Pivotal behavior as the mediator of the relationship between parental responsiveness and children's symbolic behavior

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ABSTRACT

Previous research with parents and children with developmental disabilities indicated that the relationship between mothers’ responsive style of interaction and children's rate of development was mediated by the simultaneous relationship between mothers' responsiveness and children's social engagement, or pivotal behavior. In this study, we attempted to determine whether children's pivotal behavior might also mediate the relationship between responsiveness and child development in a sample of 165 typically developing toddlers and their Taiwanese parents. Child development was assessed with a parent report measure of children's symbolic behavior. Parental responsiveness and children's pivotal behavior were assessed from observations of parent–child play. Results indicated that parental responsiveness was correlated with children's pivotal behavior, and that both of these variables were correlated with children's symbolic behavior. Structural equation models indicated that the relationship between responsiveness and children's symbolic behavior was fully mediated by children's pivotal behavior.

One of the major questions investigated in child development research is what parenting qualities and characteristics are associated with variability in children's development. This research evolved from interactionist models that posited that developmental growth, particularly during the early childhood years, results from the interaction of children with their parents and other primary caregivers (Sameroff, 2009, 2010). Interactionist models assert that developmental variability can be explained not only by children's individual constitutional characteristics but also by the quality of parents' stimulation, including their style of interacting with their children.

Research that has investigated this question has reported that parental responsiveness, as indicated by measures of sensitivity, contingency, reciprocity, and developmental match, is reliably associated with children's cognitive, communication, and social emotional functioning (Bornstein & Tamis-LeMonda, 1989; Mahoney & Nam, 2011; Warren & Brady, 2007). Although responsiveness is generally reported to account for small to moderate amounts of variability in children's development (Mahoney & Nam, 2011), these findings contrast markedly with other parenting characteristics such as directiveness (Egeland & Farber, 1984; Ispa et al., 2004; Park, Belsky, Putnam, & Crnic, 1997) or quality and quantity of stimulation (Mahoney & Nam, 2011), which have been reported to be unrelated or only inconsistently related with developmental variability.

Several studies have been conducted to examine the generalizability of this phenomenon across various populations of parents and children. In general, parental responsiveness is associated with developmental variability among populations of children having...
different types of constitutional characteristics, ranging from typically developing children (Bornstein & Tamis-LeMonda, 1989; Tamis-LeMonda, Bornstein, & Baumwell, 2001; Tamis-LeMonda, Bornstein, & Damast, 1996), to premature children (Landry, Smith, & Swank, 2003; Landry, Smith, Swank, Assel, & Vellet, 2001), and children having a variety of disabilities and developmental challenges (Mahoney & Nam, 2011; Spiker, Boyce, & Boyce, 2002). Furthermore, even when responsiveness is not a dominant parenting characteristic or value of a cultural, racial, or socioeconomic group, still it is one of the primary parenting qualities associated with developmental variability (Chen, Liu, & Li, 2000; Newman, Gozu, & Guan, 2015; Pong, Johnston, & Chen, 2010; Putnick et al., 2015).

Although all of the research described above have been derived from descriptive, nonexperimental studies, and although there is evidence that the quality of children's social behavior can affect how parents respond to their children (Paschall & Mastergeorge, 2016), this evidence may indicate the likelihood that parental responsiveness is a causal influence on children's development and social emotional functioning. This belief has been reinforced by results from intervention studies that have demonstrated that improvements in children's development and social emotional functioning resulted from parents being taught and encouraged to engage in highly responsive interactions (Karaaslan & Mahoney, 2015; Mahoney & Solomon, 2016). However, there continues to be skepticism regarding the causal effects of parental responsiveness, at least partly because responsiveness, which primarily entails the act of responding to and supporting behaviors children are currently capable of doing, contrasts sharply with widely accepted notions that parents promote development by directly teaching children the higher-level skills and competencies that are the hallmarks of advanced developmental functioning (Schreibman et al., 2015).

Several years ago Mahoney, Kim, & Lin (2007) reported a descriptive study of parent–child interaction in which the children had developmental disabilities. Results indicated that mother's responsiveness was not only associated with measures of the children's cognitive and communication development, but was also associated with the quality of the children's social engagement with their mothers. In addition, they reported regression analyses that indicated that the relationship of mothers' responsiveness with child development was mediated by children's social engagement.

Based upon these findings, Mahoney et al. (2007) proposed the pivotal behavior model of development as an explanation of the effects of parental responsiveness on child development. According to this model, developmental learning is not dependent so much upon parental instruction of higher-level skills as it is on children routinely using the social engagement behaviors that parents encourage through responsive interaction in their daily routine play and social activities. These behaviors, which include attention, involvement, initiation persistence, and responsiveness to adults, are thought to be “pivotal developmental behaviors” insofar as many are purported to be the behaviors that are the foundations for constructive learning as described by Piaget (1963), or social communication that theorists posit to be critical for language learning (Bruner, 1983; Tomasello, 2003). In addition, these engagement behaviors also appear to be the social interactive behaviors that are the foundations for children's attachment (Ainsworth, 1979; Bowlby, 1969), empathy (Kochanska, Forman, Aksan, & Dunbar, 2005), and other core social emotional competencies (Eisenberg & Fabes, 1994).

To date, only one other published study provides empirical support for the pivotal behavior model. Karaaslan and Mahoney (2015) examined whether increases in parental responsiveness and children's pivotal behavior that were promoted by a developmental intervention that promoted parental responsiveness with preschool children with disabilities mediated intervention improvements in children's language and personal/social development. Although intervention changes in parental responsiveness were not associated with intervention effects on child development, they were associated with intervention improvements in children's pivotal behavior. Furthermore, consistent with the pivotal behavior model, increases in children's pivotal behavior that were promoted by changes in parental responsiveness mediated intervention effects on child development.

The purpose of this investigation was to determine whether variability in the symbolic functioning of typically developing toddlers from Taiwan is compatible with the assertions of the pivotal behavior model. In particular, this study assessed three issues. First, it examined whether mothers' responsiveness was associated with children's current level of symbolic functioning. Second, it examined whether mother's responsiveness was associated with children's social engagement or pivotal behavior, and third, it examined whether the relationship between maternal responsiveness and children's symbolic behavior was mediated by children's pivotal behavior.

1. Method

1.1. Participants

Purposive sampling was used to recruit toddlers who were between 1 and 2 years old for the study. Participants were recruited from registrants of a baby crawling and toddler competition hosted by the early intervention research center in the university, volunteers who learned about the study from flyers distributed at the center, and referrals from parents whose children had participated in the study. Participants were mostly residents from northern Taiwan: Tao-Yuan City, Tao-Yuan County, Taipei City, New Taipei City, Hsin-Chu City, and Hsin-Chu County. A total of 171 subjects were recruited between November, 2009, and October 15, 2010. Because several parents failed to report children's symbolic behavior, only 165 of these subjects participated in this study. Demographic data for the participants are reported in Table 1.

1.2. Procedure

The initial investigation was focused on the standardization of the Chinese edition of the Communication and Symbolic Behavior
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