



## The association of activity level, parent mental distress, and parental involvement and monitoring with unintentional injury risk in fifth graders

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### ARTICLE INFO

#### Article history:

Received 25 April 2010

Received in revised form 22 October 2010

Accepted 4 November 2010

#### Keywords:

Injury

Safety

Fifth graders

Early adolescence

Activity level

Parent mental health distress

Parental involvement and monitoring

### ABSTRACT

**Objective:** Extend findings with young children by examining the strength of association of activity level, parent mental distress, and parental involvement and monitoring with fifth graders' unintentional injuries.

**Methods:** Ordinal logistic regression models were used to predict unintentional injury frequency among 4745 fifth-graders. Examined predictors included demographics, parent reports of mental distress, temperamental activity level (tendency to be fidgety, restless, and constantly in motion), and parental involvement and monitoring in adolescents' lives.

**Results:** Higher levels of both activity level and parent mental distress predicted more frequent injuries.

**Conclusions:** As has been found with younger children, unintentional injuries in fifth graders are associated with both parent and child characteristics. The result is discussed in the context of adolescent development. Implications include those for injury prevention (multi-dimensional prevention strategies that incorporate environmental modifications as well as training of youth and parents) and future research (study of potential mechanisms behind injury risk behavior via longitudinal and experimental research; study of injury risk during this phase of child development).

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Unintentional injury is the leading cause of death for American youth (National Center for Injury Prevention and Control [NCIPC], 2010). Among children ages 11–12 in the United States, the mortality rate from unintentional injury surpasses that of the next 5 leading causes of death combined, and accounts for nearly 50% of all deaths (National Center for Injury Prevention and Control [NCIPC], 2010). Morbidity from injury far exceeds mortality, with recent estimates indicating over 850,000 American youth ages 11–12 require emergency medical attention annually following an injury (National Center for Injury Prevention and Control [NCIPC], 2010).

### 1. Conceptual background

Contextual theory offers a theoretical perspective from which to consider pediatric injury risk (Barton and Schwebel, 2007). The

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premise of contextual theory is that an individual does not act or develop in a vacuum, but rather does so in the presence of people, places, and situations that influence how he or she thinks, behaves, and acts (Bronfenbrenner, 1977, 1986, 1988). From the perspective of injury risk, a wide range of contextual factors influences the risk of an injury occurring. These factors, which vary across development, include societal, neighborhood and community, family, peer, and individual factors. The present paper focuses specifically on the interrelation between parents and children since there is a paucity of data describing how parental factors such as parent involvement, monitoring, and mental distress influence injury risk as children develop into the early adolescent years.

The people in a fifth-grader's life – and especially his or her parents – are likely to significantly affect safety. Although a number of parent-related factors predict child injury risk (Schwebel and Gaines, 2007), the one that emerges most consistently in the literature, and that focuses only on the parent (rather than the parent–child relationship) is parental mental health status. Higher levels of maternal depression and anxiety prospectively predict increased child injury among young children (Bradbury et al., 1999;

Phelan et al., 2007; Schwebel and Brezaussek, 2008). That relation is less clear among older children and adolescents, but there is some evidence to suggest there may be a link between parental mental health distress and adolescents' safety in workplace settings (Westaby and Lowe, 2005).

Contextual theory also suggests that individuals are more than just recipients of environmental influences and that they act as agents who influence their own environments, both consciously (e.g., by choosing activities) and unconsciously/subconsciously (e.g., through biologically-driven patterns of behavior; Belsky et al., 1998; Boyce et al., 1998; Sameroff, 1983; Steinberg and Avenevoli, 2000). Decisions and actions about which social, cognitive, and environmental contexts youth enter, as well as how they interpret, construct, and react to those contexts, influence their injury risk considerably. There is strong evidence, for example, that temperament-driven traits such as activity level, inhibitory control, and impulsivity influence children's injury risk (Schwebel and Barton, 2006; Schwebel and Plumert, 1999), and preliminary evidence also suggests such links for adolescents (Rowe et al., 2007; Ulleberg and Rundmo, 2003).

The contextual influences of parent and self are interdependent. Thus, investigations of injury etiology should also consider the role of the parent–child relationship, and in particular the strategies parents use to monitor and stay involved with their children's behavior, activities, and whereabouts, as they develop independence in decision-making within potentially injurious environments during the early adolescent years. Parental supervision and monitoring have been repeatedly shown to reduce injury risk in younger children (Morrongiello, 2005; Morrongiello et al., 2004, 2006; Schwebel and Bounds, 2003), and even to reduce subsequent injury rates among children at elevated risk for injury due to temperamental or psychopathological traits (Schwebel et al., 2004). Among older children and adolescents, there is evidence to indicate that high-quality parenting might increase use of safety equipment (Thuen and Rise, 1995) and decrease risky driving practices (Hartos et al., 2000), but the influence of parental involvement and monitoring on older children's or adolescents' broad injury risk has not been examined carefully.

## 2. Study objectives

The present study was designed to examine the relative magnitudes of associations of activity level, parent mental health, and parental involvement and monitoring on injury risk among a sample of fifth graders. From a developmental perspective, we felt it important to examine these three contextual influences simultaneously because fifth grade represents a development stage when youth begin to act with much greater independence from parents. Many of those acts involve individual decisions, made without direct parental influence, that could lead to injury. All three contextual influences appear to be relevant to injury risk in toddlerhood, preschool, and the early school years, but they have not been studied in an early adolescent population, especially in combination with one another. We hypothesized that all three would predict injury history among fifth graders, but that activity level would emerge as the strongest predictor given the increasing independence of decision-making and activities at this developmental stage.

## 3. Methods

### 3.1. Data source

Data come from Healthy Passages, a community-based longitudinal study of adolescent health. This report uses baseline data collected in two cohorts from 2004 to 2006, when the sample con-

sisted of 5147 individuals in the fifth grade. Participants in Healthy Passages were sampled from public schools in three geographic areas: (a) 10 contiguous public school districts in and around Birmingham, AL; (b) 25 contiguous public school districts in Los Angeles County, CA; and (c) the largest public school district in Houston, TX. Within these 36 districts, schools with at least 25 fifth-graders (representing over 99% of students enrolled in regular classrooms) were eligible for selection.

Within each of the three sites, a two-stage probability sampling procedure was employed. In the first stage, we randomly sampled schools using probabilities that were a function of each school's racial/ethnic distribution as compared to the site's racial/ethnic target. In the second stage, all fifth-grade students ( $N=11,532$ ) in regular classrooms of sampled schools ( $N=118$ ) were invited to participate. About 58% of students' families ( $N=6663$ ) either agreed to be contacted for study participation, or were unsure about participation. Over three-quarters of those students (77%,  $N=5147$ ) completed an interview. Informed consent to participate was obtained from school superintendents, principals, and teachers, as well as from study participants (who provided developmentally-appropriate assent) and their primary caregivers (henceforth referred to as "parents"). Schools and families were compensated for their time.

Design weights were constructed to reflect different school selection probabilities by racial/ethnic composition. Non-response weights were constructed based on participant non-response to the full survey as a function of school, student gender, and student race-ethnicity. These two sets of weights were combined into a final weight that represents the population of 5th graders in the public schools in the catchment areas defining each site. All inferential analyses take into account the complex sample design, including the final probability weights. Within completed surveys, rare cases of missing data (less than 5% of data points for all variables) were imputed using a single Markov–Chain Monte Carlo imputation. Demographic variables were not imputed. Further details concerning sampling and weighting are available elsewhere (Windle et al., 2004).

Child and parent assessments were conducted separately using a combination of computer-assisted personal interview (CAPI) and audio-computer assisted self interview (A-CASI) segments. All interviews were completed in private spaces, and they were conducted in English or Spanish according to participants' preference. The study protocol was reviewed and approved by the IRBs of all participating institutions.

### 3.2. Participants

The sample includes 5147 fifth graders (mean age = 11.1 years,  $SD=0.6$ ; 52% male) and their parents. Youth were 34% African American, 35% Hispanic, 24% White non-Hispanic, and 6% multiracial or of other ethnicities. A small number of participants had missing or uninterpretable demographic data, usually household income data, and these participants were excluded from these analyses, leaving a final analytic sample of 4745 parent–child dyads.

### 3.3. Measures

#### 3.3.1. Demographic measures

Parents reported their child's gender and race/ethnicity, and household income. Household income was reported within income ranges, and the median of the selected range was used for analyses. Parents also reported whether or not the child was covered by medical insurance, which was included because it might influence a parent's decision to seek medical attention following a child's injury.

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