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A Complex Interplay Among the Parent-Child Relationship, Effortful Control, and Internalized, Rule-Compatible Conduct in Young Children: Evidence from Two Studies

Grazyna Kochanska and Sanghag Kim

Abstract

We propose a model linking the early parent-child Mutually Responsive Orientation (MRO), children's temperament trait of effortful control, and their internalization of conduct rules. In a developmental chain, effortful control was posited as a mediator of the links between MRO and children's internalization. MRO was further posited as a moderator of the links between effortful control and internalization (i.e., moderated mediation): Variations in effortful control were expected to be more consequential for internalization in sub-optimal relationships (low MRO) than in optimal ones (high MRO). The model was tested in two studies that employed comparable observational measures. In Family Study ($N = 102$ community mothers, fathers, and children), MRO was assessed at 25 months, effortful control at 38 months, and children's internalization at 67 months. In Play Study ($N = 186$ low-income, diverse mothers and children), MRO was assessed at 30 months, effortful control at 33 months, and children's internalization at 40 months. MRO was observed in lengthy naturalistic interactions, effortful control in standardized tasks, and internalized, rule-compatible conduct in parent-child interactions and in standardized paradigms without surveillance. Structural Equation Modeling analyses, with internalized, rule-compatible conduct modeled as a latent variable, supported moderated mediation across mother- and father-child relationships and both studies. In optimal, mutually responsive relationships, multiple mechanisms other than capacity for effortful control may also operate effectively to promote internalization, thus reducing the relative importance of variations in child temperament.

Keywords

Parent-child relationship; temperament; effortful control; internalized conduct; longitudinal studies

The significance of morality for individuals, families, and societies extends well beyond developmental, social, personality, and clinical psychology, and into philosophy, sociology, law, and religion. Individual consciences, the internal monitors of conduct, reduce the need for ubiquitous external surveillance, and are effective forces of preserving social fabric. For young children, emerging conscience is a hallmark of early development, and its disruptions, such as disregard for rules and feelings of others, are key precursors of the unfolding antisocial trajectory (Kimonis & Frick, 2010; Rhee et al., 2012; Wakschlag, Tolan, & Leventhal, 2010). Thus, the processes and individual differences in paths of early conscience development are of key importance, and relevant research has been on the rise (Eisenberg, Fabes, & Spinrad, 2006; Killen & Smetana, 2006; Thompson, in press).

When the first signs of conscience emerge has been debated (Grusec, 1997; Kochanska & Aksan, 2004; Thompson, 2012, in press). The classic stage theories focused on child evolving moral understanding from self-centered, absolute, and concrete to principled, relative, and abstract (see review by Lapsley, 2006), and considered young children egocentric and oblivious to rules and feelings of others. More recent work, however,

informed by research on early social cognition, has been extended to young ages (Smetana, Jambon, Conry-Murray, & Sturge-Apple, 2012; Turiel, 2006).

We have embraced an approach rooted in psychoanalytic and neo-psychoanalytic theories, reinvigorated by attachment theory (Emde, Biringen, Clyman, & Oppenheim, 1991; Thompson, 2006; 2012; in press). It emphasizes the emergence of conscience in very young children (even older infants and toddlers), and the key role of early parent-child relationships in inculcating values and standards of conduct (Hoffman, 1983; Thompson, in press). Recently, infused with a new significance by attachment research, dyadic, reciprocal, mutual qualities of the early parent-child relationship have been posited as key in child emerging morality (Shaw, 2003; Thompson, 2008; Thompson, Meyer, & McGinley, 2006).

We have introduced an explicitly dyadic construct of *Mutually Responsive Orientation* (MRO) that evolves in some early parent-child relationships. We drew from several traditions, including attachment theory, the concepts of mutuality and reciprocity in the parent-child dyad (Maccoby, 1983; Schaffer, 1977), and Clark's (1984) notion of "communal relationships". MRO is a positively reciprocal, mutually binding, receptive, and cooperative parent-child relationship. Multiple studies, across many designs, measures, ages, and both mother- and father-child relationships, have shown that MRO promotes a host of positive internalization outcomes (e.g., Kochanska, Aksan, Prisco, & Adams, 2008).

Research on early morality that focuses on young children, socialization, and individual differences has found a natural synergy with that on temperament. Advances in genetics, physiology, and neuroscience in the study of individual differences have elucidated biologically-based child temperament in emerging trajectories of early morality and conscience (Frick & Morris, 2004; Kagan, 2005; Kochanska, 1997; Rothbart & Bates, 2006; Thompson, 2006; 2012, in press).

The role of children's temperamental trait of *effortful control* has been increasingly highlighted as key in social-emotional development in general, and moral development in particular. Effortful control, the child's capacity to deliberately, actively suppress the dominant response for the sake of a subdominant response, underpins children's capacity for self-regulated behavior, including rule-compatible conduct in the absence of surveillance. Poor effortful control is implicated in rule-breaking, disruptive, and antisocial conduct (Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Eisenberg, Spinrad, & Eggum, 2010; Kochanska, Murray, & Coy, 1997; Kochanska, Murray, & Harlan, 2000; Rothbart & Bates, 2006; Rueda, 2012).

Effortful control is a complex construct due to its *dual nature* (Eisenberg et al., 2010; Rothbart & Bates, 2006; Rueda, 2012). On the one hand, it is, in part, a product of the parent-child relationship. In particular, dyadic qualities such as MRO, early positive synchrony, mutuality, or attachment security between the parent and the child have been stressed as key for child ability for self-regulation -- from modulating emotional arousal to complex effortful control and executive capacities (Bernier, Carlson, Deschenes, & Matte-Gagne, 2012; Calkins & Hill, 2007; Feldman, Greenbaum, & Yirmiya, 1999; Hofer, 1994; Hughes & Ensor, 2009; Kim & Kochanska, 2012; Kochanska, et al., 2000, 2008; Schore, 2001; Spinrad et al., 2007; Sroufe, 1996). On the other hand, however, effortful control is a temperament trait, and as such, robustly grounded, in part, in the child's biology, neural, physiological, and genetic substrates (Posner & Rothbart 2007, 2009; Rothbart, Sheese, & Posner, 2007).

Recognizing the former aspect of effortful control, many studies have examined it as a mediator of the links between parent-child relationships and rule-compatible, moral conduct.

Spinrad and colleagues (Spinrad et al., 2012) demonstrated that children's effortful control mediated the links between mothers' warmth and sensitivity and children's future committed compliance with maternal directives. Committed compliance, when the child embraces and internalizes the parent's agenda, is typically seen as a manifestation of early conscience (Kochanska & Aksan, 1995). Eisenberg and colleagues (Eisenberg et al., 2005) further showed that children's effortful control mediated the relation between mothers' warmth and positive expressivity and children's low level of externalizing problems, such as lying or aggression. Kochanska and Knaack (2003) found that higher effortful control mediated the link between maternal low power assertion and multiple measures of children's future successful internalization of conduct rules.

Although the role of effortful control as a mediator of the relations between the parent-child relationship and internalization is well established, our understanding has gaps. A more complete model must also incorporate the role of the parent-child relationship as a *moderator* of the effects of effortful control on internalization. We believe that *moderated mediation* is a more accurate portrayal of the links among relationships, effortful control, and child internalization.

Recall that effortful control is, in part, a biologically-based child temperament trait. Evidence shows that parent-child relationships can effectively *moderate* links between such traits and outcomes (e.g., Bates, Pettit, Dodge, & Ridge, 1998; Kiff, Lengua, & Zalewski, 2011; Kochanska, Aksan, & Carlson, 2005; Kochanska & Kim, 2012; Paterson & Sanson, 1999; Rubin, Burgess, Dwyer, & Hastings, 2003; Spinrad & Stifter, 2006). We believe that the impact of effortful control on children's internalization would differ in optimal versus sub-optimal relationships, such that *variations in effortful control would be less consequential in highly mutually positive, optimal relationships than in sub-optimal ones*.

In mutually positive parent-child relationships, multiple mechanisms can effectively promote children's internalization of parental values and standards (Thompson, 2012, in press; Thompson et al., 2006). Children are likely to adopt a "willing stance" toward their parents, be receptive to and motivated to embrace their agenda, to cooperate with gentle guidance (Kochanska, Aksan, Knaack, & Rhines, 2004; Londerville & Main, 1981), and to imitate and identify with their parents (Kochanska et al., 2010; Waters, Kondo-Ikemura, Posada, & Richters, 1990). They are eager to accept parents' socialization messages (Grusec & Goodnow, 1994), and, because parents are less likely to use forceful discipline, to store them in semantic memory (Hoffman, 1983). They also likely share positive affect with the parent, an effective socialization vehicle (Kochanska, Forman, Aksan, & Dunbar, 2005; Maccoby, 1983; Shaw, 2003). Even if the child's capacity for effortful control is low, those processes and mechanisms of internalization that capitalize on the parent-child positive bond may be deployed and effectively lead to internalized conduct.

In contrast, in sub-optimal relationships, where such relational mechanisms do not function effectively, variations in effortful control may be particularly consequential for children's internalization. Without the mechanisms that derive from the positive parent-child bond, and with poor effortful control, there is little to support the child's internalized conduct. However, children with effective effortful control capacities may have sufficient ability for restraint to engage in rule-compatible behavior.

In this article, we aim to elucidate those complexities. Figure 1 presents a general model of possible relations among the parent-child relationship, child temperamental individuality, and child moral or conscience development. We test the components of the model depicted in black.

The toddler years have been recognized as key in terms of the impact of the parent-child relationship on future adaptive and maladaptive trajectories (e.g., Shaw, Hyde, & Brennan, 2012). Further, at toddler age, effortful control begins to coalesce as a robust individual trait (e.g., Kochanska et al., 2000). And by the time children reach the preschool and kindergarten age, individual differences in internalization are well established (Aksan & Kochanska, 2005), and considered a key aspect of competence and adjustment (Masten et al., 1995; Wakschlag et al., 2010).

Almost all research on MRO, effortful control, and internalization has involved children and mothers. Very little is known about the father-child relationship in this context ((Hastings, Utendale, & Sullivan, 2007). The evidence is inconsistent. Sometimes, MRO with both parents has predicted effortful control and internalization (Kochanska et al., 2008) and other positive outcomes (Lindsey, Cromeens, & Caldera, 2010), but sometimes, only mother-child MRO has done so (Kim & Kochanska, 2012).

Furthermore, most existing studies have involved community families. Much less is known about the associations among early family relationships, children's effortful control, and internalization in at-risk families. Low income, although not in itself a cause of poor parenting or poor outcomes, is linked to other risk factors that are cumulatively detrimental to parenting (low education, family chaos and instability, unsafe neighborhood, parental stress and psychopathology, Belsky, 1984; Bornstein & Bradley, 2003; McLoyd, 1998). Thus, MRO in high-risk families may well be lower than in community families.

We report data from two large studies of normally developing young children. *Family Study* involved mothers, fathers, and children from two-parent community families that entered the study when children were infants. The measures of the mother-child and father-child MRO were obtained when children were approximately two, of effortful control at age three, and of internalized conduct at 5 ½. *Play Study* involved low-income, diverse mothers and toddlers. Mother-child MRO was assessed at 2 ½, effortful control 3 months later, and internalized conduct 10 months later. All measures were parallel across the studies to test the model using comparable data and allow for inferences about replicated findings.

Most studies have relied on parental reports and/or short observations. In both our studies, we used exclusively behavioral measures, obtained in lengthy sessions, many naturalistic interactions, batteries of tasks, and naturalistic and structured laboratory paradigms, coded from videotapes by multiple teams. Reliability was established on 15%–20% of cases, followed by frequent realignments to prevent observer drift. Kappas were used for discrete variables, and either alphas or intra-class correlations (ICC's) for continuous ones (both approaches have been recommended over the last 15 years, when our data have been collected, and they are essentially equivalent, Bravo & Potvin, 1991; Shrout & Fleiss, 1979). Extensive aggregation at multiple levels (observed contexts, effortful control tasks, coded segments, etc.) was programmatically implemented to achieve robust constructs (Rushton, Brainerd, & Pressley, 1983).

FAMILY STUDY

Method

Participants—Two-parent families ($N = 102$) of normally developing infants volunteered for the study advertised in a college town, a small city, and rural areas in Eastern Iowa. They represented a broad range of education. Among mothers, almost 25 % had a high school education (or less), 54% had an associate or college degree, and 21% had post-graduate education. Those figures for fathers were: almost 30%, 51%, and 20%. Annual family income ranged: 8% earned less than \$20,000, 17% earned between \$20,000 and \$40,000,

26% earned between \$40,000 and \$60,000, and 49% earned over \$60,000. Regarding ethnicity, 90% of mothers were White, 3% Hispanic, 2% African American, 1% Asian, 1% Pacific Islander, and 3% “other” non-White. Among fathers, 84% were White, 8% Hispanic, 3% African American, 3% Asian, and 2% “other”. In 20% of families, one or both parents were non-White.

Overview—We report data collected at three times: Child MRO with the mother and father was assessed at 25 months ($N = 100$, 50 girls), effortful control at 38 months ($N = 100$, 50 girls), and internalized conduct at 67 months ($N = 92$, 45 girls). There were two 1 ½-3-hour-long laboratory sessions at each time, conducted by female experimenters (Es), one with each parent (at 38 months, there was one home and one laboratory session, with each parent participating in half of each session). The laboratory included a naturalistically furnished “living room” and sparsely furnished “playroom”. The former contained an easily accessible shelf with very attractive toys and objects designated as off limits to the child. The parent was asked to issue the prohibition at the outset and enforce it throughout the session. Parent-child dyads were observed in naturalistic but carefully scripted contexts.

Measures

Children’s MRO with Mothers and Fathers, 25 Months

Observed contexts: Each mother-child and father child dyad was observed in six naturalistic contexts (47 min with each parent): introduction to the laboratory and to the shelf with the prohibited toys (5 min), parent “busy” (10 min), snack (12 min), play (5 min), toy cleanup (10 min), and opening a gift (5 min).

Coding: For each of the six contexts, coders rated the parent-child dyad on five dimensions. Each dimension included items rated from 1 (very untrue of the dyad) to 5 (very true of the dyad). Those dimensions were as follows (lowest and highest descriptors in parentheses). (1) Coordinated routines, 4 items (dyad has no routines or routines are a source of conflict; dyad has easy, comfortable, coordinated routines), (2) Harmonious communication, 4 items (dyad does not communicate; dyad communicates smoothly, in a connected back-and-forth way), (3) Mutual cooperation, 3 items (dyad unable to cooperate, conflicts escalate; parent and child adopt an open, willing, receptive stance toward each other), (4) Connectedness, 3 items (dyad avoids each other, disconnected; dyad in tune with each other), and (5) Emotional ambience, 5 items (negative ambience permeates interaction; very positive, warm ambience, with bouts of joy and displays of affection). Reliability of coding, alphas, ranged from .82 to .94.

Data aggregation: For each context, we created a composite by averaging across all the items. Then, we averaged across all six contexts to create one *overall MRO score* for each parent-child dyad. Cronbach’s alphas were .83 for both mother-child and father-child dyads. There were no differences between the dyads with daughters and sons for either parent.

Children’s Effortful Control, 38 Months

Battery of tasks: Children were given nine effortful control tasks (extensively published, thus the description is brief). The tasks targeted five effortful control functions (Kochanska, Murray, & Harlan, 2000): delaying (3 tasks), slowing down motor activity (2 tasks), suppressing/initiating activity (Go-No Go, 1 task), lowering voice (1 task) and effortful attention (2 tasks).

Delaying: In Snack Delay, the child waited to retrieve an M&M candy from under a cup until E rang the bell (4 trials). In Gift, the child waited, without peeking, while a gift was

being wrapped behind him or her (1 min), and then waited in the seat, without touching the gift, while E left to get a bow (3 min). In Dinky Toys, child was shown a box full of small prizes, and asked to indicate the desired choice verbally, after having looked at the toys without touching them, keeping hands on the table.

Slowing down: In Walk-a-Line, the child walked down along a marked line as slowly as possible. In Turtle and Rabbit, the child guided the two animals to a barn along a curved path as slowly and as fast as possible, respectively (2 trials for each).

Suppressing/initiating activity to signals: In Tower, the child took turns with E while placing blocks on top of each other, building a tower (2 trials).

Lowering voice: In Whisper, the child whispered the names of 12 characters.

Effortful attention: In Day-Night and Snow-Grass (Carlson and Moses, 2001), the child was asked to ignore a dominant perceptual feature of a stimulus for the sake of a subdominant feature (point to the opposite picture than one named by E, 10 trials each).

Coding and data aggregation: Higher scores reflected a better capacity for effortful control. In Snack Delay, each trial was coded from 0 (eats candy before E lifts the bell, to 4, waits until the bell is rung). In Gift, during wrapping, child behavior was coded from 1 (turns fully around to look) to 5 (does not peek). While waiting for E to return, touching behavior was coded from 1 (opens gift) to 4 (never touches), and seat behavior from 1 (in seat for less than 30 sec) to 4 (in seat for more than 2 min). The latencies to peek, turn body around, touch, lift, and open gift, and to leave seat were also coded. In Dinky Toys, the codes ranged from 0 (grabs a toy) to 5 (never removes hands from table). In the slowing down tasks, codes reflected durations (walking, moving the animals to barn). In Tower, the code reflected the number of turns correctly given to E. In Whisper, codes ranged from 0 (shouts) to 3 (whispers). In Day/Night and Snow/Grass, the codes ranged from 0 (fails to point) to 3 (correctly points on first attempt).

Reliabilities, kappas, were .71 to 1.00, and alphas .81 to 1.00. The scores were averaged across trials where applicable. The individual tasks' scores were then standardized and aggregated into the *effortful control composite* (Cronbach's $\alpha = .65$). Girls scored higher than boys, $M = .14$, $SD = .47$, and $M = -.17$, $SD = .53$, respectively, $t(98) = 3.07$, $p < .01$.

Children's Internalization Measures at 67 Months

Internalization of Parental Prohibition When Alone

Observed contexts: At the end of the session, the child was left alone for 8 min in the laboratory living room, after the parent reminded him or her about the prohibited toys before leaving to the adjoining room. The child was asked to perform a dull sorting task set up directly in front of the shelf.

Coding: Child behavior was coded for every 5-sec segment as other activity (playing with unrelated toys), sorting task, looking at the toys without touching, spontaneously self-correcting, touching toys gently, and violating the rule ("wholeheartedly" playing with the toys). Occasional segments when the child was outside the room, seeking parent, were marked. The latencies to the first instances of looking, touching, and violating the rule were recorded. Reliability, kappa, was .91.

Data aggregation: All instances of each behavior were tallied and divided by the number of segments when child was in the room. Those variables and the latencies were submitted to

Principal Components Analysis (PCA). The results were consistent with many earlier reports (e.g., Kochanska & Knaack, 2003). The first factor (with mothers, Eigenvalue 3.35, 37.2% of variance, and with fathers, Eigenvalue 3.53, 39.3% of variance) captured internalization of prohibition. Rule violations and gentle play loaded negatively, and sorting, looking without touching (mother session), latencies to touch and to violate the rule loaded positively. Those factor scores were used as the measures of child *internalization of the mothers' and fathers' prohibition*. Girls had higher scores than boys for maternal prohibition, $M = .24$, $SD = .68$, and $M = -.23$, $SD = 1.19$, respectively, $t(88) = 2.38$, $p < .05$, and paternal prohibition, $M = .27$, $SD = .49$, and $M = -.28$, $SD = 1.28$, respectively, $t(85) = 2.63$, $p < .05$.

Internalized Compliance with Parental Prohibition

Observed contexts: Children were observed in six scripted interactions with their parents, in the living room, with the shelf with prohibited toys easily accessible. The contexts were as follows (60 min with each parent): introduction to the laboratory and to the prohibited toys (10 min), parent “busy” (15 min), snack (10 min), a craft project (10 min), cleaning up after the project (10 min), and opening a gift (5 min).

Coding and data aggregation: During the first pass, a team of coders coded all instances when the child oriented toward the prohibited toys (looked at, touched, approached, talked about), or when the parent commented on them. This was the onset of an episode, coded until its offset was marked (when the child reoriented away from the toys for at least 30 sec). Reliabilities for this coding, ICCs, ranged from .80 to .83. Another team coded child behavior for each 30-sec segment within those episodes.

Several child behaviors were coded; we focus on committed compliance, typically seen as a form of early internalization (Kochanska & Aksan, 1995): self-regulated, enthusiastic, eager compliance. The child adhered to parental prohibition without the need for control, and indicated that she or he had wholeheartedly endorsed the rule (e.g., pointing to the toys, looking at or talking about them, but without an attempt to touch). Reliability, kappa, was .73. All instances of committed compliance were tallied and divided by the number of the segments to create the *committed compliance score* with each parent. Girls had higher scores than boys with mothers, $M = .98$, $SD = .04$, and $M = .89$, $SD = .22$, respectively, $t(88) = 2.60$, $p < .05$, and fathers, $M = .96$, $SD = .07$, and $M = .91$, $SD = .15$, respectively, $t(86) = 2.04$, $p < .05$.

Internalization of E's Rules When Alone

Observed contexts: The child was observed alone, playing two games, one in each laboratory session. E described the rules and promised rewards for winning. The games involved either balls or rings at the target while remaining in a designated space, and were essentially impossible to win if the rules were followed. E reviewed the rules, asked the child to follow them and not to “cheat”, in a friendly but serious manner. The child was then left alone for 3 min. When E returned, she apologized for having given the child “the wrong rules”, and asked the child to play again in an easier way, until every child won a prize.

Coding: Child behavior was coded for every 3-sec segment as fully rule compatible or as representing one of possible violations (kappa, .96). The fully rule-compatible codes were used in this article.

Data aggregation: For each game, all fully rule-compatible conduct codes were tallied and divided by the number of segments when the child was playing the game (ball game, $M = .81$, $SD = .29$, ring game, $M = .87$, $SD = .26$). Those scores correlated, $r(90) = .59$, $p < .001$,

were standardized, and averaged into one score of rule-compatible conduct. Girls had marginally higher scores than boys, $M = .19$, $SD = .85$, and $M = -.19$, $SD = 1.10$, respectively, $t(88) = 1.83$, $p < .10$. Descriptive data are in Table 1.

Results and Summary

Overview—Data analyses progressed in three stages. First, we explored the correlations among the variables. Second, we conducted a Confirmatory Factor Analysis (CFA) of the internalization variables at 67 months: internalization of parental prohibition (the mother's and the father's) when alone, internalized compliance with parental prohibition (in the mother's or father's presence), and internalization of another adult's (E) rules when alone. The goal was to assure that it was legitimate to treat the child's internalization of rules as a latent variable, with the five observed behavioral measures as indicators.

Third, using Structural Equation Modeling (SEM), we simultaneously tested the presence of the posited *mediational path*, from MRO at 25 months to children's effortful control at 38 months, to children's internalization (modeled as a latent variable) and the posited *moderation*, where early MRO was modeled as a moderator of the link between effortful control and internalization. In other words, we examined whether effortful control predicted children's internalization differently depending on the quality of the early parent-child relationships.

In the CFA and SEM analyses, we used the maximum likelihood method for parameter estimation. For the missing values, we applied Full Information Maximum Likelihood (FIML) imputation method. We also implemented the listwise deletion method to check any possible impact of missing data, and we ascertained that the patterns of the results were consistent regardless of the treatment of missing data.

Correlations among the measures—The correlations are in Table 3. MRO correlated positively across mother- and father-child dyads. Higher MRO with both parents was linked to children's higher effortful control scores, and by and large, to higher internalization scores. Children's effortful control was linked to internalization scores. By and large, all internalization scores were positively inter-correlated.

Testing the measurement approach to children's internalization: CFA—In the CFA model, the five observational measures listed above were treated as indicators, posited to measure a single latent factor, rule-compatible, internalized conduct. The single-factor model fit the data well. Chi-square test did not reject the hypothesis of similarity between the observed covariance matrix and the predicted covariance matrix at .05 alpha level ($\chi^2 = 3.95$, $df = 5$, $p = .56$). Other overall indices also satisfied conventional criteria of a good model (Hu & Bentler, 1999): comparative fit index (CFI = 1.00) and Tucker-Lewis index (TLI = 1.02) were greater than .95, and root mean square error of approximation (RMSEA = .00) and standardized root mean square residual (SRMR = .03) were lower than .05. When we fixed the factor loading of child internalization of maternal prohibition, the factor loadings of the other four indicators ranged from .49 to .81. All loadings were significant at alpha = .001. Thus, we were comfortable treating all five measures as reflecting an underlying latent construct of internalized, rule-compatible conduct.

Testing moderated mediation—We used Preacher, Rucker, and Hayes' (2007) method to analyze the moderated mediation component of the model in Figure 1. In this analysis, (a) effortful control was modeled as the mediator of the relation between MRO and child internalization, and (b) parent-child MRO was considered not only as the predictor of effortful control and internalization, but also as a moderator of the relation between effortful

control and internalization. Particularly, this method allowed us to test whether the indirect effect of MRO on internalized conduct through effortful control was significant at a designated level of MRO. In other words, we could examine how different the indirect effects were depending on the different scores on MRO, or whether variations in effortful control were differently consequential for children's internalization in parent-child relationships varying in quality. Recall that we expected that they would be less consequential in optimal, highly mutually responsive relationships, and more so in sub-optimal, less positive relationships.

The tests of the indirect effects were based on the bootstrap method. Its advantage, particularly given small-to-moderate sample size, is the absence of any assumption on the sampling distribution and particular formula for the standard error (MacKinnon, Lockwood, & Williams, 2004; Shrout & Bolger, 2002). Because Preacher et al.'s (2007) moderated mediation analysis allows only one predictor in each model, we tested two separate models: one with the mother-child MRO as the predictor and the father-child MRO as a covariate (Figure 2), and one with the father-child MRO as the predictor and the mother-child MRO as a covariate (Figure 3). Child gender was also included as a covariate.

For mothers and children (Figure 2), the fit indices revealed that the model fit the data at acceptable level ($\chi^2 = 36.86$, $df = 26$, $p = .08$; CFI = .95; TLI = .93; RMSEA = .07; SRMR = .05). The structural coefficients in Figure 2 indicate the following significant effects: mother-child MRO on effortful control, effortful control on internalization, and the interaction term of MRO and effortful control on internalization.

These results implied the presence of the posited moderated mediation process among mother-child MRO, effortful control, and child internalization. To probe the moderated mediation, we compared the indirect effects of mother-child MRO on child internalization through effortful control at two different MRO levels (low MRO: -1 SD below the mean, high MRO: $+1$ SD above the mean). As expected, in the dyads with low MRO, the indirect effect was significant ($b = .17$, $SE = .06$, $p < .01$) such that the increase in MRO led to higher internalization through the increase in effortful control. The 95% CI of the indirect effect obtained by the bootstrapping method, [.06, .31], did not include zero. This also confirmed the presence of the indirect casual sequence. By contrast, in the dyads with high mother-child MRO, the indirect effect was not significant ($b = -.00$, $SE = .03$, ns), and the 95% CI, [-.04, .10], did include zero.

For fathers and children, the pattern of the results was similar (Figure 3). The model fit indices were good ($\chi^2 = 31.73$, $df = 26$, $p = .20$; CFI = .97; TLI = .96; RMSEA = .05; SRMR = .05). The effect of father-child MRO on effortful control, the effect of effortful control on children's internalization, and the interaction term of father-child MRO and effortful control on internalization were significant.

The moderation effect of father-child MRO on the link between child effortful control and internalization was significant, again supporting the posited moderated mediation. In the dyads with low father-child MRO, the indirect effect was significant at a marginal level ($b = .12$, $SE = .07$, $p = .09$). The CIs obtained by the bootstrapping method did not include zero at 95 % CI, [.01, .29]. In the dyads with high MRO, the indirect effect was not significant ($b = .03$, $SE = .03$, ns), and the 95% CI, [-.01, .15], did include zero. Although the point estimation of the indirect effect in low father-child MRO was marginally significant, the results of the bootstrapping CIs provided reasonable evidence to accept the presence of the expected moderated mediation.

Summary—The findings supported our expectations. At the level of measurement, the results of CFA produced results that were strikingly consistent with another longitudinal study on early conscience, where comparable behavioral measures were collected at 33 and 45 months (Aksan & Kochanska, 2005): A latent factor of internalized, rule-compatible conduct emerged, suggesting young children's generalized tendency to embrace the parents' and another adult's rules and standards of behavior, whether assessed with the parent present or when the child was alone.

Furthermore, the results highlighted developmental processes leading to individual differences in children's rule-compatible conduct, and showed that those processes are comparable in mother-child and father-child relationships. The findings were consistent with large amount of extant research that had shown that children's temperament, including effortful control, and their early relationships with parents significantly contribute to early morality, and with the extant evidence that the child's effortful control mediates effects of the parent-child relationship on the emerging internalization.

However, this research goes beyond the existing evidence by demonstrating that the *path from MRO to effortful control to internalization does not universally apply to all parent-child relationships*. To our knowledge, this is one of the first studies to show that this path is moderated by the quality of the early relationship. In less mutually responsive, sub-optimal early parent-child relationships, the child's temperamental capacity for deliberate self-control takes on particular significance, because in such relationships, there are few other mechanisms that can promote internalization. In mutually highly positive relationships, effects of variations in effortful control on internalization are not significant, perhaps because in such relationships, there are multiple alternative paths to early conscience, including children's receptive stance toward the parents and parental values, identification with and eager imitation of them, or positive parent-child affect, all of which can promote early internalization

PLAY STUDY

Method

Participants—Play Study targeted exclusively low-income mothers of toddlers. Mothers of toddler-age children volunteered for the study in response to flyers distributed broadly in local communities, targeting particularly venues frequented by low-income families, such as Women, Infants, and Children nutritional program offices, thrift stores, Head Start locations, mobile homes parks, subsidized housing areas, etc. To qualify, mothers had to receive or be eligible for aid from a federal, state, or faith-based agency, or for Earned Income Tax Credit, the child had to be free of major health problems, and the mother had to be able to speak English while observed.

The average annual family income was \$20,385, $SD = \$13,010$; 5% of mothers had not completed high school, 50% had a high school education/GED, and 45% had an associate, BA, or technical degree. There were 11% Hispanic, and 88% not Hispanic mothers; 73% described themselves as White, 15% as African American, 2% as Asian, 2% as American Indian, and 8% as being of more than one race (or unreported). Approximately half (54.3%) were married.

Overview—Data were collected at three points. Mother-child MRO was assessed when children were on average 30 months ($N=186$, 90 girls), children's effortful control -- at 33 months ($N=168$, 81 girls), and children's internalization -- at 40 months ($N=162$, 79 girls). At each time, mothers and children were observed in the laboratory in an approximately 3-hour-long session, conducted by female Es. The laboratory fully resembled that in Family

Study, including a low shelf with attractive, off-limits toys and objects, and the sessions, observational contexts, and coding all paralleled those in Family Study.

The study involved a parenting intervention. After the session at 30 months, mothers were randomized into two groups, and the intervention was implemented for 10–12 weeks (child-oriented play versus play-as-usual). Because there were no differences between the groups in the 33- and 40-month measures reported here attributable to the intervention, the findings are presented for the entire sample (when all analyses were conducted with the intervention group as a covariate, the findings were unchanged).

Measures

Children's MRO with Mothers, 30 Months

Observed contexts: Observations included seven contexts: The introduction to the laboratory and the prohibited toys (5 min), mother “busy” (10 min), snack (12 min), play (10 min), toy cleanup (10 min), free time (10 min), and opening a gift (5 min) (total 62 min).

Coding: Coding was essentially similar to that in Family Study, but simplified. Coders assigned one overall MRO rating for each context, from 1 (very untrue of the dyad) to 5 (very true of the dyad), considering four dyadic dimensions: coordinated routines, harmonious, connected communication, mutual cooperation, and emotional ambience. The conventions specified how to arrive at the overall score for each context Reliability (ICCs) ranged from .86 to .88.

Data aggregation: The scores for all contexts were highly inter-related (Cronbach's alpha = .78), and were averaged into one MRO score. The dyads with girls had higher scores than those with boys, $M = 2.75$, $SD = .55$, and $M = 2.46$, $SD = .63$, respectively, $t(184) = 3.25$, $p < .01$.

Children's Effortful Control, 33 Months

Battery of tasks: The battery consisted of five tasks. *Delaying* was assessed in three tasks. Snack Delay was analogous to that in Family Study (four trials). In Tongue Game, the child had to wait for E's signal before he or she ate an M&M candy placed on his or her tongue (three trials). In Gift Bag, the child was asked to wait for 3 min and stay in his or her seat until E returned before he or she retrieved a gift from a bag. *Suppressing/initiating activity to signals* was captured in one task, Tower, analogous to Family Study (two trials). *Effortful attention* was assessed in Animal Sorting Game (adapted from the reverse categorization task, Carlson, Mandell, & Williams, 2004), 12 trials, where the child first placed “baby” animals in one bag (marked with a small animal) and “mommy” animals in the other (marked with a big animal), and next, he or she placed each animal in the opposite bag.

Coding: Coding of Snack Delay and Tower largely paralleled that in Family Study. Reliabilities were as follows: Snack Delay, kappas .88–.91, Tower, ICCs = 1.00. In Tongue game, we coded the latencies to eat the candy (ICCs .91 –.99). In Gift Bag, we coded the child's restraint (1=pulls gift from bag, 5=does not touch bag, kappas .73–1.00), staying in seat (1=less than 30 sec, 4=more than 2 min, kappa 1.00), and the latencies to touch the bag, peek in the bag, put hand in the bag, pull out the gift, and leave seat (ICCs .85 – 1.00). In Animal Sorting Game, each trial was coded from 1 (incorrect placement and not corrected), to 2 (self-corrected), to 3 (correct on first attempt), kappas .94–.97.

Data aggregation: In multi-trial tasks, the scores were averaged or added across trials. In Gift Bag, all coded scores cohered, alpha = .86, were standardized and averaged. All tasks'

scores were standardized and averaged into the *effortful control composite*, $\alpha = .57$. Girls, $M = .12$, $SD = .56$, outperformed boys, $M = -.13$, $SD = .61$, $t(166) = 2.76$, $p < .01$.

Children's Internalization Measures at 40 Months

Internalization of Maternal Prohibition When Alone

Observed context, coding, data aggregation: The paradigm, the coding ($\kappa = .88$), and the results of PCA were essentially identical to that in Family Study. The first factor (Eigenvalue 3.48, 38.6% of variance) included negative loadings by rule violation and gentle play, and positive loadings by engagement in the sorting task, looking without touching, and latencies to touch and to violate the rule. This factor score was used as the measure of internalization of the mother's prohibition. Girls had higher scores than boys, $M = .25$, $SD = .84$, and $M = -.24$, $SD = 1.08$, respectively, $t(160) = 3.25$, $p < .01$.

Internalized Compliance with Maternal Prohibition

Observed contexts, coding, data aggregation: The approach was very similar to Family Study. Mothers and children were observed in the living room, with easy access to prohibited toys, for 45 min: introduction to the laboratory and to the toys (5 min), mother "busy" (10 min), snack (12 min), play with a pounding block (3 min), free time (10 min), and opening a gift (5 min). Reliability for coding the onset and offset of each episode when child attention was directed toward the toys, ICCs, ranged from .85 to .91; for coding children's committed compliance for each 30-sec segment, κ was .88. All instances of committed compliance were tallied and divided by the number of coded segments. Girls had higher scores than boys, $M = .87$, $SD = .13$, and $M = .74$, $SD = .22$, respectively, $t(160) = 4.43$, $p < .001$.

Internalization of E's Rules When Alone

Observed contexts, coding, data aggregation: Children played two games similar to those in Family Study (throwing a ball, finding a duck with a smiley face sticker at the bottom, both impossible to win if the rules were followed). They were observed for 3 min alone in each game, and their behavior was coded for every 3-sec segment as fully rule compatible or as one of several rule violations (κ s .84 – .91). The fully rule-compatible codes were used (ball game, $M = .44$, $SD = .37$, duck game, $M = .26$, $SD = .25$). Although the scores did not correlate, to be consistent with Family Study, they were standardized and averaged into one score of rule-compatible conduct. Girls had higher scores than boys, $M = .20$, $SD = .82$, and $M = -.18$, $SD = .73$, respectively, $t(158) = 3.11$, $p < .01$. Descriptive data are in Table 4.

Results and Summary

Overview—Data analyses paralleled those in Family Study, but were simplified, given that there were only mother-child dyads. First, we examined the correlations among the constructs. We do not report CFA for the latent outcome, rule-compatible conduct, because we had only three indicators, internalization of prohibition while alone, internalized compliance, and internalization of E's rules (three indicators cannot produce model fit indices). However, we observed that each of the factor loadings for the indicators was significant ($p < .001$) in the SEM analysis. Second, we simultaneously tested the posited mediation from MRO to child effortful control to internalization, and the posited moderated mediation -- different links between effortful control and internalization in dyads that differed in the quality of their relationship (Figure 4). In the SEM analysis, we used maximum likelihood method for parameter estimation and applied FIML imputation to treat missing data (we implemented also the listwise deletion and found that the treatment of missing data had no impact on the results).

Correlations among the measures—The correlations are in Table 4. By and large, they were very consistent with Family Study. Higher mother-child MRO was linked to children's higher effortful control scores and higher internalization. Children's effortful control was associated with two out of three future internalization scores. All three internalization scores were positively inter-correlated.

Testing moderated mediation—As in Family Study, we applied Preacher et al.'s (2007) method to analyze the moderated mediation model (Figure 4). Mother-child MRO moderated the relation between effortful control and internalized conduct, and predicted effortful control and internalization. This model had good overall fit ($\chi^2 = 8.15$, $df = 9$, $p = .52$; CFI = 1.00; TLI = 1.01; RMSEA = .00; SRMR = .03). All the structural coefficients among MRO, effortful control, and internalization were significant. The posited interaction effect of MRO and effortful control on internalization was also significant.

These results supported the anticipated moderated mediation process among the three factors. To probe the moderated mediation, we compared the indirect effects of MRO on child internalization through effortful control at two different MRO levels (low MRO: $-1 SD$, high MRO: $+1 SD$). As expected, in the dyads with low MRO, the indirect effect was significant ($b = .12$, $SE = .04$, $p < .01$) and 95% CI, [.04, .20], obtained by bootstrapping, did not include zero. But in dyads with high mother-child MRO, the indirect effect was not significant ($b = .02$, $SE = .03$, ns) and 95% CI, [−.04, .09], included zero.

Summary—The findings in Play Study were fully consistent with those in Family Study, supporting essentially similar fundamental processes of development, despite the differences in the studied populations (a more highly stressed and more ethnically and demographically diverse group than Family Study) and in the design (following children for 10 months rather than 3 ½ years). Already by the age of 3 ½, children's internalization of the mother's and another adult's rules, either in the mother's presence or absence, reflected a unitary underlying construct of rule-compatible conduct. And as expected, a mediational chain from mother-child MRO to child effortful control to internalized conduct was certainly present. But more importantly, we again showed that a complete picture of the links among MRO, child effortful control, and internalization is more complex, and reflects moderated mediation: The path from MRO to effortful control to internalization was significant only in the dyads where MRO was low. In the dyads where mothers and children were receptive to each other, connected, and shared the enjoyment of their interactions, variations in children's effortful control were unrelated to their internalized conduct.

GENERAL DISCUSSION

Developmental researchers have long believed that children's biologically-based individuality and early relationships with parents are closely interwoven, and that studying their interplay will lead to a more complete understanding of individual differences in early morality. But the actual mapping, testing, and replicating of those interwoven processes continue to present challenges. Studies that systematically examine such complex effects make useful contributions.

We presented two large studies that employed comparable observational measures to address those questions regarding the development of morality and conscience in the first few years of life. In both studies, we focused on MRO, a dyadic, positive relationship that has repeatedly been shown to be a context for successful socialization. The findings were remarkably consistent, despite the differences in the populations (two-parent community families versus low-income mothers) and design (from age 2 to 5 ½ versus 2 ½ to 3 ½). The inclusion of the higher-risk sample was a strength. As expected, MRO in the highly stressed

families in Play Study did appear lower than in Family Study, $t(284) = 11.21, p < .001$ (but recall that the coding, although very similar, was not identical, and children's ages differed by about 5 months, so caution is indicated). Nevertheless, the studied developmental *processes* were replicated across the two samples, and across mother- and father-child dyads. Perhaps once children enter the toddler age, positive relationships with *both* parents support their emerging regulation (Parke & Buriel, 2006); however, in infancy, mother-child MRO is more significant than that with the father (Kim & Kochanska, 2012). This research may therefore help explain several inconsistent findings in the field.

Both studies supported a significant path from the early parent-child positive, reciprocal, close, and mutually receptive relationship to child effortful control, and from that capacity to his or her generalized internalization of behavioral standards of conduct, consistent with the extant research (e.g., Eisenberg et al., 2005; Kochanska & Knaack, 2003; Spinrad et al., 2012). At the same time, however, both studies supported our view that while certainly accurate, the extant data do not convey a complete portrayal of the studied processes. Specifically, our data revealed *moderated mediation*, such that children's effortful control was differentially consequential for emerging internalization in varying parent-child relationship contexts. Given the challenge of replicating interactions (Rutter, 1983), this is a significant contribution. As expected, variations in effortful control were more important for children in sub-optimal, less positive relationships with their parents than for those in highly mutually responsive relationships.

This pattern of results is broadly consistent with several studies that have shown that effects of child temperament traits on adjustment outcomes are more pronounced in sub-optimal, more adversarial, and less positive childrearing environments. Already Thomas and Chess (1977) claimed that child difficult temperament likely predicts poor adjustment, but only in a sub-optimal childrearing environment, and not in patient, supportive families. Rubin et al. (2003) showed that variations in children's behavioral and emotional under-control at age 2 predicted externalizing behavior problems at age 4, but only in children of highly negative mothers. Bates et al. (1998) found, in two large studies, that child temperamental difficultness and resistance (with several mother-rated items capturing poor self-regulation) predicted externalizing problems for children whose mothers relied on less optimal discipline strategies, but not for those whose mothers' discipline was appropriate. Paterson and Sanson (1999), using concurrent maternal reports, found that children's difficult temperament was associated with externalizing behavior problems, but only in children whose mothers were highly punitive. As well, links between children's anger proneness and social-emotional outcomes were significant in insecure parent-child dyads but not in secure ones (Kochanska et al., 2005; Kochanska & Kim, 2012).

In our view, when it comes to moral development, the relative lower "potency" of temperament traits in more positive relationships is due to the availability of multiple alternative mechanisms that promote internalization: the child's willingness to embrace the parent's values, eagerness to identify with and imitate the parent, or shared positive affect. Indeed, in two separate studies, we found that in securely attached parent-child relationships, compared to insecurely attached, effects of such positive socialization mechanisms are enhanced (Kochanska et al., 2004; 2010). In less optimal relationships, such mechanisms function less effectively, and therefore, the relative importance of temperament is increased.

In this article, we focused on and tested only a subset of constructs and processes included in our broad model (marked in black in Figure 1). Examples of broader umbrella constructs and processes are marked in gray. Effortful control is only one of temperament traits potentially involved in conscience development. A large literature has focused on fearfulness (e.g., Frick & Morris, 2004; Kagan, 2005; Kochanska, 1997). Anger and

sociability have also been implicated (Carlo, Roesch, & Melby, 1998). Behavioral measures are only one way of assessing temperament, and biological measures of child individuality, including effortful control (molecular genetic, physiological, assessments of brain structure and function) have been increasingly employed (Calkins & Swingler, 2012). Multi-trait, multi-method, multi-level studies hold great promise in terms of elucidating adaptive and maladaptive moral trajectories (Blair, Peschardt, Budhani, Mitchell, & Pine, 2006; Raine, 2008). As well, MRO is only one of many constructs implicated in moral development. Other examples include parental discipline or attachment security. Both positive and adversarial dyadic sets can serve as key long-term catalysts, or moderators, of future socialization processes (Kochanska et al., 2010b, Kochanska & Kim, 2012).

In terms of children's conscience, growing research has documented its richness, even in young children. In this article, we focus on rule-compatible behavior. We show that a unitary latent "internalized, rule-compatible conduct" construct underlay multiple observed measures, such as the child's enthusiastic compliance with the parent's rule, whether in the parent's presence or absence, and unmonitored compliance with another adult's rules. But early conscience encompasses also moral emotions of guilt and empathy, moral cognition, and moral self (Aksan & Kochanska, 2005; Kochanska et al., 2010a; Thompson, in press). How well the current model applies to those components of early conscience is an empirical question.

We have not tested several possible paths linking the constructs in the model (the gray arrows in Figure 1). For example, we examined the parent-child relationship as a moderator of temperament-outcome links, but often, temperament traits, and other biological substrates of individuality, such as genotypes, are seen as moderators of relationship-outcome links. Growing evidence shows that some children are more susceptible than others to variations in parenting (Belsky & Pluess, 2009). And indeed, effects of MRO on children's effortful control and on several aspects of their conscience can be moderated by children's biological characteristics and traits (e.g., Kim & Kochanska, 2012; Kochanska, 1997).

This study has several limitations. Although suggestive of causal pathways, longitudinal designs cannot fully prove causality in the proposed developmental cascades. However, the replication across two quite different samples and mother- and father-child relationships suggests that we might have captured an important developmental process. Although attrition was low, by the time children were 67 months, the sample in Family Study was relatively small, and did not allow for the examination of all transactional processes over the course of development and controlling for longitudinal continuity. Play Study did not involve fathers, and thus, was not fully comparable with Family Study.

The ultimate progress toward a more complete picture of early moral development and factors that determine its trajectories will require conceptual models, methodologies, and statistical strategies that can adequately capture the complexities in the constructs and processes involved. Such research will be an exciting research enterprise leading toward rewarding goals.

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Figure 1.

A general model of the interplay among the parent-child relationship, child temperament, and child conscience. The constructs and paths examined in this article are depicted in black. Examples of broader constructs and additional potential paths, not examined here, are depicted in gray.

Figure 2.

Family Study: Structural equation model estimating the moderated mediation effect of mother-child MRO on child internalization mediated by child effortful control. Father-child MRO and child gender are included as covariates, although not depicted. Structural coefficients are unstandardized maximum likelihood estimates (*SE* in parentheses). Solid lines represent significant effects ($*** p < .01$, $**** p < .001$), and dashed lines represent non-significant effects. M=Mother, C=Child, E=Experimenter, MRO=Mutually Responsive Orientation.

Figure 3.

Family Study: Structural equation model estimating the moderated mediation effect of father-child MRO on child internalization mediated by child effortful control. Mother-child MRO and child gender are included as covariates, although not depicted. Structural coefficients are unstandardized maximum likelihood estimates (*SE* in parentheses). Solid lines represent significant effects (* $p < .05$, *** $p < .01$), and dashed lines represent non-significant effects.

F = Father, C = Child, E=Experimenter, MRO=Mutually Responsive Orientation.

Figure 4.

Play Study: Structural equation model estimating the moderated mediation effect of mother-child MRO on child internalization mediated by child effortful control. Child gender is included as a covariate, but not depicted. Structural coefficients are unstandardized maximum likelihood estimates (*SE* in parentheses). Solid lines represent significant effects (* $p < .05$, *** $p < .01$, **** $p < .001$). M = Mother, C = Child, E = Experimenter, MRO=Mutually Responsive Orientation.

Descriptive Data, Family Study

Table 1

Age of Child in Months <i>N</i>	25			38			67		
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
M-C MRO	3.28	.41	2.10–4.09						
F-C MRO	3.20	.42	2.07–4.12						
C Effortful Control ^a				-.01	.52	-1.35–1.30			
Internalization of M Prohibition (Alone) ^b							.00	1.00	-3.73–.78
Internalization of F Prohibition (Alone) ^b							.00	1.00	-4.82–1.05
Internalized Compliance (with M)							.93	.16	.00–1.00
Internalized Compliance (with F)							.94	.12	.40–1.00
Internalization of E's Rules (Games, Alone) ^c							.00	.89	-2.69–.57

M=Mother F=Father C=Child MRO=Mutually Responsive Orientation

^aMean of standardized scores in effortful control tasks.

^bFactor score derived from PCA.

^cMean of standardized scores in cheating games.

Note. *N*s for the specific variables were as follows: M-C and F-C MRO, 100, C effortful control, 100, internalization of M prohibition, 90, internalization of F prohibition, 87, internalized compliance with M, 90, internalized compliance with F, 88, internalization of E rules, 90.

Table 2

Correlations Among the Measures: Family Study

	MRO		C Effortful Control		Internalization of Prohibition, Alone		Internalized Compliance		Internalization of E's Rules, Games	
	M-C	F-C	25 Mo.	38 Mo.	M	F	w/M	w/F	67 Mo.	67 Mo.
MRO										
M-C	---	.36****	.41****		.48****	.18 ⁺	.41****	.52****		.39****
F-C		---	.35****		.38****	.09	.33****	.42****		.18 ⁺
C Effortful Control			---		.61****	.32****	.35****	.50****		.46****
Internalization of M Prohibition, Alone					---	.40****	.57****	.54****		.43****
Internalization of F Prohibition, Alone						---	.20 ⁺	.27**		.17
Internalized Compliance w/M							---	.51****		.31***
Internalized Compliance w/F								---		.33****

M=Mother F=Father C=Child E=Experimenter MRO=Mutually Responsive Orientation

⁺ $p < .10$.* $p < .05$.** $p < .025$.*** $p < .01$.**** $p < .001$.

Descriptive Data, Play Study

Table 3

Age of Child in Months	30		33		40	
	<i>N</i>		<i>N</i>		<i>N</i>	
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
M-C MRO	2.60	.61	1.43–4.29			
C Effortful Control ^a				-.01	.60	-1.46–1.17
Internalization of M Prohibition (Alone) ^b				.00	1.00	-1.89–1.61
Internalized Compliance (with M)				.80	.19	.18–1.00
Internalization of E's Rules (Games, Alone) ^c				.01	.80	-1.18–3.01

M=Mother C=Child E=Experimenter MRO=Mutually Responsive Orientation

^aMean of standardized scores in effortful control tasks.

^bFactor score derived from PCA.

^cMean of standardized scores in cheating games.

Note. *N*s for the specific variables were as follows: M-C MRO, 186, C effortful control, 168, internalization of M prohibition, 162, internalized compliance with M, 162, internalization of E rules, 160.

Table 4

Correlations Among the Measures: Play Study

	MRO M-C 30 Mo.	C Effortful Control 33 Mo.	Internalization of M Prohibition, Alone 40 Mo.	Internalized Compliance w/M 40 Mo.	Internalization of E's Rules, Games 40 Mo.
M-C MRO	---	.36****	.40****	.47****	.26****
C Effortful Control		---	.34****	.37****	.09
Internalization of M Prohibition, Alone			---	.67****	.34****
Internalized Compliance w/M				---	.39****

M=Mother C=Child E=Experimenter MRO=Mutually Responsive Orientation

+ $p < .10$.

* $p < .05$.

** $p < .025$.

*** $p < .01$.

**** $p < .001$.