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Maternal scaffolding and attention regulation in children living in poverty

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ABSTRACT

This study examines the relation of maternal scaffolding and children's attention regulation abilities in preschool children from low-income families within the context of a parent–child interaction task and in a child-alone task. Maternal scaffolding behaviors differed for mothers of children with different attention regulation skills. Mothers whose children demonstrated poor attention regulation skills in the parent–child interaction were more likely to verbally engage their children, including more strategic questions, verbal hints, and verbal prompts. Children's level of attention regulation skills interacted with mother's amount of scaffolding to predict performance in the child-alone task. Attention regulation skills were related to independent performance only in the context of high maternal scaffolding. Findings contribute new information important for parent interventions to promote attention regulation skills in children who are at risk for poor academic achievement outcomes.

1. Introduction

Understanding children's self-regulation of attention has been described as central to enhancing school readiness and academic achievement (Blair, 2002; Sethi, Mischel, Aber, Shoda, & Rodriguez, 2000). Attention regulation refers to the ability to self-monitor one's deployment of attention, which includes maintaining attention, ignoring distractions, staying alert to task goals, and coordinating one's attention during a task (Ruff & Rothbart, 1996). The literature on children's attention regulation has traditionally focused on the child in isolation from the social environment within which the development of attention occurs. However, attention regulation has been recognized as an enduring interaction between individuals and their environment (Bronfenbrenner, 1999; Rogoff, 1990; Vygotsky, 1978; Wertsch, 1979). Recent research has examined individual differences in the processes by which attention regulation develops in a social context (Davis, Burns, Snyder, Dossett, & Wilkerson, 2004; Davis, Chang, Burns, Robinson, & Dossett, 2004; Gauvain, 2001; Harris, Robinson, Chang, & Burns, 2007). These studies have focused on preschool children from populations who are at risk for developing attention delays and disorders. The current study continues this socio-cognitive approach with low-income families and examines specific attention regulation skills and individual performance by children, along with techniques exhibited by mothers to promote attention regulation during a joint parent–child puzzle-matching task.

Researchers have demonstrated that the child learns how to regulate attentional processes, at least in part, through interactions with the parent (Bronfenbrenner, 1999; Rogoff, 1990). The development of attention regulation abilities occurs through parental guidance and instruction. It is through these interactions, or sociocognitive transactions (e.g. Rogoff, 1990), that more capable and experienced adults help children learn to direct their attention to the key elements of a task while ignoring less relevant information within the environment (Levine, 1993; Wertsch, McNamee, McLane, & Budwig, 1980). For successful self-regulation of

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attention, children must learn to evaluate the effectiveness of their attentional strategies and alter their behavior accordingly (Bronson, 2000).

Parent–child interactions provide a context within which children can learn about their own attentional processes and the ways in which they might control and regulate these processes. By establishing a joint focus of attention, parents support children's acquisition of fundamental lessons regarding attention and their world. For instance, parents may frequently direct their children's attention to important stimuli in the environment. These parental behaviors *may* influence the way very young children learn to gather relevant information and distinguish between important and irrelevant information.

Kopp (1987) reported that the specific types of control techniques used by caregivers influenced children's self-regulation skills. In a sample of middle income families, mothers who encouraged independence were more likely to have children who were rated low on impulsivity, inattention and hyperactivity, and high on self-control measures. Similarly, Grolnick and Ryan (1989) have found that greater parental encouragement of autonomy was associated with more self-regulation and less acting out behaviors and learning problems in a similar sample of school-aged children. Based on these studies, it appears that the amount of control the caregiver exerts over the child's behavior is related to children's self-regulation abilities. With increasing age, parents transfer responsibility to their children such that their children become independent regulators of their own attentional processes.

Explaining the facilitative phenomenon behind such interactions, Vygotsky (1978) argued that an essential feature of socio-cognitive transactions that facilitate children's cognitive growth is the ability of adults to structure the situation in relation to the child's ability levels. By structuring and modeling ways to solve problems, parents support children's emerging cognitive skills. Vygotsky suggested that children are most susceptible to learning and acquiring new skills when "tutoring" occurs in what he termed the "zone of proximal development" (ZPD; e.g., Rogoff, Ellis, & Gardner, 1984). This zone is described as a context in which children are unable to perform tasks independently, but can successfully complete them with the assistance of an adult or more capable peer. Empirical cognitive and linguistic research performed across several contexts supports this Vygotskian framework of early parent–child interaction (e.g., Bruner, 1985; Rogoff et al., 1984; Wertsch, 1985). Wood, Bruner, and Ross (1976) extended the Vygotskian perspective and termed this process "scaffolding." Parents create a "scaffold" that serves to structure interactions in a way that facilitates increasing children's cognitive development. Ideally, parents initially provide a great deal of structure and assistance in a difficult task to ensure children's immediate understanding of the task. In order to help children reach more independent levels of cognitive functioning, parents use a variety of techniques or strategies that they adapt to fit the child's ability level and the task demands (Sigel, 1982). Through scaffolding, also termed "other regulation," children gradually learn to take more regulatory responsibility for the task until they are able to solve the problems independently (Rogoff & Wertsch, 1984; Vygotsky, 1978; Wertsch, 1979). Within this view, the role of the parent shifts from one of planning and regulating the execution of the task to one of support, encouragement, and feedback (Wertsch et al., 1980; Wood et al., 1976).

Previous studies with middle-income families by Wood and colleagues (e.g., Wood et al., 1976; Wood & Middleton, 1975) suggest that variations in the use of the ZPD, or "region of sensitivity to instruction," by mothers and preschoolers in a simple copying task are predictive of children's subsequent skills on this task. Furthermore, differences were found in how well mothers adjusted their level of support based on the child's performance (i.e., providing less support after the child succeeded and more support after failure), and these differences were also predictive of children's skill acquisition. The current investigation studied low-income families and sought to assess the relationship between maternal scaffolding and children's attention regulation in joint and individual task performance. We were particularly interested in identifying the verbal scaffolding behaviors of mothers of children who did or did not accurately complete a puzzle-matching task when working independently.

A focus on families in poverty is important as empirical research has revealed that significant differences in interactional characteristics exist in families of different socioeconomic levels (Gottfried, 1984; Hart & Risley, 1992, 1995; Heath, 1989). In fact, poverty also has been shown to influence the nature of parent–child interactions as a whole. Bronfenbrenner (1974) proposed that impoverished environments may interfere with the formation and maintenance of adaptive parent–child interactions and hinder the child's development of attention.

Others have suggested that conditions associated with impoverished environments, such as environmental confusion, may cause children to develop strategies that filter out high levels of stimulation and, thereby, filter out both unwanted and developmentally facilitative stimulation (Matheny, Wachs, Ludwig, & Phillips, 1995). Wachs (1993) demonstrated that caregivers in over-stimulating environments are more likely to be less responsive and provide less scaffolding in parent–child interactions. In addition, Black, Hutcheson, Dubowitz, Starr, and Berenson-Howard (1996) found that parents from low-income households reported more stress and negative feelings and used more controlling strategies with their infants and toddlers. These children later displayed lower levels of competence. In contrast, supportive mother–child relationships and organized home routines have been shown to mediate factors associated with poverty and children's self-regulation skills (Brody & Flor, 1997). Taken together, this research has established that poverty can negatively influence the quality of parent–child interactions. The current study seeks to extend this knowledge and examine more specific scaffolding behaviors of mothers in impoverished environments that may influence young children's problem solving abilities. It is clear that in order to develop effective and individualized early intervention for "at-risk" families, this additional research is needed to identify explicit parenting behaviors that facilitate the development of attention regulation skills in children from low-income families.

The current study utilized a parent–child puzzle-matching task to assess how children regulate their attention processes, when with their mother and when alone, and examined how specific behaviors of the mother relate to children's abilities to regulate their own attention and transfer these abilities to independent tasks. We examined verbal behaviors of mothers that relate to children's attention regulation skills. Aspects of maternal scaffolding during a parent–child puzzle-matching task as well as children's attention regulation behaviors and accuracy during a parent–child and an independent puzzle-matching task were coded. As noted