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THE RELATIONSHIP BETWEEN UNINTENTIONAL INJURY RISK AND RISK
TAKING BEHAVIORS: THE EFFECTS OF IMPULSIVITY/OVERACTIVITY AND
INATTENTION, GRADE, AND GENDER IN SCHOOL-AGE CHILDREN

A Thesis

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Master of Arts
in
The Department of Human Performance and Health Promotion

by

Christy Ann Favorite

B.S. Louisiana Tech University, 2001

August, 2006

DEDICATION

My Father

Terryl Favorite, Sr., for teaching me strength and determination

My Mother

Linda Favorite, for your prayers and encouragement

My Sisters and Brother

Terri Favorite, for changing your life and outlook
Tracy Moses, for your brilliance and motivation
Hope Favorite-Harding, for your support and enlightening financial ideas
Terryl Favorite, Jr., for your silence and maturity

My Nieces

Lina Favorite, for the inspiration to write this paper
Kortlin (KoKo) Favorite, for your strength and patience
Mallisia (MeMe) Arianne Favorite, my black butterfly, for teaching me how to love
beyond the physical

“Consider it all joy, my brethren, when you encounter various trials, knowing that the testing of your faith produces endurance. And let endurance have its perfect result, that you may be perfect and complete, lacking in nothing.”

James 1:2-4

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*“Extraordinary people survive under the most terrible circumstances and they become more extraordinary because of it”
Robertson Davies*

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ABSTRACT

THE RELATIONSHIP BETWEEN UNINTENTIONAL INJURY RISK AND RISK TAKING BEHAVIORS: THE EFFECTS OF IMPULSIVITY/OVERACTIVITY AND INATTENTION, GRADE, AND GENDER IN SCHOOL-AGE CHILDREN

The purpose of this study was to investigate the relationship of behavior subscales (inattention and impulsivity/overactivity), grade, and gender to unintentional injury risk and risk-taking behaviors among primary school-age students. The participants included the parents, guardians, and teachers of 109 primary school-age students. The students represented 1st – 3rd grades (n= 61) and 4th – 5th grades (n= 48). Parents completed three questionnaires including socio-demographics, Injury History Questionnaire, and Injury Behavior Checklist scale measures. Teachers reported each child's classroom and playground behavior on the Teacher Disruptive Behavior Disorder measure. Regression analyses revealed that impulsivity/overactivity and gender were significantly related to risk-taking behaviors. Given that unintentional injuries are a national health problem for primary school-aged children, the current study and future studies can be used to better understand injury in this population and develop preventative safety practices to minimize injury risk.

CHAPTER I

INTRODUCTION

Statement of the Problem

Imagine two elementary school students, Lisa and Steve, playing on the playground during recess. The playground has a long balance beam on which all the kids love to play. Lisa and Steve join several other children going across the balance beam. Lisa walks across the beam at a steady pace watching her feet the entire time. Steve crosses the balance beam by hopping and running to and from each side. Lisa and Steve continue to cross until Steve injures himself. Steve is left with a sprained arm and contusions on his knees. His impulsive and overactive characteristics may have influenced his increased risk of injury in this situation. Previous research has examined the effects of behavioral characteristics on injury risk. However, there is little research available with elementary age students.

Laflamme and Menckel (2000) defined an injury as, any serious bodily harm requiring a hospital visit/medical care, and that may indicate a deficiency in the environment or one's ability to avoid injury. In this study, an injury was defined as any event that produced bodily damage including those that required treatment by medical personnel. According to the Center for Disease Control and Prevention (CDC) injury fact book, unintentional injuries are any injuries that result from motor vehicle crashes, falls, child-passenger safety, dog bites, falls, poisonings, water-related, pedestrian, playground, fires, sports activities, and recreation (National Center for Injury Prevention and Control [NCIPC],2001). The rationale for the use of this definition is that

it includes all known activities that may contribute to unintentional injuries and help to explain where the injuries may occur.

Nature of the Problem

Everyday children injure themselves whether it is minor or severe. Injuries are not uncommon. Thus, accidents or unintentional injuries are a part of life and life's learning process. During school-age years, children are constantly exploring their surroundings and any part of their environment, that sparks their interest. This exploratory nature that exists in children is just one of the multi-deterministic factors that contribute to injury in school-age children. Injury is an inherent part of being a child. Therefore, it is important to examine all the possibilities that may predispose a child to the occurrence and frequency of an unintentional injury.

The statistics on children's injuries and accidents are astonishing with an estimated 39,000 children seriously injured and requiring medical attention everyday totaling 14 million a year (National Safe Kids Campaign [NSKC], 2005). Unintentional injuries are the main cause of death in children. These statistics have led investigations by researchers on issues such as pedestrian safety, childhood drowning, bicycling safety, and children's ability to operate motorized vehicles (Plumert, 1995). Although some research has been carried out on the effects of behavioral, emotional, developmental, and physical characteristics on injury risk, there is an absence of studies on the multiple factors that contribute to injury risk, incidence, or prevalence in school-age children. Because of the lack of research in this field, further research is warranted.

It has long been recorded in research that environmental factors influence injury risk and prevalence (Schwebel & Barton, 2005). Environmental factors consist of incidences, which take place at home and school. Children spend the majority of their day at school, so it is expected

that most of their injuries will occur at school and more specifically on the playground and during physical education classes. The Federal Consumer Product Safety Commission (CPSC) reported in 1991 that 464,000 people younger than 25 years of age received treatment due to playground injuries (Baker, Fowler, Guohua, Warner & Dannenberg, 1994). In a longitudinal study, researchers (Keller, Kresnow, Sosin, Sacks & van Dyck, 1993) found that of the 228 children who met the selection criteria 448 injuries occurred each year on the playground. Laflamme and Eilert-Petersson (1998) reported that injuries that occur at home tend to result from falls of different levels, crush/pinch, blow/shove, or chemical/thermal injuries. At school, the type of activity that a student is participating in when an injury occurs is strongly dependent on their gender.

Geographic and socio-economic status (SES) has also been researched as a risk factor. Hammig and Weatherly (2003) found that unintentional injury rates were higher among rural areas and intentional injuries were highest among urban dwellers. More specifically, Ni Barnes, and Hardy (2002) found for every 1000 children those injured were categorized within three groups including not poor (118.7), near poor (80.4), or poor families (51.8). These findings suggest that as family income increases the risk of injury increases. Previous research has yielded inconsistent findings therefore, limited research has found a significant relationship between injury risk and SES.

Previous research has shown demographic factors such as gender and age can lead to unintentional injuries (Morrongiello, Ondejko & Littlejohn, 2004). Laflamme et al. (2000) found that boys normally are injured during recess, whereas, girls are more likely injured during sports participation. This suggests that types of activities influence injury rates among gender. Several studies have illustrated that boys tend to experience more injuries than girls (Schelp,

Ekman, & Fahl, 1991; Morrongiello, 1997). Morrongiello and Hogg (2004) reported mothers with sons reported more risk-taking behavior by their children and their rate of injury. In contrast, the mothers with daughters reported low risk-taking behavior by their children and their rates of injury were consistent. In an audit review of a pediatric emergency department, it was recorded that 65% of the registered patients were male accounting for the majority of the patient population (Magnole, Stewart, Plunkett, & Thompson, 2005).

While gender affects the prevalence of injuries, research on injuries show that age differences have been found to greatly affect the severity and prevalence of injuries. Children 4 years and under are more likely to sustain injury than older children due to an overestimation of their physical abilities (Plumert, 1995). Children have yet to find what skill level they are capable of, so they tend to take more risks which accounts for their increased severity of their injuries. In Laflamme et al.'s (1998) study the incidence of home-injury at age 1 and 2 years was high and then decreased up to the age of 6 years for boys and girls. A similar finding reported in the Journal of School Health, that elementary students' injury rates are high and they decrease as student age until the end of middle school and then rates peak again in high school (Limbos & Peek-Asa, 2003). These findings suggest that age differences contribute to injury risk in this population.

Additional factors that will be examined for the present study are behavioral risk factors. This encompasses impulsive/overactive behavior and inattentive behavior. Previous studies tend to study relationships between impulsive traits and behaviors on groups that have already been categorized as personality-disordered (Dolan & Fullam, 2004; Counts, Niggs, Stawicki, Rappley & von Eye, 2005; & Olson, Schilling & Bates, 1999). The latter findings also focused on populations categorized as pre-school, adolescents, or adults. This supports the need for further

research in the school-age population. These findings point to the need to expand this work into factors that influence injury risk so the relationship between behavioral characteristics and injury risk is better understood. The three previously discussed factors including gender, age, and behavior subscales have been found to independently affect unintentional injury risk, but collectively research is scarce.

Identification of the factors that might contribute to injuries among this population would allow parents and administrators to formulate preventive strategies that mitigate injury risk. Unfortunately, insufficient research is available to compare injury risk and related factors in those who exemplify behavioral characteristics. Hence, the aim of the current study is to assess potential factors that might contribute to increased injury risk and increased risk-taking behavior.

Purpose of the Study and Rationale

There is considerable debate among researchers regarding which factors contribute to injury rates in children and to what extent each factor contributes. The results of the previous study were inconclusive because of the limited sample size. Very few studies have focused on school-age children and research is scarce on the African-American population which is why this study specifically targeted these populations. The purpose of this study was to investigate the relationship between behavior subscales (inattention and impulsivity/overactivity), grade, and gender on injury. More specifically, the intent was to compare unintentional injury risk and the risk factors among school-age students. Another purpose was to examine the interactions and main effects among inattention and impulsivity/overactivity, grade, and gender data on risk-taking behaviors.

Hypotheses and Exploratory Questions

The following hypotheses were proposed for this study:

1. Students illustrating impulsive/overactive and inattentive behavior will have an increased risk of unintentional injury than non-impulsive or attentive students.
2. Male students will have a higher incidence and prevalence of injuries than female students.
3. Older students (grades 4 - 5) will have greater injury risk than younger students (grade 1-3).
4. Students illustrating impulsive/overactive and inattentive behavior will engage in more risky behavior than non-impulsive or attentive students.
5. Male students will engage in more risk-taking behavior than females.
6. Older students (grades 4-5) will engage in more risk-taking behavior than younger students (grade 1-3).

In addition, this study investigated the following exploratory questions:

1. Which factors contribute most to injury risk?
2. Which factors influence increased risk-taking behavior?

Operational Definitions

The following terms and definitions were used in this study:

1. Injury – Any event that produces bodily damage including those that require treatment by medical personnel.
2. Unintentional injury – Any injury that results from motor vehicle collisions, falls, fires, poisonings, drowning, recreation, and sports-related activities.
3. School-age students – Students who are between 1st and 5th grade.
4. Impulsive/Overactive – When an emotion of your mind propels an action without the intellect's reason (Parthasary, 2006).

5. Inattentive – A child that exemplifies characteristics of having “a sluggish cognitive tempo” (Weiler, Berstein, Bellinger & Waber, 2002).

Assumptions

The following assumptions were made for this study:

1. The measures employed in this study are valid and reliable to assess the risk of injury in school-age children.
2. The responses of parents and teachers are accurate and honest.
3. Parents accurately recalled injuries in their children.

Delimitations

This study was delimited by the following factors:

1. It only includes parents, guardian, and teachers of school-aged students in grades 1 through 5.
2. The student populations of the schools consisted predominately of middle, working class, African-Americans, so the ability to generalize the results is limited to other similar populations.
3. The parents only reported minor injuries incurred by the students, such as non-medically reported injuries.

CHAPTER II

REVIEW OF LITERATURE

Introduction

This chapter provides a review of literature pertaining to unintentional injuries and the factors influencing injury risk among school-age children. It reviews unintentional injuries and how the prevalence is affected by demographic factors and behavioral factors as it relates to injury risk.

Unintentional Injuries Overview

Since the last half of the twentieth century, unintentional injuries have been the leading cause of death and hospitalization in Canada and the U.S. for children over 1 year of age (Morrongiello, Ondejko, et al., 2004). The terms accidents and unintentional injuries are often used interchangeably, however, they can be defined separately to provide further clarity of their meanings. Wazana's (1997) definition of an accident focused on the implication that such events are random and unpredictable. In contrast to this assertion, Wazana's research has shown that accidents are not random and involve identifiable factors that put one at higher risk for injuries. In 2002, unintentional injury deaths totaled 106,742 averaging 37.0 deaths per 100,000 people (Center for Disease Control and Prevention [CDC], 2005). Industrialized countries such as the U.S. have experienced a continuous increase in injuries and deaths among children due-in large-part-to unintentional injuries. These injuries have become the main health concern for children in the industrialized world, replacing infectious diseases (Dal Santo, Goodman, Glik & Jackson, 2004). In fact, Dal Santo et al. (2004) found that more children age 1 to 4 years who died annually in the U.S. died from unintentional injuries than from all other causes combined.

The majority of school-age children's unintentional injuries occur at home and on the playground (Laflamme et al., 2000; Laflamme et al., 1998; Limbos et al., 2003). Toddlers and preschoolers incur most of their injuries around the home (Morrongiello, Ondejko, et al., 2004). The occurrence of injuries around the home is mostly due to parental safety behaviors and parental perceptions (Dal Santo et al., 2004). The safety of the home is dependent upon parents' observations and mitigation of potential hazards (e.g., items on the floor, trees in the yard, large amounts of furniture throughout the home, and types of furniture) in and around the home. In addition, children who are risk-takers will most likely engage in potentially injurious behaviors regardless of parental influence.

School-aged children are more likely to be injured at school and on the playground than at home compared to pre-school aged children (Morrongiello, Ondejko, et al., 2004). A study by the NCIPC, indicated that from 1990 to 2000, 147 children aged 14 years and younger died from playground injuries alone (2005). Of these injuries, more than half were severe including fractures, internal injuries, concussions, dislocations, and amputations (NCIPC). Playground injuries are more severe due to a combination of a lack of proper supervision and the risk-taking inherent to this environment. Studies have shown that the occurrences of unintentional injuries on the playground are a result of teachers' underestimation of supervision needs and overestimation of the children's physical and decision-making abilities (Bradbury, Janicke, Riley, & Finney, 1999).

In the U.S., \$5.7 billion in childhood injury medical expenses was spent in 2000 (NSKC, 2005). The majority of these injuries could be prevented. The U.S. is continuously trying to improve injury prevention and awareness to lower the cost of these expenses (e.g., safer playground equipment, mandated use of helmets and other physical activity safety equipment).

Demographic factors contributing to injury risk consist of socioeconomic status, gender, and age have been previously examined in research (Hammig et al., 2003; Morrongiello, Ondejko, et al., 2004; Gofin, Donchin, & Schulrof, 2004). However, to prevent unintentional injuries in children, and reduce the concomitant morbidity, mortality, and health care expenses, the etiology of unintentional injuries must be better understood and expanded to include additional factors. Furthermore, certain behavioral characteristics (impulsive/overactive and inattention) may influence the potential risk for injury. Thus, these factors should be examined to determine if the behavioral factors independently or collectively with demographic factors affect the injury risk and risk-taking behavior.

Injury Risk

The term ‘injury risk’ is used interchangeably with the previously used term ‘injury proneness’. These terms are defined as the potential frequency of long-term pain or tissue damage (Morrongiello, Ondejko, et al., 2004). Wazana’s study on injury-prone children suggests that certain children are more prone to injuries than others (1997). Specifically, Wazana found that children who have certain physical, developmental, emotional, or behavioral characteristics may increase their likelihood of being injured. Within recent years, several longitudinal studies have been conducted on children and injuries. One of the goals of this study was to quantify injury risk among primary school-age children.

Measuring Children’s Injury Risk

Injury risk suggests that an individual has an increased risk of pain and tissue damage. Even though there is no direct method of measuring injury risk, studies are constantly attempting to find a more valid measure of injury risk. There are several measures that will be used to assess injury risk. One basic measure is “epidemiological data which reveals systematic

variation in childhood injury as a function of the child's sex and age" (Morrongiello, Ondejko, et al., 2004). Morrongiello, Ondejko, et al. measured injury risk with an epidemiologic and process of analytic approach which provided a thorough analysis of the context within which injuries occur, the extent and types of such injuries, and the child- and parent-based factors contributing to such factors. One of the measures used in this study to assess children's injuries is the Injury Behavior Checklist (IBC). The IBC has been used in several studies. This measure assesses injury risk by reporting the injury context and prevalence of past injuries. Schwebel's dissertation best describes the common measure used to assess injury proneness in the past, which were the child's history of major lifetime injuries (2000). She defines the child's history as any injury requiring a visit to a medical professional (Schwebel, 2000). This measure was used in the past more often because it was easy to obtain from children's parents. A problem with this measure is that it does not take into consideration that every parent does not report all injuries because they may not consider certain injuries serious enough to require a medical visit.

Demographic Factors

Children suffer a significant risk from unintentional injury-related death and disability (NSKC, 2005). The rate of injury varies with children according to several factors such as their age, gender, and socioeconomic status. Older children are usually more aware of unintentional injuries because of their previous experience this makes them engage in more risk-taking behavior. In this study, the NSKC reported that children ages 4 and under account for 49% of the deaths among children ages 14 and under each year. This shocking statistic revealed that the majority of unintentional injuries occurring each year are among elementary school-age children. The 4 years old and under age group was proposed to experience the most injuries due to their natural curiosity and lack of fear (NSKC). In Plumert's (1995) study on the overestimation of

physical abilities and accident proneness two experiments were conducted. In the first experiment it was found that younger children had a difficult time and make more errors in judging their physical abilities, which was in part due to the children's sensitivity to feedback about their physical skills. In the second experiment it was found that 6-year olds were less accurate than 8-year olds about tasks that were just beyond and well beyond their ability than tasks within their ability. The two experiments concluded that due to their lack of developmental skills 6-year olds were not able to successfully complete tasks, which led to an increased rate of injury. In a study of fifty 6-year old and fifty 8-year old children, it was found that 8-year olds scored higher on all tested motor tasks than 6-year olds (Binder et al., 2003). In contrast, Gofin et al. (2004) found in a study of 2057 children in grades 3 through 6 that there was no significant difference between grades 6 (5.1%) and grades 3 (3.4%).

Most males at all ages tend to participate in more active play and risk-taking behaviors. These behaviors put them at a higher risk for injuries. Several studies have found that males were generally more likely than females to be injured, which was due to their risk-taking behavior (Spady, Saunders, Schopfloch & Svenson, 2004; Hammig et al., 2003; Morrongiello, Ondejko, et al., 2004). Boys tend to be thrill seekers. In a study of the opinions of 62 mothers of toddler-age children, Morrongiello, Ondejko, et al. found that boys participate in more adventurous (sensation-seeking) activities than girls, including outdoors activities (2004). Morrongiello, Ondejko, et al. also found in this study that as boys age they are normally exposed to more risk-taking behavior as opposed to girls. However, Gofin et al. (2004) suggested that males suffered a slightly higher rate of injury (3.8%) than females (3.0%) with gender accounting for a small non-significant difference in injury risk. Other authorities have studied

injury risk rates and severity, and have found no significant relationship with gender (Bradbury et al., 1999; Dal Santo et al., 2004).

There are very few studies examining the relationship of socioeconomic status to injury risk. In one such study a direct relationship was found among urban and rural dwellers, urban children had a higher mortality rate due to homicide (intentional) and rural children had a higher mortality rate due to unintentional injuries (Hammig et al., 2003). In this study injuries among urban dwellers and rural dwellers were compared but there was no breakdown of actual gross income for each household to determine if income was a factor. Previous research has also studied etiologic factors (EF) with injury rates, and has found that children whose families had received welfare benefits had the highest EF for drug poisoning (15.7%: Hjern, Ringback-Weitofte & Andersson, 2001). In addition, they found that children from rural areas had the highest EF for scald injuries (6.8%). These findings suggest that children living in urban areas tend to be exposed to more injuries that normally occur outside the home as opposed to those living in rural areas that are exposed to injuries occurring more in the home.

In a study of southeast London inner city emergency departments on patterns of unintentional injury, it was found that SES accounted for 33% of injuries in children 0 – 14 years (Laing & Logan, 1999). Laing et al. found that the overall incidence rate was 138.2 per 1,000 injuries reported (1999). A variance of 33% is significant to warrant concern. This study suggests that a combination of factors which relates to low SES such as poor playgrounds and play equipment may expose children to the risk of severe injuries that warrant a hospital visit. Even though there is notable influence, there is great uncertainty if SES alone affects injury severity and prevalence.

Behavioral Factors

The basis of most childhood unintentional injuries is dependent upon a child's developmental abilities and exposure to potential hazards (NSKC, 2005). The NSKC suggests that throughout their younger childhood stages, children's motor abilities are still being developed so certain physical tasks may not be able to be carried out properly or to the full extent because of poor impulse control and judgment (2005). The NSKC states that the results of the poor motor ability of preschoolers suggests that they are more likely to die from drowning, residential fire and burn injury, poisoning, motor vehicle occupant injury, pedestrian injury and airway obstruction injury.

The cognitive abilities are largely affected by the feelings of the parents, specifically the mother. An example of this is found in a study by Dal Santo et al. (2004) where the study compared children over 2.5 years and found they were negatively associated with maternal supervision ($r=-0.27$, $p<. 01$) and positively associated with home controllable hazards ($r=0.22$, $p<. 01$) (2004). These findings suggest that as children grow older their mothers relax their safety standards as well as their supervisory styles because they overestimate their child's cognitive capabilities. This overestimation of their abilities gives these children a false sense of maturity, wherein, these younger children assume that they can do a lot more than they actually can.

Schwebel (2000) explains Lee's theory of one perceptual-cognitive skill that may play an important role in children's safety is the ability to evaluate one's level of skill in relation to demands of the task in which an example of crossing the street is given. In this example, children had to think about the speed of the car and understand the perception of how far away the car was from them. If a child's cognitive abilities were not developed enough to decipher

what actions need to be taken, injury will occur. Thus, injury occurs when the demands of a task exceeds the child's abilities to complete the task safely (NSKC, 2005).

Impulsivity/Overactive Behavior

Dolan et al. found that “subjects with high trait impulsivity or those who engaged in reactive violence... have difficulties in behavioral/response inhibition” (2004). These characteristics suggest that the subjects had lower self-control over their behavioral abilities, thus responding impulsively. In a study of the theoretical structure of multiple behavioral factors of injury risk, one model characterized by several studies research (Bijur, Golding, Haslum, & Kurzon, 1988; Langley, McGee, Silva, Williams, 1983; Manheimer & Mellinger, 1967; Matheny, 1986; Pulkkinen, 1995; Schwebel, 2004; Schwebel & Plumert, 1999) investigated the collective influence of three risk factors of child unintentional injury (Schwebel et al., 2005). Schwebel et al. concluded from this collection of research that “aggressive, oppositional, overactive, impulsive, and under controlled behavioral styles predicted an increased risk of subsequent and concurrent unintentional injury”.

There is significant data available that suggests that impulsivity varies with age and gender (Olson, et al., 1999; Snyder, Prichard, Schrepferman, Patrick, & Stoolmiller, 2004). Olson and colleagues found that “...controlled performance on interactive task measures increased significantly between ages 6 and 8” (1999). In Olson et al.'s study, significant gender differences were also found indicating that between 6 and 8 years of age, girls changed from equally impulsive to less impulsive than boys during play and work tasks. In a similar study, Patrick et al. found that boys displayed higher levels of impulsivity-inattention than girls (2004). In a study conducted completely on 7- year old boys on inattentive behavior, overactive behavior was more closely linked with conduct problems (Warner-Rogers, Taylor, A., Taylor, E., &

Sandberg, 2000). This study suggests that the relationship between inattentive behaviors is neither simple nor direct. Although these findings only lend limited support to current research, they establish the possibility of future researchers to investigate the main effects of inattention on injury risk and risk-taking behaviors.

In an age controlled study of 440 school-age boys, subjects were statistically categorized into high- and low-active impulsive groups (Mori & Peterson, 1995). Mori & Peterson reported that their group means differed significantly (1995). This study suggests when controlling for gender differences significance is consistently found with males. Other studies have supported this finding because the frequency of injuries for males of all ages is higher compared to females. This increased frequency does not suggest that females have a decreased risk for injuries.

Inattentive Behavior

There are very few studies investigating the effects of inattention on injury risk and behaviors, but researchers have speculated that those eliciting inattention characteristics may be at greater risk for injuries related to uninhibited behaviors. Warner-Rogers et al. also found that "...1.3% of the participants exhibited pure inattentive behavior, 1.7% showed co-morbid problems of inattentive behavior and overactivity, and 2% demonstrated pure overactivity problems" (2000). In the latter study, Warner-Rogers et al. found that teachers viewed children with pure inattentive behavior as being less confident in the classroom, but not more worrisome or miserable. This research suggests that children with pure inattentive behavior are least likely to exhibit conduct problems. Very few studies have examined the relationship of inattention independently on injury risk and behavior.

Summary

Unintentional injuries are the number one cause of death in school-age children. Children diagnosed with Childhood Behavioral Disorders are >1.5 times more at risk for a range of injury outcomes (Brehaut, Miller, Raina, & McGrail, 2003). Few studies have examined the relationship between school-age children demographics and behavioral risk factors as it relates to injury risk and increased risk-taking behavior. Although not the main focus of their study, one group of researchers (Olson, et al., 1999) reported a significant correlation of .45(boys) at age 6 and .20(girls) at ages 7 – 10 years who performed more impulsively in the laboratory and had higher ratings of hyperactive problem behavior than others. Similarly, Dolan et al. (2004) found significant correlations among psychometric impulsivity and behavioral outcome measures. It has been suggested that a collection of factors including behavioral, developmental, emotional, and physical characteristics might combine to predict unintentional injuries in children (Wazana, 1997). The current study included demographics and behavioral factors.

CHAPTER III

METHODS

Design

This study employed a cross-sectional, informant-reported design. Parents and teachers served as the primary sources of informant data. A prospective causal-comparative model was used to assess the differences in unintentional injuries due to the varying demographic and behavioral factors between school-age children.

Participants

Participants ($N = 109$) included a cluster sample of the parents, guardians, and teachers of school-age students from two public elementary schools students in the greater New Orleans metropolitan area. The majority of the participants represented the African-American population, a large ethnic group. Several heterogeneous classes representing grades 1-3 ($n = 61$) and 4-5 ($n = 48$); and ages 5-12 years within each school were sampled using a stratified random method. Grades pre-K and K students were excluded from the sample because of their developmental level.

Parent Measures

Socio-demographics. A basic questionnaire was used to assess the demographics of the student and their family (see Appendix C). This questionnaire was given to the parents or guardians of each student via the students. The informants were asked to provide information of certain characteristics and criteria of the student, their total household income, and the number of siblings. The questions included a combination of forced choice questions and fill in the blank.

Injury History. Injury history of each student was assessed using the Injury History Questionnaire (see Appendix D: Schwebel, 2005). The IHQ contains 6 items that provided a

record of all lifetime and more recent injuries, within last 6 months, of the participant which required any type of medical treatment administered by the parent/guardian, doctor, or any medical professional. It also indicated the type and frequency of injuries that the participant had sustained throughout his/her lifetime. A rating scale was used to describe injury history and that asked the parent/guardian to check the most appropriate description. “In your child’s lifetime, has your child ever had to see a doctor or dentist, or go to an emergency room or hospital, because of an accidental injury?” A yes or no answer is applied. The reliability and validity of the measure has yet to be established.

Injury Behavior. The child’s risk-taking behavior was assessed using the Injury Behavior Checklist (see Appendix E: Speltz, Gonzalez, Sulzbacher, & Quan, 1990). The IBC consisted of 24 items that asked the parents or guardians to select one of five ratings that best reflected how often their child had performed a certain task within the past 6 months. Each item is a behavior description rated for frequency on a 5-point rating scale ranging from “1 = not at all to 5 = very often (more than once a week)”. The scale normally ranges from “0 = not at all to 4 = very often, but numbers were modified for this study, thus changes were accounted for in the calculations. Overall, scores ranged from 0 to 96, and the higher the score the more risky the child’s usual behavior. This test had a high reliability with an alpha level of .93

Teacher’s Measures

Child Behavior. Teachers assessed the student’s behaviors using the Teacher Disruptive Behavior Disorder Rating Scale (see Appendix F: University at Buffalo). The TDBD rating scale was modified for this study to consist of 18 items that showed how well each statement that best described the child’s behavior. Homeroom teachers reported the behavior and relationships of each student, in relation to their school environment. They were asked a series of forced-

choice questions to assess the behavior of the student on the playground and their classroom behavior. Each item is a behavior description rated for frequency on a 5-point rating scale ranging from “1 = not at all to 5 = very much”. The scale normally ranges from “0 = not at all to 4 = very much, but numbers were modified for this study, thus changes were accounted for in the calculations. This test had a high reliability and an alpha coefficient level of .970.

The behavioral characteristics of impulsivity/overactivity and inattention were measured on a different scale. Of the 18 overall items on the TDBD, 9 items were used to measure the level of impulsivity/overactivity and asked the parent or guardian to rate an item such as “often talks excessively” and 9 items were used to measure the level of inattention with a question such as “often easily distracted by extraneous stimuli”. In this study, the impulsivity/overactivity scale had an alpha coefficient of .964 while inattention scale had an alpha coefficient of .951.

Procedures

In compliance with the University of New Orleans Human Subject Committee, data collection was administered to 2 schools in the New Orleans Metropolitan Area. Inclusive classes consisted of 2 classes from each grade (1 – 5th). Data packets were then sent home to each parent and/or guardian in the inclusive classes via the student. The parent/guardian packets included a Demographics Questionnaire used to assess the demographics of the student and their family, an Injury History Questionnaire to assess the injury history of each student, and an Injury Behavior Checklist used to assess the child’s risk-taking behavior. Parents and guardians then returned the questionnaires to the investigator with the self-addressed stamped envelope enclosing the questionnaire packet. Once the parents returned and consented to participate in the study, teachers were given the TDBD to complete on each of the approved students. All questionnaires and checklists were then randomly number coded for each parental participant.

Teacher participants' questionnaire coversheet did however identify the students name for easy reference for teachers; however the names of these participants were kept confidential by the investigators. After data collection was obtained from teacher participants, TRCB questionnaires were then number coded.

Data Analysis

Data from all questionnaires were independently coded to ensure confidentiality of the subjects and entered using a computer program (SPSS 12.0). Demographic information (grade, gender, race, siblings, and total household income) was then analyzed using descriptive statistics including percentages, frequencies, means, and standard deviations. Hypothesis 1 was examined by using a separate chi-square test to compare the injury risk for students high and low in both impulsive/overactive and inattention behaviors. Hypothesis 2 was examined by using a separate chi-square test to compare the injury risk for male and female students. Hypothesis 3 was examined by using a separate chi-square test to compare the injury risk for older and younger students. Hypotheses 4 – 6 were examined using a 2 (inattention) x 2 (impulsivity/overactivity) x 2 (grade) x 2 (gender) factorial ANOVA. For hypothesis 4 the factorial ANOVA assessed the main effect for inattention. For hypothesis 5 the factorial ANOVA assessed the main effect for gender on IBC scores. In addition, for hypothesis 6 the factorial ANOVA assessed the main effect for grade on IBC scores. Exploratory question 1 was examined using a multivariable logistic regression to determine the odds of injury risk. Lastly, exploratory question 2 was examined using multiple regression to determine which factors influenced an increase for risk-taking behavior. The significance level was established at $p < .05$.

CHAPTER IV

RESULTS

Introduction

All the descriptive statistics for this sample population are included in this chapter. An overview of the descriptive statistics is presented first followed by a review of the results from the hypotheses and exploratory questions. Tables and figures are also included throughout this chapter to summarize the results for the reader.

Descriptive Statistics

The targeted population consisted of 453 students and their parents/guardians and teachers from 2 schools. The overall sample from this group included 109 students (61 males and 48 females) and their parents/guardians and teachers. The mean age for the males and females in the study was 8.75 years. An independent sample t-test was conducted to compare males and females ≥ 9 years of age (older grades) and < 9 (younger grades). Among students in the older grades, there were a total of 63 males ($n = 37$) and females ($n = 26$). Students in the younger grades consisted of 46 males ($n = 24$) and females ($n = 22$). The results of the t-test comparing the number of genders in each age group were not significant ($t = -.68$, $F = 1.19$, $p = .28$).

Parents reported information regarding their child's and household demographics. The sample had a relatively even distribution of 1st through 5th grade students (19.3% 1st graders; 17.4% 2nd graders, 19.3% 3rd graders; 20.2% 4th graders; and 23.9% 5th graders). The majority (81.7%) of participants in the study were African-American, with remainder of the sample representing (.9% American Indian; 4.6% Asian; 5.5% White; .9% Latino (a); 3.7% Biracial; and 2.8% of Other). The majority (69%) of the families in this sample had average incomes of

\$30,000 or below. Only 11.9% of the families had incomes above \$60,000. Overall, family sizes typically averaged between 1 – 3 children living at home (29.4% reported 2 children; 24.8% at least 3 children; and 18.3% 4 children). Table 1 shows the frequencies and percentages of the demographics.

Table 1

Summary of Frequencies and Percentages for Participants Grade, Gender, Race, Siblings, and Household Income (N= 109).

Factors	Category	#	%
Grade	1 – 3	61	(56.0)
	4 – 5	48	(44.0)
Gender	Male	61	(56.0)
	Female	48	(44.0)
Race	American Indian	1	(.9)
	Asian	5	(4.6)
	African American	89	(81.7)
	White	6	(5.5)
	Latino (a)	1	(.9)
	Biracial	4	(3.7)
	Other	3	(2.8)
Siblings	0	19	(17.4)
	1	32	(29.4)
	2	27	(24.8)
	3	20	(18.3)
	4	6	(5.5)
	5	5	(4.6)
Household Income	\$30,000 or below	69	(63.3)
	\$30,001 - \$59,999	27	(24.8)
	\$60,000 - \$99,999	11	(10.1)
	\$100,000 or above	2	(1.8)

The parents assessed their child’s risk-taking behavior using the IBC questionnaire, which asked the parents to rate the frequency their child engaged in a task as not at all (1), very seldom (2), sometimes (3), pretty often (4), and very often (5). The subjects’ scores on the IBC averaged 12.31 ($SD = 12.94$). Teachers assessed the student’s behavior using the TDBD questionnaire, which asked teachers to rate the frequency with which each student engaged in a task as not at all (1), just a little (2), pretty much (3), and very much (4). The scores on the total TDBD averaged 16.25 ($SD = 14.97$). The impulsivity/overactivity subscale of the TDBD yielded an average of 8.51 ($SD = 8.45$). The inattention subscale of the TDBD yielded an average of 7.73 ($SD = 7.42$). Using a clinical cut-off (i.e., an average of at least 6 items being scored at or above the “pretty much” level) high (>17) and low (<18) for the impulsivity/overactivity and inattention subscales of the TDBD were formed. Table 2 shows the frequencies and percentages of the samples that scored in the high and low groups of the inattention and impulsivity/overactivity subscales.

Table 2

Summary of Frequencies and Percentages of Inattention and Impulsivity/Overactive on the Teacher Disruptive Behavior Disorder Rating Scale (N = 109).

	Low		High	
	(1)	(2)	(1)	(2)
	#	%	#	%
Inattention	92	84.4	17	15.6
Impulsivity/Overactivity	89	81.7	20	18.3

The majority of students scored low for the impulsivity/overactivity and inattention subscales. Of these students, 18.3% scored high for impulsivity/overactivity and 15.6% scored high for inattention. These extreme scores are representative of average students (i.e., the low groups) and students clinically diagnosed as having a child behavior disorder (i.e., high groups).

Evaluation of Hypotheses

Hypothesis 1 – Students who were high in impulsive/overactive and inattentive behaviors will have a greater risk of unintentional injury than students low in non-impulsive/overactive or attentive behaviors. Separate chi-square tests were calculated to assess the difference in injury risk for students high (risk factor) and low in both impulsive/overactive and inattention behaviors. The results of the chi-square for inattention on injury status ($\chi^2 = .11, p = .74$) were not significant. The results of the chi-square for impulsivity on injury status ($\chi^2 = .07, p = .79$) were also not significant. A series of odd ratios (*ORs*) and 95% confidence intervals (*CI*s) were then calculated to determine actual injury risk for these groups. The *ORs* for these analyses are presented in Table 3. The *ORs* suggest little or no relationship between these factors and injury risk.

Hypothesis 2 – Male students will have a greater risk of injury than female students. A chi-square test was calculated to assess the difference in injury risk for male (risk factor) and female students. The results of the chi-square for gender on injury status ($\chi^2 = .14, p = .71$) were not significant. Odd ratios and 95% *CI*s were then calculated to determine actual injury risk for males and females. The *ORs* for this analysis are presented in Table 3. The *ORs* indicate that there were no significant differences in the number of injuries between males and females.

Hypothesis 3 – Older students (grades 4 – 5) will have greater injury risk than younger students (grade 1 – 3). A chi-square test was calculated to assess the difference in injury risk

for older (risk factor) and younger students. The results of the chi-square for grade and injury status ($\chi^2 = 2.47, p = .12$) were not significant. Odd ratios and 95% CIs were then calculated to determine actual injury risk for older and younger students. The ORs for this analysis are presented in Table 3. The ORs suggest that students in the older grades have a non-significant increased risk for injuries compared to those in younger grades.

Table 3

Odds Ratios and 95% Confidence Intervals for Inattention, Impulsivity/Overactivity, Gender and Grade on Injury Risk (N= 109).

	<i>ORs</i>	<i>95% CI Lower</i>	<i>95% CI Upper</i>
Inattention (low vs. high)	.84	.29	2.40
Impulsivity(low vs. high)	1.15	.42	3.16
Gender (male vs. female)	.54	.24	1.17
Grade (younger vs. older)	.86	.40	1.88

Hypothesis 4 – Students who were high in impulsive/overactive and inattentive behaviors will engage in more risky behavior than students low in non-impulsive or attentive behaviors. For Hypotheses 4 to 6 a 2 (inattention) x 2 (impulsivity/overactivity) x 2 (grade) x 2 (gender) factorial ANOVA was calculated to assess the main and interactive effects of these variables on IBC scores. The results of the main effect for inattention ($F [1, 94] = .15,$

$p = .70$, $\eta^2 = .00$) on IBC scores were not significant. The results of the main effect for impulsivity/overactivity on IBC scores were also not significant. The descriptive statistics for these analyses are presented in Table 4. The results suggest that there is no relationship between these subscales and risk-taking behaviors.

Table 4

Results of the Between-Subjects Main Effects for the ANOVA for Inattention, Impulsivity/Overactivity, Gender and Grade on Injury Behavior Checklist (IBC) scores (N= 109).

		IBC total		
		Mean	SD	N
Inattention	High	14.35	10.61	17
	Low	11.93	13.34	91
Impulsivity/Overactivity	High	14.05	16.36	20
	Low	11.92	12.10	88
Gender	Male	14.70*	14.73	61
	Female	9.21*	9.44	47
Grade	1 – 3	12.56	11.87	61
	4 – 5	12.00	14.33	47

* $p < .05$

Hypothesis 5 – Male students will engage in more risk-taking behaviors than female students. The results of the factorial ANOVA for the main effect for gender on IBC scores were significant ($F [1, 94] = 3.74$, $p = .05$, $\eta^2 = .04$). The parents reported that that male children ($M =$

14.70, $SD= 14.73$) more frequently participated in risk-taking behaviors than female children ($M= 9.21$, $SD= 9.44$). The descriptive statistics for this analysis are presented in Table 4.

Hypothesis 6 – Older students (grades 4-5) will engage in more risk-taking behaviors than younger students (grades 1-3).

The results of the factorial ANOVA for main effect for grade on IBC scores were not significant ($F [1, 94] = .03$, $p = .86$, $\eta^2 = .00$). In addition, the results of the between-subject effects for older grades ($M = 12.00$, $SD = 14.33$) and younger grades ($M = 12.56$, $SD = 11.87$) on IBC scores were not significant. The results suggest that there is no relationship between grade and risk-taking behavior. The descriptive statistics for this analysis are presented in Table 4.

Interactive Effects

A series of Pearson product-moment correlations were calculated to investigate the interrelationships among injury total, visited doctor, household income, IBC total, TDBD total, inattention hi/low, impulsivity hi/low, gender, and age (see Appendix G). The results supported no significant relationships among these factors. However, impulsivity hi/low ($r = -.23$) and IBC total ($r = -.21$) were negatively correlated with gender. Injury total ($r = -.24$) was negatively correlated with age.

Although there were no significant interactions among the variables in the ANOVA, a non-significant ($F [1, 94] = 2.07$, $p = .15$, $\eta^2 = .02$) trend for an interaction between inattention and grade on IBC scores was evident (see Figure 1). Specifically, older students who were high in inattention scored lower (11.56) on the IBC than those low in inattention (12.11). However, among younger students, those high in inattention scored higher (17.50) on the IBC than those low in inattention (11.81).

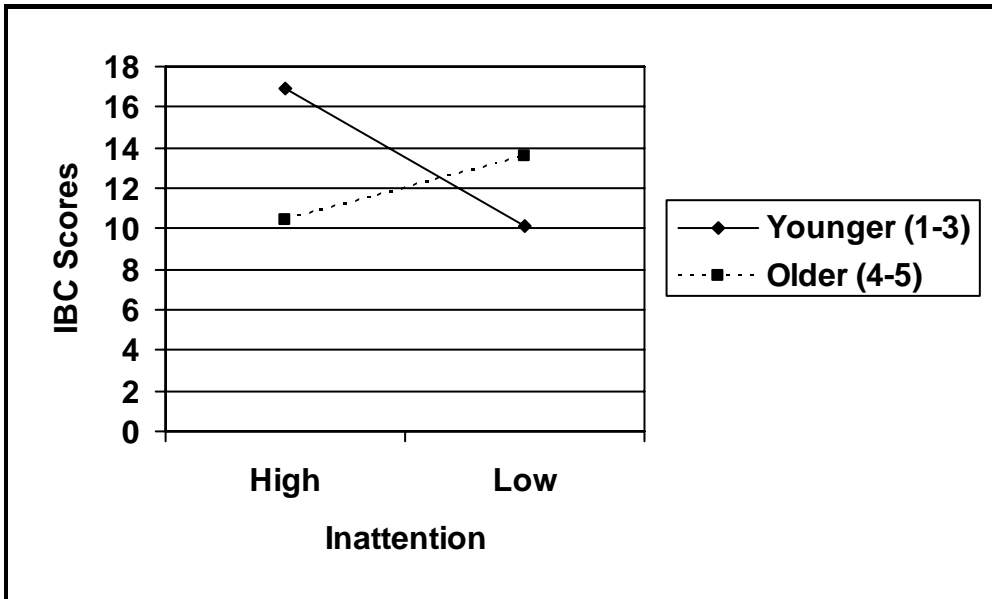


Figure 1. Non-significant interaction between inattention and grade on IBC scores.

There was also a non-significant ($F= 1.05, p= .31, \eta^2=. 01$) trend for an interaction between impulsivity/overactivity and grade on IBC scores (see Figure 2). Specifically, older students who were high in impulsivity/overactivity scored higher ($M = 18.67, SD = 21.55$) compared to those low in impulsivity/overactivity ($M = 10.42, SD = 11.89$). However, among younger students, those high in impulsivity/overactivity scored lower ($M = 10.27, SD = 10.11$) on the IBC than those low in impulsivity/overactivity ($M = 13.06, SD = 12.26$).

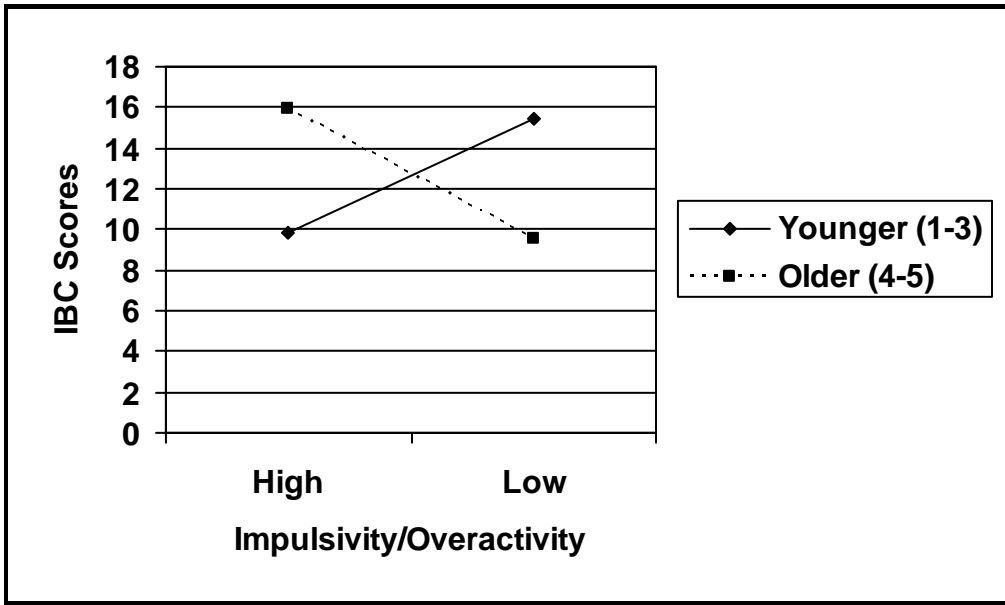


Figure 2. Non-significant interaction between impulsivity/overactivity and grade on IBC scores.

A non-significant ($F [1, 94] = 2.34, p = .13, \eta^2 = .02$) trend for an interaction between impulsivity/overactivity and gender on IBC scores was reported (see figure 3). The findings showed that males who were high in impulsivity/overactivity scored higher ($M = 16.63, SD = 17.40$) on the IBC than those who were low in impulsivity/overactivity ($M = 14.02, SD = 13.80$). Females who were high in impulsivity/overactivity scored lower ($M = 3.75, SD = 2.22$) on the IBC than those who were low in impulsivity/overactivity ($M = 9.72, SD = 9.70$).

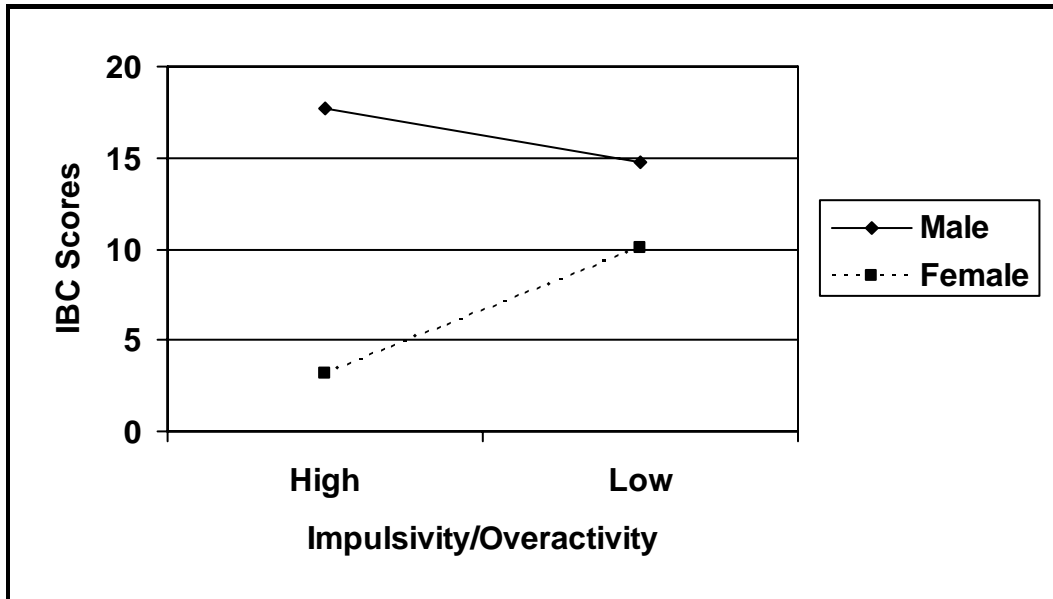


Figure 3. Non-significant interaction between impulsivity/overactivity and gender on IBC scores.

Exploratory Question 1: Which factors contribute most to injury risk?

A logistic regression (*LR*) was performed to assess the ability of inattention, impulsivity/overactive, gender, and grade to predict injury status in this sample. The result of the LR was significant ($R^2 = .32, F = 1.89, p < .01$). As is evident in Table 5, the subjects' IBC total score and grade were significant predictors of injury risk accounting for 32% of the variance in injury.

Table 5

Logistic Regression Analysis for Inattention, Impulsivity/Overactivity, Gender and Grade on Injury Status (N= 109).

Factors	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>p</i>
Age	-.52	.17	.59	.00
Gender	-.18	.48	.84	.71
Siblings	-.04	.18	.96	.84
Income	-.13	.34	.88	.71
IBC total	.11	.04	1.11	.01
Inattention	-.04	.06	.96	.51
Impulsivity	.01	.05	1.02	.76

* $p < .05$

Approximately 81% of subjects who had an injury were accurately predicted by the equation. However, only 37.6% of subjects who did not have an injury were correctly identified. Subjects with high IBC total scores were 1.11 times more likely to be injured than those with low IBC total scores. In contrast, there was a strong preventive effect with regard to injury for subjects from the older grades [$OR = .59$] compared to those from the younger grades.

Exploratory Question 2: Which factors influence increased risk-taking behavior?

A multiple regression (MR) was conducted to identify which variables among age, grade, siblings, and total household income, inattention, and impulsivity predicted IBC scores. The regression for these variables on IBC scores was not significant ($R^2=.10$, $F=1.89$, $p<.09$). A summary of the regression analyses is presented in Table 6.

Table 6

Multiple Regression Analysis for Age, Grade, Siblings, Income, Inattention on Risk-Taking Behaviors (N= 109).

Factors	<i>B</i>	<i>SE</i>	<i>B</i>	<i>p</i>
Age	-.53	1.92	.06	.78
Grade	-.08	2.08	.01	.97
Siblings	.80	.95	.08	.40
Income	2.98	1.68	.17	.08
Inattention	.19	.27	.11	.48
Impulsivity	.21	.23	.14	.37

CHAPTER V

DISCUSSION

Introduction

This chapter provides a summary of the results. The behavior subscales including impulsivity/overactivity and inattention characteristics are discussed in relation to their effects on injury risk and risk-taking behavior. Gender differences will also be discussed as it relates to the effects of injury risk and risk-taking behavior. In addition, grade and age effects will be discussed in relation to injury risk and risk-taking behaviors. The between-subjects main effects and interactions are explored and the implications of these comparisons are explained. Noteworthy limitations of the study are also examined. Lastly, the need for further research in this field of study is presented.

Summary of Results

When comparing injury risk for students high and low in impulsive/overactive and inattention behaviors, there was no significant relationship observed. Students demonstrating these behavioral characteristics had a slightly increased risk for injury. Odd ratios showed a close relationship of increased risk between inattention and injury status and between impulsivity/overactivity and injury status values. Inattentive children had little or no chance to be unintentionally injured. In contrast, impulsive/overactive children were more at risk to be injured. More precise means of measuring inattention and impulsive/overactivity behaviors should be utilized in future research while controlling for pre-existing behavioral conditions.

In regards to risky behavior, the results indicated no significant interactive effects for impulsive/overactive and inattentive behaviors on the IBC scores. However, the students' IBC scores were positively related to the behavioral subscales. When comparing high and low groups

the mean scores only slightly deviated for IBC scores. Students who scored in the high impulsivity/overactivity and inattention groups reported participating in more risk-taking behavior compared to the low groups. Overall, the mean scores deviated only slightly for high and low groups. Therefore there were no significant main effects for inattention on risk-taking behaviors.

Males and females were included in this study to account for potential differences. A non-significant relationship was observed among gender differences for injury status. Males had decreased injury risk compared to females. Odd ratio values did not report any relationship of increased risk between gender and injury status. The *ORs* showed that there was a non-significant increased risk for injuries for females compared to males.

Gender differences were not observed for injury risk. Males and females had essentially the same chance of being injured in this study. Thus, gender could not be considered a related factor for injury risk. Because there was no relationship between gender and injury risk, future research on injury risk should aim to further examine gender. In contrast, gender differences were observed in relation to the IBC scores. These differences accounted for a significant interactive effect. Males who scored high and low on the IBC scores had a significantly greater chance of participating in risk-taking behaviors than females who scored high and low. A significant main effect for gender on risk-taking behaviors was also observed. The results supported the main effect for gender differences on risk-taking behaviors. Males had a significantly increased risk for engaging in risk-taking behaviors. Nonetheless, there were no gender differences in IBC totals. Future research regarding the effects of gender should control for potential gender differences in injury status and risk-taking behaviors.

No significant interactive or main effects were present for older and younger students on the IBC scores or injury risk. Students in older grades were slightly (but not significantly) less likely to engage in risk-taking behavior than students in younger grades. Participants' grade was not related to IBC scores and age. However, the current study explored collapsed grades, rather than distinct separate grades. Future research should aim to control for clinically diagnosed students.

Effects of Behavior Subscales

Although several studies have been conducted to investigate the effects of diagnosed Child Behavioral Disorders (CBDs) on patterns of childhood injury (Brehaut, Miller, Raina, & McGrail, 2003; DiScala, Leschoier, Barthel, & Guohua, 1998), few studies have examined the relationship between externalizing behavior problems such as impulsivity/overactivity and inattention as they relate to injury risk and risk-taking perceptions in school-age children. Brehaut and colleagues have suggested that children with CBDs are twice as likely to be injured as those not diagnosed with a CBD (2003). In a similar study, DiScala and colleagues reported that children with ADHD were injured severely at a rate of 12.5% as opposed to the no pre-injury condition group with 5.4% (1998). This study suggests that there is no difference in injuries between the two groups; however, the ADHD group reported severe injuries twice as frequently. The current study's findings were consistent with the previous studies, as there was no relationship found between the behavioral subscales and injury risk.

In the current study, the behavior subscales were not significantly related to IBC scores. Previous findings suggest that there are significant behavioral characteristics that contribute to increased risk-taking behaviors. Boles, Roberts, Brown, & Mayes (2005) studied pre-school and younger school-age children to assess children's risk-taking behaviors and their relationship to

perceptions of vulnerability and temperament. They found that boys were more likely to engage in risk-taking behaviors. However, this trend was only noted when interacted with the effects of the predictor measures (Temperament Assessment Battery for Children and Injury Vulnerability Assessment of Children). This suggests that gender differences are not present when examined independently but when examined interactively with these measures, children's perceptions of vulnerability scores predicted risk-taking behavior. These findings were not significant in the current study, in contrast to the previously reported relationship between gender and risk-taking behaviors. Future research should focus on using more precise scales of measuring impulsivity/overactivity and inattention externalizing behaviors while controlling for pre-existing behavioral conditions.

Effects of Gender

Results supported gender differences for risk-taking behaviors as reported on the IBC scores. Males had significantly higher IBC score than females. However, there were no gender differences in injury risk. In reference to injury risk, the results imply that school-age males and females have a similar risk of being injured. However, the current study did not examine exposure to injury or difference in exposure between males and females. The fact that males and females sustained similar injury rates is inconsistent with numerous studies which have reported males to have a higher risk of injury than females (Petridou, Sibert, Skalkidis, & Trichopoulos, 2002; Hammig et al., 2003; Limbos et al., 2003; Morrongiello, 1997; Morrongiello, Midgett, & Shields, 2001; Schelp et al., 1991). Future research regarding the risk of injury in school-age children should control for potential difference in exposure.

Even though several studies support the notion that males are injured more often than females (Petridou et al., 2002; Sun, Yu, Wong, Zhang & Fan, 2006; Hammig et al., 2003;

Limbos et al., 2003; Morrongiello, 1997; Morrongiello et al., 2001; Schelp et al., 1991), there are a few studies that counter this notion. Bradbury and colleagues (1999) studied male and female school-age children to identify predictors of unintentional injury. They concluded that there were no significant gender differences for sustained injuries.

Sibling Effects

Because social interactions play a substantial role in school-age children, first interpersonal relationships involving siblings may influence injury risk and related behaviors. Even though the direct effect of sibling interactions on decision-making remains equivocal, there are notable influences reported in the literature. Nathens, Neff, Goss, Maier, and Rivara (2003) studied children 6 and younger on the effects of an older sibling and birth interval on injury risk. Nathens et al. (2003) reported that children with 3 or more siblings reported an *OR* of 1.69 (95% *CI* 1.44 to 1.97). This research suggests children having 3 or more siblings have an increased risk for injuries compared to those with fewer than 3 siblings. In contrast to the current studies findings, no significant interaction was found for sibling effects on the IHQ. These findings suggest that there may be significant sibling effects. Ideally, future research should include an observation measure to assess for observed differences in sibling and non-sibling interactions.

Based on inherent differences between males and females, such as differences in personality, behavior, and perceptions of risk, it is possible that males and females have different views on risk-taking. The results of the present study found that potential gender differences exist for risk-taking behaviors. Gender differences were evident for males who scored high and those who scored low on the IBC scores. Males scoring high on the IBC scores were reported as participating in risky behavior more often than females. Males' scores on the IBC scores averaged 14.70 (*SD*= 14.73), and females' scores averaged 9.21 (*SD*= 9.44). There was a

substantial difference observed between male and female IBC scores with males scoring on average 5 points higher than females.

Parents may play an influential role in relation to perceived risk for injury. Morrongiello (2004b) reported in a study to assess gender differences in mother's reactions to their child's risk-taking behaviors that mother's focused more on safety for daughters and discipline for sons. This study suggests that mothers perceive an activity or situation as risky for the female child but not for their male child. Future research should aim to control for the influence of parental perceptions.

Effects of Grade

The current study included school-age students within grades 1-5. Several studies have suggested that age affects injury risk and risk-taking behavior (Sun et al., 2006; Hillier & Morrongiello, 1998; Limbos et al., 2003; Plumert, 1995). The current study's results indicated that age had no effect on the injury risk. In contrast, several studies have reported equivocal findings among all ages (Bradbury et al., 1999; Greening, Stoppelbein, Chandler, & Elkin, 2005). Sun and colleagues reported that students in grades 3 tended to be injured more than other grades, suggesting a curvilinear relationship. Although Plumert (1995) found a negative correlation between 6-year olds accuracy of their physical ability judgments and accidents ($r = -.44, p = .05$) compared to 8-year olds. This finding suggests that children were able to estimate their physical abilities better as they aged. Future research should aim to control for age differences, as it is apparent that there is a relationship between injury risk and risk-taking behaviors.

In contrast to the current study's findings, Schwebel and Bounds (2003) studied 6 and 8 - year-old girls and boys to assess the role of parents and temperament on children's estimation of

physical ability as it relates to unintentional injury prevention. They concluded that girls underestimated their ability to perform a task more often than boys, however the gender difference was deemed not statistically significant. In the current study, perceptions of risk were not assessed.

As mentioned earlier, sibling interactions are an inherent part of the lives of students. In the current study, there were no significant sibling differences on injury risk or IBC scores. In contrast to the current study's findings, another study that assessed the high-risk periods of injury risk among siblings found significant effect for siblings (Johnston, Grossman, Connell, & Koepsell, 2000). The findings suggested that injury risk was higher as the uninjured sibling's age increased. In contrast, Nathens and colleagues (2000) reported an *OR* of 1.50 (95% *CI* = 1.37 to 1.67) for injury risk and having an older sibling, with the strongest association found among children age 2 years and younger. These findings suggest that younger siblings' actions are influenced by their older siblings and there is more association the younger the uninjured siblings. These differences may be apparent because of the sample populations used in the studies such as Johnston and colleagues population was between 0 – 17 years whereas Nathens and colleagues population consisted of those 6 and younger. In the current study, the participants' grades ranged from 1st through 5th grade which was representative of the target population. Future research suggests should examine a larger, grade specific sample to allow for greater generalizability of the findings within the school-age population.

Interactive Effects

A non-significant interaction between inattention and grade on IBC scores was evident in the current study. The results suggested that older grades that were more inattentive were least likely to participate in risk-taking behaviors than low inattention groups. In contrast, younger

grades that were more inattentive were more likely to engage in risk-taking behaviors. Dal Santo and colleagues (2004) reported age differences in a study on preschoolers. Their findings suggested that as children age their exposure to risk increases. Although older students are unable to correct behavior problems associated with their inattention, the results of the present study suggest that children in older grades may have higher self-perceptions of risk.

An apparent non-significant interaction was observed between inattention and grade on IBC scores. The results showed that students in the older grades who were more impulsive and overactive were more likely to participate in risk-taking behaviors than low impulsive and inattention groups. In regards to younger grades, those who were more impulsive and overactive were less likely to engage in risk-taking behaviors than low groups. The current study's findings were consistent with previous studies such as the findings of Boles and colleagues (2005) in which they reported as children increased in age the perceptions of vulnerability increased. This study reported that perceptions of vulnerability scores predicted risky behavior. In contrast to the current findings, past research reported impulsive, older children behaviors were more subdued than younger children (Paulsen & Johnson, 1980). In the current study the findings may be due to self-perception in which there is an overestimation of the child's physical abilities or it may be because of decreased parental perceptions.

A significant interaction for IBC scores between impulsivity/overactivity and gender suggests that males who were more impulsive and overactive were more likely to interact in risk-taking behaviors compared to low impulsive and inattention males. However, females who were more impulsive and overactive were less likely to engage in risk-taking behaviors. The findings of Bates and colleagues (1999) contest the current study's findings. Their study reports that girls become less impulsive as they age (i.e., 6 – 8 years). These findings suggest behavioral

differences between males and females become more defined as they progress in their school-age years. A study by Paulsen and Johnson (1980) found that boys exhibited impulsive characteristics that were expressed through external actions (i.e., less delay, high movement, and large muscle activity). These characteristics are descriptive of the impulsive/overactive behavior, thus boys were more likely to be high in impulsivity/overactivity and take more risks. In a study that assessed children's perceptions of vulnerability in relation to risk-taking behaviors, the findings suggested that boys were more likely than girls to participate in risky behavior (Boles et al., 2005).

Implications

According to the National Safety Council, unintentional injuries continue to be the number one cause of death in children (2001). The prevalence of injuries and risky behavior is influenced by behavioral characteristics such as inattention and impulsivity/overactivity (Brehaut et al., 2003; Bardina, Jones, Schwebel, & Speltz, 2002; Boles, Brown, Mayes, & Roberts, 2005; & Sandberg et al. 2000). These findings stem from previous research studies in which clinically diagnosed children with the externalized behavioral characteristics were more likely to sustain injuries (Bardina et al., 2002; Finch, Montgomery, Nelson, Wilkinson, 1975; Patrick et al, 2004, & Counts et al., 2005). Even though three interactions were reported in the current study only one had a significant relationship. It was evident in the interaction between impulsivity/overactivity and gender on IBC scores. The current study suggested that those children demonstrating characteristics of impulsive/overactive behavior were more likely to be injured and participate in risk-taking behavior. This increased risk was observed more often in the older, male groups.

The results of the present study indicated that there were significant gender differences in IBC scores among school-age students. Researchers should aim to conduct a longitudinal study including a larger population than utilized in this study. This type of population would be more inclusive and representative of the population, so that the threat to external validity would be limited and developmental trends could be explored.

Limitations

The small sample size is a limitation of this study. Because there are a large numbers of factors which contribute to childhood injuries there are several interactions between the factors which influence risk and risk-taking behavior. The small sample size did not permit sufficient power to adequately analyze these relationships within the sample (e.g., low total household income compared to high income groups). There was also little variability in the sample with regard to some of the factors such as injury history, income, and behaviors. Because of this lack of variability effects were not found among the risk factors. Thus, a large sample is needed to adequately address the research questions.

Another limitation of this study may have been selection bias. The participants were students in two schools from post-Hurricane Katrina New Orleans, so they were not randomly selected. Moreover, these groups of students represent a unique subsample of students. The population consisted primarily of lower, middle-class (63.3%) African-Americans (81.7%), so the ability to generalize the results to other dissimilar populations is limited.

The cross-sectional nature of the data collection limited the findings in this study to a single point in time. In this research design, the data were retrospectively collected at one point in time on several variables such as gender, grade, income, injury history, and observed behavior. Therefore, this study explored associations between injury risk and risk-taking

behaviors but not causality. As mentioned in the previous section, future research should employ a longitudinal research design.

Post-Katrina Environment

It is important to note that this study was limited by factors associated with the post-Hurricane Katrina environment that existed in greater New Orleans in 2005-2006. Specifically, data were collected in a post-Katrina environment in one of the most devastated cities, New Orleans. Even though the measures were reliable, the validity is unknown. The personalities and attitudes of the parents and children were more than likely influenced by this new and changing environment, even though collection took place over 6 months after the hurricane. In an article on the children affected by Katrina, Callimachi (2006) reported that 8 months after the storm elementary and middle-school children are suffering from anxiety in the form of nightmares, intrusive thoughts, and physical symptoms (i.e. stomach aches). It was also reported in a similar article that the children impacted by the hurricane exhibited hyperactive or withdrawn characteristics that were not observed by the parents' pre-Katrina (Golden, 2006). The results of such a trauma may have effected the children's participation in certain activities that they may or may not have participated in prior to Katrina. It is also likely that parents may not have accurately responded or not have responded at all because of "...stress stemming from their own uncertainty, loss and disruption after Katrina...". From an ethnographic view, it can be assumed that parents were busy restarting their lives that they did not have time to answer the questions and if they did complete the questionnaires they did not have time to accurately answer the questions. Additionally, in this unique environment the fact that the study relied on subjective parent- and teacher-reported, questionnaire data may have impacted the results. Although the present measures have been shown to have reliability for risk-taking behavior ($\alpha =$

.93), the use of parental/teacher measures alone, and particularly in such a challenging environment introduced significant potentials for subject and recall bias.

African-American Parents

The halo effect may have affected the parents and teacher's responses to questionnaires and checklists so they may have answered the questions the way they thought the researcher wanted them to answer. The predominate racial group representing the parents and guardians in this study consisted of African-Americans, who are rarely represented and often suspicious of research studies. In this ethnic community there is a fear of social services that has been researched and observed. An article from the Center for an Urban Future, reported that African American children are twice as likely to be removed from the home and reported for neglect and abuse as Caucasians (White, Courtney, Fifield, 1998). As such, African-American parents often fear negative stereotypes and the potential consequences of misperceptions of their environment, parenting behaviors and attitudes. The parental participants may have thought that questionnaires were administered from social services because they contained questions about the child's behavior which could be attributed to neglect. The researcher observed a lack of responses yielded, with less than a fourth of data packets sent out being returned. Several parents indicated to the students that they did not like the manner of the questions, and as one respondent stated, "too much information was being asked". Hence, participants may have conjured up images of the stereotypical old, white male in a trench coat collecting data. As a result, there may have been more response to the questionnaires if the ethnic background (i.e., African-American) of the researcher was known to participants. Most ethnic groups tend to feel comfortable with those who share similar cultures as them. As an African-American female researcher and a P.E. teacher for one of the participating schools in this study, I was able to be

viewed from an ethnographic view point. From a personal perspective it was observed that several of the parents' responses were inconsistent with the students' observable personality and behaviors. The children who were the most disruptive or overactive were often described by their parents as 'very seldom' or 'not at all' participating in risky behaviors. Therefore, studies using observed data are needed to draw more definitive conclusions regarding the effects of these variables on the risk of injuries and increased risk-taking behavior in school-age children.

Lastly, the fact that the non-medically reported injuries were the main type of injury in this study, and in view of the lack of research on common childhood injuries, it is difficult to draw parallels between findings of this study and those in childhood injury literature. However, what does seem to be consistent with the literature is that males were significantly more likely to be injured (Connell et.al., 2000; Sun et.al., 2006; Hillier & Morrongiello, 1998; Limbos et al., 2003; Plumert, 1995), participate in risk-taking behaviors (Olson et.al., 1999; Boles et.al.,2005; Paulsen & Johnson,1980) and have high levels of impulsivity/overactivity (Brehaut et al., 2003; Bardina, Jones, Schwebel, & Speltz, 2002; Boles et al., 2005; & Warner-Rogers et al. 2000).

Future Research

Future research should include longitudinal study designs and a larger population than utilized in this study. The current study population was small, because the researcher had to use an available population in less than ideal data collection conditions. Random sampling of schools or classes was not feasible due to nature of the data collection area (i.e., New Orleans) post-Hurricane Katrina. A longitudinal study of an entire school district would be more inclusive and representative of the general student population, so that any threats to external validity would be minimized. Future studies should also include a wider ranging school-age population. This will allow the findings to have more generalizability and will allow the

researcher to observe developmental trends and differences at each grade level. In addition, the research measures should include observations and interactive laboratory tests to better categorize the students' externalizing behaviors. The current study relied completely on questionnaires. Finally, there is a need for preventive safety programs to stop the increase in injuries among school-age children.

Conclusion

This research provided a novel examination of unintentional injuries in school-age children in regard to several multi-deterministic factors. A non-significant interaction effect was found for inattention and grade on IBC scores and impulsivity/overactivity and grade on IBC scores. In addition, one significant interaction was found between impulsivity/overactivity and gender on IBC scores. However, the current study found statistically significant main effects for the behavior subscales, gender or grade on injury risk or risk-taking behaviors. Future research in this area is needed to substantiate these findings.

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APPENDICES

APPENDIX A

PARENT/GUARDIAN LETTER OF CONSENT

Dear Parents or Guardians:

I am a graduate student under the direction of Assistant Professor Anthony P. Kontos, Ph.D. in the Department of Human Performance and Health Promotion/ College of Education at the University of New Orleans. I am conducting a research study to investigate the relationship between unintentional injury risk and the two dimensions of impulsivity ‘cognitive and delay’ among school-aged students.

I am requesting your participation, which will involve answering several questionnaires about you and your family, your child’s injury history and behavior which should take within 15 to 20 minutes per child. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty it will not affect your child’s grade.

The results of the research study may be published, but your name will not be used. All forms of this study will be kept in a locked, secure file accessible only to Dr. Kontos. After 3 years, all raw data will be destroyed.

I would also like to request your approval to allow your child’s teacher to complete a questionnaire about your child or children. The teacher will be asked to answer questions that best describe the behavior of your child such as “often has difficulty awaiting turn”. The teacher will be asked to rank this question on a scale from “not at all” to “very much”.

The benefit for your participation is that your name will be entered into a raffle for a \$10 gift certificate at Target or K-mart stores. Gift certificates will be administered to five of the chosen parents.

If you have any questions concerning the research study, please call Dr. Laura Scaramella at (504) 280 – 7481.

Sincerely,

Christy A. Favorite

By signing below you are giving consent to participate in the above study.

Signature

Printed Name

Date

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. Anthony Kontos at the University of New Orleans (504) 280-6420.

APPENDIX B

TEACHERS LETTER OF CONSENT

Dear Teachers:

I am a graduate student under the direction of Assistant Professor Anthony P. Kontos, Ph. D. in the Department of Human Performance and Health Promotion/ College of Education at the University of New Orleans. . I am conducting a research study to investigate the relationship between unintentional injury risk and the two dimensions of impulsivity ‘cognitive and delay’ among school-aged students.

I am requesting your participation, which will involve answering questionnaire of items that best describes the behavior of your students which should take 5 - 10 minutes per student. You will only be asked to complete a questionnaire for students whom parental consent has been obtained. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty.

The results of the research study may be published, but your name will not be used. All forms of this study will be kept in a locked, secure file accessible only to Dr. Kontos. After 3 years, all raw data will be destroyed.

If your entire class completes and returns their questionnaire packets you will receive \$25 gift certificate to one of the following restaurants of your choice: Applebee’s, Shoney’s, Bennigan’s, or T. G. I. Friday’s.

If you have any questions concerning the research study, please call Dr. Laura Scaramella at (504) 280 – 7481.

Sincerely,

Christy A. Favorite

By signing below you are giving consent to participate in the above study.

Signature

Printed Name

Date

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. Anthony Kontos at the University of New Orleans (504) 280-6420.

APPENDIX C

Demographics Questionnaire

Please complete the following questions about your child.

1. Please indicate your **child's current age** (in years):

_____yrs

2. Please indicate your **child's current grade in school** (please circle only one):

1st 2nd 3rd 4th 5th 6th

3. Please indicate your **child's gender** (please circle one):

Male (M) Female (F)

4. Please indicate your **child's race/ethnicity** below (please check only one box):

American Indian Asian Black White Latino(a)

Biracial (2 or more) Other (Please fill in) _____

5. **Excluding the child in this study**, how many **siblings (sisters and brothers) live at home** with you and your child?

0 1 2 3 4 5 6 7 8 9 10+

6. Please indicate **each sibling's gender (please circle M or F) and age (in years)?**

	Sibling 1	Sibling 2	Sibling 3	Sibling 4	Sibling 5
Age	_____yrs	_____yrs	_____yrs	_____yrs	_____yrs
Gender	M F	M F	M F	M F	M F

	Sibling 6	Sibling 7	Sibling 8	Sibling 9	Sibling 10
Age	_____yrs	_____yrs	_____yrs	_____yrs	_____yrs

Gender M F M F M F M F M F

7. Please indicate your **total household income during the past year** (please check only one):

- \$30,000 or below \$30,001-\$59,999 \$60,000-\$99,999
 \$100,000 or above

APPENDIX D

Injury History Questionnaire

1. How many injuries has your child had, within the last 6 months, that required your attention (e.g., you need to apply an ice pack, put on a Band-Aid, or clean a wound)? An injury can be anything like a scrape, cut, fall, or burn that made your child complain of pain, or that made him/her cry.

In the **last 6 months**, my child has had...

- _____ no injuries at all that required my attention
- _____ a couple of injuries (1-2) that required my attention
- _____ several injuries (3-5) that required my attention
- _____ many injuries (6 or more) that required my attention

2. How many injuries has your child had, in the last 6 months that required a doctor's attention (e.g., trip to the doctor's office or emergency room)?

In the **last 6 months**, my child has had...

- _____ no injuries at all that required a doctor's attention
- _____ a couple of injuries (1-2) that required a doctor's attention
- _____ several injuries (3-5) that required a doctor's attention
- _____ many injuries (6 or more) that required a doctor's attention

3. How many injuries has your child had, in the last 6 months that required a dentist's attention (e.g., chipped or broken teeth, or mouth or gum injuries)?

In the **last 6 months**, my child has had...

- _____ no injuries at all that required a dentist's attention

- _____ a couple of injuries (1-2) that required a dentist's attention
- _____ several injuries (3-5) that required a dentist's attention
- _____ many injuries (6 or more) that required a dentist's attention

4. In your child's **lifetime**, has your child ever had to see a doctor or dentist, or go to an emergency room or hospital, because of an accidental injury?

_____ Yes

_____ No

5. Has your child **ever** been hospitalized because of an injury – that is, has he or she ever had to stay overnight for one or more nights in a hospital because of an injury?

_____ Yes

_____ No

If yes, how many times has your child been hospitalized because of injuries?

_____ Once

_____ 2 to 3 times

_____ over 4 times

6. Please indicate which of the following injuries your child has **ever** had, regardless of whether or not you sought medical attention from a doctor or dentist. By injury we mean any event that causes your child to cry or complain of pain.

Please use this rating scale to indicate how often your child has had the injury listed:

1 = never

2 = 1-2 times

3 = 3-5 times

4 = 6-8 times

5 = more than 10 times

Rating (please circle one)

Motor vehicle accident – injury as a passenger.....	1	2	3	4	5
Motor vehicle accident – injury as a pedestrian.....	1	2	3	4	5
Other pedestrian injuries.....	1	2	3	4	5
Water-related accident (e.g., fall in tub).....	1	2	3	4	5
Burn – hot liquids or food.....	1	2	3	4	5
Burn – chemical or fire.....	1	2	3	4	5
Burn – hot object (e.g., stove, heater).....	1	2	3	4	5
Fall – from heights (e.g., downstairs).....	1	2	3	4	5
Fall – from moving object (e.g., bike, swing).....	1	2	3	4	5
Cut of any kind (e.g., scrape, puncture).....	1	2	3	4	5
Crushing injury (e.g., slamming door on hand).....	1	2	3	4	5
Electrical injury (e.g., electrical shock).....	1	2	3	4	5
Poisoning – chemical/drugs.....	1	2	3	4	5
Poisoning – food.....	1	2	3	4	5
Poisoning – plants.....	1	2	3	4	5
Choking or suffocation.....	1	2	3	4	5
Injury to mouth, teeth, or tongue.....	1	2	3	4	5
Sports-related injury of any kind.....	1	2	3	4	5

APPENDIX E

IBC

No. _____

Injury Behavior Checklist

For each statement, circle the number that best describes how often your child has shown each of the following behaviors **during the past 6 months**.

1. Runs out into street (or parking lot)
 - a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
2. Jumps off furniture or other structures (playground equipment, etc.)
 - a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
3. Jumps down stairs
 - a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)

- e. Very often (more than once a week)
4. Rides big wheel (kiddie car, skateboard, bike, etc.) in unsafe areas (street, hill, down stairs, etc.)
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
5. Runs or bumps into things (furniture, walls, poles, etc.)
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
6. Falls down
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
7. Plays with fire (matches, candles, lighters, etc.)
- a. Not at all
 - b. Very seldom (has happened once or twice)

- c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
8. Puts fingers or objects in electrical wall sockets or appliances (e.g., toaster)
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
9. Leaves the house without permission
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
10. Refuses to use seat belt or stay seated in car
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
11. Plays with sharp objects (tools, knives, etc.)
- a. Not at all

- b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
12. Pulls/pushes furniture or heavy objects over
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
13. Falls out of windows or down stairways
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
14. Puts objects or non-food items in mouth
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)

15. Get scratches, scrapes, or bruises during outdoor play

- a. Not at all
- b. Very seldom (has happened once or twice)
- c. Sometimes (about once every month)
- d. Pretty often (about once every week)
- e. Very often (more than once a week)

16. "Takes chances" on playground equipment

- a. Not at all
- b. Very seldom (has happened once or twice)
- c. Sometimes (about once every month)
- d. Pretty often (about once every week)
- e. Very often (more than once a week)

17. Tries to climb on top of furniture, cabinets, etc.

- a. Not at all
- b. Very seldom (has happened once or twice)
- c. Sometimes (about once every month)
- d. Pretty often (about once every week)
- e. Very often (more than once a week)

18. Stands on chairs

- a. Not at all
- b. Very seldom (has happened once or twice)
- c. Sometimes (about once every month)
- d. Pretty often (about once every week)

- e. Very often (more than once a week)
19. Explores places that are “off limits” (medicine cabinets, storage shed, etc.)
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
20. Gets into dangerous substances (medicine, gasoline, cleaning supplies, etc.)
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
21. Plays carelessly or recklessly
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
22. Burns self with hot objects (stove, iron, etc.)
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)

- d. Pretty often (about once every week)
 - e. Very often (more than once a week)
23. Behaves carelessly in or around water hazards (pools, bathtub, etc.)
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)
24. Teases animals, such as unfamiliar dogs
- a. Not at all
 - b. Very seldom (has happened once or twice)
 - c. Sometimes (about once every month)
 - d. Pretty often (about once every week)
 - e. Very often (more than once a week)

APPENDIX F

TEACHER DISRUPTIVE BEHAVIOR DISORDER RATING SCALE

Child's Name: _____ Form Completed by: _____

Grade: _____ Date of Birth: _____ Sex: _____

Date completed: _____

Check the column that best describes this child.

	Not at All	Just a Little	Pretty Much	Very Much
1. Often interrupts or intrudes on others (e.g. butts into conversations or games)				
2. Often talks excessively				
3. Is often easily distracted by extraneous stimuli				
4. Often fidgets with hands or feet or squirms in seat				
5. Often does not seem to listen when spoken to directly				
6. Often blurts out answers before questions have been completed				
7. Often has difficulty playing or engaging in leisure activities quietly				
8. Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities				
9. Often leaves seat in classroom or in other situations in which remaining seated is expected				
10. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)				
11. Often has difficulty sustaining attention in tasks or play Activities				
12. Often has difficulty awaiting turn				
13. Is often "on the go" or often acts as if "driven by a motor"				
14. Often loses things necessary for tasks or activities (e.g. toys, school assignment, pencils, books, or tools)				
15. Often runs about or climbs excessively in situation in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings or restlessness)				
16. Often avoids, dislikes, or is reluctant to engage in tasks that require mental effort (such as schoolwork or homework)				
17. Often has difficulty organizing tasks and activities				
18. Is often forgetful in daily tasks				

APPENDIX G

Zero-Order Correlations Among the Dependent Variables (N = 109).

Factors	n	M	SD	1	2	3	4	5	6	7	8	9
1. Injury total	109	.74	.66	---								
2. Injured visited dental or doctor	109	.62	.49	.88	---							
3. Household Income	109	1.50	.75	.08	.02	---						
4. IBC total	109	12.31	12.94	.41	.33	.18	---					
5. TDBD total	109	16.25	14.97	.02	.07	.04	.25	---				
6. Inattention hi/low	109	1.16	.36	-.06	-.03	-.02	.07	.66	---			
7. Impulsivity hi/low	109	1.18	.39	.01	.03	-.04	.06	.75	.38	---		
8. Gender	109	1.44	.50	-.11	-.04	-.08	-.21*	-.25	-.18	-.23*	---	
9. Age	109	8.75	1.56	-.24*	-.33	-.09	-.09	-.07	.09	.03	-.14	---

VITA

Christy Ann Favorite was born in New Orleans, Louisiana, on November 3, 1977, the daughter of Terryl Favorite Sr. and Linda T. Favorite. After completing a work at John Ehret High School, Marrero, Louisiana, in 1995, was accepted into Louisiana Tech University. She received a Bachelor of Science degree in Animal Biology with a minor in Chemistry in May 2001. Christy participated in independent study research with the previous department chair, David K. Mills, in extracellular matrix and TMJ structure and function during the Spring of 2000 to Spring 2001. In the Fall of 2001, was accepted into the graduate program of Health and Exercise Sciences at Louisiana Tech University. Christy was awarded a graduate assistantship in the Health and Exercise Sciences department for the 2001 – 2002 school year at Louisiana Tech University, where she served as an undergraduate instructor, faculty/staff personal trainer, and research assistant. In the middle of her graduate program at Louisiana Tech University Christy returned home to New Orleans. In the Spring of 2003, Christy was then accepted into the graduate program of Human Performance and Health Promotion at the University of New Orleans. During her graduate career at the University of New Orleans, Christy was employed for three years as a Fitness Coordinator/Personal Trainer at West Jefferson Medical Center, Marrero, Louisiana. After graduating, Christy will continue her education by attending a Physical Therapy Doctoral program. Christy will then go on to pursue a career as a Physical Therapist specializing in sports medicine.