12 years; for mothers’ ratings, $r = .63$, $p < .001$, and for fathers’ ratings, $r = .62$, $p < .001$, and thus were averaged across the two ages. Those final scores were reversed, to reflect each parent’s report of the child’s adaptive regulation of negativity in social interactions.

Internalization of adults’ values, 10 and 12 years.: Children completed the Adolescent Values Inventory (Allen, Weisberg, & Hawkins, 1989), adapted to cohort-specific issues (e.g., texting in class). The format followed Harter’s (1982) approach, for example, “Some kids think it’s cool to text in class BUT Other kids don’t think that a kid should text in class.” Both statements were followed by “really true of me” or “sort of true of me,” and children selected one answer. We averaged a subset of 12 items that represented children’s internalization of adults’ values (Cronbach’s αs = .69 and .64, at 10 years and 12 years, respectively). Those scores correlated across the two assessments, $r = .39$, $p = .001$, and were averaged into one score.

Covariates.

Children’s sex.: Children’s sex was included as a covariate in all analyses.

Attachment security with the other parent, 2 years.: In all analyses, we covaried the child’s security score at 2 years with the other (non-focal) parent.

Willingness to serve as attachment figure, 10 and 12 years.: Mothers and fathers completed the 10-item measure of self-reported willingness to serve as an attachment figure (Kerns, Tomich, Aspelmeier, & Contreras, 2000). Ratings ranged from 1 = *not at all descriptive of me* to 6 = *highly descriptive of me*. The final score was an average of all items. Cronbach's αs were .70 and .86 at 10 years and .74 and .72 at 12 years. The scores were stable across 10 and 12 years; mothers, $r(76) = .62$, fathers, $r(73) = .74$, both ps $< .001$. They were averaged across 10 and 12 years into overall scores for mothers and fathers, respectively. Table 1 presents descriptive data for all main constructs.

Results

Preliminary Analyses

Participants who did and did not return for the outcome measures did not differ with regard to any predictor or mediator, with one exception: Children who did not return had lower adaptive regulation scores in control interactions with fathers at 3 to 5.5 years than those who did; $M = -0.29$, $SD = 1.25$, and $M = 0.08$, $SD = 0.44$, respectively, $t(97) = -2.14$, $p < .05$.

Correlations among all the constructs are in Table 2A (for mother-child dyads) and 2B (for father-child dyads). For both mother- and father-child dyads, children's security with the respective parent at age 2 was positively associated with all measures of their emotion regulation in response to frustration between 3 and 5.5 years. Additionally, the three emotion regulation measures (regulation in delay tasks, regulation in parent-child control, and parent-rated trait-like anger regulation, 3 to 5.5 years) were positively inter-related. Children's regulation in delay tasks was positively associated with all outcomes. Observed regulated anger in control contexts and parent-rated regulated anger were associated with parent-rated regulation of negativity in social interactions at 10 to 12 years. Among the outcomes, children's observed regulation of negative emotional tone in interactions with each parent was positively associated with child-reported internalization of adults' values. Children's observed regulation of negative emotional tone in interaction with mothers was positively associated with mother-rated regulation of negativity in social interactions.

Main Analyses: Testing the Mediation Models

For the following analyses, we used Mplus Version 7 (Muthén & Muthén, 1998–2017), using full information maximum likelihood estimation, the preferred treatment of missing data for relatively small sample sizes (Enders, 2010). We estimated the mediation effects using bootstrapping, which provides an empirical approximation of sampling distributions of effects. This approach performs well when the sample size is relatively limited, as it does not assume the sampling distribution to be normal (and indeed, some of our measures were skewed), no particular formula for the standard error is required, and power is maximized while minimizing Type 1 error rate (MacKinnon, Lockwood, & Williams, 2004; Preacher, Rucker, & Hayes, 2007; Shrout & Bolger, 2002). We performed a bias-corrected bootstrap with 10,000 samples drawn to derive the 95% confidence intervals (CIs).

We tested separate models for mother- and father-child dyads. In each model, child security at 2 years with the respective parent was the independent variable. The three emotion regulation measures in response to frustration at 3 to 5.5 years (observed regulation in delay tasks and in control contexts with the respective parent, and the parent-rated child trait-like regulation of anger) were the mediators. Children's observed regulation of negative emotional tone in interactions with the parent, parent-rated regulation of negativity in social interactions, and child-reported internalization of adults' values at 10 to 12 years were modeled as the outcomes.

To test unique effects of security with the respective parent, we included children's security with the other parent as a covariate. To account for attachment-related measures of parenting concurrent with the outcomes, we also included the respective parent's willingness to serve as an attachment figure at 10 to 12 years. Child sex was a covariate in all models.

Mother-child dyads.—Figure 1A depicts findings for mother-child dyads; direct and indirect effects are in Table 3A. An increase in early security was associated with all measures of emotion regulation when frustrated at 3 to 5.5 years. Children who had been more secure were better regulated in delay tasks and in challenging mother-child control contexts and were rated by mothers as better in trait-like regulation of anger. Further, better regulation in delay tasks was associated with higher internalization of adults' values. Better regulation in control contexts was associated with better regulation of negative emotional tone with the mother at 10 to 12 years. Better trait-like, mother-rated regulation of anger was associated with better regulation of negativity in social interactions at 10 to12 years, also rated by mothers, and, surprisingly, with lower internalization of adults' values.

Four indirect effects from security at 2 years to emotion regulation at 3 to 5.5 years to social regulation outcomes at 10 to 12 years were present: (1) from security to emotion regulation in delay tasks to internalization of adults' values, (2) from security to trait-like regulation of anger to regulation of negativity in social interactions, (3) from security to emotion regulation in control contexts to regulation of negative emotional tone in interactions, and (4) from security to trait-like regulation of anger to internalization of adults' values (unexpectedly, linking better regulation of anger with lower internalization). Child security did not have long-term direct effects on any of the outcomes at 10 to 12 years.

Father-child dyads.—Figure 1B depicts findings for father-child dyads; direct and indirect effects are in Table 3B. For father-child dyads, as for mother-child dyads, increase in early security was associated with all measures of better emotion regulation when frustrated at 3 to 5.5 years. Further, as for mother-child dyads, better regulation in delay tasks was associated with higher internalization of adults' values, and better trait-like regulation of anger at 3 to 5.5 years was associated with better regulation of negativity in social interactions at 10 to 12 years.

Two indirect effects from security at 2 years to emotion regulation at 3 to 5.5 years to outcomes at 10 to 12 years – both parallel to mother-child dyads – were present: (1) from security to emotion regulation in delay tasks to internalization of adults' values, and (2) from security to trait-like regulation of anger to regulation of negativity in social interactions. As

for the mother-child dyads, child security did not have any long-term direct effects on any of the outcomes at 10 to 12 years.

Discussion

Eisenberg and colleagues (1998a) emphasized the key role of parenting for the development of young children's emotion regulation capacities, which in turn, lead to future broadly ranging social behavior and social competence. Following the productive discussion that evolved around that target article, they expanded their model to include specifically children's early attachment relationships, which likely precede and set "the affectional stage" for many parenting practices, including ERSBs (Eisenberg et al., 1998b). By doing so, they made contact with the thriving attachment perspective on emotion socialization.

The current work contributes to the field by addressing several remaining questions. Although research has clearly shown that early security has implications for child emotion regulation into the preschool age, few studies have examined sequelae of security over an extended period of time, from toddler age through early adolescence, and across regulatory domains broadening over time. As well, few studies have examined simultaneously diverse measures of emotion regulation, assessed in response to various tasks and in diverse contexts, as mediators between early security and children's future social regulation conceptualized broadly. To our knowledge, very few, if any studies have done so for both mother-child and father-child relationships and endeavored to identify unique implications of security with each parent. As well, few studies of early security and emotion regulation have controlled for future attachment measures, concurrent to the outcomes, to demonstrate the key importance of early experience.

Several methodological strategies buttress the contribution of this study. Many of our measures came from observations of lengthy contexts and multiple assessments, systematically aggregated to produce robust scores. When examining the paths from early security with a given parent to future outcomes, we controlled for security with the other parent. We also controlled for attachment-related measures of parenting concurrent with the outcomes. Thus, we were able to address unique contributions of security in each parent-child relationship and the privileged role of early experience – some of the fundamental and perennial questions of attachment theory.

Early security with mothers and with fathers was directly associated with children's emotion regulation in frustrating contexts, assessed during the period from early childhood to preschool age (3 to 5.5 years). In both relationships, security of attachment at 2 years was positively associated with children's emotion regulation capacities. Compared to less secure children, those who had been more secure regulated their emotion better in laboratory delay tasks and in challenging control contexts with the parent and were rated as managing their anger better when faced with frustrating events in their daily lives. However, by early preadolescence (10 to 12 years), security no longer had direct effects on the outcomes. Should we conclude that the legacy of experience in early relationships does not extend past the preschool period?

The answer to this question appears to be “no.” Rather, our findings were consistent with attachment scholars’ view of early security – and more generally, of early relational experience – as a powerful, although often indirect, socialization force that has a privileged role in development, even if its direct long-term effects may not be detected. Further, we demonstrated how effects of early security may be “cascading” developmentally in a complex way, via more than one path. The indirect effects of security, mediated by the preschool emotion regulation skills, were present for a broad spectrum of social regulatory competencies. Clearly, emotion regulation, first deployed in response to the relatively narrow range of challenges, can be recruited for adaptive navigation of future broader developmental goals and tasks, and effective social regulation and competence (Eisenberg et al., 1998b; Sroufe, 2016; Thompson, 2016).

When the long-term mediated paths were examined, the picture of the sequelae of security with the mother and the father, and of the role of emotion regulation at preschool age in various contexts became complex. Our findings inform the field by elucidating processes that were similar and those that were distinct across mother- and father-child relationships. Two proposed paths were parallel across both relationships. Early security with either parent had an indirect effect on children’s internalization of adults’ values at 10 to 12 years; more secure children had higher scores, and that path was mediated through their enhanced emotion regulation in delay tasks at 3 to 5.5 years. That path is remarkably consistent with the literature on origins of conscientiousness that has linked early relationship, effortful control, and acceptance of adults’ values (Eisenberg, Duckworth, Spinrad, & Valiente, 2014). Indeed, we have demonstrated a part of that path with data from this study (Kim & Kochanska, 2019). The new contribution of the current work is to elucidate specifically the role of secure attachment as an early trigger for that developmental sequence. Roberts, Jackson, Berger, and Trautwein (2009), emphasized the dearth of observational studies of early origins of conscientiousness, particularly the role of early relationships. Consequently, the current work addresses an important gap.

The other long-term path that was parallel across mother- and father-child relationships was the sequence from early security to parent-rated anger regulation at 4.5 to 5.5 years to better ability to regulate negativity across broader social contexts – not only at home, but also with peers, teachers, and other adults at 10 to 12 years – also rated by the parent. As a note of caution, this path is subject to method variance limitation, given that both the mediator and the outcome came from the parent’s report, and the content of the items in the parent-rated management of anger at 4.5 to 5.5 years and ability to regulate negativity at 10 to 12 years overlapped to some extent. This path, however, suggests that early security initiates an effective trait-like, relatively stable ability to regulate angry and negative behaviors across multiple domains.

Two mediational paths were present only in mother-child relationships. One path unfolded exclusively within the relational context: From early security to the child’s ability to regulate anger during control encounters at 3 to 5.5 years to his or her ability for adaptive regulation of negative emotional tone in interactions with the mother at 10 to 12 years. Lower security at 2 years and the following history of child defiance and angry outbursts in response to maternal control at preschool age appeared to launch a negative emotional trajectory within

the relationship, still manifested in mother-child interactive contexts in early preadolescence. Conversely, higher early security initiated a positive path to the child's better management of maternal control at preschool age, and to better emotional regulation in early preadolescence.

Why this path was present only in mother-child dyads is unclear. Perhaps the findings reflect the two functions of the attachment system: safe haven and secure base for exploration (Bretherton, 2010; Grossmann & Grossmann, 2019; Verschueren, 2019). Kerns, Matthews, Koehn, Williams, and Siener-Ciesla (2015) found that in middle childhood and preadolescence, children reported greater safe haven support from mothers (i.e., when distressed) and greater secure base support from fathers (i.e., when trying new things). Perhaps the history of safe haven – either positive or negative – has important long-term implications for regulation of negative affect within the given relationship. Given the salience of the safe haven function for mother-child attachment, those effects may be amplified in the mother-child relationship, with insecurity followed by the child's adversarial, dysregulated response to maternal control and continuing emotional dysregulation in interactive contexts in preadolescence.

One indirect effect, for mothers and children only, was surprising and hard to explain. Mother-rated trait-like anger regulation at 3 – 5.5 years was associated with lower child-reported internalization of adults' values in the overall model (albeit not in separate correlations). The CBQ Anger scale is part of broader negative emotionality; thus low levels of anger may be associated with low levels of other negative emotions, such as fear or discomfort. These latter emotions have, in fact, been broadly linked to more internalization (Frick & Morris, 2004). Future research is needed to replicate and understand the process involved.

As discussed above, it was interesting that the mediators (preschool regulation of emotion when frustrated) appeared to play distinct roles in the long-term paths. In particular, regulation in delay tasks was specifically associated with youths' internalization of adults' values; regulation of frustration in mother-child control contexts – with their regulation of negative emotional tone with mothers; and trait-like anger regulation – with their regulation of negativity in social interactions. The latter two associations may be due to the relative similarity of the measures (e.g., both the mediator and outcome assessed in parent-child contexts; or both assessed via parental perceptions of child trait-like attributes).

Although Eisenberg and colleagues' model (1998a, b) was not specifically inspired by attachment theory, the role of parental sensitivity in infancy was extensively acknowledged, and responsiveness to infants' signals of distress seen as key for future emotion socialization. This view is entirely consistent with attachment researchers' perspective, which considers early sensitivity to infants' distress a crucial antecedent of the forming attachment organization. Consequently, we believe that our current work is a natural complement to Eisenberg et al. (1998a, b) in that it examines early security as initiating a future cascade to first, emotion regulation when frustrated, and next, to future broad social regulation and competence.

Of note, Eisenberg and colleagues (1998b) proposed that early security can serve as a moderator of future links between parenting practices and child outcomes. Indeed, our team has extensively documented moderating effects of early security for many outcomes (Kochanska et al., 2019), and for anger regulation specifically (Brock & Kochanska, 2018). Future research should seek to integrate several possible models depicting how early relational experience can influence parental ERSBs (Eisenberg et al., 1998a, b) and children's emotion regulation at multiple levels. Ultimately, such studies will inform parenting education, prevention, and intervention programs. Many attachment-based interventions already include a focus on the parent's ability to read and respond to the child's emotional signals (e.g., see Berlin, Zeanah, & Lieberman, 2016; Steele & Steele, 2018 for reviews). For example, Attachment and Biobehavioral Catch-up (ABC) focuses on increasing caregivers' sensitivity by coaching them to be nurturing when the child is distressed, following the child's lead with delight, and reducing potentially overwhelming or frightening behaviors (Dozier, Roben, Caron, Hoye, & Bernard, 2018). Children whose caregivers received ABC intervention have been shown to express less negative affect during frustrating tasks and improved physiological regulation compared to those whose caregivers were in the control conditions (Lind, Bernard, Ross, & Dozier, 2014; Tabachnick, Raby, Goldstein, Zajac, & Dozier, 2019).

This study has limitations, some due to the nature of the studied constructs. The mediators (emotion regulation in response to frustration at 3 to 5.5 years) and outcomes (social regulation conceived more broadly, at 10 to 12 years) overlap conceptually, as both sets of constructs refer generally to self-regulation. Given the complex, multi-level nature of self-regulation (Calkins & Fox, 2002; Perry, Calkins, Dollar, Keane, & Shanahan, 2018), soft and fluid definitional boundaries in this area are well known. Pertinent research encompasses a dizzying diversity and richness of constructs, including, as examples, emotion regulation, effortful control, executive function, self-regulation, self-control, regulation, volitional processes, and a plethora of related constructs, often used interchangeably (the "self-regulation universe," Nigg, 2017). Mindful of those definitional overlaps, we carefully referred to "emotion regulation in response to frustration" when discussing our mediator measures at 3 – 5.5 years, and to "social regulation" when discussing the broader outcome measures at 10 – 12 years. We also exercised care to deploy measures that were clearly distinct empirically. Certainly, however, some of the same latent variables, including biological markers, may underpin both sets of constructs.

The relatively modest size of our sample is another limitation. This constraint prevented us from relying on analytic longitudinal models that account for stability and change in the studied constructs over time, for correlations among them, and for the transactional and bidirectional nature of socialization processes (e.g., cross-lagged designs with an autoregressive structure). We did control for an attachment-related measure of parenting concurrent with the measures of outcomes. This increases our confidence in the privileged role of early attachment, but future research with larger samples would strengthen causal inferences.

As well, a larger sample would allow for a more nuanced examination of distinct insecurely attached groups (avoidant, resistant, and disorganized). Such distinctions are particularly

relevant to the study of emotion regulation strategies (Cassidy 1994; Thompson, 2016). Finally, in a larger sample, we could examine mother-child and father-child relationships in the same model, an optimal approach to delineate relationship-specific effects, but one that our current sample size could not support. Of note, in each model, we controlled for security of attachment with the other parent, to boost our confidence that our findings reflect unique effects of the mother-child or father-child relationship.

The generalizability of our findings is limited. Although the families were diverse in terms of education and income, ethnic diversity was limited. All families were two-parent community families with typically developing biological children. Interactions were generally positive, and children overall well regulated. Nevertheless, the expected findings were present. Future research with more diverse and higher-risk families will be useful.

In science, it is always exciting to follow a history of heuristically generative work that becomes an impetus for future growing, synergistic yet diverse research. The original papers by Eisenberg and colleagues (Eisenberg et al., 1998a, b) have certainly served to frame and fuel important new foci and new understandings in research on emotional development, and they will continue to inspire scientists' new efforts.

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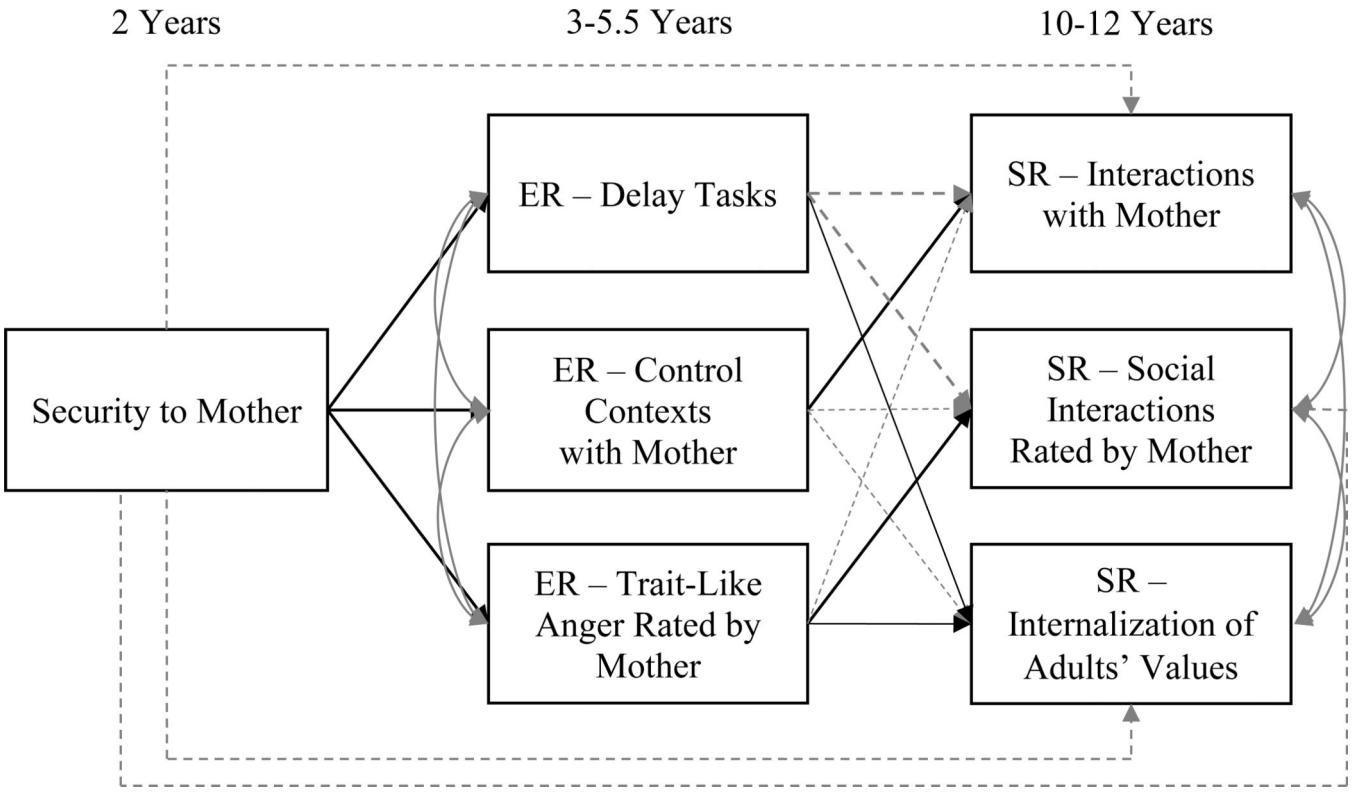

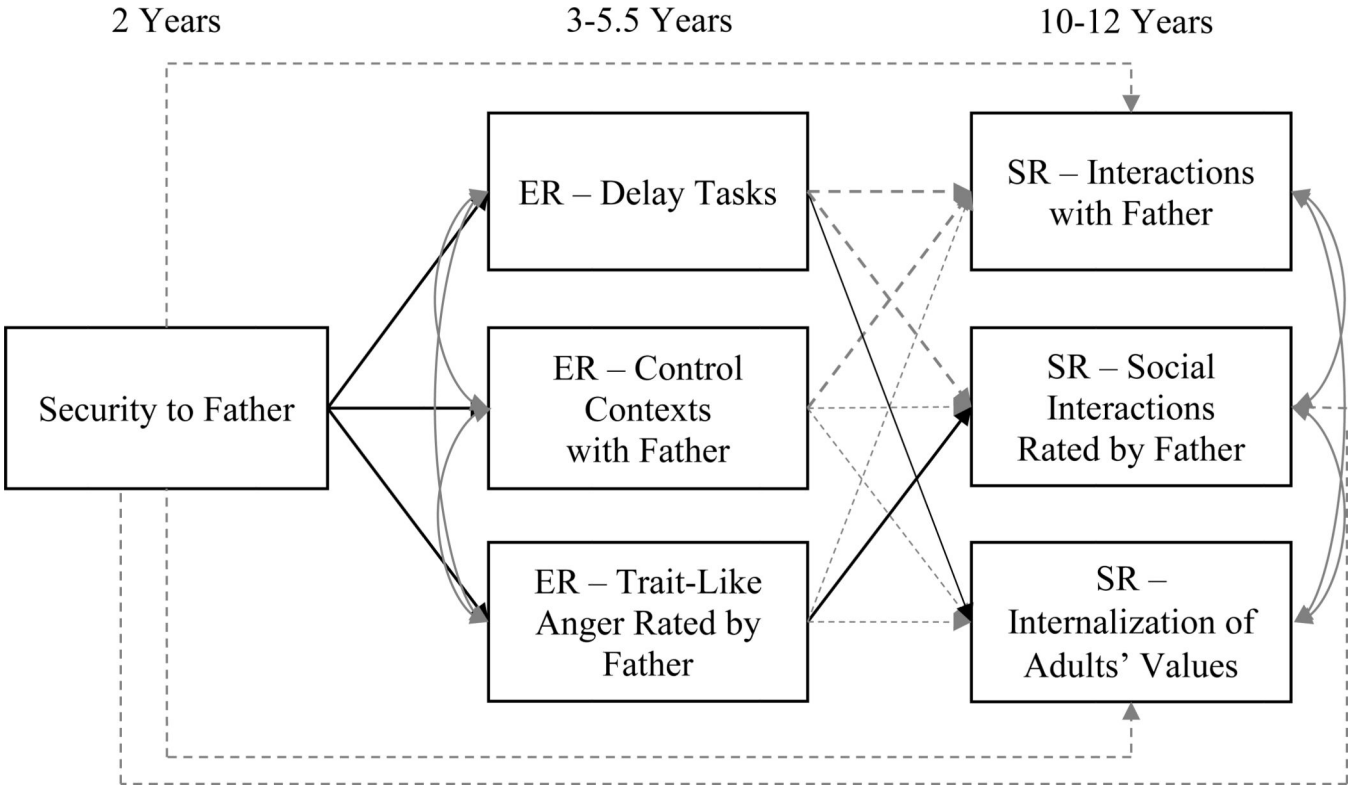

Figure 1.
A. Results of Mediation Analyses: Mother-Child Model

B. Results of Mediation Analyses: Father-Child Model

The mediation models of the paths from the predictor (child security to the parent at 2 years), to the mediators (emotion regulation, ER, in delay tasks at 3–5.5 years, in control contexts with the parent at 3–5.5 years, and parent-rated trait-like regulation of anger at 4.5–5.5 years), to the outcomes (social regulation, SR, of negative emotional tone in interactions with the parent, parent-rated regulation of negativity in social interactions, internalization of adults' values at 10– 12 years). Child sex, children's security to opposite parent at 2 years, and respective parent's willingness to serve as attachment figure at 10–12 years are included as covariates (not depicted). Solid lines represent significant effects and dashed lines represent non-significant effects. ER = Emotion Regulation (in response to frustration). SR = Social Regulation (regulation of negative emotional tone in interaction with parent, regulation of negativity in social interaction, internalization of adults' values).

Table 1.

Descriptive Data for All Measures

Age and Measure										
	Measures Obtained for the Child Only									
	M	*SD*	Range	Skewness	*N*					
ER - Delay Tasks										
3 Years[a]	0.00	0.68	−2.33 – 1.76	−0.35	100					
4.5 Years[b]	0.00	0.68	−4.50 – 1.27	−3.67	99					
5.5 Years[c]	0.00	0.93	−4.14 – 0.83	−2.28	91					
Overall	0.01	0.62	−3.09 – 0.83	−2.37	100					
SR - Internalization of Adults' Values[d]										
10 Years	3.75	0.27	2.67 – 4.00	−1.60	79					
12 Years	3.65	0.29	2.33 – 4.00	−2.04	74					
Overall	3.71	0.24	2.50 – 4.00	−2.31	82					
	Parallel Measures Obtained for Mother-Child and Father-Child Dyads									
	M-C Dyad					F-C Dyad				
	M	*SD*	Range	Skewness	*N*	*M*	*SD*	Range	Skewness	*N*
Children's Security										
2 Years	.29	.24	−.46 – .79	−0.35	100	.28	.22	−.25 – .77	−0.05	100
ER – Control Contexts[e]										
3 Years	0.00	0.84	−5.35 – 0.47	−3.40	99	0.00	0.83	−4.73 – 0.45	−2.85	99
4.5 Years	0.00	0.83	−4.90 – 0.38	−3.21	98	0.00	0.91	−6.89 – 0.24	−5.93	98
5.5 Years	0.00	0.70	−4.35 – 0.20	−4.69	90	0.00	0.73	−4.67 – 0.16	−5.83	88
Overall	0.01	0.63	−4.33 – 0.47	−4.09	99	0.01	0.67	−4.48 – 0.45	−4.62	99
ER - Trait-Like Anger[f]										
4.5 Years	−4.75	0.87	−6.46 – −2.85	0.14	98	−4.74	0.69	−6.46 – −2.85	0.29	98
5.5 Years	−4.65	0.94	−6.31 – −2.08	0.37	91	−4.63	0.78	−6.38 – −2.46	0.24	90
Overall	−4.67	0.87	−6.15 – −2.85	0.20	98	−4.69	0.67	−6.19 – −3.08	0.22	98
SR – Interactions with Parent										

Age and Measure										
10 Years	−0.46	0.43	−1.94 – 0.00	−1.43	78	−0.34	0.35	−1.58 – 0.00	−1.32	74
12 Years	−0.21	0.46	−2.61 – 0.00	−3.72	73	−0.18	0.48	−3.74 – 0.00	−6.11	71
Overall	−0.36	0.39	−2.10 – 0.00	−2.19	81	−0.25	0.33	−2.38 – 0.00	−4.26	77
SR – Social Interactions										
10 Years[g]	−6.20	3.50	−16.00 – 0.00	−0.52	81	−5.56	3.50	−14.00 – 0.00	−0.22	78
12 Years[h]	−5.19	3.97	−23.00 – 0.00	−1.52	78	−4.35	3.51	−16.00 – 0.00	−1.08	75
Overall	−5.79	3.52	−18.50 – 0.00	−0.78	83	−4.98	3.18	−14.00 – 0.00	−0.45	80
Parent Willingness To Serve as AF[i]										
10 Years	5.26	0.43	3.90 – 5.90	−0.84	81	5.05	0.63	3.40 – 6.00	−0.70	78
12 Years	5.34	0.47	3.60 – 6.00	−1.20	78	5.12	0.52	3.90 – 6.00	−0.52	75
Overall	5.29	0.41	3.75 – 5.90	−0.98	83	5.08	0.53	3.75 – 5.90	−0.66	80

[a]Composite of 3 standardized scores in delay tasks.

[b]Composite of 5 standardized scores in delay tasks.

[c]Composite of 2 standardized scores in delay tasks.

[d]Adolescent Value Inventory score.

[e]Composite of standardized constituent scores (“Do”, toy cleanup, and “Don’t”, prohibition).

[f]Child Behavior Questionnaire Anger/Frustration score.

[g]Child Symptom Inventory Oppositional Defiant Disorder score.

[h]Adolescent Symptom Inventory Oppositional Defiant Disorder score.

[i]Respective Parent Willingness to Serve as Attachment Figure.

M-C = Mother-Child. F-C = Father-Child. ER = Emotion Regulation (in response to frustration). SR = Social Regulation (regulation of negative emotional tone in interaction with parent, regulation of negativity in social interaction, internalization of adults’ values). Note that all higher ER and SR scores denote more adaptive regulation. AF = Attachment Figure.

Table 2A.

Correlations Among Mother-Child Measures

	2	3	4	5	6	7	8	9
Predictor, 2 years								
1. Security to M	.72***	.46***	.43***	.40***	.18	.35***	.09	.07
Covariate, 2 years								
2. Security to F		.49***	.43***	.39***	.28*	.29**	.01	.20
Mediators, 3.5–5.5 years								
3. ER - Delay Tasks			.47***	.27**	.40***	.24*	.46***	28**
4. ER – Control Contexts				.31**	.22	.34**	.04	.31**
5. ER – Trait-Like Anger					.09	.43***	−.18	.17
Outcomes, 10–12 years								
6. SR – Interactions with M						.30**	.36***	.21
7. SR – Social Interactions							.02	.45***
8. SR – Internalization of Adults' Values								.09
Covariate, 10–12 years								
9. M Willingness to Serve as AF								

Note:

*$p \leq .05$.

**$p \leq .01$.

***$p \leq .001$.

Table 2B.

Correlations Among Father-Child Measures

	2	3	4	5	6	7	8	9
Predictor, 2 years								
1. Security to F	.72***	.49***	.51***	.29**	.33**	.28*	.01	.11
Covariate, 2 years								
2. Security to M		.46***	.35***	.23*	.21	.26*	.09	.00
Mediators, 3.5–5.5 years								
3. ER - Delay Tasks			.55***	.25*	.52***	.28*	.46***	.17
4. ER – Control Contexts				.29**	.19	.26*	.04	−.02
5. ER – Trait-Like Anger					.28*	.34**	−.07	.09
Outcomes, 10–12 years								
6. SR – Interactions with F						.15	.50***	.25*
7. SR – Social Interactions							.03	.40***
8. SR – Internalization of Adults' Values								.23*
Covariate, 10-12 years								
9. F Willingness to Serve as AF								

Note:

*$p \leq .05$.

**$p \leq .01$.

***$p \leq .001$.

M = Mother. F = Father. ER = Emotion Regulation (in response to frustration, 3–5.5 years). SR = Social Regulation (regulation of negative emotional tone in interaction with parent, regulation of negativity in social interaction, internalization of adults' values, 10–12 years). AF = Attachment Figure. Note that all higher ER and SR scores denote more adaptive regulation.

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Table 3A.

Results of Mediation Analyses: Mother-Child Model

			Bias-Corrected Bootstrap 95% CI			
Predictor, 2 years	**Mediator, 3–5.5 years**	**Outcome, 10–12 years**	***b***	***SE***	**Lower 2.5%**	**Upper 2.5%**
Security to M	ER-Delay Task		**1.08**	**0.27**	**0.61**	**1.66**
	ER-Control Contexts with M		**1.13**	**0.34**	**0.54**	**1.87**
	ER-Trait-Like Anger Rated by M		**1.35**	**0.29**	**0.74**	**1.90**
	ER-Delay Tasks	SR-Interaction with M	0.23	0.13	−0.02	0.44
	ER-Control Contexts with M	SR-Interaction with M	**0.19**	**0.11**	**0.02**	**0.48**
	ER-Trait-Like Anger Rated by M	SR-Interaction with M	−0.02	0.05	−0.13	0.06
	ER-Delay Tasks	SR-Social Interactions Rated by M	−0.64	0.71	−2.12	0.60
	ER-Control Contexts with M	SR-Social Interactions Rated by M	0.46	0.93	−1.57	1.86
	ER-Trait-Like Anger Rated by M	SR-Social Interactions Rated by M	**1.02**	**0.39**	**0.22**	**1.77**
	ER-Delay Tasks	SR-Internalization of Adults' Values	**0.22**	**0.10**	**0.01**	**0.38**
	ER-Control Contexts with M	SR-Internalization of Adults' Values	0.00	0.07	−0.09	0.21
	ER-Trait-Like Anger Rated by M	SR-Internalization of Adults' Values	**−0.07**	**0.03**	**−0.14**	**−0.03**
Security to M		SR-Interaction with M	−0.13	0.23	−0.62	0.28
Security to M		SR-Social Interactions Rated by M	2.94	1.49	−0.27	5.63
Security to M		SR-Internalization of Adults' Values	−0.03	0.11	−0.26	0.17
Security to M	ER-Delay Task	SR-Interaction with M	0.25	0.17	−0.02	0.65
Security to M	ER-Control Contexts with M	SR-Interaction with M	**0.22**	**0.15**	**0.02**	**0.70**
Security to M	ER-Trait-Like Anger Rated by M	SR-Interaction with M	−0.02	0.07	−0.18	0.09
Security to M	ER-Delay Task	SR-Social Interactions Rated by M	−0.69	0.70	−2.02	0.66
Security to M	ER-Control Contexts with M	SR-Social Interactions Rated by M	0.52	1.04	−1.51	2.53
Security to M	ER-Trait-Like Anger Rated by M	SR-Social Interactions Rated by M	**1.38**	**0.63**	**0.36**	**2.91**
Security to M	ER-Delay Task	SR-Internalization of Adults' Values	**0.24**	**0.14**	**0.02**	**0.55**
Security to M	ER-Control Contexts with M	SR-Internalization of Adults' Values	0.00	0.08	−0.11	0.25
Security to M	ER-Trait-Like Anger Rated by M	SR-Internalization of Adults' Values	**−0.10**	**0.04**	**−0.21**	**−0.04**

Table 3B.

Results of Mediation Analyses: Father-child Model

			Bias-Corrected Bootstrap 95% CI			
Predictor, 2 ears	**Mediator, 3–5.5 years**	**Outcome, 10–12 years**	***b***	***SE***	**Lower 2.5%**	**Upper 2.5%**
Security to F	ER-Delay Task		**1.28**	**0.33**	**0.69**	**2.00**
	ER-Control Contexts with F		**1.63**	**0.54**	**0.78**	**2.87**
	ER-Trait-Like Anger Rated by F		**0.72**	**0.28**	**0.15**	**1.25**
	ER-Delay Tasks	SR-Interaction with F	0.29	0.18	−0.06	0.53
	ER-Control Contexts with F	SR-Interaction with F	−0.15	0.19	−0.43	0.17
	ER-Trait-Like Anger Rated by F	SR-Interaction with F	0.06	0.05	−0.03	0.18
	ER-Delay Tasks	SR-Social Interactions Rated by F	−0.12	0.75	−1.43	1.59
	ER-Control Contexts with F	SR-Social Interactions Rated by F	1.11	1.15	−1.02	3.64
	ER-Trait-Like Anger Rated by F	SR-Social Interactions Rated by F	**1.10**	**0.52**	**0.07**	**2.10**
	ER-Delay Tasks	SR-Internalization of Adults' Values	**0.28**	**0.10**	**0.03**	**0.42**
	ER-Control Contexts with F	SR-Internalization of Adults' Values	−0.14	0.14	−0.33	0.13
	ER-Trait-Like Anger Rated by F	SR-Internalization of Adults' Values	−0.03	0.03	−0.09	0.04
Security to F		SR-Interaction with F	0.16	0.19	−0.15	0.54
Security to F		SR-Social Interactions Rated by F	1.04	2.00	−3.01	4.87
Security to F		SR-Internalization of Adults' Values	−0.18	0.13	−0.41	0.09
Security to F	ER-Delay Task	SR-Interaction with F	0.37	0.29	−0.05	0.98
Security to F	ER-Control Contexts with F	SR-Interaction with F	−0.25	0.32	−1.04	0.18
Security to F	ER-Trait-Like Anger Rated by F	SR-Interaction with F	0.04	0.04	−0.01	0.17
Security to F	ER-Delay Task	SR-Social Interactions Rated by F	−0.15	0.92	−1.83	1.82
Security to F	ER-Control Contexts with F	SR-Social Interactions Rated by F	1.82	2.08	−0.96	7.73
Security to F	ER-Trait-Like Anger Rated by F	SR-Social Interactions Rated by F	**0.78**	**0.52**	**0.06**	**2.14**
Security to F	ER-Delay Task	SR-Internalization of Adults' Values	**0.35**	**0.19**	**0.04**	**0.77**
Security to F	ER-Control Contexts with F	SR-Internalization of Adults' Values	−0.23	0.24	−0.80	0.14
Security to F	ER-Trait-Like Anger Rated by F	SR-Internalization of Adults' Values	−0.02	0.03	−0.09	0.02

M = Mother. F = Father. Significant effects as indicated by the bias-corrected bootstrapped confidence interval (CI) are bolded.

Child sex, negative emotion in interactions with parent, and parent-rated negativity at 7 months, children's security to opposite parent at 2 years, and respective parent's willingness to serve as attachment figure at 10–12 years are included as covariates (not listed). ER = Emotion Regulation (in response to frustration). SR = Social Regulation (regulation of negative emotional tone in interaction with parent, regulation of negativity in social interaction, internalization of adults' values). Note that all higher ER and SR scores denote more adaptive regulation