Pathways to conscience: early mother–child mutually responsive orientation and children’s moral emotion, conduct, and cognition

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Background: Associations between early mother–child mutually responsive orientation (MRO) and children’s conscience have been previously established, but the mechanisms accounting for those links are not understood. We examined three such mediational mechanisms: (a) the child’s enhanced enjoyment of interactions with the mother, (b) increased committed, self-regulated compliance with the mother, and/or (c) a decreased need for maternal use of power assertion. Children’s conscience was seen as a complex system encompassing moral emotion (guilt), conduct, and cognition. Methods: In a longitudinal design, MRO was observed in mothers’ and children’s multiple naturalistic interactions at 9, 14, and 22 months. The mediators were observed at 33 months. Children’s conscience was observed at 45 months (moral emotion) and at 56 months (moral conduct and cognition). Results: The mediating paths were different for the three components of conscience. MRO had a direct, unmediated effect on moral emotion. MRO influenced moral conduct through two mediational paths: by promoting the child’s enjoyment of interactions with the mother and by enhancing committed compliance. MRO influenced moral cognition by promoting the child’s enjoyment of mother–child interactions. Maternal power assertion did not mediate the relation between MRO and conscience once the influence of the other mediators was considered. Conclusions: The impact of the early mother–child relationship on future conscience appears to be a complex process that progresses along distinct paths. Keywords: Conscience, mother–child relationship, developmental pathways. Abbreviation: MRO: mutually responsive orientation.

How children gradually internalize rules and standards of conduct, and how individual consciences collectively support the inter-generational transmission of values, have been compelling questions from the beginning of recorded history (Grusec, 1997). An impaired early conscience is a risk factor for, and a core aspect of, future conduct problems, antisocial development, and psychopathy (Blair, 1997; Frick et al., 2003; Lykken, 1995). Conversely, early capacity for remorse, engaging in conduct compatible with rules, and an understanding of right and wrong are markers of successful adaptation. Recently, we have returned to the study of conscience, with a new appreciation for the early years (Eisenberg & Fabes, 1998; Emde, Biringen, Clyman, & Oppenheim, 1991; Grusec & Goodnow, 1994; Kochanska, 1993; Radke-Yarrow, Zahn-Waxler, & Chapman, 1983; Thompson, 1998).

Parental influence on children’s conscience development remains controversial (Bugental & Goodnow, 1998; Collins, Maccoby, Steinberg, Heatherington, & Bornstein, 2000; Eisenberg, 1998; Maccoby, 1992; Maccoby & Martin, 1983). The role of parents has been revisited owing to the blossoming ‘science of relationships’ (Hinde, 1979; Hartup, 1989). Relationships endure over time, are built upon the history of interactions, and involve strong, frequent, and diverse connections (Maccoby, 1999). They are critical developmental contexts, which afford a productive vantage point from which to explore early socialization (Collins & Laursen, 1999; Maccoby, 1992; Reis, Collins, & Berscheid, 2000; Thompson, 1998, 2000).

As one approach consistent with that perspective, we have proposed a concept of mutually responsive orientation (MRO) (Kochanska, 1997, 2002a; Kochanska, Forman, & Coy, 1999). This approach has evolved in the context of several converging traditions, all sharing a common premise: Relationships characterized by mutual responsiveness, positivity, and harmony promote partners’ eager, willing stance toward each other’s influence. Maccoby (1983, 1999; Maccoby & Martin, 1983) viewed mutuality and reciprocity as the ‘positive socialization forces’ that promote child cooperation with the parents. Attachment scholars believe that secure children, who presumably have had responsive care, are cooperative and well internalized (Belsky, 1999; Bretherton, Golby, & Cho, 1997; Londerville & Main, 1981; Matas, Arend, & Sroufe, 1978; Stayton, Hogan, & Ainsworth, 1971; van IJzendoorn, 1997). Clark (1984) described a ‘communal relationship’ between adult partners who are invested in each other’s welfare, empathic, responsive to one another, and share a sense of mutual reciprocity. Integrating those literatures, we proposed that MRO is a positive, close, mutually binding, cooperative relationship that emerges in some parent–child dyads, and promotes many positive socialization outcomes, including children’s conscience. We also proposed that
MRO has two components: *mutual responsiveness* and *shared affective positivity*.

Mutual responsiveness in relationships has been seen as promoting trust in the partner, security, mutual bond, sense of agency and efficacy, empathy, and expectations of reciprocity. Parental responsiveness has been linked to child cooperation, and its lack to impaired socialization (Bryant & Crockenberg, 1980; Lytton, 1980; Martin, 1981; Parpal & Maccoby, 1985; Rocissano, Slade, & Lynch, 1987; Shaw, Keenan, & Vondra, 1994; Westerman, 1990).

Shared affective positivity – mutually experienced pleasurable, smoothly flowing activities infused with positive emotion in both partners – has been studied less than responsiveness. Its importance, however, has been stressed by many (Dix, 1991; Emde et al., 1991; Lay, Waters, & Park, 1989; Maccoby, 1983; Maccoby & Martin, 1983; Radke-Yarrow, Richters, & Wilson, 1988).

In two large longitudinal studies, we replicated robust findings of positive implications of MRO for conscience, across a striking range of the designs, ages, and outcomes: empathy, guilt, internalized conduct alone and with peers, reluctance to transgress, and maternal reports (Kochanska, 1997, 1998; Kochanska et al., 1999; Kochanska & Murray, 2000). The links were concurrent (toddler, preschool age) and longitudinal (toddler to preschool age, toddler and preschool age to early school age, infancy to toddler age), and supported by others (Bugental, 2000; Deater-Deckard & O'Connor, 2000; Deater-Deckard & Petrill, 2004; De Wolff & van IJzendoorn, 1997; Harrist & Waugh, 2002; Laible & Thompson, 2000; Maccoby, 1999; Thompson, 1998).

We do not yet know, however, what mechanism or mechanisms account for those established empirical links between MRO and children's conscience. To identify such potential mechanisms is a necessary next step, a goal consistent with the recent agenda in social-emotional development (Eisenberg, 1998).

This goal is made challenging by the complex nature of conscience, which, even at a young age, encompasses emotional, behavioral, and cognitive components. Although related, those components may not form a unitary, global predisposition, as first pointed out by Hartshorne and May (1928–1930), and revisited since (Burton, 1963; Sears, Rau, & Alpert, 1965). Thus, we asked if the mediating paths linking early MRO and later conscience may be relatively specific to the component of conscience being studied.

To examine the paths linking early MRO with children's future conscience is the objective of this article. We propose three mediators of those links: MRO may exert its influence by (a) fostering child enjoyment of the interaction with the parent, (b) promoting committed compliance, a nascent form of internalization, and/or (c) lessening the need for parental power assertion.

The first posited, and tested, mechanism involves the *child's enjoyment of interactions with the parent*. In mutually responsive relationships, children come to feel happy and content when interacting with parents, perhaps due to the prevailing positive ambience, or because responsive parents prevent them from experiencing many negative emotions.

Positive emotions have been consistently and broadly linked to multiple forms of prosocial behavior in social psychology (Carlson, Charlin, & Miller, 1988; Isen, 1999). Developmentalists have also acknowledged broad benefits of positive mood for socialization, although they focus on more enduring positive emotions and developmental processes, rather than on situational mood (Emde et al., 1991; Eisenberg & Fabes, 1998; Lay et al., 1989; Maccoby, 1983; Waters, Kondo-Ikemura, Posada, & Richters, 1990). We examined if such a link could be empirically shown, and further, whether such enjoyment indeed mediated the links between early MRO and future moral conduct and cognition.

We did not, however, expect those positive feelings to promote children's tendency to experience the moral emotion of guilt. Unlike prosocial cognition and conduct, guilt tends to be associated with negative rather than positive emotionality (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994).

The second proposed mediating link involves *committed compliance*, eager, wholehearted, and self-sustained form of compliance (Kochanska & Aksan, 1995; Kochanska, Aksan, & Koenig, 1995; Kochanska, Coy, & Murray, 2001). Committed compliance, first shown with the mother present, over time leads to fledgling, genuine internalization of maternal rules – rule-compatible conduct in the absence of control and surveillance, originating entirely within the child.

Our earlier work has shown both the correlations between mother–child MRO and child committed compliance, and between committed compliance and emerging conscience. Those links were concurrent and longitudinal, across a broad range of ages (from 14 to 48 months) and measures: rule-compatible behavior in many settings, and multiple maternal ratings (Kochanska, 2002b; Kochanska & Aksan, 1995; Kochanska et al., 1995; Kochanska, Tjebkes, & Forman, 1998; Kochanska et al., 2001). Again, however, we have never examined the mediational character of those empirical associations. In this study, we tested whether committed compliance serves as a mediator linking MRO with children's moral emotion, moral conduct, and moral cognition.

The third mediating mechanism involves *maternal use of power*. High MRO may reduce the need for parents to rely on forceful discipline. Indeed, we have found that in mutually responsive dyads, mothers used less power in control encounters. The links were between MRO at toddler and preschool age and power at toddler and preschool age, concurrent and longitudinal, and between MRO at 9 and 14 months...
and maternal power at 22 months (Kochanska, 1997; Kochanska et al., 1999), across observed and self-reported power measures.

Parental power, in turn, has been often seen as undermining children’s internalization (Grusec & Goodnow, 1994; Hoffman, 1983; Kochanska, Padavich, & Koenig, 1996; Lepper, 1981). Power assertion may engender external attributions for compliance (Lepper, 1981), a ‘threat to autonomy’ (Grusec & Goodnow, 1994), and resentment and anger toward the parents, and the consequent rejection of the parent's values. It may lead the child to store parents' messages in episodic rather than semantic memory, and thus impair internalization (Hoffman, 1983). Thus, we tested if the decreased power assertion may indeed mediate the link between MRO and conscience.

In sum, we examined three non-mutually exclusive models explaining the links between MRO and conscience. We propose that MRO promotes conscience by: (a) fostering the child's enjoyment of interactions with the parent, (b) promoting the child's committed compliance, and/or (c) diminishing the need for parental power assertion.

To strengthen our ability to address the causal hypotheses, we adopted a developmental longitudinal approach. The measures of MRO came from behavioral observations of extensive naturalistic mother–child interactions at 9, 14, and 22 months. The three mediators (child enjoyment of interactions, committed compliance, and maternal use of power) were assessed at 33 months, also using observations in multiple contexts. The measures of children's conscience included their moral emotion, guilt, when they believed they had committed a transgression (at 45 months), moral conduct when they were alone in situations that called for resisting strong temptations to break rules (at 56 months), and cognitive responses to hypothetical moral dilemmas (also at 56 months).

Mediation was examined for each conscience measure and for each mediational path separately (Baron & Kenny, 1986), in sequential regression-based tests of predictors and mediating influences. We also tested all three mediators in one comprehensive regression. In all analyses, to control for the systematic variation in both the mediators and outcomes (Collins et al., 2000), we used their earlier measures, concurrent with MRO, as covariates, when available (the composites of the 14- and 22-month scores for all three mediators and for child moral conduct, and a 22-month score, available for moral emotion).

Method

Participants

Mothers of normally developing infants in intact families in Iowa replied to ads in local papers, libraries, day care and health care centers, etc. The families were mostly White (mothers 97%, fathers 92%), but ranged broadly in income and education (details are in Kochanska, Coy, Tjebkes, & Husarek, 1998a). We report data from 9 months, M = 8.94, SD = .63, N = 112 (56 girls), 14 months, M = 13.65, SD = .74, N = 108 (53 girls), 22 months, M = 22.30, SD = .55, N = 106 (53 girls), 33 months, M = 32.80, SD = .53, N = 104 (52 girls), and 56 months, M = 56.53, SD = 1.09, N = 74 (41 girls). The study had been originally planned through 45 months; when additional funds became available, some participants had left the area or become too busy. The families who did and did not return did not differ on any relevant variable, based on t-tests.

Overview

At 9 months, we conducted a 2–2½ hr home session; at 14 months, a 2–2½ hr laboratory session. At 22 and 33 months each, there were two 3–4 hr laboratory sessions, and at 56 months – one 4 hr laboratory session. Each session involved the mother and the child, and was conducted by a young woman (‘E’). The laboratory has a naturalistically furnished living room and a sparsely furnished play room. The sessions were videotaped for later coding. Independent teams coded all data sets. Reliability was based on at least 15% of cases. The coders realigned routinely to prevent observer drift. To obtain robust constructs, we aggregated the data, following standardization, at multiple levels of measurement (Rushton, Brainerd, & Pressley, 1983).

Predictor measures: mutually responsive orientation (9, 14, 22 months)

MRO encompassed two components: maternal responsiveness and shared positivity. The coded contexts encompassed naturalistic mother–child interactions in many daily situations, such as free time, meal preparation, meal time, routine caregiving (giving the child a bath, changing his/her clothes), play time, etc. The approximate total coded times were: 60 min at 9 months, 40 min at 14 months, and 90 min at 22 months. The coding, reliability, data reduction, and coherence for the 9- and 14-month data are in Kochanska et al. (1999). Here, we also include 22-month data. Because the final measures were analogous with the past publications, their description is brief. Reliability at 22 months is described.

Maternal responsiveness

Two coding systems were used: microscopic and macroscopic coding (see Kochanska, 1997). They were coded independently, and their final scores were ultimately aggregated.
Microscopic coding. A combination of a time-sampled and event-triggered approach entailed two passes through a videotape, using 60-s intervals. During the first pass, the coders decided whether or not the child directed a signal toward the mother or was in a state requiring maternal response (reliability, kappa .87), and they identified all such signals (for example, child distress or bid; kappa .83). In the absence of any signal, one of several global codes was given (kappa .90). Only one global code was considered here (continuous harmonious exchange), used in the measure of shared positivity, described below.

During the second pass, the coders located each child signal, and evaluated the mother’s response to it as poor, fair, good, or exceptional (kappas .68–.75), considering multiple aspects of responsiveness: sensitivity, promptness, engagement, acceptance, cooperation, emotional availability, ability to follow child lead and focus of attention, and to adjust stimulation to child state.

Data reduction. We tallied all the instances when the mother responded poorly, fairly, well, or exceptionally to the signals in each category. Each tally was divided by the total number of the signals in that category (e.g., for child distress category, we computed the proportions of all child distress signals to which the mother responded poorly, fairly, well, or exceptionally). Next, we computed four broader composite scores which represented poor, fair, good, and exceptional response patterns (respectively, the averages of poor, fair, good, and exceptional response across all child signals).

Finally, we created an overall microscopic weighted score by weighing the composite of poor responses by −2, that of fair responses by −1, that of good responses by +1, and that of exceptional responses by +2, and by summing these scores (the means at 9, 14, and 22 months, respectively: −.38, .18, −.16).

Macroscopic coding (ratings). Each interactive context (e.g., play, snack) was rated using the three classic 9-point scales (Ainsworth, Bell, & Stayton, 1971): sensitivity–insensitivity (awareness of and attunement to the child’s signals), acceptance–rejection (warmth, interest in and enjoyment of the child), and cooperation–interference (respect for the child’s autonomy). Reliability, kappas, ranged from .65 to .83. For each context, all the scales correlated (r’s above .72), and were averaged into one score, then across contexts (alpha .88 for session 1 and .90 for session 2 at 22 months) into an overall macroscopic score (the means at 9, 14, and 22 months: 5.16, 4.89, 6.08).

Overall history of maternal responsiveness, 9 to 22 months. Despite having been produced by separate coding teams, the overall microscopic weighted score and the overall macroscopic score correlated at all ages (from .33 to .56, all p’s < .001); they were standardized and averaged into an overall maternal responsiveness score at each age (9, 14, 22 months).

Shared positivity

Mother–child shared positivity incorporated mother–child shared positive affect scores and the continuous harmonious exchange global scores from the responsiveness coding, described above.

Coding and data reduction. Shared positive affect was coded by an independent team during the same mother–child naturalistic interactions as was maternal responsiveness. The coding segments were 30 s long. For both the mother and for the child, one or more of the discrete negative affects (not used here) or discrete positive affects (affection and joy) was coded. If there was no ‘full-blown’ emotion, neutral positive mood or neutral negative mood was coded. Kappas were .68 to .79 for the mother, and .63 to .80 for the child. We tallied all the segments where both the mother and child displayed positive affect or neutral positive mood and neither displayed negative affect or neutral negative mood, and divided those tallies by the number of coded segments (the means at 9, 14, and 22 months, respectively, .59, .81, .79).

The continuous harmonious exchange was coded within the microscopic responsiveness system as a global code (a segment when the child did not direct any signals toward the mother, and the interaction appeared harmonious and smooth). Those codes were tallied and divided by the number of coded segments (the means at 9, 14, and 22 months, respectively, .23, .41, .12).

Those two scores correlated: at 9 months, r(112) = .55, at 14 months, r(108) = .46, and at 22 months, r(106) = .53, all p’s < .001. Thus, they were standardized and aggregated into a shared positivity score at each age.

Overall MRO score, 9–22 months

In the final step, at each age, the overall maternal responsiveness score and the shared positivity scores, which correlated (r’s ranged from .47 to .55, p’s < .001), were aggregated into the final MRO score. Next, these MRO scores, which were longitudinally stable (r’s ranged from .34 to .50, all p’s < .001) were aggregated into one score of the overall MRO score, reflecting the history of MRO from 9 to 22 months.

Mediators at 33 months: children’s enjoyment of interactions with mothers, children’s committed compliance, and mothers’ power assertion

Children’s enjoyment of interactions with mothers.

Coding and data reduction. Working with the affect codes for each child (affect was coded in a parallel
manner to that described above, for about 60 min of mother–child interaction across two sessions, kappa = .89), we weighted the instances of the child’s positive affect that were pervasive or intense (longer than half of a segment, and/or a strong emotion) by 3, the discrete positive affect codes by 2, and neutral positive affect codes by 1, added those figures, and divided by the number of coded segments to create the score of the child’s enjoyment of the interactions with the mother.

Children’s committed compliance. Coding. Committed compliance was coded in the laboratory, during 68 minutes of mother–child interaction in contexts such as snack, play, and free time. There was also a low shelf with attractive toys and other objects, designated as off-limits for the child (for details, see Kochanska et al., 2001). The mother issued this prohibition at the outset, and enforced it throughout each session. Every episode when the child was involved with the prohibited toys was coded, for every 30-s segment, until the child reoriented.

In each segment, the predominant behavior was coded, using several codes. Here, we use focus only on committed compliance, coded when the child looked but did not attempt to touch; verbalized the prohibition (e.g., ‘no-no toys’, ‘we don’t touch’); or turned away spontaneously. Restraint appeared to originate within the child, not due to maternal immediate control (Kochanska et al., 2001). Reliability for identifying the onset of an episode ranged from 87% to 96%; kappas for the behavioral codes were .65 to .77.

Data reduction. Tallied codes were divided by the number of coded segments, which were variable, because they depended on how many times the child directed attention to the prohibited toys, thus triggering the beginning of a coded episode (for session 1, M = 14.12, SD = 6.96, and for session 2, M = 9.10, SD = 5.35). Thus created relative committed compliance scores correlated across the sessions, r(103) = .56, p < .001, and were averaged across them, to create an overall score of committed compliance.

Mothers’ power assertion. Coding. The mother’s power assertion was coded in the discipline contexts described above. For each 30-s segment when the child was involved with the prohibited toys, the coders assigned one global rating of maternal control style (kappas .71–.85) and they coded all physical interventions the mother used in the segment (.69–.77). The global ratings that reflected power-assertive discipline included: assertive control (mother controls in decisive, firm manner) and forceful control (uses power, threats, negative or angry control). The power-assertive physical interventions included assertive physical control (holds child firmly, moves him/her decisively, takes away a toy, etc.) and forceful physical control (shakes, slaps, spanks, handles roughly, uses frightening, angry gestures).

Data reduction. For each prohibition context, we tallied all instances of the power-assertive codes, divided each tally by the number of segments, averaged across the two sessions, standardized, and created a power-assertive global and physical scores. Those correlated, r(104) = .43, p < .001, and were aggregated into one score of maternal power assertion.

Outcome measures: children’s conscience

Moral emotion of guilt (45 months). Procedure. All empirical details are in (Kochanska, Gross, Lin, and Nichols 2002). In two 3-min ‘mishap’ paradigms, the child was led to believe that he or she had transgressed (damaged E’s valued objects – a stuffed cat and a toy boat).

Coding. Two codes were applied to child emotional expression for every 5-s segment (average of 66). They included: avoiding gaze (look away, down, or askance; marked as brief or long), and bodily tension (squirm, back away, hang down head, hunched shoulders, hug self, cover face with hands). Three codes were applied to longer epochs in the mishap paradigm (for example, 60 s after the occurrence of the mishap): overall distress response, from 1 (child not distressed/affected by the mishap), to 4 (child strongly distressed/affected, freezes, cries, uncomfortable, uneasy); negative affect and positive affect (further qualified as strong, if applicable). Reliabilities (kappas) were: for gaze avoidance, .88 and .91; for bodily signs of tension, .77 and .62; for overall distress response, .61 and .63; for affect, .77 and .60.

Data reduction. For each mishap, we tallied all instances of each 5-s code (having weighted long gaze avoidance), producing the scores of avoiding gaze and bodily tension. We tallied the epoch-based codes (having weighted strong affects), to produce an overall distress score, a negative affect score, and a positive affect score for each mishap. Those five components of guilt cohered across the two mishaps (mean r = .48), and were aggregated. Finally, we created a composite guilt score at 45 months by standardizing and averaging those scores, having reversed the positive affect score; alpha was .83.

Moral conduct (56 months). Internalization while alone with prohibited toys. Procedure. The procedural and coding details are in Kochanska et al. (2001). At the end of the session, during which the mother enforced the prohibition regarding the off-limits toys, we observed child internalization. The
mother repeated the prohibition, and left to the adjoining room, leaving the child alone. To draw the child’s attention to the toys, she also asked the child to do a dull sorting task, set up directly in front of the shelf. The child was alone for 1 min; then, an unfamiliar female entered, played with the most attractive toys (1 min), and left; child was again alone for 6 min.

**Coding.** The child’s behavior was coded for each of 96 5-s segments as: looking at toys without touching, engaged in other activity (e.g., snacking), sorting, touching toys gently, self-correcting (beginning to touch and terminating the attempt spontaneously), and deviating (playing with the toys). Latency to deviate was also coded. Reliability, kappa, was .91.

**Data reduction.** The relative scores for each of the coded behaviors (divided by the number of segments), and latency to deviate were submitted to Principal Components Analysis. The first factor produced by the PCA expressed child internalization: low deviation (−.94), long latency to deviate (.92), sorting activity (.53), low gentle touch (−.37), and looking without touching (.26). Eigenvalue was 2.83, accounting for 40% of variance. The score on this factor reflected internalization while alone with prohibited toys.\(^1\)

**Internalization while playing the ‘cheating game’.** **Procedure.** The child played a game that involved throwing velcro balls at a target on the wall for 3 min, while left alone (Kochanska & Murray, 2000). E explained the rules and asked not to cheat, during a friendly, but serious talk about the meaning of cheating, honesty, etc. The rules made the game impossible to win (e.g., child was asked to face away from the target or stay within a confined space far away). The child was to receive a prize for each ball that stuck to the target. Upon return, E ‘discovered’ she had used ‘the wrong rules’ and let the child play the game again; every child won a prize.

**Coding and data reduction.** Child behavior was coded for every 3 s for both ‘legal’ and ‘illegal’ behaviors, such as facing away from the target, or facing the target while throwing; remaining inside the specified space or being outside of it. Latencies to the first instances of the illegal behaviors were also coded. Reliability, kappa, was .90. Regarding the latencies to the first occurrence of a behavior, 93% of coders’ judgments were within 1 s. The averaged latencies, legal behaviors, and (reversed) illegal behaviors, all standardized, were aggregated into a score of internalization in the cheating game.

**Overall moral conduct.** The two measures of internalized behavior in the absence of surveillance (with the prohibited toys and in the ‘cheating game’) correlated, \(r(74) = .49, p < .001\), and thus were aggregated into one moral conduct score at 56 months.

**Moral cognition (56 months).** **Procedure.** The procedure was similar to that in an earlier study (Kochanska & Murray, 2000). Children were shown two sets of stories with vignettes: four by Eisenberg (Eisenberg-Berg & Hand, 1979) and four by Nunner-Winkler (1993), depicting protagonists matching the child’s gender.

All Eisenberg story stems presented conflicts between the protagonist’s interests and those of others (e.g., ‘Birthday’ – run to a party or help an injured child). E asked the child what the protagonist should do and why, challenged the decision (pointed out the needs of the other if the child chose the selfish option, or of the protagonist if the child chose the prosocial option), and asked the child again to make a final choice. The Nunner-Winkler stories depicted conflicts between the protagonist’s wishes and those of others (e.g., ‘Drink’ – drink one’s soda or share with a thirsty child).

**Coding.** We coded the child’s solutions to the dilemmas. In the Eisenberg stories, each solution was coded as selfish or prosocial. For each story, and for both selfish and prosocial solutions, we used the codes of 0, 1, 2, or 3. Zero was coded when the given solution was absent in the child’s response; 1 when the given solution was the child’s first choice but changed when challenged, not final; 2 when it was the child’s second or changed choice, retained as final; and 3 when it was the child’s first choice, unchanged when challenged, retained as final. In the Nunner-Winkler stories, each solution was coded as antisocial or as moral. Reliability, kappas, were .80 and .95 in the Eisenberg and Nunner-Winkler stories, respectively.

**Data reduction.** The scores were tallied across all four stories in each set, to create two scores for the Eisenberg stories: selfish and prosocial, and two scores for the Nunner-Winkler stories: antisocial and moral. The selfish score and the antisocial score were summed into an overall selfish/antisocial score, and the prosocial score and the moral score into an overall prosocial/moral score. Finally, we subtracted the former from the latter to create an overall internalized moral judgment score at 56 months. All descriptive data are in Table 1. For brevity, only some of the composite variables were decomposed to their constituent raw scores; all data are available from the first author.

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1 This approach has yielded a similar factor score repeatedly in the past, across several samples and ages (e.g., Kochanska et al. 2001).
Results

Early MRO and children’s future moral emotion, conduct, and cognition: testing mediational pathways

Preliminary analyses. Univariate correlations. The correlations are in Table 2. All measures were meaningfully correlated. MRO at 9–22 months predicted all three mediators at 33 months: child enjoyment of interaction with the mother, committed compliance, and mother power assertion. MRO also predicted all three measures of conscience: 45-month moral emotion, and 56-month conduct and cognition.

The relations between the mediators and the outcomes were mixed. The child’s enjoyment of interaction with mother at 33 months predicted future moral conduct and cognition, but not guilt. Committed compliance at 33 months predicted future guilt and moral conduct, but not cognition. Maternal power at 33 months predicted the child’s future guilt (marginally), moral conduct, but not cognition. Further, the three mediators and the three components of child conscience, respectively, were significantly inter-correlated.

Gender differences. We tested gender differences in the mediators and the outcomes. Whenever they emerged, gender was controlled as a covariate in all subsequent analyses. MANOVA for the three mediators at 33 months showed a marginal multivariate effect of gender, $F(3,100) = 2.46, p < .07$. Girls tended to enjoy interaction with the mothers more than boys, $F(1,102) = 3.18, p < .08$, girls $M = 1.19, SD = .16$, boys $M = 1.14, SD = .15$, and girls were higher than boys in committed compliance, $F(1,102) = 6.18, p < .025$, girls $M = .94, SD = .11$, boys $M = .86, SD = .19$.

MANOVA for the three conscience measures indicated a near-significant multivariate effect of gender, $F(3,70) = 2.70, p = .05$. Girls had higher scores than boys on guilt, $F(1,72) = 6.28, p < .025$, girls $M = .31, SD = .93$, boys $M = -.17, SD = .65$, and on moral conduct, $F(1,72) = 4.52, p < .05$, girls $M = .15, SD = .53$, boys $M = -.18, SD = .78$.

We also examined gender differences in MRO. There were no differences in MRO between the dyads with girls and those with boys, at any age, all $t’s < 1$.

The testing of mediation. These analyses tested three conditions for mediation using a series of

Table 1 Descriptive data for the predictor, mediator, and outcome measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
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<tbody>
<tr>
<td>Mutually responsive orientation, MRO*</td>
<td></td>
<td></td>
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<tr>
<td>9 months</td>
<td>.00</td>
<td>.76</td>
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<td>14 months</td>
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<td>22 months</td>
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<td>Overall MRO, 9–22 months</td>
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<td>.16</td>
<td>.68–1.68</td>
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<tr>
<td>Child committed compliance, 33 months</td>
<td>.90</td>
<td>.16</td>
<td>1.18–1.00</td>
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<tr>
<td>Maternal power assertionb, 33 months</td>
<td>.00</td>
<td>.64</td>
<td>−.35–3.50</td>
</tr>
<tr>
<td>Child conscience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moral emotionc; guilt, 45 months</td>
<td>.00</td>
<td>.77</td>
<td>1.20–3.33</td>
</tr>
<tr>
<td>Moral conductd, 56 months</td>
<td>.00</td>
<td>.67</td>
<td>3.00–.81</td>
</tr>
<tr>
<td>Moral cognitione, 56 months</td>
<td>4.50</td>
<td>7.02</td>
<td>−14.00–16.00</td>
</tr>
</tbody>
</table>

*aComposite of standardized responsiveness and shared positivity.
*bComposite of standardized global power scores and physical power scores.
*cComposite of standardized scores: avoiding gaze, bodily tension, overall distress, negative affect, and positive affect (reversed).
*dMean of internalized behavior while alone with prohibited toys and in the cheating game.
*eDifference between the prosocial/moral and selfish/antisocial cognition scores.

N’s: 9 months, 112; 14 months, 108; 22 months, 106; 33 months, 104; 56 months, 74.

Table 2 Correlations among the predictor, mediator, and outcome measures

<table>
<thead>
<tr>
<th>Predictor (9–22 Mo)</th>
<th>Mediators (33 Mo)</th>
<th>Outcome measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother–child</td>
<td>Child</td>
<td>Child</td>
</tr>
<tr>
<td>MRO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRO</td>
<td>.26***</td>
<td>.26***</td>
</tr>
<tr>
<td>Child enjoyment of interaction</td>
<td>.30***</td>
<td>.35****</td>
</tr>
<tr>
<td>Committed compliance</td>
<td>-.35****</td>
<td>-.35****</td>
</tr>
<tr>
<td>Power assertion</td>
<td>-.59****</td>
<td>-.59****</td>
</tr>
<tr>
<td>Moral emotion</td>
<td>-.18+</td>
<td>.44****</td>
</tr>
<tr>
<td>Moral conduct</td>
<td>-.36****</td>
<td>-.36****</td>
</tr>
<tr>
<td>Moral cognition</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; **p < .025; ***p < .01; ****p < .001.
First condition: MRO at 9–22 months predicting the mediators (scores of moral conduct), and gender when necessary (predicting moral emotion and moral conduct).

Second condition: MRO at 9–22 months predicting child conscience.

Third condition: the mediators at 33 months predicting child conscience, with a simultaneous decrease in the effect of MRO at 9–22 months.

Despite the potential overlap, the findings confirmed the mediators at 33 months predicting child conscience, with a simultaneous decrease in the effect of MRO at 9–22 months.

The first condition. We performed three multiple regressions (Baron & Kenny 1986). To simplify the presentation, Table 3 includes only the Beta values for the essential effects, from the final equations, and the details are reported in the text.

Before testing the separate relations, we conducted an omnibus multivariate multiple regression to assure that there was a significant overall relation between the set of the three mediators and the set of three outcome measures (SPSS-X User’s Guide, 1988, pp. 623–625). Those two sets of measures were significantly related, $F(9,210) = 4.14$, $p < .001$.

The first condition. We performed three multiple regressions to test if the independent variable, MRO, at 9–22 months, predicted each of the 33-month mediators (child enjoyment of interaction with mother, committed compliance, and maternal power assertion). Only the effect of MRO on each mediator is listed in Table 3 (reported as the first row of Betas).

Because there was at least a marginal gender effect for the first two mediators, in those two regressions (Baron & Kenny 1986). To simplify the presentation, Table 3 includes only the Beta values for the essential effects, from the final equations, and the details are reported in the text.

The first condition. We performed three multiple regressions to test if the independent variable, MRO, at 9–22 months, predicted each of the 33-month mediators (child enjoyment of interaction with mother, committed compliance, and maternal power assertion). Only the effect of MRO on each mediator is listed in Table 3 (reported as the first row of Betas).

Because there was at least a marginal gender effect for the first two mediators, in those two conditions.

Table 3 The testing of the three conditions for mediation: standardized regression coefficients (Betas) from the separate regressions

<table>
<thead>
<tr>
<th>Predictor (9–22 Mo)</th>
<th>Mediators (33 mo)</th>
<th>Dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRO</td>
<td>.20*</td>
<td>.22**</td>
</tr>
<tr>
<td>MRO</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MRO</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MRO</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MRO</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 4 Comprehensive prediction of conscience outcomes

<table>
<thead>
<tr>
<th>Predicators</th>
<th>t</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable: moral emotion at 45 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictors entered in Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child gender</td>
<td>2.49**</td>
<td>-.23</td>
</tr>
<tr>
<td>Earlier measure of child moral emotiona</td>
<td>2.69***</td>
<td>.25</td>
</tr>
<tr>
<td>Significant predictors retained in the equation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRO, 9–22 months</td>
<td>2.16*</td>
<td>.20</td>
</tr>
<tr>
<td>Overall $R^2 = .21$, $F(3,97) = 8.66$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent variable: moral conduct at 56 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictors entered, Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child gender</td>
<td>1.19</td>
<td>-.12</td>
</tr>
<tr>
<td>Earlier measure of child moral conductb</td>
<td>&lt;1</td>
<td>.04</td>
</tr>
<tr>
<td>Significant predictors retained in the equation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committed compliance, 33 months</td>
<td>4.08***</td>
<td>.43</td>
</tr>
<tr>
<td>Child enjoyment of interaction, 33 months</td>
<td>2.03*</td>
<td>.21</td>
</tr>
<tr>
<td>Overall $R^2 = .35$, $F(4,69) = 9.30$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent variable: moral cognition at 56 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant predictors retained in the equation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child enjoyment of interaction, 33 months</td>
<td>2.57**</td>
<td>.29</td>
</tr>
<tr>
<td>Overall $R^2 = .08$, $F(1,72) = 6.57$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Beta and t values represent the final values, with all the predictors in the equation. The predictors at Step 1 (child gender, if applicable, and the earlier measure of the conscience outcome, if available) were forced into the equation; the remaining predictors (all three mediators, their earlier measures, and MRO) were evaluated stepwise. The predictors that were retained are listed.

Further to reduce the possibility that the mediational findings may be due to an overlap between MRO (particularly the shared positivity component) and children’s positive mood, we conducted all the analyses, having removed the shared positivity component from the MRO score. The findings remained substantially unchanged and thus, these analyses confirmed that the findings cannot be attributed to any potential overlap.

* $p < .05$; ** $p < .025$; *** $p < .01$; **** $p < .001$.

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

The 22-month score. An aggregate of the 14- and 22-month scores. For moral cognition, there was no gender effect, and no measure at 14–22 months was available. Thus, all the predictors were evaluated stepwise.
regressions we also entered gender in the first step. Further, to assure that the effect of MRO on each mediator reflected a ‘real’ longitudinal change in the mediator, and not simply continuity of concurrently associated measures, in the first step, in each regression, we controlled for the earlier measure of the given mediator. Those earlier measures were, respectively, the composites of the 14- and 22-month scores of child enjoyment of interactions with the mother, committed compliance, and the mother’s power assertion. Indeed, although not reported in Table 3, those earlier measures of the mediators made significant contributions in the first two regressions.

The first condition for mediation was met for all three mediators. The 9–22-month MRO was a significant (positive) predictor of each of the 33-month mediators. Children with histories of higher MRO during the first two years enjoyed interacting with their mothers more and showed more committed compliance with them (even above the initially high levels of those mediators), and the mothers resorted to less power assertion at 33 months.

The second condition. We conducted three regressions (one for each component of conscience), to test if the independent variable, 9–22-month MRO, predicted each dependent variable (moral emotion at 45 months, moral conduct and moral cognition at 56 months). Again, only those effects are in Table 3 (reported as the second row of Betas).

Because there was a significant gender effect for the first two components of conscience, gender was entered in the first step in those equations. Again, to assure that any effect of MRO reflected a longitudinal change in conscience and not just continuity of concurrently associated measures, we entered an earlier measure of the dependent variable when available (a 22-month score on moral emotion, a composite of the 14- and 22-month scores on moral conduct; moral cognition was not assessed in the first two years). Though not reported, the 22-month moral emotion significantly predicted the 45-month score.

The second condition was met for all three conscience measures. Children with histories of higher early MRO showed a stronger moral emotion of guilt at 45 months, and moral conduct and moral cognition at 56 months. Each effect represented an increase over the earlier measure of the given outcome.

The third condition. Finally, for each of the three conscience outcomes, we performed three regressions, one for each mediator. Each tested whether (a) the given mediator was a significant predictor of the conscience measure when considered together with MRO, the independent variable, and (b) whether the effect of MRO became not significant. Then, we judged that mediation occurred. In the first step, we controlled for child gender when necessary, and for the earlier measures of both the given mediator and the given conscience measure. The final effects (only for a given mediator and MRO, for clarity) are also in Table 3 (reported in the columns under each outcome).

For children’s moral emotion, the third condition for mediation was not met for any of the mediators. Child gender and the earlier measures of guilt both explained significant variance in children’s guilt at 45 months (not reported in Table 3). None of the three mediators was a significant predictor. MRO continued to be significant in the first equation, and marginally significant in the other two, suggesting that its effect was direct and not mediated.

For children’s moral conduct, the third condition was met for all three mediators. Children’s enjoyment of interaction with mothers at 33 months, committed compliance, and mothers’ power assertion all continued to predict children’s moral conduct at 56 months. Moreover, in all three equations, the effect of MRO became non-significant.

For children’s moral cognition, the third condition was met for only one mediator, children’s enjoyment of interaction with the mothers at 33 months, which continued to predict moral cognition, with the effect of MRO dropping to the marginal level. Committed compliance and maternal power assertion were not significant predictors of moral cognition.

The testing of all three mediators. Finally, for each conscience outcome measure, we conducted a comprehensive multiple regression where all three mediators were examined simultaneously. In the first step, gender (if necessary) and the earlier measure of the conscience outcome (if available) were entered. To allow for a clear view of the significant effects, and given that all the effects had been examined separately in the previous regressions, here, after the first step, all the remaining predictors (MRO, all three mediators, and all their earlier measures) were allowed to compete, and were evaluated in the stepwise manner. The findings are in Table 4.

For the moral emotion of guilt, the findings were consistent with the earlier separate regressions. After controlling for gender and guilt at 22 months, both significant predictors, early MRO continued directly to predict children’s guilt at 56 months. There were no mediating effects.

For moral conduct, there were two significant mediation effects consistent with the earlier regressions. The effect of MRO dropped to non-significant level, but two mediators at 33 months – child committed compliance and enjoyment of interaction with mother – remained significant. In contrast to the earlier regressions, however, power assertion, when tested together with the other two mediators, no longer independently predicted moral conduct.

The results for moral cognition were consistent with the separate regressions. Children’s enjoyment of interaction with mothers mediated the relation between MRO and this conscience outcome.
Discussion and conclusions

MRO and future conscience

Children’s conscience is rarely studied in developmental psychopathology, although conduct problems in children and adults can be seen as reflecting impaired moral emotion, conduct, and cognition (Frick et al., 2003; Lykken, 1995). We revisit the classic question: Is early conscience development unitary? Most often, this question has been asked in structural terms – is conscience a global, coherent, trait-like structure, such as superego or a ‘moral stage’, or a set of unrelated or loosely related components (Burton, 1963; Hartshorne & May, 1928–1930; Rushton et al., 1983; Sears et al., 1965)? Our study informs this question by showing that moral emotion, conduct, and cognition are significantly, if modestly, coherent at preschool age (Table 2). The major contribution of this work, however, goes beyond the structure of conscience. We ask if conscience development is a unitary process, or if its components unfold along multiple pathways. Our findings support the latter: Distinct paths appear to link the early parent–child relationship with child future moral emotion, conduct, and cognition.

This study affords new – albeit preliminary – insights into the potential mediating mechanisms responsible for the established empirical associations between mother–child mutually responsive relationship and the child’s conscience. We again replicated, in a new sample and at a new age, several links: between mother–child MRO and committed compliance, between MRO and maternal power assertion, and between committed compliance and conscience (Kochanska, 1997; Kochanska & Murray, 2000). We also demonstrated new links: the longitudinal association between early MRO and the child’s enjoyment of interactions with the mother, and between that enjoyment and the child’s future moral conduct and cognition. Those findings complement the research on parent–child synchrony, positive reciprocity, and mutual positivity as factors that decrease children’s future risk for conduct problems (Criss, Shaw, & Ingoldsby, 2003; Deater-Deckard & Petrill, 2004; Gardner, Ward, Burton, & Wilson, 2003; Shaw et al., 1994). The core new contribution of this study, however, consistent with the current zeitgeist (Eisenberg, 1998), was to take the first step toward examining mechanisms that link the mother–child MRO and child developing conscience.

Children’s enjoyment of interactions with mothers as a mediator of conscience. As expected, MRO between the mother and the child, established during the first two years of life, enhanced children’s enjoyment of their interactions at 33 months, controlling for the initial level of pleasure in interactions. This enjoyment, in turn, fostered children’s moral conduct and cognition at 56 months. Those findings add to the large body of literature that has linked temporary or dispositional positive emotions with prosocial behavior and self-regulation (Carlson et al., 1988; Cialdini, Kenrick, & Baumann, 1982; Eisenberg & Fabes, 1998; Fry, 1975; Isen, 1999; Lay et al., 1989; Moore & Isen, 1990). Because we assessed children’s enjoyment two years earlier than their consciences, clearly, early mother–child relationship fostered in the child a form of positive disposition that was more enduring than a mere positive mood during a sample of interactions with the mother. More likely, it promoted the child’s deeper and lasting positive disposition toward the mother, which in turn, over time, fostered his or her eagerness to embrace the mother’s rules and values.

Those findings echo Maccoby’s (1983) emphasis on the role of positive affect in socialization. She proposed that research on links between positive mood and prosocial behavior has important implications for socialization. She suggested that the history of sensitive, playful, and cooperative interactions and the resulting positive affective bond, ‘... engenders attention to the parent and a readiness to become interested in, and cooperative with, an enterprise suggested by the parent’ (Maccoby, 1983, p. 363). Our findings also support and expand Lay et al.’s (1989) conclusions: ‘The fact that maternal responsiveness induces a positive mood points to a mechanism that may be significant in both attachment and socialization beyond infancy’ (p. 1405).

From the attachment perspective, the child’s positive emotions toward the parent may promote moral development by fostering security, and by increasing receptiveness to the parent and eagerness to adopt her agenda. Children who are happy in their relationships with their parents may pay more attention to them, look forward to interacting with them, feel secure in the relationship, and thus be more eager learners during the socialization process (Lay et al., 1989; Maccoby, 1983; Waters et al., 1990).

To show that the child’s enjoyment of interactions with the parent mediates the relations between MRO and moral conduct and, more tentatively, moral cognition, is only the first step. A challenge for future research is to understand the mechanism or mechanisms of that relation.

Social psychology has proposed several mechanisms that may link positive emotions with moral behavior and cognition and that may help explain why children who enjoy their interactions with their parents develop strong consciences, act in accord with rules, and weigh prosocial values over selfish concerns in their moral judgments. They may act to maintain good feelings by engaging in ‘good’ behavior, itself a source of positive emotions (Waters et al., 1990; Emde, 1991), consistent with the ‘positive mood maintenance’ hypothesis (Carlson et al., 1988). That hypothesis implies that the child who is experiencing positive mood would seek to maintain that emotional state. One way to do so is to engage in...
behavior consistent with parental rules, because such 'good' behavior elicits positive emotion (Emde, 1991).

Those children may also have positive, benevolent, and cooperative views of others and the society, and thus endorse prosocial, non-selfish choices in their moral judgments, consistent with the 'social outlook' hypothesis (Carlson et al., 1988). That hypothesis assumes that good mood, particularly when it is due to social stimuli and events, primes communal and cooperative cognitions and perceptions. Such cognitions may promote children’s more generous, empathic, and prosocial thoughts and reasoning. Happy mood may also reduce a child’s defensive focus on self (Moore & Isen, 1990), and thus enhance prosocial conduct and the ability to consider others’ perspectives and welfare. They may feel less worried about their own well-being and less defensive, and feel more generous toward others (Moore & Isen, 1990). And finally, positive mood also increases the capacity for restraint when dealing with temptations (Eisenberg & Fabes, 1992; Fry, 1975; Seeman & Schwarz, 1974). Without concluding which specific mechanism links the child's enjoyment of interactions with the parent with the developing conscience, we have shown such a link exists, and, further, that such enjoyment mediates the links between early MRO and future moral conduct and cognition.

Because the moral emotion of guilt is associated with negative rather than positive affect, we had not anticipated – and indeed did not find – children’s enjoyment of interactions with mothers to mediate the link between MRO and guilt. Children who had been in highly mutually responsive early relationships, as preschoolers were more prone to experience guilt following transgressions, but this effect of MRO was direct. It is another challenge for future research to determine what mechanisms may be responsible for that impact. Perhaps other mediators, not studied here, link the early mother–child relationship with child guilt (Zahn-Waxler & Kochanska, 1990). For example, MRO may foster the child’s high self-esteem, and consequently, increase guilt and remorse when his or her behavior falls short of standards.

Future research will need to reconcile the findings on positive emotion and moral conduct and cognition with the research on negative emotions, such as fear or sadness, and aspects of conscience, such as guilt or empathy (Kagan, 1998; Kochanska et al., 1994; Rothbart, Ahadi, & Hershey, 1994; Rothbart & Bates, 1998). Ultimately, an integration of those literatures will produce a comprehensive theory of positive and negative emotions, both transient and enduring, as factors that influence moral emotions, conduct, and cognition.

Children’s committed compliance as a mediator of conscience. As expected, high MRO in the mother–child dyad during the first two years promoted future conscience through another mediational mechanism: through the child’s committed compliance to the mother. This mediation, however, was only true for children’s moral conduct. MRO fostered children’s wholehearted, eager, self-regulated compliance with maternal prohibitions at 33 months, and it, in turn, promoted moral conduct at 56 months, but had no effect on moral emotion or cognition. Our findings support others’ view of willing compliance as an antecedent of internalization (Emde et al., 1991; Londerville & Main, 1981; Maccoby & Martin, 1983), and we elucidate the developmental mediational chain. Several mechanisms accounting for that mediation are possible. Maternal responsiveness and shared positive affect between the mother and child promote the child’s cooperative attitude, characterized by an internal sense of obligation (Maccoby, 1999), and thus, they compel the young child to engage in committed compliance. Because of the voluntary nature of committed compliance, children likely attribute their behavior to their own wishes, and experience a sense of choice and autonomy, which in turn leads to the integration of the particular behavioral rule with their own selves, or genuine internalization (Grolnick, Deci, & Ryan, 1997; Grusec & Goodnow, 1994; Lepper, 1981). Over time, children who engage in committed compliance may come to view themselves as ‘good’ and moral, and such ‘moral self’ increasingly serves as a guide for behavior (Kochanska, 2002b), consistent with attributional and self-determination theories (Ryan & Deci, 2000). Again, regardless of the specific mechanism involved, we expected that committed compliance would serve as a mediator linking MRO with children’s moral emotion, moral conduct, and moral cognition.

Why did committed compliance mediate only the link between MRO and moral conduct? Perhaps it was because the nature of the rules with which the children had complied at 33 months was quite similar to that involved in the internalization paradigms at 56 months. All those rules were prescriptive ‘Don’ts’, specifying what behavior was forbidden, and requiring restraint.

Future research should address a possibility that, with age, the mediational effects of committed compliance may gradually generalize beyond such ‘isomorphic’ behavior. If indeed the experience of committed compliance leads children to view themselves as moral and ‘good’ (Kochanska, 2002b), then as they grow older, those self-attributions may become more general. Children may begin to apply them to a broader moral spectrum, including moral emotion and cognition. Grusec and Redler (1980) found that attributions of helpfulness to the self increased generalized altruism, but not before age 8.

Although the families in this study represented a low-risk child-rearing environment, our findings are relevant to developmental psychopathology and they may inform our understanding of pathways
undermining conscience development in children in at-risk environments. For example, physically abused children have shown less committed compliance than children in non-maltreating families (Koenig, Cicchetti, & Rogosch, 2000).

**Maternal power assertion as a mediator of conscience.** The marginal univariate relation between maternal power at 33 months and children's future emotion of guilt disappeared when power and MRO were entered together (whether or not the other two mediators were also entered). Maternal power assertion was also unrelated to children's future moral cognition, a finding consistent with our recent work on domain specificity regarding the effects of power (Kochanska, Aksan, & Nichols, 2003).

Power assertion, when tested alone, did mediate between MRO and children's moral conduct at 56 months. However, when tested together with MRO and the other two mediators—child enjoyment of interaction with mother and committed compliance—maternal power was no longer a mediator of that link. These intriguing findings add to the growing discussion of parental power assertion in the context of early relationships. Several non-mutually exclusive interpretations are possible. Perhaps the most important is the fact that the mediators shared common variance. Children who enjoyed their interactions with mothers also showed more committed compliance, and received less maternal power. It is possible—although entirely beyond the scope of this article—that the three mediators were causally related over time. As just one example of a possible direction of effect, children who had enjoyed their interactions with their mothers may become more eager to comply, thus causing their mothers to use less power assertion. In our final regression, we did not examine the causal links among the mediators. In future research, with larger samples, structural equations techniques could help model the potentially more complex causal effects, and thus allow for a more appropriate examination of the developmental processes involved.3

Another possibility involves heterogeneity within the relatively amorphous category of power assertion (Grusec & Goodnow, 1994). Mothers who have formed high MRO with their children and whose children happily cooperate, when using power at all, may resort to firm, clear commands and guidance that may be easily accepted by the child and promote conscience. Mothers who have failed to form such responsive relationships, and whose children are more difficult, may use more confrontational, sharp, or angry strategies, which may be resented by the child and undermine conscience. A more fine-grained coding of power assertion might provide a window into such a possibility.

A third possibility involves the issue of the context in which power is used. Its maladaptive effects have not been found across all ecologies of parenting. Patterson (Patterson, DeBaryshe, & Ramsey, 1989) found repeatedly that in family relationships that are generally adversarial, children do not respond to punishment, in contrast to children in more positive relationships. Baumrind (1983) proposed that firm discipline applied in the context of an accepting and warm relationship promotes adaptive outcomes. Darling and Steinberg (1993) argued that parenting style serves as a relationship context which moderates the effectiveness of discipline. In some cultures or sub-cultures, power assertion is viewed as a component of a loving, child-oriented relationship, and in those populations, it does not have negative implications for socialization (Chao, 1994; Deater-Deckard, Dodge, Bates, & Pettit, 1996). Finally, in our study, the range of maternal power was relatively constrained; most mothers resorted to power-assertive strategies rarely, and when they did, they used mostly low-intensity tactics. In contrast, the other two mediators were well distributed. Our failure to support the mediational effect of power may have been due to this problem. Future exploration of these issues in populations where the range of parental discipline techniques is broader, for example in child-maltreating families, seems warranted.

These considerations support a need for more research on power assertion (Grusec & Goodnow, 1994). It would be currently premature to conclude that power per se does not interfere with the early development of conscience. Its effects may be indirect, and may depend on the context, population, and other characteristics of the child and the relationship with the parent.

A useful contribution of this study is another demonstration of the convergence between micro- and macroscopic responsiveness, and between responsiveness and shared positivity. Deater-Deckard and O'Connor (2000) replicated the structure of MRO in two samples, relying on ratings rather than microscopic coding. We have also again demonstrated longitudinal continuity of MRO, beyond continuity from toddler to preschool age in another sample (Kochanska, 1997), and from 9 to 14 months in this sample (Kochanska et al., 1999).

**Limitations and future directions**

This study has several limitations. Most importantly, we need to exercise caution regarding causal inferences, even when our longitudinal analyses, which controlled for the earlier levels of the constructs,
supported the existence of mediational paths. In non-experimental designs, competing interpretations are always possible. For example, recent advances in behavioral genetics suggest some genetic effects in parent–child mutuality (Deater-Deckard & O’Connor 2000), along with nonshared effects (Deater-Deckard et al., 2001).

In view of the increasingly recognized importance of the network of family relationships (Lamb, 1997; Parke & Buriel, 1998), our exclusive focus on mothers is another limitation. The role of fathers in the development of children’s conscience remains unexplored, and is one of the urgent challenges for future research.

How early conscience is formed, whether its development progresses along a unitary path or multiple paths, whether and how mother–child relationship influences its development, and whether early measures of conscience predict future behavior problems are compelling questions of development and psychopathology. This research adds to our search for the answers.

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References


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