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Managing children's risk of injury in the home: Does parental teaching about home safety reduce young children's hazard interactions?

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ABSTRACT

Past research confirms that parents extend much effort to teach their young children about safety, but little is known about this process. The present study examined mothers' use of teaching as a strategy to manage young children's risk of home injury and how this impacts children's hazard interactions. Mothers of three-year-olds completed an in-home room-by-room interview in which they identified injury hazards that concern them, reported on use of teaching to manage risk of injury from these hazards, rated children's understanding of these safety issues and compliance with behavioral guidelines regarding these safety issues, and reported on children's recent interactions with these hazards. They also completed questionnaire measures of how difficult the child is to manage and the child's typical level of risk taking. Results revealed that children's understanding of safety impacted both their compliance and hazard interactions, moderating the impact of risk taking on compliance and also the impact of children's difficult-to-manage score on hazard interactions. These findings demonstrate that teaching strategies need to effectively enhance children's understanding of the safety issue in order to reduce children's risk of hazard interactions.

1. Managing children's risk of home injury

Unintentional injuries pose a significant health threat to children worldwide. In most developed nations, unintentional injuries are a leading cause of death and serious injury for children (World Health Organization, 2008). In the United States in 2009, for example, unintentional injuries was the leading cause of pediatric mortality, accounting for 36.5% of all deaths to youth aged 1 to 19 years (Kochanek et al., 2012). For children in the two through five age range, injuries occur most often in and around the home when they are presumably being supervised by a caregiver (Rivara, 1995; Shannon et al., 1992). Studies of the circumstances leading to child injury mortality have concluded that the majority of injuries to young children could be prevented (Rimsza et al., 2002). Thus, understanding what caregivers do to manage children's injury risk, what motivates these actions, and how well these strategies work to reduce hazard interactions, is essential for developing interventions to improve caregivers' home safety practices and reduce children's risk of home injury.

Past research has shown that parents use three strategies to manage young children's risk of injury at home, including modifying the environment to reduce access to hazards, supervision (i.e., watching, proximity), and teaching about safety (Morrongiello et al., 2004a). Moreover, they transition from using predominantly environmental and supervision strategies to implementing mostly teaching and rule-based ones between two and 4 years of age. Historically, past research on parents' safety practices has focused on environmental changes and ways to increase usage of safety devices (Gielen et al., 1995; Greaves et al., 1994; Wortel et al., 1995). More recently, researchers have identified best practices for defining and measuring supervision (Gitanjali et al., 2004; Morrongiello, 2005). Studies have shown both that inadequate supervision predicts more frequent injury (Morrongiello et al., 2004b, 2009, 2011) and that one can improve supervision by applying interventions that target caregivers' beliefs about child behavior and appraisals of injury risk (Morrongiello et al., 2012b). In contrast, relatively little is known about parents' teaching young children about home safety, although there is extensive research indicating that parents spend considerable time teaching children academically-relevant material, such as math or reading (e.g., Mattanah et al., 2005; Neitzel and Stright, 2004).

2. Teaching about home safety

Past research indicates that parents believe it is their responsibility to teach young children to avoid hazards and risk situations

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(Peterson et al., 1990). Indeed, during the toddler and into the preschool years, safety becomes a major focus in parents' socialization-directed talk with their children (Garling and Garling, 1995; Gralinski and Kopp, 1993). By the time children reach 3 years of age, parents often manage injury risk by teaching their children about hazards and safety practices (Garling and Garling, 1995; Gralinski and Kopp, 1993; Peterson et al., 2002). Parents believe teaching is an appropriate strategy for managing young children's risk behaviors and they apply this strategy to prevent all types of injuries in the home (Morrongiello et al., 2006). Moreover, parents report not engaging in proactive safety strategies (e.g., removing items they identify as injury hazards) because they believe young children *should* be capable of learning both to discriminate safe from unsafe actions and to not interact with hazards (Morrongiello et al., 2004a,b; Peterson and Stern, 1997; Power et al., 2002). Thus, by the time children reach 3 years of age, parents extend considerable effort to teach them about safety and they use this teaching as a substitute for removing hazards and watchful supervision, assuming that this teaching will enable their child to make decisions to avoid interacting with hazards that are present and that could cause injury.

Although there is very limited research on teaching about safety, the research to date suggests that parents' assumption that teaching will reduce children's risk of injury may not be valid. In a prospective study relating parents' teaching about safety to injury outcomes for toddlers, for example, results revealed that use of teaching actually was related to *increased* frequency of injury when hazards were present (Morrongiello et al., 2004b). Although why this occurred could not be determined based on the data gathered, past research suggests two factors that are likely to impact the extent to which teaching is effective to reduce hazard interactions, namely- children's compliance with the guidelines being taught and their understanding of the safety issue being taught. Research with school-age children, for example, has shown that compliance is a better predictor of injury outcomes than number of safety rules recalled per se (Morrongiello et al., 2001; Peterson et al., 1986). Moreover, enhancing understanding of a safety issue can promote school-age children's acquisition of and compliance with safety practices (Morrongiello et al., 1998, 2012a). Thus, compliance and understanding are factors that have been shown to impact older children's behavior in risk situations.

3. Present study

Extending past research, the current study focused on parents of 3-year-olds with the aim being to explore parents' use of teaching as a risk management strategy among young children, including examining relations between children's understanding of the safety issue, compliance with teaching guidelines, and recent hazard interaction scores. In addition, children's typical level of risk taking and ease-of-management were also considered. Past research has shown these behavioral factors predict increased frequency of injuries in children (Morrongiello and Dawber, 1998; Schwebel, 2004; Schwebel and Gaines, 2007; Schwebel et al., 2004), but whether understanding of safety issues can moderate these negative effects on injury risk has not been considered previously.

To promote accurate recollection of home hazards and safety practices addressing these, mothers completed an interview in their home in which the main rooms their children spend time in were visited. Within each room, they commented on hazards that concerned them and their use of teaching to reduce children's interactions with these hazards, as well as how often their child had recently interacted with these hazards. Mothers also completed ratings of the child's understanding of the safety issue that applied to each hazard and children's compliance with maternal teaching, so these factors could be related to the child's hazard interaction score.

4. Method

4.1. Participants

Participants included 94 mothers of female ($n = 45$) and male ($n = 49$) children, 3 years of age ($M = 36.39$ months, $SD = 2.71$ months). Participants were randomly selected from a database of 13,000 families who previously indicated they were interested in participating in research on child development. The sample was predominantly Caucasian and all mothers were fluent in English and all children were first born. For maternal education, 10.6% of mothers had some or had completed high school, 65.9% had some or had completed a college or university degree, and the remaining mothers had graduate and/or post-graduate training. Reported family income was: 11.8% earned between $20,000 and $39,999, 19.7% earned between $40,000 and $59,999, 18.3% earned between $60,000 and $79,999, and the remaining 50.2% earned $80,000 or above. All participating families were two-parent homes; no additional caregivers lived in the home. Any mother who worked did so for less than 20 h per week. This study was approved by the University Research Ethics Board and all parents gave written consent.

4.2. Measures

Mothers completed a structured interview that focused primarily on teaching about safety as a risk-management strategy. They also completed questionnaires about aspects of their child's behavior.

4.3. Structured interview

During the home visit all rooms the toddler spends time in were visited. In each room, mothers identified hazards that concerned them for the child's safety, indicated how long they would leave their child alone in the room in the presence of these hazards and explained why they would not leave the child longer, and rated their child's risk of injury. They also were told to divide 100 tokens to indicate the extent to which they use changing the environment (e.g., adding or removing something to change accessibility to a hazard), supervision (i.e., keeping the child in view, proximity), and teaching about safety (i.e., implementing safety guidelines or rules to address a hazard) to manage their child's risk of injury in the room; this method has been used successfully in previous research examining parental strategies for promoting home safety among younger children (Morrongiello et al., 2006).

Due to the interest in teaching strategies, the remainder of the interview focused on the three hazards that elicited the highest number of tokens for teaching the child about safety. For each of the three top teaching hazards, mothers were asked to indicate: how old the child was when teaching about this hazard started, how many times in the past month the child had interacted with the hazard, how well their child understands about the safety issue represented by the hazard, how compliant their child now is with the guidelines or prohibitions related to the hazard, and why their child is not 100% compliant with their guidelines and prohibitions related to the hazard (i.e., if the child was not 100% compliant).

4.4. Child behavior questionnaires

Questionnaires provided information on child behaviors of interest, including: (1) *Difficult-to-Manage Questionnaire*, developed for the current study, provided an index of the extent to which the child is difficult to manage. Using a 5-point Likert scale