

Gagné, C., Bernier, A., & McMahon, C. (2018). The role of paternal mind-mindedness in preschoolers' self-regulated conduct. *Infant and Child Development*, 27, article e2081.

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

## Abstract

This study examined the prospective links between paternal mind-mindedness (MM) and two indices of preschoolers' self-regulated conduct, namely inhibitory control and rule-compatible conduct. Ninety-two families (47 boys) participated in two assessments. Paternal MM was assessed with a 10-minute father-child free-play session when children were aged 18 months. Children's rule-compatible conduct was reported by mothers when children reached 3 years of age, and inhibitory control was measured with a Snack Delay task, also administered at 3 years. The results suggested that after accounting for the contribution of child temperament (social fearfulness), paternal MM was positively related to children's inhibitory control. In contrast, the relation between paternal MM and mother-reported rule-compatible conduct was not significant. The results are interpreted in light of the mechanisms that may account for the links between paternal MM and preschoolers' emerging capacity to voluntarily control their behavior.

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

### The role of paternal mind-mindedness in preschoolers' self-regulated conduct

One important foundation of child functioning is moral development, the first indicators of which begin to appear in early childhood (Kochanska & Thompson, 1997). These early indicators can take different forms, including cognitive (e.g., knowledge of family rules), emotional (e.g., guilt following inappropriate behavior), and behavioral indices (e.g., compliance). As children develop beyond infancy, their ability to respond adequately to societal demands and expectations is influenced by both internal (e.g., cognitive and brain development, temperament) and external factors (e.g., family environment, parenting).

Parent-child interactions may be especially salient influences in early childhood, due to young children's limited social networks and the central role played by their caregivers. When children are approximately 2 years of age, parents gradually expand their focus from primary care to incorporate educational components, for instance teaching their children rules of behavior; children thus begin to distinguish right from wrong and begin to regulate their behavior in line with this understanding (Lamb & Lewis, 2004). It is likely, therefore, that parent-child interactions in infancy and toddlerhood influence children's behavioral regulation (Kochanska & Kim, 2014). There is, however, surprisingly little empirical support for this proposition (Hinnant, Nelson, O'Brien, Keane, & Calkins, 2013; Malti, Eisenberg, Kim, & Buchmann, 2013), and even less concerning the specific role of fathers (Grusec, Chaparro, Johnston, & Sherman, 2014). Given the wealth of evidence showing that fathers contribute to many aspects of children's cognitive, behavioral, and social development (Cabrera & Tamis-LeMonda, 2013), this study addresses this gap and examines the role of one aspect of father-child interactions, namely paternal mind-mindedness, in one behavioral facet of young children's first moral manifestations, namely self-regulated conduct.

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

### **Self-regulated conduct**

One of the central roles of parents is to teach their children the rules and standards of conduct that are important in their culture, a process known as socialization (Thompson, 2014). When children are very young, their caregivers must constantly monitor their actions, but gradually as they develop increased autonomy and cognitive capacity, children's behavioral regulation is increasingly governed by internalizing rules in the absence of adult supervision (Bandura, 1991; Baumeister & Vohs, 2007). This process of rule internalization is one of the main goals of socialization, and one of its most observable manifestations is self-regulated conduct (Kochanska & Aksan, 1995; Kochanska & Kim, 2014; Kohlberg, 1969).

Self-regulated conduct can be manifested in different ways including behavior consistent with rules (rule-compatible conduct) and voluntary inhibition of disruptive behavior (inhibitory control; Kochanska, Barry, Jimenez, Hollatz, & Woodard, 2009). The developmental progression of self-regulated conduct is well documented and typically occurs in discipline contexts (Grusec & Goodnow, 1994). According to Kopp (1982), 15-month-old children are able to obey their parents; they can initiate or stop their behavior following a request from a caregiver. However, this requires adult presence. From approximately 2 years, children are capable of self-control: they are able to inhibit behaviors that provide them with immediate delight and rather opt for behavior in which gratification will come later. By the age of 3, many children are capable of spontaneous rule-compatible conduct and inhibitory control: they can voluntarily adjust their behavior as a function of situational demands without surveillance and are able to voluntarily inhibit an inappropriate but dominant response to adopt one that is more suitable (Kochanska & Kim, 2014). Overall, spontaneous rule-compatible conduct and inhibitory control are two of the most observable manifestations of

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

self-regulated conduct, which develop in the toddlerhood and preschool years (Kochanska & Kim, 2014; Kochanska, Koenig, Barry, Kim, & Yoon, 2010).

While the age-related progression in self-regulated conduct is well documented, there are also important individual differences in children's capacity to display these skills. These individual differences relate, both concurrently and prospectively, to important aspects of functioning such as school adjustment, behavior problems, psychopathology, and prosocial action (Baumeister & Vohs, 2004; Eisenberg, Spinrad, & Eggum, 2010; Eisenberg et al., 2005; Malti & Latzko, 2012; Shoda, Mischel & Peake, 1990). Children with well-developed inhibitory control also have better emotion-regulation skills and more adaptive social functioning (Eisenberg, Smith, & Spinrad, 2011). It is therefore important to assess individual children's capacity for self-regulated conduct, and the antecedents of observed individual differences.

### **Parenting influences on child self-regulated conduct**

Despite being frequently proposed as a major driving force of early moral development, parenting has received little empirical attention in this literature (Hinnant et al., 2013; Malti et al., 2013). Parent-child interactions constitute mutual and reciprocal forces of socialization that promote cooperation between children and their caregivers (Kochanska & Thompson, 1997), and the quality of this cooperation is believed to support and promote the emergence of self-regulated conduct (Thompson, 2014).

Although the vast majority of studies in the broader parenting literature have focused on maternal behavior, there has been increasing interest in paternal influences on children, possibly because fathers are now more involved with their children than in previous generations (Cabrera & Tamis-LeMonda, 2013). Fathers make unique contributions to child

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

functioning in numerous spheres (e.g., Bordeleau, Bernier, & Carrier, 2012; Brown, McBride, Shin, & Bost, 2007; Lindsey, Cremeens, & Caldera, 2010) including socio-cognitive development (Lundy, 2013) as well as emotional regulation and control (Gottman, Katz, & Hooven, 1997). For instance, the quality of father-child relationships and interactions has been found to relate negatively to children's behavior problems (Amato & Rivera, 1999) and positively to their subsequent self-regulatory capacities (Kochanska, Aksan, Prisco, & Adams, 2008) and committed compliance (Volling, McElwain, Notaro, & Errera, 2002).

One aspect of parental behavior that appears likely to support the development of the cognitive skills subsuming self-regulated conduct is mind-mindedness, defined as parents' proclivity to treat their child as an individual with an autonomous mental life (Meins, 1997). This proclivity is manifested through caregivers' tendency to comment appropriately on, and not misread, children's mental states (e.g., thoughts, desires) during parent-child interactions (Meins, Fernyhough, Arnott, Leekam, & Turner, 2012). Numerous studies suggest that children whose parents display greater mind-mindedness have better developmental outcomes (McMahon & Bernier, 2017), including more secure mother-child attachment (e.g., Demers Bernier, Tarabulsky, & Provost, 2010; Meins, Fernyhough, & Bureau, in press) and father-child attachment (Lundy, 2003), superior theory of mind (Meins, Fernyhough, Arnott, Leekam, & de Rosnay, 2013) and in families of low socio-economic background, lower levels of externalizing behavior problems during the preschool years (Meins, Centifanti, Munoz, Fernyhough, & Fishburn, 2013). Mind-mindedness has never, however, been studied in relation to child self-regulated conduct, although such relations appear plausible.

By its very nature, parental mind-mindedness offers children an opportunity to reflect on their own ideas and those of others (Laranjo, Bernier, Meins, & Carlson, 2014). As they

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

develop, children become able to appreciate that their wishes and preferences are not shared by everyone else, to anticipate the consequences of their behavior on others (Sharp & Fonagy, 2008), and to differentiate between what they want and what others expect of them (Perner, Lang, & Kloo, 2002). Hence, they are better equipped to make the deliberate decision to inhibit certain gratifying yet inappropriate behaviors, thus showing self-regulated conduct. Mind-mindedness, with its focus on the child's thoughts, intentions, and desires, could contribute to this process and thus provide children with the cognitive substrates of self-regulated conduct. In fact, one of the best documented outcomes of parental mind-mindedness is superior theory of mind in children (see McMahon & Bernier, 2017), which itself is robustly linked to aspects of executive functioning that show close connections to self-regulated conduct, such as impulse control (see Devine & Hughes, 2014). However, the links between parental mind-mindedness and child self-regulated conduct have never been examined. Investigating this question in the context of father-child relationships and children's earliest manifestations of self-regulated conduct was the core aim of the current study.

Child intrinsic factors can also influence self-regulated conduct. Some children, when faced with unfamiliar people, events, or stimuli, are hesitant to explore and approach, showing shyness and inhibited behavior. This is defined as fearfulness, an inhibitory system of temperament (Aksan & Kochanska, 2004). Fearfulness may favor children's behavioral inhibition and was therefore considered here as a potential confound.

### **The current study**

As described above, mind-mindedness may be relevant for child self-regulated conduct. Nearly all existing studies, however, have focused on maternal mind-mindedness, although mind-mindedness can be displayed by mothers and fathers, at comparable frequencies (Arnott

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

& Meins, 2007; Lundy 2013). We are aware of no study concerned with the influence of mind-mindedness on children's capacity to self-regulate their behavior. Examining fathers' contributions in this regard may be particularly informative, given the documented paternal influences on different indices of child behavior with close connections to self-regulated conduct (Amato & Rivera, 1999; Gottman et al., 1997; Kochanska et al., 2008; Volling et al., 2002). Consequently, the aim of this study was to investigate the longitudinal links between paternal mind-mindedness and two indices of young children's self-regulated conduct, namely rule-compatible conduct and inhibitory control. Paternal mind-mindedness was assessed in the context of father-child free play at 18 months. This age was chosen because the observational measure of mind-mindedness (used here) is usually used with infants between 6 and 18 months, whereas research indicates that fathers tend to become more involved with their children after infancy (Cabrera & Tamis-LeMonda, 2013; NICHD Early Child Care Research Network, 2000). Thus, 18 months appeared to be a fruitful transitional time to assess mind-mindedness among fathers, overlapping both of these time windows.

In line with previous studies (e.g., Kochanska & Kim, 2014; Merz et al., 2014), self-regulated conduct was assessed at age 3. Given that toddlers are limited in their capacities to identify their thoughts and emotions, we used maternal reports and behavioral observation. Questionnaires assess parents' perceptions of their child's willingness to comply with instructions in different life situations, and are likely to provide indices that are representative of child behavior in a variety of real-life situations over a period of time. In contrast, behavioral observation allows for objective assessment, which we used here to tap into children's ability to follow an adult's request to wait, and thus inhibit an impulsive response.

### **Method**

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

### Participants

Participating families were recruited randomly from birth lists of a large Canadian metropolitan area, provided by the Ministry of Health and Social Services. Criteria for participation were full-term pregnancy and the absence of any known physical or mental disability or severe developmental delay in the infant. The initial sample consisted of 92 child-parents triads (47 boys and 45 girls). Mothers were between 21 and 45 years of age ( $M = 31$ ) and fathers between 21 and 58 years of age ( $M = 34$ ). Almost half of parents had a college degree (mothers: 41.6%; fathers: 42.7%) and most were Caucasian (mothers: 96.7%; fathers: 91.1%). Family income varied from less than \$20,000 CDN to more than \$100,000 CDN, with an average in the \$60,000 to \$79,000 CDN bracket, near the mean family income in the province, which was \$65,095 at the time of this study.

### Measures

**Paternal mind-mindedness.** Paternal mind-mindedness was assessed during a 10-minute father-child free-play session when children were aged approximately 18 months. The 10-minute duration was chosen based on the literature, in which duration of assessment for mind-mindedness varies from as little as 2 minutes (Marcoux, Bernier, Séguin, Boike Armerding, & Lyons-Ruth, 2017) to up to 30 minutes (Meins, Fernyhough, Arnott, Turner, & Leekam, 2011). Fathers were asked to play as they normally would with their child, with a standard set of toys provided by the research team. These videotaped interactions were later rated by a trained assistant using Meins, Fernyhough, Fradley, and Tuckey's (2001) coding system. Five categories of mind-related comments were assessed: (a) comments on the child's mental states, such as thoughts, desires, and knowledge; (b) comments on mental processes, such as remembering; (c) comments on the child's emotional engagement; (d) comments on attempts

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

to manipulate people's beliefs (e.g., "Are you teasing me?"); and (e) comments that involved the father talking on the child's behalf (e.g., "See dad, it's easier this way").

Mind-related comments are then classified as appropriate or non-attuned according to Meins et al.'s guidelines (2001). An appropriate comment must meet one or more of the following criteria: (a) the coder agrees with the father's comment on his child's state of mind; (b) the comment is linked with a past, present or future activity; (c) the comment clarifies how to proceed after a lull in the interaction. In contrast, non-attuned comments appear unrelated to the child's preferences and/or behavior, and may cut across the child's apparent interests. Because non-attuned mind-related comments were extremely rare in this low-risk sample (more than 90% of fathers made no such comments at all), they were not examined.

The mind-mindedness score consisted of the total number of appropriate mind-related comments made by the father during the interaction. Although some studies control for verbosity by calculating proportional scores, studies report identical patterns of results with frequency scores (Meins et al., 2001; 2003) and that was the case in this study. Accordingly, frequency scores were used in all subsequent analyses. A second trained rater independently coded 20% of the sample ( $n = 19$ ). Interrater reliability was satisfactory, intraclass correlation (ICC) = .83.

**Rule-compatible conduct.** Mothers were asked to complete the 20 items constituting the subscale "Internalized Conduct" of the questionnaire "My Child" (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994) when their children reached 3 years. This subscale measures children's willingness to comply with rules, whether in the presence or absence of external control. It is designed to assess whether children have internalized the rules taught to them and spontaneously follow them (e.g., "Will spontaneously pick up toys, even without

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

being asked"), or at least can obey the rules when requested to do so (e.g., "If asked to do a chore, does not need to be reminded about it"). Mothers completed the items on a 7-point Likert scale, from "extremely false" to "extremely true". Higher scores indicate more rule-compatible conduct. The subscale has been shown to possess high internal consistency (.90), good test-retest reliability (.69), and to correlate with other aspects of conscience (Kochanska et al., 1994). In the current sample, internal consistency was  $\alpha = .87$ .

**Inhibitory control.** A "Snack Delay" task (Kochanska, Murray, Jacques, Koenig, & Vandegest, 1996) was administered when children were aged 3 years. The experimenter offered children three choices of snacks, asking them to pick their favorite (Frootloops, Goldfish, or raisins). The experimenter then placed the child's favorite snack in a bowl in front of the child, telling him or her to wait until she rang a bell before taking the treat. The experimenter then kept a neutral facial expression while the child was waiting. Four trials of increasing duration were administered: 5, 15, 30, and 45 seconds. Due to lack of variability on the first two trials, for which children's performance was at ceiling, scores consisted of the sum of the last two trials with longer waiting times. Children's scores on this task have been found to correlate positively with subsequent internalization of rules (Kochanska, 1996).

**Temperament.** Child temperament was assessed with the *Toddler Behavior Assessment Questionnaire* (TBAQ; Goldsmith, 1996), completed by mothers when children were 3 years old. The TBAQ consists of 110 items on a 7-point Likert scale, assessing mothers' perception of their 15 to 36 month-old child's personality along five dimensions: activity level, pleasure, social fearfulness, anger proneness and interest/persistence. The TBAQ shows good internal consistency for all scales (between .78 and .83; Goldsmith, 1996). As mentioned above, the fearfulness dimension of temperament is of particular relevance for children's capacity to

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

inhibit their impulses, and indeed only the social fearfulness subscale (14 items;  $\alpha = .84$  in this sample) was related to self-regulated conduct in this study (Table 2). It was therefore used as a covariate. Higher scores indicate greater social fearfulness (e.g., “When your child was approached by a stranger when you and she/he were out (for example, shopping), how often did your child show distress or cry?”).

### **Procedure**

Data were collected during two visits. When children were about 18 months old (Time 1;  $M = 18.27$ ,  $SD = 0.98$ , range = 16.55 – 20.50), fathers came to the university with their child. A 10-minute free play was video-recorded, and later coded for mind-mindedness. When children were about three years old (Time 2;  $M = 36.72$  months,  $SD = 0.86$ , range = 35.11 – 37.85), a research assistant went to the family’s home and administered children a series of tasks, including the inhibitory control task described above. The research assistant left a packet of questionnaires (including the Internalized Conduct questionnaire and TBAQ) for the mother, who was asked to return them by mail in the days following the visit. Of the 92 children for whom paternal mind-mindedness was assessed at Time 1, 83 (90%) completed the inhibitory control task at Time 2, and 71 (77%) mothers completed the questionnaires.

## **Results**

### **Preliminary analyses**

Table 1 presents the observed ranges, means, and standard deviations for the main study variables. The correlations among these variables, socio-demographic indicators, and other potential confounds are reported in Table 2. Inhibitory control and rule-compatible conduct were unrelated. Overall, the potential covariates (temperamental social fearfulness, child sex and age, family SES) were unrelated to paternal mind-mindedness and to child outcomes, with

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

two exceptions: social fearfulness was marginally related to children's performance on the inhibitory control task, and significantly (but unexpectedly, negatively) associated with their rule-compatible conduct. Consequently, only social fearfulness was retained as a covariate in the main analyses.

### **Main analyses**

As displayed in Table 2, mothers' reported rule-compatible conduct was unrelated to the total number of paternal mind-related comments,  $r(71) = -.10, p = .423$ . Accordingly, this outcome was not considered further. However, children's inhibitory control was positively related to fathers' overall use of appropriate mind-related comments during the free-play session,  $r(83) = .28, p = .010$ . Next, to examine whether paternal mind-mindedness added to the prediction of children's inhibitory control above and beyond temperamental social fearfulness, a multiple regression analysis was carried out. Social fearfulness was entered in the first block, followed by mind-related comments in the second block. Table 3 presents the results of this analysis. The overall model was significant,  $F(2,66) = 5.15, p = .027$ . Social fearfulness accounted for a marginal 5% ( $p = .065$ ) of the variance in children's inhibitory control, whereas mind-related comments added a unique significant 7% ( $p = .027$ ) to the prediction.

### **Discussion**

This study investigated the longitudinal links between paternal mind-mindedness and some of young children's first manifestations of self-regulated conduct, namely rule-compatible conduct and inhibitory control. The results showed that fathers' use of appropriate mind-related comments during free play at 18 months was unrelated to rule-compatible conduct reported by mothers, but was positively related to children's inhibitory control at 3 years, even

## PATERAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

when their temperamental social fearfulness at that time was controlled. These results suggest that paternal mind-mindedness might contribute to children's early manifestations of self-regulated conduct, at least in the form of inhibition of an inappropriate but dominant response. This early capacity may be protective against the development of aggression and impulsivity, which in fact would be consistent with the findings of two studies in which parental (mostly maternal) mind-mindedness was found to relate negatively to preschoolers' conduct problems (Walker, Wheatcroft, & Camic, 2012) or externalizing problems generally, albeit only among children from low-SES homes (Meins et al., 2013). The current results suggest that exposure to not only maternal, but also paternal mind-mindedness may be beneficial to young children's behavioral regulation, in this case inhibitory control.

One interpretation of these results is that the links between paternal mind-mindedness and children's inhibitory control may transit through the intermediate role of children's acquisition of precursors of theory of mind, which is the ability to attribute mental states to others (Moll & Meltzoff, 2011). Parental labelling of mental states during parent-child interactions can help children reflect on their own ideas and those of others and help them realize that their own perspectives are not necessarily shared by everyone. Previous studies have reported that toddlers' understanding of others' desires and visual perspectives (Laranjo, Bernier, Meins, & Carlson, 2010) as well as their perspectival symbolic play (Meins et al., 2013), which are precursors of theory of mind, were positively associated with maternal mind-mindedness. Consequently, toddlers exposed to parental mind-mindedness are conceivably acquiring the tools to differentiate what they want and what others expect of them (Perner et al., 2002). With this understanding, they can choose to meet (or not) adult demands, and inhibit certain behaviors that they understand to be inappropriate in others' eyes, showing inhibitory control

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

(Sharp & Fonagy, 2008). In fact, as mentioned earlier, studies have found that children who have difficulties in theory of mind also have difficulty controlling their behavior (as evidenced by studies of executive functioning, e.g., Carlson & Moses, 2001). Hence, one may speculate that paternal mind-mindedness is associated with children's inhibitory control through the intervening role of child theory of mind and precursors thereof.

Another mechanism by which mind-mindedness could influence child self-regulated conduct is child language. Consistent findings indicate that language develops faster in children whose mothers talk to them more (e.g., Hurtado, Marchman, & Fernald, 2008) and in fact, one study found that children whose mothers used more mind-related comments at 1 year had a more developed vocabulary at the age of 2 (Laranjo & Bernier, 2013). In turn, it has often been proposed that child language can contribute to children's capacity to inhibit inappropriate behavior (Fernyhough, 2010). The suggestion is that children with superior language skills are better equipped to understand and internalize the rules issued by adults and are able to develop verbal strategies to regulate their own behavior (Carlson & Meltzoff, 2008). In short, children whose parents regularly demonstrate mind-mindedness can be presumed to develop better language skills, which in turn help them understand the rules and develop internal strategies to comply with them and thus regulate their behavior.

All in all, different mechanisms including language, theory of mind, and its precursors might explain the links observed here between paternal mind-mindedness and one aspect of children's self-regulated conduct, namely inhibitory control. However, the lack of relation between paternal mind-mindedness and the other outcome considered, namely mother-reported rule-compatible conduct, was unexpected, as was the lack of relation between the two outcome variables. There are a number of possible reasons for this pattern of results. One

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

possibility is that rule-compatible conduct, as assessed here, is not sufficiently specific and not as well operationalized as inhibitory control. In fact, there were several differences between our two outcomes: one was assessed behaviorally, in a game-like situation with an unknown experimenter, whereas the other tapped into mothers' perceptions of their child's willingness to comply with rules in a variety of daily situations. Although these different assessments make for rich information, they do imply that we cannot tease apart conceptual and methodological hypotheses for the lack of relations between rule-compatible conduct and inhibitory control, as well as between rule-compatible conduct and paternal mind-mindedness. From the current results we cannot exclude the possibility that paternal early use of mind-related comments during father-toddler interactions is simply unrelated to children's later rule-compatible conduct in everyday situations. However, it may also be the case that paternal reports of rule-compatible conduct would have proven more closely associated with early paternal mind-mindedness than maternal reports, given that one parent's behavior likely influences child behavior mostly toward that parent.

Strengths of this study include the focus on fathers, the longitudinal design, and the multi-method approach (observation, behavioral task, maternal reports). There are also, however, limitations that qualify the conclusions that can be drawn. First, the sample was drawn from a low-risk community population, which may have reduced variability on some variables. Second, attrition impacted the sample size (although attrition was not differential on study variables), which in turn had implications for statistical power, and the correlational design precludes causal inference. Further, we examined only one specific paternal behavior, although other aspects of paternal behavior are also important for children's development (e.g., Cabrera, Fagan, Wight, & Schadler, 2011; Mills-Koonce et al., 2011). Finally, given that

## PATERNAL MIND-MINDEDNESS & SELF-REGULATED CONDUCT

we assessed paternal mind-mindedness only, we cannot tease apart parental gender and the exact aspect of parenting considered; although the results may be suggestive of a positive influence of fathers' mind-mindedness on children's inhibitory control, they might just as well suggest an influence of fathers' interactive behavior more generally. Similarly, they may point to a broad role of mind-mindedness, whether maternal or paternal.

All in all, although the current results are the first, to our knowledge, to suggest that paternal mind-mindedness relates to child self-regulated conduct, much remains to be done to specify the nature of the observed association. For the time being, the results reported here tentatively raise the possibility that when fathers demonstrate mind-mindedness while interacting with their toddlers, they may help them understand the differences between what they want and what others want, while also fostering children's language skills, which in turn, may support children's growing capacity to inhibit a dominant behavior. Importantly, this putative influence of mind-mindedness appears to be independent of temperamental social fearfulness, a documented correlate of inhibitory control. Future studies are needed to test the robustness of the current results, and investigate other implications of paternal mind-mindedness for children's moral and behavioral development.

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

**References**

- Aksan, N., & Kochanska, G. (2004). Links between systems of inhibition from infancy to preschool years. *Child Development, 75*, 1477-1490. doi :10.1111/j.1467-8624.2004.00752.x
- Amato, P. R., & Rivera, F. (1999). Paternal involvement and children's behavior problems. *Journal of Marriage and Family, 61*, 375-384. doi: 10.2307/353755
- Arnott, B., & Meins, E. (2007). Links among antenatal attachment representations, postnatal mind-mindedness, and infant attachment security: A preliminary study of mothers and fathers. *Bulletin of the Menninger Clinic, 71*, 132-149.  
doi:10.1521/bumc.2007.71.2.132
- Bandura, A. (1991). Social cognitive theory of moral thought and action. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of moral behavior and development, Vol. 1. Theory* (pp. 45-103). Hillsdale, NJ: Erlbaum.
- Baumeister, R. F., & Vohs, K. D. (2004). *Handbook of self-regulation: Research, theory and applications*. New York, NY: Guilford.
- Baumeister, R. F., & Vohs, K.D. (2007). Self-regulation, ego depletion and motivation. *Social and Personality Psychology Compass, 1*, 115-128. Doi: 10.1111/j.1751-9004.2007.00001.x
- Bordeleau, S., Bernier, A., & Carrier, J. (2012). Longitudinal associations between the quality of parent-child interactions and children's sleep at preschool age. *Journal of Family Psychology, 26*, 254-262. doi :10.1037/a0027366
- Brown, G. L., McBride, B. A., Shin, N., & Bost, K. K. (2007). Parenting predictors of father-child attachment security: Interactive effects of father involvement and fathering quality. *Fathering, 5*, 197-219. doi:10.3149/fth.0503.197

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

- Cabrera, N. J., Fagan, J., Wight, V., & Schadler, C. (2011). Influence of mother, father, and child risk on parenting and children's cognitive and social behaviors. *Child Development, 82*, 1985-2005. doi: 10.1111/j.1467-8624.2011.01667.x
- Cabrera, N. J., Shannon, J. D., & Tamis-LeMonda, C. (2013). *Handbook of father involvement: Multidisciplinary perspectives* (2<sup>nd</sup> ed.). New York, NY: Taylor & Francis Group.
- Carlson, S., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental Science, 11*, 282-298. doi :10.1111/j.1467-7687.2008.00675.x
- Carlson, S., & Moses, L. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development, 72*, 1032-1053. doi :10.1111/1467-8624.00333
- Demers, I., Bernier, A., Tarabulsky, G. & Provost, M. A. (2010). Mind-mindedness in adult and adolescent mothers: Relations to maternal sensitivity and infant attachment. *International Journal of Behavioral Development, 34*, 529-537. doi :10.1177/0165025410365802
- Eisenberg, N., Smith, C.L., & Spinrad, T.L. (2011). Effortful control: Relations with emotion regulation, adjustment and socialization in childhood. In K.D. Vohs and R.F. Baumeister (Eds), *Handbook of self-regulation: Research, theory and applications* (2<sup>nd</sup> edition; pp. 263-283). New York, NY: Guilford.
- Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children's maladjustment. *Annual Review of Clinical Psychology, 6*, 495-525. doi:10.1146/annurev.clinpsy.121208.131208

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

Eisenberg, N., Zhou, Q., Spinrad, T. L., Valiente, C., Fabes, R. A., & Liew, J. (2005).

Relations among positive parenting, children's effortful control, and externalizing problems: A three-wave longitudinal study. *Child Development, 76*, 1055–1071.

doi:10.1111/j.1467-8624.2005.00897.x

Fernyhough, C. (2010). Vygotsky, Luria, and the social brain. In J. Carpendale, G. Iarocci, U.

Müller, B. Sokol, & A. Young (Eds.), *Self and social regulation: Social interaction and the development of social understanding and executive functions* (pp. 56–80).

Cambridge, England: Oxford University Press.

Goldsmith, H.H. (1996). Studying temperament via construction of the Toddler Behavior

Assessment Questionnaire. *Child Development, 67*, 218-235. doi :10.2307/1131697

Government of Quebec (2011). Le revenu familial [Family income]. In *Un portrait statistique*

*des familles au Québec* [A statistical picture of families in Quebec] (pp. 373–484).

Quebec: Government of Quebec. Retrieved from

[https://www.mfa.gouv.qc.ca/fr/publication/documents/sf\\_portrait\\_stat\\_chapitre5\\_11.pdf](https://www.mfa.gouv.qc.ca/fr/publication/documents/sf_portrait_stat_chapitre5_11.pdf)

f

Gottman, J. M., Katz, L. F., & Hooven, C. (1997). *Meta-emotion*. Hillsdale, NJ: Erlbaum.

Grusec, J. E., Chaparro, M. P., Johnston, M., & Sherman, A. (2014). The development of

moral behavior from a socialization perspective. In M. Killen & J. Smetana (Eds.),

*Handbook of moral development* (2<sup>nd</sup> ed., pp. 113-134). New York, NY: Psychology

Press.

Grusec, J. E., & Goodnow, J. J. (1994). Impact of parental discipline methods on the child's

internalization of values: A reconceptualization of current points of view.

*Developmental Psychology, 30*, 4-19. doi:10.1037/0012-1649.30.1.4

## PATERAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

- Hinnant, J. B., Nelson, J. A., O'Brien, M., Keane, S. P., & Calkins, S. D. (2013). The interactive roles of parenting, emotion regulation and executive functioning in moral reasoning during middle childhood. *Cognition and Emotion, 27*, 1460-1468.  
doi:10.1080/02699931.2013.789792
- Hurtado, N., Marchman, V. A., & Fernald, A. (2008). Does input influence uptake? Links between maternal talk, processing speed and vocabulary size in Spanish-learning children. *Developmental Science, 11*, 31-39. doi:10.1111/j.1467-7687.2008.00768.x
- Kochanska, G., Aksan, N., Prisco, T. R., & Adams, E. E. (2008). Mother-child and father-child mutually responsive orientation in the first two years and children's outcomes at preschool age: Mechanisms of influence. *Child Development, 79*, 30-44.  
doi:10.1111/j.1467-8624.2007.01109.x
- Kochanska, G., Barry, R. A., Jimenez, N. B., Hollatz, A. L., & Woodard, J. (2009). Guilt and effortful control: two mechanisms that prevent disruptive developmental trajectories. *Journal of Personality and Social Psychology, 97*, 322-333. doi :10.1037/a0015471
- Kochanska, G., DeVet, K., Goldman, M., Murray, K., & Putnam, S. P. (1994). Maternal reports of conscience development and temperament in young children. *Child Development, 65*, 852-868. doi :10.2307/1131423
- Kochanska, G., & Kim, S. (2014). A complex interplay among the parent-child relationship, effortful control, and internalized, rule-compatible conduct in young children: Evidence from two studies. *Developmental Psychology, 50*, 8-21.  
doi :10.1037/a0032330
- Kochanska, G., Koenig, J. L., Barry, R. A., Kim, S., & Yoon, J. E. (2010). Children's conscience during toddler and preschool years, moral self, and a competent, adaptive

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

developmental trajectory. *Developmental Psychology*, 45, 1320-1332.

doi :10.1037/a0020381

Kochanska, G., Murray, K., Jacques, T. Y., Koenig, A. L., & Vandegest, K. A. (1996).

Inhibitory control in young children and its role in emerging internalization. *Child Development*, 67, 490-507. doi: 0.2307/1131828

Kochanska, G., & Thompson, R. (1997). The emergence and development of conscience in toddlerhood and early childhood. In J. Grusec & L. Kuczynski (Eds.), *Parenting strategies and children's internalization of values: A handbook of theoretical and research perspectives*. New York, NY: Wiley.

Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), *Handbook of socialization theory* (pp. 347-480). Chicago, IL: Rand McNally.

Kopp, C. B. (1982). Antecedents of self-regulation: A developmental perspective.

*Developmental Psychology*, 18, 199-214. doi :10.1037/0012-1649.18.2.199

Lamb, M. E., & Lewis, C. (2004). The development and significance of father-child relationships in two-parent families. In M. E. Lamb (Ed.), *The role of the father in child development* (4th ed., pp. 94-154). Hoboken, NJ: Wiley.

Lamb, M. E., & Lewis, C. (2010). The development and significance of father-child relationships in two-parent families. In M. E. Lamb (Ed.), *The role of the father in child development* (5th ed., pp. 94-153). Hoboken, NJ: Wiley.

Laranjo, J., & Bernier, A. (2013). Children's expressive language in early toddlerhood: Links to prior maternal mind-mindedness. *Early Child Development and Care*, 183, 951-962.

doi :10.1080/03004430.2012.699964

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

- Laranjo, J., Bernier, A., Meins, E., & Carlson, S. M. (2010). Early manifestations of children's theory of mind: The roles of maternal mind-mindedness and infant security of attachment. *Infancy, 15*, 300-323. Doi: 10.1111/j.1532-7078.2009.00014.x
- Laranjo, J., Bernier, A., Meins, E., & Carlson, S. M. (2014). The role of maternal mind-mindedness and infant security of attachment in predicting preschoolers' understanding of visual perspective taking and false belief. *Journal of Experimental Child Psychology, 125*, 48-62. doi :10.1016/j.jecp.2014.02.005
- Lewis, C., & Carpendale, J. I. M. (2009). Introduction: Links between social interaction and executive function. In C. Lewis, & J. I. M. Carpendale (Eds.), *Social interaction and the development of executive function* (pp. 1–15). San Francisco, CA: Jossey–Bass.
- Lindsey, E. W., Cremeens, P. R., & Caldera, Y. M. (2010). Mother–child and father–child mutuality in two contexts: Consequences for young children's peer relationships. *Infant and Child Development, 19*, 142-160. doi: 10.1002/icd.645
- Lundy, B. L. (2003). Father- and mother-infant face-to-face interactions: Differences in mind-related comments and infant attachment? *Infant Behavior and Development, 26*, 200-212. doi :10.1016/S0163-6383(03)00017-1
- Lundy, B. L. (2013). Paternal and maternal mind-mindedness and preschoolers' theory of mind: The mediating role of interactional attunement. *Social Development, 22*, 58-74. doi :10.1111/sode.12009
- Malti, T., Eisenberg, N., Kim, H., & Buchmann, M. (2013). Developmental trajectories of sympathy, moral emotion attributions, and moral reasoning: The role of parental support. *Social Development, 22*, 773–793. doi: 10.1111/sode.12031

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

- Malti, T., & Latzko, B. (2012). Moral emotions. In V. Ramachandran (Ed.), *Encyclopedia of human behavior* (pp. 644–649). Maryland Heights, MO: Elsevier.
- Marcoux, A.A., Bernier, A., Séguin, J., Boike Armerding, J. & Lyons-Ruth, K. (2017). How do mothers with borderline personality mentalize when interacting with their infants? *Personality and Mental Health, 11*, 14-22.
- Meins, E. (1997). *Security of attachment and the social development of cognition*. Hove, England: Psychology Press.
- Meins, E., Centifanti, L. C. M., Fernyhough, C., & Fishburn, S. (2013). Maternal mind-mindedness and children's behavioral difficulties: Mitigating the impact of low socioeconomic status. *Journal of Abnormal Child Psychology, 41*, 543-553.  
doi :10.1007/s10802-012-9699-3
- Meins, E., Fernyhough, C., Arnott, B., Leekam, S. R., & de Rosnay, M. (2013). Mind-mindedness and theory of mind: Mediating roles of language and perspectival symbolic play. *Child Development, 84*, 1777-1790. doi :10.1111/cdev.12061
- Meins, E., Fernyhough, C., Arnott, B., Leekam, S. R., & Turner, M. (2012). Mind-mindedness as a multidimensional construct: Appropriate and non-attuned mind-related comments independently predict infant-mother attachment in a socially diverse sample. *Infancy, 17*, 393-415. doi :10.1111/j.1532-7078.2011.00087.x
- Meins, E., Fernyhough, C., Arnott, B., Turner, M., & Leekam, S. R. (2011). Mother versus infant centered correlates of maternal mind-mindedness in the first year of life. *Infancy, 16*, 137-165. doi:10.1111/j.1532-7078.2010.00039.x
- Meins, E., Fernyhough, C., & Bureau, J.F. (in press). Mother-child attachment from infancy to the preschool years: Predicting security and stability. *Child Development*.

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

- Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants' mental processes predict security of attachment at 12 months. *Journal of Child Psychology and Psychiatry, 42*, 637-648. doi :10.1111/1469-7610.00759
- Meins, E., Fernyhough, C., Wainwright, R., Clark-Carter, D., Das Gupta, M., Fradley, E., & Tuckey, M. (2003). Pathways to understanding mind: Construct validity and predictive validity of maternal mind-mindedness. *Child Development, 74*, 1194-1211. doi :10.1111/1467-8624.00601
- Merz, E. C., Landry, S. H., Williams, J. M., Barnes, M. A., Eisenberg, N., Spinrad, T. L., ... Clancy-Menchetti, J. (2014). Associations among parental education, home environment quality, effortful control, and preacademic knowledge. *Journal of Applied Developmental Psychology, 35*, 304-315. doi:10.1016/j.appdev.2014.04.002
- Mills-Koonce, W. R., Garrett-Peters, P., Barnett, M., Granger, D. A., Blair, C., & Cox, M. J. (2011). Father contributions to cortisol responses in infancy and toddlerhood. *Developmental Psychology, 47*, 388-395. doi: 10.1037/a0021066
- Moll, H., & Meltzoff, A. N. (2011). How does it look? Level 2 perspective-taking at 36 months of age. *Child Development, 82*, 661-673. doi: 10.1111/j.1467-8624.2010.01571.x
- NICHD Early Child Care Research Network (2000). Factors associated with fathers' caregiving activities and sensitivity with young children. *Journal of Family Psychology, 14*, 200-219. doi: 10.1037/0893-3200.14.2.200

## PATERAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

- Perner, J., Lang, B., & Kloo, D. (2002). Theory of mind and self-control: More than a common problem of inhibition. *Child Development, 73*, 752-767. doi :10.1111/1467-8624.00436
- Sharp, C. & Fonagy, P. (2008). The parent's capacity to treat the child as a psychological agent: Constructs, measures, and implications for developmental psychopathology. *Social Development, 17*, 737-754. doi :10.1111/j.1467-9507.2007.00457.x
- Shoda, Y., Mischel, W., & Peake, P. K. (1990). Predicting adolescent cognitive and self-regulatory competencies from preschool delay of gratification: Identifying diagnostic conditions. *Developmental Psychology, 26*, 978–986. doi :10.1037/0012-1649.26.6.978
- Thompson, R. A. (2014). Conscience development in early childhood. In M. Killen & J. Smetana (Eds.), *Handbook of moral development* (2<sup>nd</sup> ed., pp. 73-92). New York, NY: Psychology Press.
- Volling, B. L., McElwain, N. L., Notaro, P. C., & Errera, C. (2002). Parents' emotional availability and infant emotional competence : Predictors of parent–infant attachment and emerging self-regulation. *Journal of Family Psychology, 16*, 447-465. doi: 10.1037//0893-3200.16.4.447
- Walker, T. M., Wheatcroft, R., & Camic, P. M. (2012). Mind-mindedness in parents of pre-schoolers: A comparison between clinical and community samples. *Clinical Child Psychology and Psychiatry, 18*, 1-18. doi:10.1177/1359104511409142

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

Table 1

*Observed ranges, means, and standard deviations for the main variables.*

Variable	Minimum	Maximum	Mean	SD
Paternal mind-mindedness	0	52	14.33	10.51
Child inhibitory control	0	75	65.34	19.21
Child rule-compatible conduct	2.40	5.55	4.06	0.75

## PATERNAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

Table 2

*Correlations among all main variables and with potential confounds*

	MM	Inhibitory control	RCC
MM	----		
Inhibitory control	.28*	----	
RCC	-.10	-.14	----
SES	.17	.12	-.01
Child age	.08	.17	.14
Child sex	.02	.01	-.04
SF	.01	.22 <sup>t</sup>	-.24*

*Note.* MM = paternal mind-mindedness; RCC = rule-compatible conduct; SES = family socioeconomic status, computed as a standardized average of paternal education, maternal education, and family income; SF = child temperamental social fearfulness.

<sup>t</sup>  $p < .10$ . \*  $p < .05$ .

## PATERAL MIND-MINDEDNESS &amp; SELF-REGULATED CONDUCT

Table 3

*Regression analysis predicting children's inhibitory control*

Predictor	R <sup>2</sup> total	R <sup>2</sup> unique	β	F change
Block 1. Child social fearfulness	5%	5%	.22 <sup>t</sup>	3.52 <sup>t</sup>
Block 2. Paternal mind-mindedness	12%	7%	.26*	5.15*

<sup>t</sup> $p < .10$ . \*  $p < .05$ .