

Research Article

Toddlers' Responsive Imitation Predicts Preschool-Age Conscience

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ABSTRACT—Imitation has long been considered a mechanism for the development of conscience. Despite the central role of imitation in theories of moral internalization, the prediction from imitation to moral behavior has not been tested using an individual differences approach. In a longitudinal design, we examined whether individual differences in toddlers' responsive imitation predict preschool-age conscience. Mothers modeled actions for their children to imitate, and both matching behavior and motivation were observed at 14 and 22 months of age. We also measured preschool conscience by observing children's internalized conduct and guilt at ages 33 and 45 months. Imitation measures consistently predicted conscience variables. These relations were strengthened by aggregation across measures and times of assessment. Motivation and matching behavior each contributed independent variance in predicting preschool-age conscience. Results are consistent with the claim that responsive imitation reflects a general receptive stance to parents' guidance, and with both neopsychoanalytic and social cognitive views of imitation's importance in early moral development.

Historically, imitation has figured in several theories of moral conduct and the development of conscience. In the 1960s, for example, influential approaches to personality development associated with Robert Sears and with Albert Bandura viewed imitation as a central mechanism of moral development. Surprisingly, these theories did not lead to empirical examination of individual differences in imitation or their developmental consequences. More recently, as the study of moral internalization has been shifting to earlier ages, several theories have converged on the idea that very young children's readiness to imitate should predict their development of conscience.

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HISTORY

Sears's Formulation

Following Freud, Sears described the acquisition of parents' values by imitation as anaclitic identification. This was a developmentally primitive desire to emulate the mother, prior to the defensive identification held to result from the Oedipal conflict. Anaclitic identification was expected to result from parental warmth; gentle, love-based discipline methods; high maturity demands; and clear moral teaching (Sears, Rau, & Alpert, 1965).

Sears, however, never directly measured imitation or identification, but instead measured the presumed products of identification, including guilt, resistance to temptation, prosocial behavior, and gender-role identification. He also used a small sample ($N = 40$) and divided his analyses by gender, losing even more power (Sears et al., 1965). The resulting analyses identified few links between early socialization practices and child outcomes.

Social Learning Theory

Imitation was also important for moral development in Bandura's social learning theory. Bandura and Walters (1963) described how children acquire self-control through observational learning from individuals who model self-control behaviors. Bandura identified several situational determinants of imitation, including vicarious reinforcement and the model's nurturance or power. However, these studies were directed at differences in the environment, not at differences among children. With the exception of an early and short-lived interest in dependency (Bandura & Huston, 1961), Bandura and his colleagues rarely addressed person characteristics that might make imitative learning more or less likely, nor did they use differences in imitation to predict later outcomes.

RECENT PERSPECTIVES

Recent perspectives are converging again on the idea that early imitation should predict the development of conscience. A neoanalytic approach emphasizes infants' learning of procedures for right conduct. Social cognitive theorists describe imitation as supporting theory of

mind, empathy, and moral development. Finally, early imitation has been described as reflecting a general receptive stance to socialization.

Early Learning of Moral Procedures

Emde's neoanalytic approach emphasizes the very early learning of moral procedures. By age 3, children are already said to have developed a moral self (Emde, Biringen, Clyman, & Oppenheim, 1991). One contributor to this process is social referencing. One-year-old infants can use parents' emotional signals to learn both how to feel about a situation and how to act (Hornick & Gunnar, 1988; Sorce, Emde, Klinnert, & Campos, 1985). Some of these socially referenced lessons involve moral norms about what to do and what not to do (Emde, Johnson, & Easterbrooks, 1988).

Emde made three claims about moral development. First, procedures in accord with moral norms (or dos and don'ts) are learned long before children themselves can articulate moral principles. Second, this early learning is relatively positive and nonconflictual. Third, it draws on universal motives for connectedness and for effective action in the environment. When introduced to a standard of conduct or moral procedure, children work on "getting it right," as "confirmed by the caregiver's pride in the child's accomplishments" (Emde & Clyman, 1997, p. 326). These ideas suggest, although they do not explicitly predict, that a toddler's eagerness to effectively reproduce the mother's actions would facilitate this process of procedural learning.

Imitation and Social Cognition

Several researchers agree that imitation relates to children's developing theory of mind, or the understanding of other individuals' beliefs, intentions, and other internal states. Some researchers also explicitly claim a joint role for imitation and social cognition in the transmission of cultural skills and moral values. Tomasello, Kruger, and Ratner (1993), for example, argued that what enables cultural learning is the ability not just to imitate, but also to understand and internalize the goals and intentions of the model as a guide to one's own behavior. Meltzoff emphasized that imitation itself is central to the development of this social understanding, as well as to the development of empathy and moral values (Gopnik & Meltzoff, 1993; Meltzoff, 2002; see also Hobson, 1993; Mitchell, 1993).

Meltzoff assumed that early imitation reflects an innate understanding that the other is "like me." He therefore argued that the understanding of one's own intentions and the understanding of others' intentions arise simultaneously in development, and that empathy is the natural result of acting on this self-other equivalence (Meltzoff, 2002). According to this perspective, moral reciprocity and identification with adult values are the product, rather than the cause, of imitation. In Meltzoff's (2002) words, "The Golden Rule, 'Treat thy neighbor as thy self' at first occurs in action, through imitation. Without an imitative mind, we might not develop this moral mind. Imitation is the bud, and empathy and moral sentiments are the ripened fruit" (p. 36). It follows that infants who imitate more readily than others should display "moral sentiments" at an earlier age.

Imitation as Receptiveness to Socialization

We (Forman & Kochanska, 2001) have suggested that imitation reflects young children's general receptive stance to socialization. This suggestion builds on Maccoby and Martin's (1983) description of a

transactional process of moral socialization. Though some parental discipline tactics work slightly better than others, if a cooperative relationship is fostered, then children will develop an eager, receptive stance to parents' guidance. Such a stance makes cooperation more likely, regardless of which discipline tactic is used (Maccoby & Martin, 1983). The construct of *committed compliance* was developed to measure qualities of child cooperation that reflect this eager, receptive stance (Kochanska & Aksan, 1995).

We believe that imitation can also reflect the general receptive stance to parents' guidance. Young children who imitate eagerly are equally disposed to cooperate with and to learn from their caregivers. This same stance promotes both moral development and the acquisition of culturally valued skills. Thus, responsive imitation is not only a mechanism of moral learning, but also reflects a relationship in which shared values are likely to develop over time (Maccoby, 1992). In a previous study, we measured imitation at 14 and 22 months, and also rated children's motivation in the imitation task. Imitation and motivation were associated with children's committed compliance at both ages (Forman & Kochanska, 2001). If responsive imitation also predicts the internalization of moral norms, this would provide further support for the claim that imitation reflects the general receptive stance to maternal guidance.

THE PRESENT STUDY

In the present study, we measured children's responsive imitation in the second year. Specifically, we measured both matching behavior and the qualities of behavior that reflect an enthusiastic, receptive stance to maternal guidance. Two aspects of children's early developing conscience were then observed at preschool age: internalized conduct and guilt. Internalized conduct was measured as continued rule-abiding conduct outside of adult surveillance. Guilt was measured as distress following an apparent transgression. We hypothesized that children who were highly responsive in an imitation task as toddlers would also have well-developed consciences at preschool age.

METHOD

Participants and Study Design

Participants were recruited as part of a larger longitudinal study. Mothers were mostly European American (97%) and had varied incomes (20% had family incomes below \$30,000, 25% had incomes above \$60,000). Observational data were gathered in laboratory visits when the children were ages 14 months ($M = 13.65$, $SD = 0.74$, $n = 108$), 22 months ($M = 22.30$, $SD = 0.56$, $n = 106$), 33 months ($M = 32.80$, $SD = 0.53$, $n = 104$), and 45 months ($M = 45.30$, $SD = 0.73$, $n = 101$). Imitation measures were obtained at the two younger ages, and conscience measures at the two older ones. Imitation coders did not code any conscience measures.

Imitation

Procedure

The 14- and 22-month observations included a teaching task. Each mother modeled three action scripts (from Bauer & Mandler, 1992) and encouraged her child to imitate her. The scripts were titled "Clean the Table" (pretend to spray a table, wipe with a towel, and throw the

towel away), “Tea Party” (pour, stir, and drink), and “Feed the Bear” (place the bear in a chair, put the bib on, and feed with a bottle).

Coding

Three variables were coded: maternal structuring, child matching, and mother-oriented motivation. Maternal structuring reflected how difficult or easy the mother made the task, through her demonstrations, verbal prompts, and physical assistance or interference. For each script, raters made a single judgment of whether the mother offered average (1), below-average (0), or above-average (2) help.

Child matching was measured by both accuracy and sequencing. Accuracy was rated on a scale of 0 to 4 for each action, so that credit could be awarded for partially matching the mother’s act. A sequencing score ranging from 0 to 2 was given for each three-action script. One point was given if the second act immediately followed the first, and another if the third act immediately followed the second.

Mother-oriented motivation measured the eager, receptive quality of the child’s behavior in the imitation task. Coders used a scale from 0 to 3 and at 30-s intervals made ratings based on attention, orientation to mother, responsiveness to her prompts, and affect. A score at the low end indicated that the child turned away, resisted the mother’s attempts to engage or direct him or her, and expressed negative affect. A score at the high end indicated that the child stayed physically close or visually attentive, changed behavior in response to the mother’s prompts, and expressed positive affect.

Reliability and Data Reduction

Kappas, based on at least 15 cases, averaged .73, .72, and .75, respectively, for maternal structuring, child accuracy, and child sequencing. For motivation, an intraclass correlation of the total across all segments was .92. Because task difficulty varied with the amount of help received, we removed maternal structuring from accuracy and sequencing scores using regression. Scores for child matching were then created by averaging the resulting residualized accuracy and sequencing scores. The matching scores reflect imitation performance after accounting for the level of maternal assistance. Ratings of mother-oriented motivation were averaged across all intervals to create a single score for each child (see Forman & Kochanska, 2001, for more details).

Conscience

Internalized Conduct: Prohibited Toys

Procedure. Mother-child interactions took place in a room with a table in the corner. The table was laden with exciting toys that were designated as off-limits to the child. When the child was 33 and 45 months old, the mother enforced this rule throughout two long lab sessions. At the end of the second session, the mother stated the rule again, then went to the adjoining room, leaving the child alone in the room with the prohibited toys. To make these toys more salient, the mother also set up a dull sorting task directly in front of the toy table. The child was alone for 1 min. Then an unfamiliar adult entered, played with the toys for 1 min, and left. The child was then alone in the room for an additional 6 min.

Coding. During 5-s segments, the presence or absence of the following child behaviors was noted: looking without touching, self-correcting (touch lasting less than 2 s), gentle touching (e.g., gingerly

using one finger), deviating (uninhibited play with forbidden toys), and other activity. More than one code was possible in each time segment. Latency to deviate was also recorded.

Reliability and Data Reduction. Kappas were .96 and .92 at the two ages. A principal components analysis produced a clear first factor that at each age accounted for approximately 40% of the variance. The factor included positive loadings for looking without touching and latency to deviate, and negative loadings for deviating and gentle touching. We used this factor as our measure of internalized conduct with the prohibited toys.

Internalized Conduct: Cheating Games

Procedure. The two cheating games had attractive prizes that could not be won by following the rules. In one game, children had to throw a rubber dart backward toward a small, distant target from behind a line, using their nondominant hand. The other game involved guessing which animal was hidden underneath a cloth cover. The experimenter explained the rules, which prohibited peeking or touching the cloth with more than one finger. Failing to follow these rules was described as “cheating,” which would be unfair. Gift-wrapped prizes for winning were visible, and the child was left alone to play for 3 min.

Coding. The number of children’s “legal” behaviors (e.g., touching the cloth with one finger, staying behind the line) and “illegal” behaviors (e.g., peeking under the cloth) was noted in 3-s segments. Latency to the first broken rule was also coded.

Reliability and Data Reduction. Kappa for the children’s behaviors was .90. Standardized scores for latency to cheat, legal behaviors, and illegal behaviors (with the sign reversed) were averaged to create a single score for internalized conduct in the cheating games (internal-consistency alphas were .76 at 33 months and .71 at 45 months).

Guilt

Procedure. Guilt was operationalized as distress following a perceived transgression (Cole, Barrett, & Zahn-Waxler, 1992). At the 33- and 45-month sessions, the children were led to believe they had damaged valuable objects, a stuffed cat and a boat at 33 months, and a xylophone and a coffee cup at 45 months.

In each of these “mishaps,” the experimenter presented the child with an object, described as having special value (e.g., “I built this myself”), and asked the child to be careful with it. Because the objects had been rigged, each fell apart as soon as the child began to handle it. The experimenter said, “Oh my . . .” and paused for up to 60 s (Epoch 1). Then she asked the child a series of questions: “What happened?” “Who did it?” and “Did you do it?” (Epoch 2). The experimenter then said that she could fix the object, left for 30 s (Epoch 3), then returned with a “fixed” object, which was an exact replica of the original object. She then explained that the mishap was not the child’s fault, took responsibility for it (“I forgot; it always does that”), and reassured the child (Epoch 4).

Coding. The presence or absence of gaze avoidance and bodily tension was coded at 5-s intervals, and overall distress during the entire episode was rated on a scale from 1 to 4. In addition, the number of epochs in which the child showed positive and negative affect was noted, with strong expressions weighted double.

TABLE 1
Correlations Among Imitation and Conscience Measures

Conscience measure	Imitation measure		
	14-month responsive imitation	22-month responsive imitation	Combined toddler-age responsive imitation
33-month internalized-conduct composite	.24*	.27**	.31***
33-month guilt	.34***	.30**	.39***
45-month internalized-conduct composite	.33***	.29**	.38***
45-month guilt	.38***	.30**	.42***
Combined preschool-age conscience	.44***	.40***	.52***

Note. Responsive imitation combines mother-oriented motivation and child matching. Internalized conduct combines measures from forbidden toys and cheating games.

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

Reliability and Data Reduction. Kappas for gaze avoidance, bodily tension, overall distress, and affect averaged .91, .70, .73, and .71, respectively, across the two sessions. Composites were created at each age by standardizing and averaging across all components, with positive-affect scores reversed (for more details, see Kochanska, Gross, Lin, & Nichols, 2002).

Compliance

Because committed compliance provides a potential alternative explanation for our findings, we included it as a covariate. At ages 14 and 22 months, participants engaged in a 5-min cleanup task (*do* task) and spent an extended time in a room with off-limits toys (*don't* task). In 30-s segments, children were assigned ratings of either committed compliance, situational compliance, or noncompliance. Committed compliance (the only variable considered here) was coded when compliant behavior was spontaneous, enthusiastic, and self-sustaining. Kappas averaged .73. The proportions of segments in which committed compliance was observed were standardized and averaged across both tasks and both ages (see Forman & Kochanska, 2001).

Aggregation of Measures

The two imitation variables were standardized and averaged to create responsive-imitation scores at each age (mother-oriented motivation and child matching correlated positively at 14 and 22 months; $r_s = .40$ and $.46$, respectively, both $p_s < .01$). The two measures of internalized conduct, with forbidden toys and in the cheating games, were positively associated at 45 months ($r = .38$, $p < .001$) and tended to be associated at 33 months ($r = .18$, $p < .10$). Each also predicted the other. Scores for the cheating games at 33 months predicted 45-month restraint with forbidden toys ($r = .22$, $p < .05$), and 33-month restraint with the forbidden toys predicted 45-month scores for the cheating games ($r = .23$, $p < .05$). The two measures were therefore assumed to tap a common dimension and were combined to create a single measure of internalized conduct at each age. These internalized-conduct composites were associated with guilt at both ages ($r_s = .28$ and $.44$, respectively, at 33 and 45 months, both $p_s < .01$). Finally, cross-age composites were made. Imitation measures were combined across the two toddler ages, and all four conscience measures (the conduct composites and guilt, at both ages) were combined.

RESULTS

Imitation and Conscience

Table 1 contains zero-order correlations between responsive-imitation scores, which combine children's mother-oriented motivation and matching behavior, and the preschool conscience measures. In every case, the prediction was significant and positive.¹ Three other aspects of these results are noteworthy. First, aggregation across ages and across the two aspects of conscience increased the strength of the prediction from imitation to conscience. Second, the relation did not diminish over the period studied, with prediction to the 45-month conscience measures as strong as prediction to the 33-month measures. Third, the prediction from overall imitation to overall conscience was unusually strong for independent behavioral measures taken over an extended developmental period. With a sample of this size and a correlation of .52, the 95% confidence interval for the effect size ranges from 13% to 42%.

Motivation and Performance

The next analysis addressed whether mother-oriented motivation adds to imitation performance in predicting conscience. We tested this using hierarchical regression. Prior to this analysis, scores for mother-oriented motivation were standardized and averaged across the two toddler ages, as were scores for child matching. The dependent variable was the preschool-age conscience aggregate.

Two potential alternative explanations for the prediction to conscience were also controlled in this analysis. Previous reports showed that girls score higher than boys on measures of both responsive imitation (Forman & Kochanska, 2001) and conscience (Kochanska et al., 2002). Gender was therefore entered at the first step, to test whether these parallel gender effects on imitation and on conscience accounted for the relations between them. Responsive imitation is also associated with committed compliance, which has been shown to predict development of conscience. Therefore, committed compliance was also entered at Step 1. Child matching was entered at the second step, and motivation at the third. Results are shown in Table 2.

¹All imitation-conscience relations remained significant after controlling for 45-month Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) Information Scale scores. The partial correlation between toddler-age responsive imitation and combined preschool conscience, controlling for Information Scale scores, was .48.

TABLE 2
Regression Showing Effects of Child Matching and Mother-Oriented Motivation on the Preschool Conscience Aggregate

Predictor	<i>B</i>	<i>SE</i>	β	<i>t</i>
Step 1 ($R^2 = .20, p < .001$)				
Gender	0.48	0.14	.33	3.41***
Committed compliance	0.18	0.09	.19	1.99*
Step 2 ($\Delta R^2 = .10, p < .001$)				
Gender	0.38	0.14	.26	3.17**
Committed compliance	0.07	0.09	.07	n.s.
Child matching	0.34	0.09	.35	3.71***
Step 3 ($\Delta R^2 = .03, p < .05$)				
Gender	0.35	0.14	.24	2.59**
Committed compliance	0.05	0.09	.05	n.s.
Child matching	0.23	0.10	.24	2.30*
Mother-oriented motivation	0.20	0.09	.22	2.15*

Note. Committed-compliance, child-matching, and mother-oriented motivation scores were each combined across the 14- and 22-month observations. The preschool conscience aggregate combined 33- and 45-month guilt and internalized-conduct measures.

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

Imitation measures predicted significant, independent variance in the preschool conscience measure after the effects of child gender and committed compliance were accounted for. Furthermore, mother-oriented motivation predicted significant, independent variance in preschool conscience beyond the effects of matching behavior.

DISCUSSION

Our results demonstrate a clear link between toddler-age readiness to imitate and preschool-age conscience. This link holds across two different aspects of conscience—internalized conduct and guilt. The results are consistent with imitation being an early marker of an unfolding developmental process, in that the link showed no attenuation over the time period studied. Predictions from the 14-month imitation composite to both 45-month conscience measures were significant, despite the numerous and dramatic changes children experience over those 2 1/2 years of development.

The basic insight of our “ancients” (Sears, 1975), that children’s imitation has consequences for moral development, is clearly consistent with the present findings. This idea has, of course, been supported empirically before. Numerous classic experimental studies of social learning convincingly showed that children can learn self-control, and other behaviors relevant to moral development, through imitation (Bandura, 1986). The present work adds a new element to that understanding by showing that early-existing individual differences in children’s readiness to imitate predict the acquisition of conscience. This developmental individual differences approach to imitation is likely to advance understanding of the roots of moral conduct and emotion.

We also found that mother-oriented motivation added significant predictive power to matching behavior alone. This result supports the strategy of measuring not only the behavioral response of matching, but also the qualities of behavior that reflect the child’s underlying motivation. The approach is analogous to rating the “commitment” in committed compliance, which improves on compliance per se in predicting internalized conduct (Kochanska & Aksan, 1995). Here,

the result provides evidence to support the predictive validity of our construct of responsive imitation as reflecting the child’s receptiveness to maternal socialization efforts.

This study also has several limitations. First, because we believe that imitation reflects children’s responsiveness, we measured children’s responses to overt teaching. Thus, our findings could have resulted in part from our having utilized a form of imitation that includes compliance to maternal instructions as one component. Though this responsive form of imitation went beyond early committed compliance in predicting conscience, we do not know whether children’s spontaneous imitation predicts conscience as well. Both incidental learning and learning from intentionally modeled actions are important social learning processes (Bandura, 1986). This study has provided evidence only for the latter.²

Second, the study is correlational. Showing that imitation predicts conscience does not demonstrate causation. There are potential alternative explanations for the predictive link between imitation and conscience. For example, a third factor, such as parenting, or child temperament or cognitive ability, could be associated with both. For this reason, more research on developmental antecedents of responsive imitation would be useful.

Additionally, because different theoretical perspectives converge on the prediction from imitation to conscience, the positive result cannot distinguish among them. These theories, however, incorporate testable claims about specific mechanisms of the development of conscience. Emde, for example, might expect links from still-earlier social referencing to children’s responsive imitation (Emde et al., 1991), and Meltzoff would expect social understanding to mediate the links between imitation and conscience (Meltzoff, 2002). We view imitation as only one of several ways in which a general and enduring receptive stance to the parent’s guidance can manifest itself (Forman,

²There are few published data relating children’s spontaneous imitation to imitation directly elicited in a teaching task. Masur has found some consistency between prompted and spontaneous verbal imitation (e.g., Masur & Eichorst, 2002). We know of no published work that reports on links between elicited imitation and spontaneous imitation of actions on objects.

2003; Forman & Kochanska, 2001). Research into all of these mechanisms will be worth pursuing.

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