

PREDICTORS OF CHILDREN'S RISK APPRAISALS

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Abstract

The purpose of this study was to explore the relationship between children's appraisals of risk and several variables hypothesized to be related to risk appraisal. Specifically, the relationships between television viewing behavior, level of sensation seeking, previous injury history and three domains of risk appraisal (child, adult, and television) were examined in a sample of 62 elementary school children. Children were presented with drawings of persons in a variety of risky situations, and were asked to judge the potential for physical injury in each. Results indicated that children tended to evaluate typical child, adult, and TV risk situations differently. Further, risk appraisal in each of the three risk domains was predicted by different factors. For the child domain, increased direct experience with risk was found to be associated with lower risk appraisals. Adult risk situations were most strongly related to age, with older children reporting lower risk appraisals. Sensation seeking, injury history, and weekday cartoons all predicted TV risk appraisals in a negative direction. The implications of these findings for knowledge about the origins childhood injury will be discussed.

CHAPTER I

INTRODUCTION

Unintentional injury has been cited as the leading cause of death each year among children between one and 18 years of age (Rodriguez, 1990; National Academy of Sciences, 1985). An even larger number of children suffer non-fatal injuries annually. Clearly, unintentional childhood injury is a significant societal problem. Knowledge about the environmental, behavioral, and psychological factors which contribute to unintentional injury is important if effective preventive interventions are to be developed.

Early theoretical conceptualizations stressed the role internal personality predispositions such as "clumsiness" or "accident proneness" as the cause of injury (e.g., Manheimer & Mellinger, 1967). When these approaches proved to be unfruitful, theoretical emphasis shifted to environmental agents described as "vectors of injury" as the key determinants of unintentional childhood injury (Haddon & Baker, 1987). However, this approach did little to explain why, in the face of an environmental hazard, an injury may or may not occur. Therefore, the most recent theoretical conceptualizations view childhood injury as resulting from a combination of both individual and environmental factors (Finney & Cataldo, 1991). This assumption that injuries are the result of personal and situational variables is the

perspective taken by the present study.

Millions of children spend at least some of their out-of-school time in environments unsupervised by adults (Padilla & Landreth, 1989). These environments are replete with physical risks and dangers. When confronted with a physical risk in an unsupervised situation, children must make decisions regarding their behavior. If children are to avoid injury, they must engage in some voluntary, self-regulatory behavior (Garbarino, 1988). Underlying these voluntary, self-regulatory behaviors is a process known as risk appraisal. Risk appraisal refers to children's assessments of the possibility of physical harm when faced with a potentially harmful situation. Risk appraisals are believed to guide and influence children's behavior in risky situations.

To date, little is known about the factors which influence children's risk appraisals. Hyson and Bollin (1990) have proposed a conceptual framework for examining children's appraisals of risk. This model includes a taxonomy of factors which may influence children's risk appraisals. These factors include status characteristics (e.g., gender, SES, residential setting), developmental characteristics (e.g., age), relatively stable personality and individual differences (e.g., sensation-seeking, temperament, self-esteem, affective style), socialization influences (e.g., parents, peers, television, direct

instruction by adults), as well as the sociocultural and historical context in which children assess environmental risk (e.g., cultural value of risk taking). The present study is designed to explore the relationship between several of these factors and children's cognitive appraisals of risk. Children's television viewing patterns, level of sensation seeking, past injury history, and various demographic characteristics will be examined as possible predictors of risk appraisal.

As suggested by Hyson and Bollin (1990), socialization is likely to be one factor affecting children's risk appraisals. Television programming, which depicts a multitude of risky behaviors resulting in injuries, is recognized as one major source of socialization for children (Potts & Henderson, 1991; Huston, et al., 1992). Social learning theory and cultivation analysis are two theoretical perspectives which are useful in understanding the possible influences of television upon children's appraisals of risk. In this study children's television viewing patterns will be examined as possible predictors of risk appraisal.

Stable personality characteristics represent another category of variables that may influence risk appraisal. Sensation seeking is one such variable that has been linked repeatedly to risk taking, with high sensation seekers displaying greater tendencies to engage in a variety of risks (Zuckerman, 1994). If sensation seekers take more

risks, it is possible that they also appraise risks differently than sensation avoiders. However, few studies have examined sensation seeking in child populations. The present study will explore the possible relationship between sensation seeking and risk appraisal in elementary school children.

Injury history is another variable which may be associated with risk appraisal. Empirical evidence suggests that children with a previous history of accidental injury tend to be at a significantly greater risk of subsequent injury (Jaquess & Finney, 1994). This study will begin to answer the question of whether children who have a high rate of past injury also have a distinctive pattern of risk appraisal, compared to children with histories of few injuries.

Demographic characteristics such as age, gender, and socioeconomic status will also be examined regarding their influence on children's appraisals of risk. With regard to age, changes in cognitive and physical abilities that occur with development may be reflected in differing appraisals of risk. Based upon gender, boys and girls are taught from a young age to value different sets of attitudes and behaviors. These disparate beliefs and behaviors may include similarly different appraisals of risk. Lastly, children from upper and lower SES families are believed to have systematically different experiences in many areas of

their lives. These differences might manifest themselves in the area of risk appraisal as well. Thus, in this study, age, gender, and SES will also be considered as possible determinants of risk appraisal.

Finally, risk appraisal has typically been described in unidimensional, global terms (Hyson & Bollin, 1990). However, based upon social learning theory (Bandura, 1986), which suggests that learning occurs in a situation-specific manner, it is possible that children's risk appraisals are domain-specific rather than unidimensional. That is, children may judge risks differently depending upon the amount of direct experience they have had with a given situation. Therefore, an additional purpose of this study will be to explore the possible domain-specificity of children's appraisals of physical risks.

CHAPTER II

REVIEW OF THE LITERATURE

Childhood Injury

Unintentional injury has been cited as the leading cause of death each year among children between one and 18 years of age. Approximately half of all deaths in young children result from injuries and each year 30,000 children suffer permanent disabilities, 600,000 children are hospitalized, and 16 million children are treated in emergency rooms because of accidental injury (Rodriguez, 1990; National Academy of Sciences, 1985).

Initially, injury research, conducted primarily from medical and public-health perspectives, employed a host-agent-environment model of injury emphasizing the physical separation of individuals from hazards in the environment (Grantz, 1979; Rivera & Mueller 1987). According to this model, the host of the injury is the child; the agent is the injury-causing stimulus; and the environment is the setting in which the injury takes place. From this perspective, injury control is viewed as similar to disease control in that the goal is to eliminate the injury agent from the host, much the way one would attempt to remove the virus from a sick child. The roles of psychological variables and human behavior play in the occurrence of injuries are not emphasized in the host-agent-environment model of injury.

A second and related approach has been to conceptualize injuries as the result of abnormal environmental energy transfers, or the interference with energy transfer, known as "vectors of injury" (Haddon & Baker, 1987). Research from this perspective has focused upon the situations in which injuries occur, and has been aimed at structuring the environment to minimize the likelihood that injuries will happen (Haddon & Baker, 1981; Wilson & Baker, 1987). These efforts have been effective in many instances, for example in the use of child-proof medicine caps, the establishment of flammability standards for children's sleepwear, mandating the use of child restraint car seats, and mandating the installation of window guards on high-rise residential buildings. These interventions have all helped reduce specific childhood injuries (Cataldo, 1991).

Approaches to injury control that emphasize structuring the situation have limitations. For the most part, children live in environments that are created by adults, largely for adults. The environmental modification approach to injury control is limited because it is often impossible to alter an adult-oriented environment in a way to isolate children from potential the agents of injury. For instance, there is no feasible way to guarantee that children will not come into contact with moving vehicles. In addition, while the presence of an environmental hazard may be necessary for an injury to occur, that presence alone does not guarantee the

occurrence of an injury. Focusing solely upon environmental hazards as the cause of injury does little to explain why, in the presence of hazard, an injury may or may not occur. Similar to the host-agent-environment model, the environmental structuring approach ignores many individual psychological and behavioral factors which may contribute to the occurrence of injuries.

A third approach taken in early epidemiological studies of injury was to explore the possibility that a stable personality trait, such as clumsiness or accident-proneness, might account for a large proportion of unintentional injuries (e.g., Manheimer & Mellinger, 1967). While certain characteristics such as gender and age were found to be related to injury, this strategy proved relatively unsuccessful in identifying distinct personality traits predictive of physical injury.

More recent conceptualizations of accidents have stressed that unintentional injury involves an interaction between the child and the environment (Finney & Cataldo, 1991). Injuries are seen as being interactive in nature, as involving psychological and behavioral processes in addition to environmental hazards. In situations that cannot be structured to isolate children from hazards, some voluntary, self-regulatory behavior on the part of the child is necessary to avoid injury (Garbarino, 1988). Such self-regulatory behavior is necessary because millions of

children spend much of their free time away from adult supervision (Padilla & Landreth, 1989). Children in these unsupervised settings encounter numerous potentially injurious situations, ranging from the operation of small appliances to crossing streets. Again, in each case some intentional, purposeful act on the part of the child may be necessary to avert injury. Therefore, knowledge about the role that behavioral and psychological variables play in unintentional injury may aid in developing strategies for injury prevention.

In sum, ideas regarding the causes of childhood injury have evolved. Injuries are no longer seen as simply the result of children passively coming into contact with environmental vectors of injury, nor are injuries thought to be due to a specific pattern of personality characteristics. The current conceptualization is that childhood injuries result from a combination of environmental and individual factors. The majority of injuries are thought to involve an interaction between environmental hazard and some voluntary, self-regulated act on the part of the child.

Risk-taking

Risk taking is one self-regulatory behavior which has been hypothesized to be related to childhood injury (Potts, Martinez, & Dedmon, 1995). Broadly, risk taking is defined as any behavior oriented toward a particular goal, despite potential negative consequences (Matheny, 1988). Studies

examining the relationship between risk taking and injury in adults have found that the two are weakly correlated (Dahlback, 1991; Levine, Lee, Ryman, & Rahe, 1976). It has been suggested that these findings might be due to the fact that risk taking was conceptualized as a global trait, and operationalized in ways that were quite different from the types of risk behaviors that may result in physical injury (Potts et al. 1995). To address this issue, Potts et al. (1995) employed a self-report measure designed specifically to assess aspects of children's physical risk taking as related to unintentional injury. In contrast to previous findings, results suggested that risk taking, measured via self-report and knowledgeable informants, was in fact predictive of physical injury. Thus, there is evidence that those children who take greater physical risks are likely to suffer more injuries than low risk-taking children.

Studies of risk taking to date have focused primarily on adults and adolescents. Risk taking in adulthood takes various forms. Financial, crime, sports, gambling, and sexual risk-taking by adults have been all received attention in psychological research (Horvath & Zuckerman, 1993). However, most relevant to the present study are models of adolescent risk taking which have also been the focus of extensive research. The following theoretical perspectives regarding adolescent risk taking will be presented here: the problem-behavior perspective, risk-

taking as normal and adaptive, egocentrism, and sensation seeking.

According to the problem-behavior perspective, people who engage in risky behaviors are thought to have rather unconventional values, attitudes, and perceptions (Jessor & Jessor, 1975). Adolescents who take risks are believed to value independence over academic achievement and have higher tolerance of deviance and lower religiosity. They report less compatibility between parents' and peers' expectations and rely on peer influence over parent influence in decision-making. Their unconventionality is reflected in greater involvement in problem behaviors such as drug use and delinquency and fewer reports of involvement in conventional behaviors such as school activities and academic performance (Donovan, Jessor, & Costa, 1991). Thus, according to the problem-behavior perspective, risk-taking is predicted by personality correlates.

Elkind's (1985) theory of egocentrism represents another possible explanation for adolescent risk-taking. According to Elkind, adolescents develop distortions in their newly-acquired ability to think abstractly. One such distortion, egocentrism, arises in part from adolescents' beliefs that others are as hyperaware of them as they are of themselves. This false belief has a number of consequences for the adolescent. Unlike younger children, adolescents are able to think hypothetically about the future. They are

likely to imagine their future lives in a special and grandiose way, one which does not include the possibility of injury or other negative consequences. This sense of uniqueness and invulnerability is termed the "personal fable" by Elkind. It may lead adolescents to conclude that what happens to others will not happen to them. For example, in accordance with their personal fables, adolescents may believe that others are not be able to drink and drive, but they can, or that others cannot use drugs without becoming addicted, but they can. Thus, adolescents' personal fables may lead to increased physical risk taking.

The idea of a personal fable is similar to Weinstein's (1980) concept of an "optimistic bias" found in people of all ages. The optimistic bias refers to people's tendency to believe that others are more likely than themselves to suffer misfortune. In general, studies have suggested that people at various ages do tend to believe that the probability of a negative outcome resulting from risky behavior is lower for themselves than for other people (Arnett, 1992).

Sensation seeking (Zuckerman, 1979, 1994) is another concept thought to be strongly related to risk taking. It has been defined as a need for novel and intense experiences (Zuckerman, 1979). Considerable evidence supports the existence of sensation seeking as a relatively stable dispositional trait (Zuckerman, 1979, 1994). Sensation

seeking has been thought to be a key determinant of risk-taking during adolescence. Adolescent sensation seekers may find that risky behaviors have the qualities they desire. Fast driving and sexual activity are intense and likely to be novel experiences for adolescents. Substance use induces a unique and intense state of consciousness. Minor criminal behavior may produce a pleasurable thrill. Risky activities such as these may be appealing to high sensation seekers who find the "rush" that accompanies new and exciting experiences quite rewarding.

Results of empirical investigations have generally supported the link between sensation seeking and risk taking. In adults, sensation seeking has consistently been found to be related to risky behavior (e.g., Horvath & Zuckerman, 1993; Zaleski, 1984). Similarly, in children between the ages of six and nine, Potts, et al. (1995) found that sensation seeking was strongly correlated with self-report and informant measures of risk taking.

A final conceptualization of adolescent risk taking is that it is normal and adaptive for healthy psychosocial development (Baumrind, 1991; Petersen, 1988). From this perspective, risk-taking is seen as a means of coping with normal developmental tasks such as autonomy and exploration. Normal and developmentally appropriate behaviors are exploratory whereas problematic behaviors are viewed as habitual. Adolescent competence, according to this view, is

a byproduct of experimentation with various lifestyles, a process considered necessary for identity formation (Baumrind, 1991; Erikson, 1973). Shedler and Block (1990) found that both excessive experimentation and total abstinence from substance use were correlated with maladaptive personality patterns, suggesting that a moderate levels of risk taking may be adaptive. Baumrind (1991) found that parenting styles that allowed for some exploration were associated with healthy, competent adolescents and that casual drug use was not linked with pathological behaviors in those children. Thus, according to this view, some degree of risk taking may be a relatively normal part of adolescent development.

To summarize, risk taking is one form of voluntary, self-regulated behavior thought to be related to childhood injury. Reviewed here were several theoretical perspectives on adolescent risk taking with relevance to the present study. Risk taking in adolescence has been hypothesized to be the result of several factors, including relatively stable personality characteristics such as unconventional values and beliefs, or sensation seeking. It has also been thought to be one byproduct of adolescent egocentric thinking. Finally, according to some theorists, moderate levels of risk taking may be a normal part of coping with developmental tasks faced during adolescence. In the next section, possible cognitive components of risk taking will

be examined.

Risk appraisal

Risk appraisal has been hypothesized to be a cognitive factor related to risk taking behavior, and has been described as the cognitive processes that occurs when individuals make subjective evaluations of potential harm in a given situation (Hyson & Bollin, 1990). Though little research has examined specifically the cognitive processes related to risk taking in children, many general theories of human behavior such as Bandura's (1986) social learning theory emphasize the role that cognitions play in guiding and influencing behavior. According to Bandura, people anticipate the probable consequences of events and regulate their behavior accordingly. Applied to risk taking, this notion of response-outcome expectancy may affect how children behave in the face of risky circumstances. Response-outcome expectancies might influence children in such a manner that the greater the perceived probability of physical harm, the higher the child's appraisal of risk is likely to be, and therefore the less likely the child may be to engage in that behavior.

Bandura's concept of self-efficacy may also be relevant to risk taking. Self-efficacy refers to people's beliefs regarding their own abilities and characteristics. According to Bandura, these beliefs guide individuals' behavior. It is possible that children's beliefs about

their competency to perform a particular risky behavior may determine whether they will engage in that behavior. So, from a social learning perspective, it appears that children's cognitive appraisals of physical risk might be related to their actual behaviors in risky situations.

Hyson and Bollin (1990) have proposed a conceptual model for examining children's appraisals of risk. This model includes several categories of factors which are hypothesized to affect children's risk appraisal processes. These potential influences include status characteristics (e.g., gender, SES, residential setting), developmental characteristics (e.g., age), relatively stable personality individual differences (e.g., sensation seeking, temperament, self-esteem, affective style), socialization influences (e.g., parents, peers, television, direct instruction by adults), as well as the sociocultural and historical context in which children assess environmental risk. The present study is designed to explore the relationship of several of these factors to children's cognitive appraisal of risk. Children's television viewing patterns, level of sensation seeking, past injury history, and demographic characteristics will be examined as possible predictors of risk appraisal.

Television and society

Television is an integral part of our society. Estimates indicate that 98% of American homes have at least

one television set (Condry, 1989). The typical American household has a television set turned on an average of seven hours daily. Individual family members watch television for approximately three hours daily. Television viewing begins during infancy and continues through adulthood, with children and the elderly watching the most (Morgan & Signorielli, 1990).

Television is an important source of information about life and the real world (Huston et al., 1992). However, content of television programs is not always an accurate reflection of the real world, and this may have implications for what individuals learn from television (Huston et al., 1992). In the following section, theoretical approaches to understanding the ways in which television influences the acquisition of various perceptions and behaviors will be presented.

Social learning theory

Social learning theory is the theoretical framework most often used to understand the effects of television upon viewers (Huston et al., 1992; Condry, 1989). According to social learning theorists, observational learning is the principal mechanism by which individuals acquire beliefs and behaviors from television (Bandura, 1963). Observational learning refers to people's ability to acquire knowledge and behaviors through the observation of models. Individuals are able to learn the utility of a behavior by observing the

consequences resulting from the actions of others.

Bandura (1986) proposes that four cognitive subprocesses are involved in observational learning: attention, retention, motoric abilities, and motivational processes. The observer must first attend to the model in order to learn the actions the model might employ. Retention processes refer to how well the observer is able to correctly discriminate the modeled stimuli and subsequently remember the model's actions. Motoric reproduction is the observer's ability to translate the acquired behavior into performance.

Motivation, the final cognitive subprocess is particularly relevant to the present study. Motivation refers to the reinforcement determinants of whether the observer will engage in modeled behavior (Bandura, 1965). In general, seeing behavior succeed for others increases the tendency to behave in similar ways, while seeing behavior punished decreases the tendency. More specifically, vicarious reinforcement occurs when observers increase behavior for which they have seen others reinforced. Conversely, in the process of vicarious punishment, observed negative consequences reduce the tendency to behave in ways similar to an observed model. Also, even previously punished behaviors will be imitated following observation of an unpunished model engaging in that behavior (Bandura, 1986).

The concept of observational learning has direct implications when considering the effects of television upon viewers behaviors and beliefs. Laboratory research has found that children who viewed film models reinforced for aggressive behavior were more inclined to exhibit aggressive behavior than children who viewed non-violent films (Bandura, 1963). Also significant in this study was the finding that even if they chose not to behave aggressively, children still learned aggressive responses as the result of observation of models. Thus, there is evidence that ideas and beliefs about how to behave in situations may be influenced by observational learning.

Observational learning is one mechanism by which children's appraisals of physical risk may be influenced by television. Potts and Henderson (1991) conducted a analysis of childrens' television programs to determine the incidence and characteristics of physical injuries in a broad sample of television programs. Results from a sample of 57 programs indicated that, on average, 15 injuries per hour occur, and that the majority of injuries are intentionally caused and most often result from impact with objects. Most pertinent to the present study was the finding that the majority of injuries (69%) resulted in only minor evidence of pain or impairment. According to social learning theory, those children who repeatedly observe risky behavior by television models, resulting in injuries with few if any

negative consequences, may develop a perception of diminished harm in various risky situations. They may engage in a greater number of risky behaviors, thus increasing the likelihood of injury.

Cultivation analysis

Researchers in the area of mass communication have developed another theoretical and methodological approach to assess the effects of television on viewers' beliefs, termed cultivation analysis. Traditional approaches to studying the effects of television have focused primarily upon individual programs or messages and their ability to produce immediate change in viewers. In contrast, cultivation analysis is concerned with the more general and pervasive consequences associated with long-term exposure to television (Morgan & Signorielli, 1990). It attempts to identify and assess the most pervasive patterns in television content that cut across many different types of television programs, and assess the cumulative effects of exposure to those messages. One of the primary theoretical assumptions underlying cultivation analysis is that, compared to those who watch less television, heavy television viewers are more likely to perceive the real world in ways that reflect the most common messages of the television world (Morgan & Signorielli, 1990).

Cultivation and risk appraisal

Although no studies have specifically examined the

relationship between television viewing and risk appraisal, there is evidence to indicate that cultivation may occur in children who repeatedly view shows containing risky content. Potts and Henderson's (1991) content analysis of children's programming showed that the majority of injuries on television resulted in minimal if any negative consequences. From the perspective of cultivation theory, the depictions of injury and risky behavior on television may come to be regarded by frequent viewers as valid representations of the "real world" of physical risk and injury. Children's beliefs about risky situations may be cultivated based upon the cumulative effect of exposure to television portrayals of such situations. Children who are heavy television viewers might acquire the belief that dangerous behavior results in minor negative consequences. These children may report lower risk appraisals than children who watch less television.

As mentioned, television represents one possible source of socialization which may influence children's risk appraisal. According to social learning theory, observation of television models engaging in risky behavior that results in few negative consequences may lead children to believe that similar situations in their own life have little physical risk. Likewise, according to cultivation theory, repeated viewing of dangerous situations on television resulting in little harm may contribute to children's

beliefs that the real world of risk is similar to that portrayed on television. These children, in turn may have lower appraisals of risk than children who watch less television.

Sensation seeking and risk appraisal

Socialization from television is one potential source of influence upon children's risk appraisal. Hyson and Bollin (1990) also theorize that relatively stable personality characteristics may impact risk appraisal. Sensation seeking (Zuckerman, 1979, 1994), defined as a need for novel, complex, and varied stimulation, is one such trait which may be related to risk appraisal. While it is well established that adult sensation seekers are likely to engage in various physically risky behaviors, such as participating in dangerous sports (Zuckerman, 1983) and driving too fast (Zuckerman & Neeb, 1980), little is known about the specific relationship between sensation seeking and risk appraisal. In perhaps the only studies to examine this relationship, Zuckerman (1979) and Horvath and Zuckerman (1993) found that risk appraisal and sensation seeking were significantly negatively correlated, indicating that adult sensation seekers are likely to appraise situations as less risky than sensation avoiders. The authors suggested that sensation seekers' lower risk appraisals may be due to the fact that they see themselves as having less of a possibility of negative outcome of the

risky activity. They also theorize that sensation seekers may value the rewards of risky behaviors more than non-sensation seekers, thus contributing to lower risk appraisals. Given evidence that sensation seeking has been found to be related to risk taking in children as well (Potts et al., 1995), it could be expected that sensation seeking children might also report lower risk appraisals than sensation avoiders.

Previous injuries and risk appraisal

Risk appraisal may be determined in part by the socializing effects of television and personality characteristics such as sensation seeking. However, experiential variables such as injury history and previous risk taking behavior may also play a role in shaping risk appraisal. Although no studies have specifically examined the relationship between past injuries and risk appraisal, Jaquess and Finney (1994) did investigate the relationship between past injury history and future injuries. Using a rather homogeneous sample of 50 children between the ages of 3 to 11, they evaluated the utility of parent-reported injury history in predicting the frequency of parent-reported injuries one year later. Findings revealed that past injury history was a strong predictor of subsequent injuries, suggesting that previously injured children may be at a significantly greater risk for later injuries.

Using a sample of 447 college students, Horvath and

Zuckerman (1993) examined the relationship between appraisals of risk in various situations (physical, criminal, financial, social violations, sports, and risk of contracting AIDS via sexual activity), and a history of having actually engaged in those behaviors. Similar to Jaquess and Finney (1994), they found that risk appraisal was negatively related to risky behavior in all areas except AIDS risk. These results support the possibility that the more risky a behavior is judged to be, the less likely someone is to have engaged in that behavior.

Given these findings that children's injury history has been associated with a greater likelihood of future injury, and that adult's risky behavior has been found to be negatively related to risk appraisals, it is likely that both injury history and risky behavior are predictive of risk appraisal. Children with a high rate of past injury, and those who have behaved in a risky manner, may consistently underestimate risk, in comparison to children with little history of injury or risk taking behavior.

Demographic variables and risk appraisal

In addition to the possible effects of socialization (via television), personality characteristics (such as sensation seeking), and injury history upon risk appraisal, various demographic characteristics of children may also be predictive of risk appraisal in some manner (Hyson & Bollin, 1990). Gender is one demographic variable likely to be

related to risk appraisal. Males and females in our society are socialized to have differing beliefs regarding the desirability of particular psychological characteristics and behaviors. Children are believed to develop well-defined conceptions of desirable "boy-traits" and "girl-traits" at a very early age (Jacklin, 1989). Characteristics such as a willingness to take risks, courage, aggression, and dominance, when presented on the Bem Sex-role Inventory, have been judged to be more desirable for males than females (Bem, 1981). Because males learn early on to value qualities such as risk taking and aggressiveness, they may report lower appraisals of risk than females.

Studies examining the relationship between risk taking or risk appraisal and gender have generally supported this possibility. In a study of children six to sixteen years of age, Slovic (1966) found that, beginning around the age of nine, boys begin to report a greater willingness than girls to take risks. Martin and Heimstra (1973) studied 1490 first, third, and fifth grade children's appraisals of risk in ten hazardous situations and found that females typically perceived more hazard than males in the ten stimulus scenes presented. Potts et al. (1995) also found gender differences on children's, parents, and teacher's ratings of children's risk taking behavior. Taken together, these results suggest that males and females may appraise risk differently, with males reporting less overall perception of

risk than females.

Socioeconomic status (SES) is a second demographic variable which may be related to risk appraisal. Matheny (1988) points out that, in general, research has not revealed a consistent relationship between SES and accident rates among children. However, it is intuitively reasonable to hypothesize a relationship between SES and risk appraisal. SES can be considered a global index of various life experiences. Based in part upon their socioeconomic status, children are likely to have systematically different experiences in a number of areas of their lives. Parents of children from lower SES families may be poorly informed about accident prevention and therefore may be less able than parents of middle SES children to educate their children about ways to avoid injury. Children from lower SES families may also live households and neighborhoods with conditions that are more hazardous than those children from middle SES families. Conditions such dim lighting, peeling paint, broken glass, inadequate storage of household chemicals, and poorly protected electrical outlets may all contribute to a greater chance of injury for lower SES children. Compared to middle SES children, lower SES children may also spend a greater amount of time away from adult supervision, more often finding themselves without the benefit of adult assistance when making decisions regarding risky behavior. These experiential variations between

children of different SES groups may be reflected in differing appraisals of physical risk, with lower SES children reporting generally lower risk appraisals than children from middle SES groups.

A final demographic factor that may be related to risk appraisal is chronological age. Studies of children's accident rates across various ages reveal a high level of accidents during the first two years, with a peak occurring between two and four years. Accident rates then decline until the mid-teens, at which time there is a second peak (Rivara, 1982; Langley, Dodge, & Silva, 1979). Matheny (1988) offers several reasons for this bimodal distribution: changes in risk exposure, changes in performance capabilities, and even changes in tissue resistance. In addition, cognitive abilities, patterns of emotional response, social competencies, language ability, and societal expectations all vary with age. These developmental changes may be accompanied by corresponding fluctuations in risk appraisal. Children may report high risk appraisals at ages of typically low accident rates, and low risk appraisals during high accident periods.

CHAPTER III

STATEMENT OF THE PROBLEM

As discussed previously, unintentional childhood injury is a significant problem in our society. Previous prevention strategies focusing upon elimination of environmental hazards as a means to reduce childhood injury rates have been successful, but are not applicable in all potentially injurious circumstances. As a result, theorists currently conceptualize injuries as resulting from an interaction between environmental and individual behavioral and psychological variables. Because this view holds the most promise for the conceptualization of future intervention strategies, it will be important to acquire knowledge concerning the possible relationship between psychological processes, as well as environmental factors, and childhood injury.

Risk appraisal is one cognitive process hypothesized to be related to childhood injury. Currently, however, very little is known about possible influences upon children's cognitive appraisals of physical risk. The purpose of the present study is to explore the relationship between children's appraisals of risk and several variables hypothesized to be related to risk appraisal. Specifically, the relationship between children's television viewing behavior, level of sensation seeking, previous injury

history, various demographic variables and general risk appraisal will be examined. General risk appraisal will be subdivided into three categories of physically risky situations. These categories include risks typically experienced by children, risks typically experienced by adults, and risks typically experienced only through television.

The following hypotheses will be made regarding the association between risk appraisal and the independent variables listed above. Based upon social learning principles and cultivation analysis, an inverse relationship is expected between overall risk appraisal and amount of television viewed. That is, the more television viewed (which typically depicts minor, if any, consequences of risk taking), the lower risk appraisals are expected to be. This relationship is expected to be strongest between risk appraisal and the television-specific risk scenarios.

Because previous findings reveal that injury history is predictive of current injury behavior (Jaquess & Finney, 1994), an inverse relationship between past injury history and risk appraisal is also hypothesized. Likewise, risky behavior is expected to be negatively related to risk appraisal.

Previous findings suggest that sensation seeking and risk appraisal are strongly negatively correlated in adults (Horvath & Zuckerman, 1993). Similar results are expected

in the child sample used here.

The demographic variables of gender, SES, and age will also be investigated for their possible relationship to risk appraisal. Evidence suggests that boys and lower SES children both have greater rates of injury (Matheny, 1988). It is therefore predicted that boys will report lower risk appraisals than girls, and that children from lower SES families will report lower risk appraisals than middle SES children. Although no specific hypotheses will be made, the relationship between age and risk appraisal will also be examined.

In addition to examining the relationship between the IV's and risk appraisal, all IV's will also be explored for their relative value in predicting the four categories of risk appraisal. Regarding general risk appraisal, it is possible that biologically determined traits are more fundamentally related to risk appraisal. Therefore it might be expected that sensation seeking and gender are better predictors of risk appraisal than experiential-based influences such as television viewing, SES, and injury history.

Three hypotheses will be made regarding the ability of the IV's to predict the three specific risk appraisal domains (child, adult, and television situations). First, it is hypothesized that television viewing will be the single strongest predictor of appraisals of the television

situations. Second, because older children are likely to have more knowledge or experience with adult behaviors, it is hypothesized that age will be the strongest IV in predicting risk appraisals of adult-oriented risk behaviors. Finally, injury history is expected to be the single strongest predictor of risk appraisals of the child-typical scenarios, due to the increased probability that this group of children will have direct, salient experience with these types of risks.

CHAPTER IV

METHOD

Subjects

Sixty-two children, 34 boys and 28 girls, participated in this study. The children, 28 second and 34 fourth graders, were recruited via parent consent letters from a public elementary school located in a midwestern town of approximately 6,000 residents. The 62 subjects represented 52.9% of the 117 children solicited for participation in the study. Ages of the children ranged from seven to ten years with a mean of 8.74. Complete socioeconomic status data was provided by 49 of the participants and was assessed using the Hollingshead Two Factor Index (Hollingshead, 1957). Scores ranged from 21.0 to 60.5 with a mean of 37.29, indicating that SES ranged from lower to upper class, with the average participant falling in the middle class. The majority of subjects in this sample were Caucasian (95.2%); of the remaining participants 3.2% were African American, and 1.6% were Hispanic.

Materials

Risk appraisal measure. Risk appraisal was assessed via a self-report measure consisting of fifteen drawings depicting figures engaging in risky behaviors. Children were asked to rate the likelihood that the figure in the picture would be injured as a result of engaging in the

behavior shown. Responses were recorded on a five point Likert scale ranging from 1 ("definitely will not get hurt") to 5 ("definitely will get hurt"). Research indicates that children of this age range have the ability to make probability estimates of the type described (Arcredolo, O'Conner, Banks, & Horobin, 1989).

In order to accurately assess possible relationships between various categories of experience and risk appraisal, three categories of risk taking pictures, each containing five depictions, were presented to subjects in a random order. The first category depicted risks commonly encountered by children (e.g., jumping out of a swing or swimming in a pool). The second risk category included common adult risks, ones with which children have little direct experience (e.g., welding metal or making repairs on a high roof). The third category of risks included those which are likely to be seen on television only, and are unlikely to be encountered in real life (e.g., jumping from the roof of one building onto another building or scuba diving).

To improve the validity of the three risk appraisal categories, items were selected in the following manner. A pool of 57 potential items representing a variety of physically risky situations was generated by the investigators. Approximately 60 undergraduate psychology students then classified each item as a risk most likely to

be encountered by children, by adults, or on television. From these results the five items with the highest agreement in classification in each category (child, adult, TV) were selected for inclusion in the risk appraisal measure. Care was also taken to insure that each category contained items representing a variety of different types of risks.

Direct Experience Scores. To assess past risky behavior, subjects were also asked to designate which if any of the 15 risky behaviors they had engaged in, and to indicate on a 3-point scale (1 = never, 2 = once, 3 = more than once) the frequency with which they had engaged in those behaviors. Direct experience scores were then created taking the means of the items in each risk domain.

Television viewing questionnaire. Children's home viewing was assessed using a self-report questionnaire based upon procedures used by Ross, Wartella, and Lovelace (1982), Tangney (1988), and Potts and Martinez (1994). In those studies, children were provided with television program titles and asked whether or not they had watched them in the previous week. Those studies found that children were quite competent in reporting their own viewership. In general, researchers of audience viewership behavior agree that accuracy of self-reported viewing patterns is facilitated when the respondent is given specific cues for the target behaviors (Webster & Wakshlag, 1985). For example, asking the respondents whether they watched the national news last

Friday provides more accurate measure than asking the respondent "What did you watch last Friday?" However, some research indicates that too much specificity may have drawbacks as well. Research on memory development indicates that young children have difficulty recalling specific events (Mandler, 1984; Nelson, 1983), such as viewing a particular television program on a specific day. For this reason the present study employed a measure to assess children's recurring or routinized viewing habits, rather than specific viewing occurrences. It was reasoned that children are better be able to report that they watch a particular weekly television series often, sometimes, or never, than to report that they viewed a specific episode of that program on a specific day of the preceding week.

Children were presented with titles of television programs and asked to indicate their general viewing frequency for each program using a schematic 3-point response scale accompanied by the labels "almost never", "sometimes", and "almost always". Thirty-five television programs were selected from two weekday afternoons, two weekday evening broadcasts, and Saturday morning. The titles in the list represent a variety of program categories utilizing a program categorization scheme developed by the Center for Research on the Influences of Television on Children (1983).

Sensation seeking. This scale was derived from two

sources: (a) Zuckerman's Sensation Seeking Scale for adults, Form V, Thrill and Adventure Seeking subscale (Zuckerman, 1979) and (b) modifications of the adult scales for use with child populations (e.g., Russo et al., 1991). Ten pairs of 14 X 22 cm pictures were presented to subjects in a random order. Children were to choose the item in each pair which they preferred. Each pair of items consists of a sensation-seeking item (scored as 1) and a sensation avoiding item (scored as 0), the order of which will be varied from item to item. The total sensation seeking score is the sum of all the item choices, and ranges from 0 to 10. The ten item pairs, with the sensation seeking alternative presented first include: (a) climbing high in a tree versus building a clubhouse beneath a tree, (b) sledding down a hill versus building a snowman, (c) doing tricks on a bicycle versus riding to see sights in the neighborhood, (d) working as an airplane pilot versus working in an office setting, (e) riding an amusement park roller coaster that turns upside down versus a train that travels around an amusement park, (f) working as an ambulance driver versus a doctor in an office, (g) running past a mean dog versus crossing the street to avoid the dog, (h) playing a competitive game with only one winner versus a game where everyone received a prize, (i) being pulled behind a motorboat on a raft versus floating on a raft near the shore, and (j) watching a scary monster movie on television versus a funny cartoon.

Injury Behavior Checklist. Parents of participants completed the Injury Behavior Checklist (IBC; Speltz et al., 1990), which consists of 24 items that represent potentially injurious behaviors (e.g., "climbs on top of furniture," "leaves the yard without permission," and "takes chances on playground equipment"). Parents rated the frequency of these behaviors on a five point scale ranging from "not at all" (0) to "very often (more than once a week" (4). The 24 items are summed to obtain a total score ranging from 0 to 96. This measure is included as an index of children's typical level of risky behavior.

Injury frequency history. Parents also completed a child injury history questionnaire which assess frequencies of injuries experienced by their child, including broken bones, muscle strains, serious cuts, concussions, burns, poisoning, animal bite, insect sting/bite, water inhalation, shock, and other (miscellaneous). This questionnaire also includes demographic items regarding family size, parental marital status and socioeconomic status as measured by Hollingshead's (1957) Two Factor Index of Social Position.

Procedure

Each child participated in a structured interview session lasting approximately 30 minutes in the school setting during normal school hours. The procedure took place in an unused classroom. Children were read an introductory script to acquaint them with the interviewer

and the interview. An adult experimenter then administered to each child the measures described previously: the risk appraisal measure, the television viewing questionnaire, and the sensation seeking measure. The order of administration will be varied randomly from subject to subject. Upon completion of the interview session, subjects were read a debriefing emphasizing safety awareness.

CHAPTER VI

RESULTS

Descriptive results of all measures are presented in Tables 1-4. Means and standard deviations of measures collapsed across grade and gender are: sensation seeking ($M=3.81$, $SD=2.49$), total IBC scores ($M=17.50$, $SD=12.10$), injury history ($M=1.45$, $SD=1.48$), and Hollingshead SES ($M=37.29$, $SD=9.69$). Tests for gender differences on the independent variables showed that boys report significantly higher sensation seeking than girls $F(1,60)=4.73$, $p<.03$. The overall pattern of means and gender differences found here is consistent with previous research examining children's injury behaviors and sensation seeking (Potts et al., 1995; Matheny, 1988).

In addition, a summary risk appraisal score for each domain (child, adult, and TV) was created by summing the scores for each of the 5 items within the domain and dividing by 5. The mean risk appraisal scores were: child risk appraisals $M=3.17$ ($SD=.71$); adult risk appraisals $M=3.00$ ($SD=.65$), TV risk appraisals $M=3.85$ ($SD=.50$).

After making these risk appraisals, children were asked to indicate how often they had performed the behaviors represented in the risk appraisal situations. From these reports direct experience scores, reflecting children's level of past participation in each of the risky situations,

were created by computing the mean of the five items in each domain. These results are presented in Tables 5 and 6. Most children reported participating in the child behaviors at least once. Few children reported participation in the adult behaviors, and none had any direct experience with the TV situations.

Risk appraisal domains

To compare risk appraisal scores across the three risk domains, a 3 (risk domain) X 2 (sex) X 2 (grade) repeated measures analysis of variance was conducted, with risk appraisal in the three domains serving as the dependent variable. Only risk domain was a significant factor, $F(1,115)=40.51$, $p<.001$; no other factor or interaction of factors was significant (all $ps >.10$). Follow-up analyses using simple effects comparisons indicated that subjects appraised the TV situations as more risky than either the child situations, $t(115)=7.37$, $p<.001$, or the adult situations, $t(115)=-9.67$, $p<.001$. No significant difference was found between the risk appraisals of the child and adult situations.

Scores on the three domains of risk appraisal were only moderately interrelated. The TV and adult situations were modestly correlated, $r(62)=.26$, $p<.02$, as were the TV and child situations $r(62)=.20$, $p<.05$; the child and adult situations were not related. These results, together with the risk domains means comparisons, indicate that, in

general, subjects differentiated between the child, adult, and television risk appraisal domains, and did not judge them in a similar way.

Initially, hypotheses were made regarding the relationship between the independent variables and a total risk appraisal score to be obtained by summing across the three risk appraisal categories. However, because risk appraisal was found to be relatively domain-specific, subsequent analyses were done which focused upon predictors of each risk appraisal domain.

Predictors of risk appraisal

To examine individual subject variables as predictors of risk appraisal, three regression analyses were conducted with the child, adult, and TV risk appraisal scores serving as the dependent variables. Child gender, age, sensation seeking, injury history, IBC score, direct experience scores, and the home television viewing categories of sports, news, action programs, and cartoons served as predictor variables. Preliminary correlational analyses revealed no significant relationship between the Hollingshead SES measure and any of the risk appraisal domains; this variable was not included in subsequent analyses.

The order of entry of independent variables into the regression equations were guided by Hyson and Bollin's (1990) theoretical categories of risk taking predictors. It

was reasoned that biologically-derived variables such as sex, age, and sensation seeking were likely to be related most fundamentally to risk appraisal. Therefore these variables were entered first, followed by those representing direct experience with physical risk-taking (injury history, IBC score, and direct experience scores); lastly the television viewing variables were entered, which reflect indirect exposure or vicarious experience with risk-taking. Presented in Tables 7-9 are the results of the three regression analyses.

For the measure of risk appraisal of child situations, direct experience was the single significant predictor, indicating that the more of the child risk behaviors subjects had directly experienced, the lower their risk appraisals were of those situations.

For the measure of adult risk situations, age was the single significant predictor. Older subjects tended to appraise these situations as less risky than younger subjects.

For the measure of TV risk situations, sensation seeking, injury history, and weekday cartoon viewing were significant predictors, all in a negative direction. This indicated that high sensation seeking was associated with lower risk appraisals, more frequent injuries were associated with lower risk appraisals, and frequent weekday cartoon viewing was associated with lower risk appraisals.

CHAPTER VI

DISCUSSION

Overall, many of the individual variables measured were related to children's risk appraisal. However, a significant qualifier of these findings is that children tended to appraise risk in the child, adult, and television situations differently. The modest correlations among scores in the three situational domains suggest that risk appraisal may be relatively domain-specific, rather than a single, unidimensional process. This finding is unique because risk appraisal has typically been conceptualized as a global construct (Hyson & Bollin, 1990).

In general, television situations were seen as being significantly more likely to result in physical injury than either child or adult situations. This finding is not surprising given that children's only experience with these situations was indirect, through observation of others; no subjects had any prior direct experience with any of the television situations. Appraisals of the adult and child situations were not significantly different from each other. Interestingly, however, three of the five child items were rated as being riskier than any of the adult items. Many of the adult items used here depicted common adult occupations such as welding, fixing a car, and repairing a roof. Children's appraisals of these activities as being only

moderately risky may result from their recognition that such behaviors are highly routinized and are commonly performed by skilled individuals; such skill at performing the behavior would presumably minimize risk of injury. In contrast, the child situations used here (e.g., jumping out of a swing, chasing a ball into the street, setting off fireworks) are performed relatively less frequently than occupational behaviors of adults. These behaviors are not necessarily enacted in a routinized manner in children's experience. This may explain children's somewhat higher appraisals of risk for these items.

Evidence that risk appraisal is domain-specific, rather than a single global construct, is consistent with a social learning theory interpretation of experience-based knowledge. According to social learning theory, knowledge about behaviors and their consequences is learned in a situation-specific manner (Bandura, 1986). Here, children may have acquired knowledge, including risk judgements, from past experiences that were similar to situations targeted in this study. This knowledge may in turn have influenced subjects' risk appraisals.

Because of the apparent multidimensionality of risk appraisal, hypotheses concerning the relationship between the independent variables and risk appraisal must therefore be considered in relation to all three risk domains, i.e., child, adult, and television, rather than a measure of

overall risk appraisal as originally intended.

Initially it was predicted that frequent television viewing would be negatively related to risk appraisal, and that the television viewing variables would be the strongest predictors of the television situation risk appraisals. Results here indicated that viewing of weekday cartoons was one variable significantly related to appraisal of the television items. Children who viewed more weekday cartoons tended to report lower appraisals of the typical TV situations than children who rarely viewed such programs. This finding makes sense in light of TV content analyses (Potts & Henderson, 1991) showing that television produced for child audiences typically depicts minor, if any, consequences of injury-relevant behaviors. Through social learning and cultivation processes (Bandura, 1986; Signorielli & Morgan, 1990) children who frequently view cartoons, which portray few lasting consequences of injury behaviors, are likely to internalize such beliefs, and therefore report lower risk appraisals of similar situations. However, these influences do not generalize to more mundane everyday situations.

It was also hypothesized that children's injury history would be negatively related to risk appraisal, as well as the strongest predictor of appraisals of the child situations. Results showed that injury history was predictive of risk appraisal, but only of the television

situations. Children with extensive injury histories reported lower risk appraisals than children with few past injuries. One interpretation of this pattern is that having been injured may alter some children's cognitions in such a way that they become desensitized to the risks involved in some future behaviors. It has also been posited (Matheny, 1988) that high-injury children may have an attentional bias which leads them to be less perceptive of cues to environmental dangers. Thus, because they are less likely to attend to dangerous environmental stimuli these children may be at greater risk to engage in future injury-related behaviors. Additionally, this attentional bias in their appraisals may appear only for situations with which they have had little or no direct experience, as in the TV situations.

Contrary to predictions, the Injury Behavior Checklist was not significantly related to risk appraisal in any domain. This finding was unexpected, given previous findings that the IBC was significantly related to other risk-taking measures (Potts et al., 1995). On the other hand, in this study subjects' reports of prior participation in the child risk situations was found to negatively predict appraisals of those same situations. This result is consistent with Horvath and Zuckerman's (1993) findings that low risk appraisal and risk taking are negatively related, and that risk appraisal appears to be a consequence rather

than a cause of risky behavior. Evidence suggests that successful performance of a risky behavior without being injured may lead to lower risk appraisals of similar situations in the future. This may account for the lack of correlation between the IBC and risk appraisal.

As predicted, sensation seeking was found to significantly predict risk appraisal, but only in the television domain. With increases in sensation seeking children tended to view the TV situations as being less risky. These results are also consistent with those of Horvath and Zuckerman (1993), who found that sensation seeking was negatively related to risk appraisal in adults. This finding may reflect an "optimistic bias" (Weinstein, 1980) on the part of sensation seekers. That is, high sensation seekers may perceive themselves as being less at risk and having less possibility of a negative outcomes of risky activities than those low in sensation seeking. It is also possible that high sensation seekers place such high value in the reward effects from risk-taking that they minimize the dangers involved in those behaviors. Therefore, compared to those lower in sensation seeking, high sensation seekers may judge situations as less risky. Finally, this finding is also consistent with the notion that personality traits, such as sensation seeking, may often be associated with a particular cognitive style, in this case low risk appraisal.

Examination of demographic variables showed that age was significantly related to risk appraisal of the adult situations, in a negative direction. It can be speculated that the increases in children's world knowledge that come with age result in lower risk appraisals, particularly of the adult situations. As children age they become more familiar with the adult occupational world. With this increased familiarity children may come to realize that even risky adult occupations are commonly performed with relatively low injury rates. Older children may therefore have lower estimations of risk in such situations.

The present study found no evidence of a relationship between socioeconomic status and risk appraisal. This result is similar to past research which failed to demonstrate a significant relationship between SES and overall injury incidence (Langley, Silva, & Williams, 1983; Matheny, 1980). It is possible that, despite differences in environmental risk conditions, children of various socioeconomic statuses acquire many similar experiences with regard to judgments of physical risks.

An additional point of interest in the present study was the finding that gender was not strongly related to risk appraisal. This lack of gender differences in risk appraisal is particularly interesting because previous research (Kafry, 1982; Matheny, 1991; Zuckerman, 1979) has consistently shown that boys display higher levels of risk-

taking and receive more injuries than girls. This inconsistency between past and present findings may call into question the assumption that lower risk appraisals lead to greater risk-taking behavior. It could be that boys and girls are similar in their estimations of risky situations, but due to differences in socialization vary in their willingness to engage in risky behaviors.

To summarize, findings from the present study suggest the possibility that risk appraisal is a multidimensional construct. Here, children tended to judge typical child, adult, and TV risk situations differently. Risk appraisal in each of these three risk domains was found to be related to certain independent variables in ways consistent with past research findings and predictions generated for this study. For the child domain direct experience was found to be the strongest predictor of risk appraisal. Children with direct experience with those behaviors tended to have lower risk appraisals of them. Adult risk situations were most strongly related to age, with older children reporting lower risk appraisals. In contrast to the child and adult domains which had only one strong predictor, the television domain was strongly related to three independent variables. Sensation seeking, injury history, and weekday cartoons all predicted TV risk appraisals in a negative direction. The increased number of predictors for the TV domain might be explained in part by the fact that children had no direct

experience with any of these situations. This lack of direct experience may allow more opportunity for risk appraisal to be affected by other indirect sources. Additionally, the TV items depicted much more extreme risk situations, which perhaps also allowed for a greater number of influences.

Several factors which limit the present study could be addressed in future research. First, children here responded to artificial pictorial risk situations. This data does not permit definitive conclusions about subjects' evaluations of risk when faced with real-life risk situations. Laboratory procedures to assess of actual risk situations have been devised (Cataldo, 1991), and could possibly be adapted for use in future studies of risk appraisal. Second, risk domains in this study were created a priori and included a total of only 15 items. Future research using a larger pool of risk situations grouped empirically might yield more accurate assessments of risk domains. Finally, this study focused upon risk appraisal, a cognitive process which has yet to be linked directly with risk behaviors. In the future, prospective research examining the relationship between risk appraisal and actual risk behavior is needed.

Despite these limitations the present study does shed light upon some of the factors influencing children's interpretations of potential hazards in unsupervised

settings. In general, these results generally support Hyson and Bollin's (1990) framework for conceptualizing possible influences upon risk appraisal. Consistent with this framework, these results suggest that a variety of factors (developmental, personality, and social) may influence children's risk appraisals. The present study also expands Hyson and Bollin's framework, suggesting that risk appraisal might best be conceptualized as a domain-specific rather than a global construct. Further, each domain of risk appraisal may be influenced by different factors or combinations of factors.

This study has important social implications for knowledge about the origins of unintentional injury. When confronted with physical risks children are often alone in deciding whether to engage in risky behaviors. Children's judgements of the risks involved in such situations may influence their decisions whether to engage in the self-regulatory behaviors necessary to avoid injury. Thus, knowledge regarding the determinants of risk appraisal can be helpful in identifying those children most at risk for physical harm because of distorted appraisals of environmental risks.

Interventions designed to improve children's appraisals of physical risks may be helpful in reducing unintentional injury. These interventions could target children's risk appraisals directly or through parent training. In related

areas, cognitive interventions have been implemented directly with children to help them improve self-control behaviors such as the delay of gratification (Mischel, Ebbesen, & Zeiss, 1972). Similarly, interventions aimed at improving cognitive appraisals of risk may help children exercise self-control in the face of danger, thus increasing their safety in unsupervised settings. Additionally parent interventions may prove beneficial in helping children develop safety-oriented risk appraisals. Parent training programs (Forehand & McMahon, 1981; Phelan, 1995) have been used successfully to ameliorate a number of childhood behavior problems. Likewise, cognitive-behavioral parenting strategies could be developed to assist parents in teaching their children to make accurate risk appraisals and to translate those appraisals into effective coping behaviors.

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Table 1

Means and Standard Deviations of Independent Variables

	Males		Females	
	2nd	4th	2nd	4th
	(n=17)	(n=17)	(n=11)	(n=17)
Sensation Seeking^a				
<u>M</u>	5.53*	3.29	3.64	2.71
<u>SD</u>	2.48	2.47	2.29	1.83
IBC^b				
<u>M</u>	21.24	17.24	17.64	13.94
<u>SD</u>	16.32	10.95	11.66	7.68
Injury History^c				
<u>M</u>	1.47	1.35	0.82	1.94
<u>SD</u>	1.74	1.27	0.75	1.68
Weekday Cartoons^d				
<u>M</u>	1.10	0.86	0.67	0.57
<u>SD</u>	0.57	0.49	0.49	0.39
Weekend Cartoons^d				
<u>M</u>	0.88	0.76	0.95	0.90
<u>SD</u>	0.49	0.40	0.50	0.44

(table continues)

	Males		Females	
	2nd	4th	2nd	4th
	(<u>n</u> =17)	(<u>n</u> =17)	(<u>n</u> =11)	(<u>n</u> =17)
Sports Programs^d				
<u>M</u>	1.24	1.18	0.68	1.00
<u>SD</u>	0.69	0.56	0.40	0.47
News Programs^d				
<u>M</u>	0.38	0.65	0.77	0.71
<u>SD</u>	0.37	0.52	0.52	0.47

Note. ^aSensation seeking range = 0-9; ^bIBC range = 1-64; ^cInjury History Range = 0-7; ^dTelevision viewing categories range = 0-2. *Represents a significant gender difference, $p < .05$.

Table 2

Means and Standard Deviations of Child Risk Appraisal Items

	Males		Females	
	2nd	4th	2nd	4th
	(n=17)	(n=17)	(n=11)	(n=17)
Chasing a Ball				
<u>M</u>	4.12	3.12	3.64	3.41
<u>SD</u>	1.01	0.99	1.43	1.06
Jumping from Swing				
<u>M</u>	3.88	3.29	3.45	3.71
<u>SD</u>	1.27	0.92	1.13	1.16
Shooting a Slingshot				
<u>M</u>	2.18	2.71	2.36	2.59
<u>SD</u>	1.38	1.21	1.63	1.06
Playing with Fireworks				
<u>M</u>	3.59	3.65	3.91	3.47
<u>SD</u>	1.50	0.86	1.30	1.18
Swimming				
<u>M</u>	3.00	2.35	2.18	2.64
<u>SD</u>	1.41	1.00	1.47	0.86

Note. Range = 0-5. Higher scores indicate higher risk appraisal.

Table 3

Means and Standard Deviations of Adult Risk Appraisal Items

	Males		Females	
	2nd	4th	2nd	4th
	(<u>n</u> =17)	(<u>n</u> =17)	(<u>n</u> =11)	(<u>n</u> =17)
Fixing a Car				
<u>M</u>	3.35	0.47	2.45	2.47
<u>SD</u>	1.54	0.87	0.82	1.18
Repairing a Roof				
<u>M</u>	3.29	2.65	2.82	2.76
<u>SD</u>	1.31	0.70	0.98	0.90
Welding				
<u>M</u>	3.00	2.82	3.27	2.59
<u>SD</u>	1.17	1.13	1.49	0.80
Using a Chainsaw				
<u>M</u>	3.00	2.88	3.18	3.06
<u>SD</u>	1.22	0.86	1.47	0.66
Sharpening an Axe				
<u>M</u>	3.29	3.53	4.00	3.41
<u>SD</u>	1.31	0.87	0.89	0.80

Note. Higher scores indicate higher risk appraisal.

Table 4

Means and Standard Deviations of Television Risk Appraisal Items

	Males		Females	
	2nd	4th	2nd	4th
	(n=17)	(n=17)	(n=11)	(n=17)
Swinging Over Fire Pit				
<u>M</u>	4.71	4.88	4.91	4.65
<u>SD</u>	0.99	0.33	0.30	0.61
Sword Swallowing				
<u>M</u>	4.59	3.65	4.09	4.12
<u>SD</u>	0.87	1.22	1.45	1.11
Being in a Shark Cage				
<u>M</u>	2.65	3.47	4.36	3.47
<u>SD</u>	1.62	1.01	0.92	1.33
Scuba Diving				
<u>M</u>	2.12	2.35	2.45	2.41
<u>SD</u>	1.22	0.93	1.51	1.00
Jumping from One Building to Another				
<u>M</u>	4.41	4.59	5.00	4.76
<u>SD</u>	1.37	0.87	0.00	0.56

Note. Higher scores indicate higher risk appraisal.

Table 5

Means and Standard Deviations of Children's Direct Experience with Child Risk Appraisal Situations

	Males		Females	
	2nd	4th	2nd	4th
	(n=17)	(n=17)	(n=11)	(n=17)
Chasing a Ball				
<u>M</u>	0.71	1.06	0.45	0.88
<u>SD</u>	0.77	0.87	0.52	0.78
Jumping from Swing				
<u>M</u>	1.53	1.12	1.10	1.12
<u>SD</u>	0.62	0.78	0.70	0.70
Shooting a Slingshot				
<u>M</u>	0.65	0.94	0.45	0.47
<u>SD</u>	0.86	0.75	0.82	0.72
Playing with Fireworks				
<u>M</u>	1.00	1.24	0.73	0.94
<u>SD</u>	0.87	0.75	1.01	0.75
Swimming				
<u>M</u>	1.24	1.59	1.64	1.35
<u>SD</u>	0.83	0.71	0.50	0.76

Note. For behavior frequency scores: 0 = never, 1 = once, 2 = more than once.

Table 6

Means and Standard Deviations of Children's Direct Experience
with Adult Risk Appraisal Situations

	Males		Females	
	2nd (<u>n</u> =17)	4th (<u>n</u> =17)	2nd (<u>n</u> =11)	4th (<u>n</u> =17)
Fixing a Car				
<u>M</u>	0.18	0.18	0.00	0.12
<u>SD</u>	0.53	0.39	0.00	0.49
Repairing a Roof				
<u>M</u>	0.35	0.18	0.00	0.18
<u>SD</u>	0.61	0.39	0.00	0.39
Welding				
<u>M</u>	0.00	0.18	0.00	0.00
<u>SD</u>	0.00	0.39	0.00	0.00
Using a Chainsaw				
<u>M</u>	0.00	0.06	0.00	0.00
<u>SD</u>	0.00	0.24	0.00	0.00

Note. For behavior frequency scores: 0 = never, 1 = once, 2 = more than once. No children reported direct experience with any of the TV situations.

Table 7

Summary of Hierarchical Regression Results for Child Risk Appraisals

Predictor	Entry Level ^a	Beta	p
Age	1	-.076	ns
Sensation seeking	1	.063	ns
Sex	1	.105	ns
IBC	2	-.075	ns
Injury history	2	-.068	ns
Direct experience	2	-.316	.012
Action programs	3	.124	ns
News programs	3	-.094	ns
Sports programs	3	.227	ns
Weekday cartoons	3	.186	ns
Weekend cartoons	3	.091	ns

Equation $R^2=.10$; $F(11,49)=6.66$, $p<.01$.

Note. ^aPredictors within each level entered in a stepwise fashion.

Table 8

Summary of Hierarchical Regression Results for Adult Risk Appraisals

Predictor	Entry Level ^a	Beta	p
Age	1	-.290	.022
Sensation seeking	1	.132	ns
Sex	1	.034	ns
IBC	2	-.132	ns
Injury history	2	-.134	ns
Direct experience	2	.081	ns
Action programs	3	-.024	ns
News programs	3	-.042	ns
Sports programs	3	.050	ns
Weekday cartoons	3	-.175	ns
Weekend cartoons	3	.039	ns

Equation $R^2=.08$; $F(11,49)=5.50$, $p<.02$.

Note. ^aPredictors within each level entered in a stepwise fashion.

Table 9

Summary of Hierarchical Regression Results for Television Risk Appraisals

Predictor	Entry Level ^a	Beta	p
Age	1	-.192	ns
Sensation seeking	1	-.312	.009
Sex	1	-.094	ns
Direct experience	2	-.176	ns
IBC	2	-.094	ns
Injury history	2	-.300	.009
Action programs	3	.034	ns
News programs	3	.045	ns
Sports programs	3	-.073	ns
Weekday cartoons	3	-.280	.017
Weekend cartoons	3	-.034	ns

Equation $R^2=.12$; $F(11,49)=8.05$, $p<.005$.

Note. ^aPredictors within each level entered in a stepwise fashion.

Appendix A: Parent Letter

Dear Parent,

The Perry Elementary School is participating in a research project being conducted by Dr. Richard Potts, Associate Professor, and David DiLillo, doctoral candidate, of the Department of Psychology at OSU. The study concerns how children's judgments of physical risk are influenced by personality and behavior characteristics. This study is one of several being conducted by Dr. Potts on psychological and behavioral processes involved in childhood injuries and safety. A better understanding of factors that influence children's judgments of physical risk will be of great use in developing injury prevention programs. We would like for your child to participate in this study.

In this study, children will be interviewed individually at school by an adult research assistant. To measure children's judgments about physical risk, several drawings will be presented which depict risky situations, such as a person jumping from a height, or doing tricks on a bicycle. Children will be asked to indicate the likelihood that the person would be injured doing those activities. Children's motivations to take risks themselves will be measured by presenting them with pictures of different activities, such as riding a roller coaster or climbing a tall tree, and they will indicate which of the activities they would like to do. Children's television viewing will be measured by asking them how often they watch each of several TV programs from a list. Finally, we are asking you to take about five minutes to complete a questionnaire about your child's risky behavior at home, any injuries he or she may have experienced, and some brief characteristics about your household. At the end of the interview, children will be given instructions about risk taking and the importance of following safety rules.

With parents' permission, children will be asked if they would like to participate in the interview, and will do so only if they choose. They can end the interview session at any time and for any reason. The single session will last for about 20 minutes and will not interfere with important school events. Our experience over the years has shown that children find these activities quite enjoyable. Children's interview statements and your questionnaire answers will be completely confidential and will be seen only by the researchers directly involved in the project. Results will be computed in group statistical terms, and not on an individual basis. When the analyses are completed, we will be happy to report the findings of the study and their significance to our understanding of children's safety behavior. We hope that you will let your child participate. If so, please complete the attached form and return them to his/her teacher. You may keep this page for your own information. If you have any questions, please contact us at 744-6027. You may also contact Ms. Jennifer Moore, University Research Services, 001 Life Sciences East, OSU, Stillwater, OK 74078, telephone 744-5700.

Sincerely,

Richard Potts, Ph.D.
Associate Professor of Psychology

David DiLillo, M.S.
Doctoral Candidate

Appendix B: Consent Form

Please keep the first page for your own information. Return this page together with the attached questionnaire.

(your child's first and last name)

has my permission to participate in the study being conducted by Dr. Richard Potts and David DiLillo of OSU concerning children's judgments of risk taking.

(your name)

(date)

PLEASE FILL OUT THE QUESTIONNAIRE ON THE FOLLOWING TWO PAGES.

THESE FORMS SHOULD TAKE ONLY ABOUT 5 MINUTES TO COMPLETE.

ALL INFORMATION THAT YOU PROVIDE WILL BE KEPT COMPLETELY CONFIDENTIAL. PLACE THE COMPLETED FORMS ALONG WITH THIS PAGE IN THE ENVELOPE PROVIDED AND HAVE YOUR CHILD RETURN IT TO HIS/HER TEACHER.

YOUR PARTICIPATION AND EFFORT ARE GREATLY APPRECIATED!

Appendix C: Injury Behavior Checklist

Dear Parent: Please provide the following information concerning behaviors your child may sometimes show. Be assured that all of the information that you provide will be confidential and seen only by the researchers involved in this study.

Use the 0-1-2-3-4 scale to indicate how often your child may show the behaviors listed. Circle the appropriate number for each of the 24 items.

	not at all	very seldom (1 or 2 times in all)	some- times (about once/ month)	pretty often (once/ week)	very often (more than once/ week)
1. Runs out into the street	0	1	2	3	4
2. Jumps off furniture or other structures	0	1	2	3	4
3. Jumps down stairs	0	1	2	3	4
4. Rides bike in unsafe areas	0	1	2	3	4
5. Runs or bumps into things	0	1	2	3	4
6. Falls down	0	1	2	3	4
7. Plays with fire	0	1	2	3	4
8. Puts fingers or objects near appliances or outlets	0	1	2	3	4
9. Leaves the house without permission	0	1	2	3	4
10. Refuses to use car seat (or belt) or to stay seated in car	0	1	2	3	4
11. Plays with sharp objects	0	1	2	3	4
12. Pulls/pushes over furniture or heavy objects	0	1	2	3	4
13. Falls out window or down stairs	0	1	2	3	4
14. Puts objects or nonfood items in mouth	0	1	2	3	4
15. Gets scratches, scrapes, bruises during play	0	1	2	3	4
16. "Takes chances" on playground equipment	0	1	2	3	4
17. Tries to climb on top of furniture or cabinets	0	1	2	3	4
18. Stands on chairs	0	1	2	3	4
19. Explores places that are off limits	0	1	2	3	4
20. Gets into dangerous substances	0	1	2	3	4
21. Plays carelessly or recklessly	0	1	2	3	4
22. Comes into contact with hot objects	0	1	2	3	4
23. Behaves carelessly in or around water hazards	0	1	2	3	4
24. Teases and/or approaches unfamiliar animals	0	1	2	3	4

Appendix D: Injury History Questionnaire

In the next section we are interested in the types of injuries that your child may have experienced.

Please complete the chart below. Simply indicate which, if any, of the listed injuries your child has received in his/her lifetime, and if so, how many times it has occurred.

type of injury	how many times has it occurred?	how many occurrences needed treatment by a doctor?
broken bones	_____	_____
muscle strain/sprain	_____	_____
serious cut	_____	_____
concussion	_____	_____
burns (fire or chemical)	_____	_____
poisoning	_____	_____
animal bite	_____	_____
water inhalation	_____	_____
electric shock	_____	_____
other (explain)	_____	_____

Finally, we would like for you to provide some information about your household which may also be relevant to children's judgements of risk, safety, and injury:

Is your a two-parent household? ___

What level of education did you complete? some high school ___
 high school diploma ___ some college ___ college degree ___

What is your occupation? _____

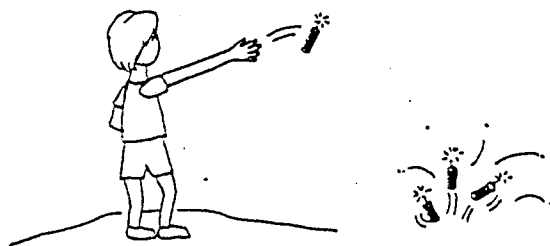
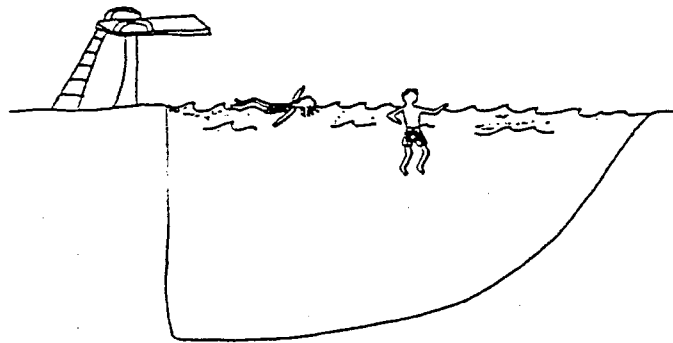
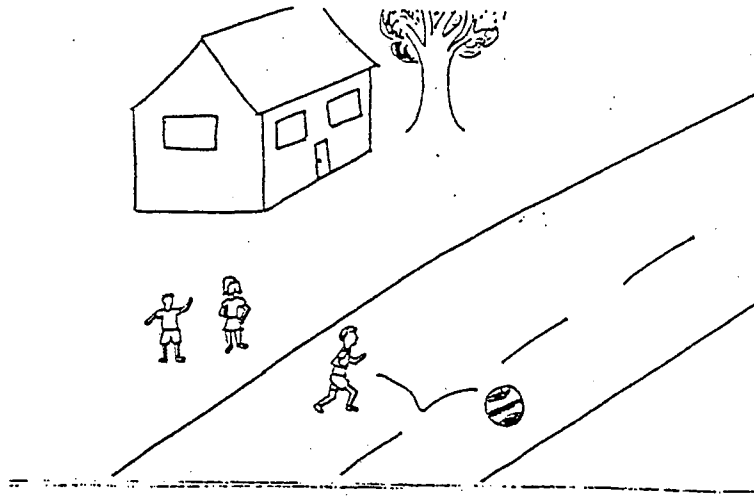
If married, what level of education did your spouse complete?
 some high school ___ high school diploma ___ some college ___
 college degree ___

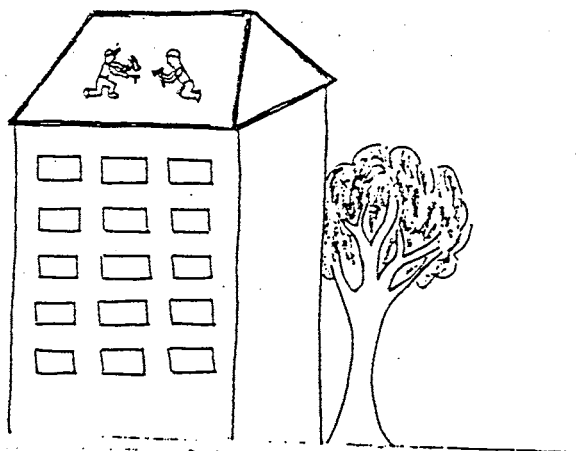
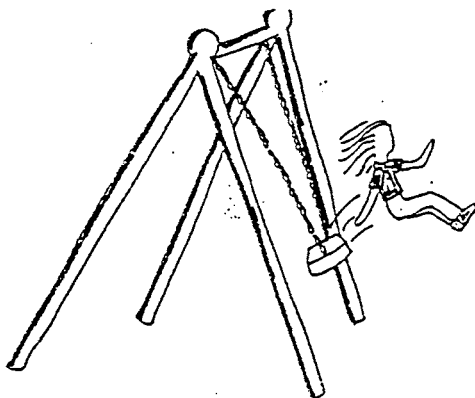
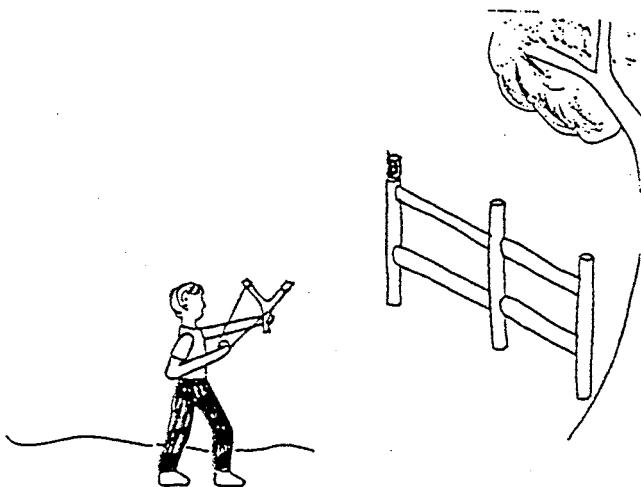
What is your spouse's occupation? _____

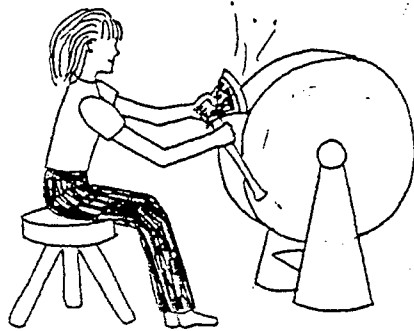
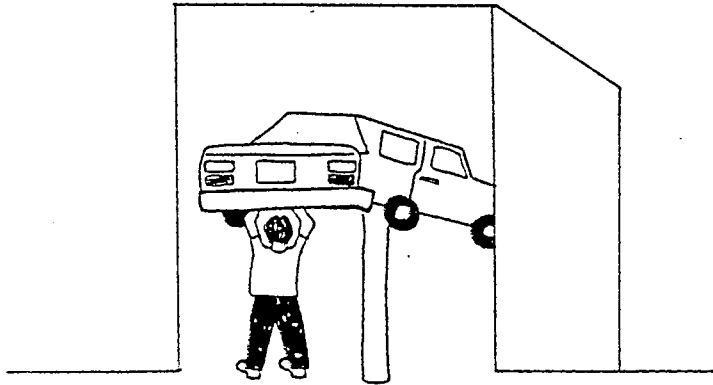
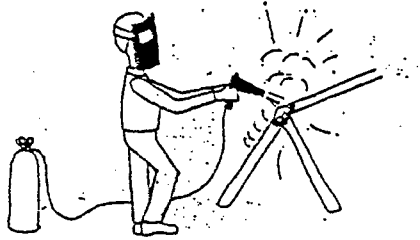
How many brothers/sisters does your child have? ___ older ones? ___

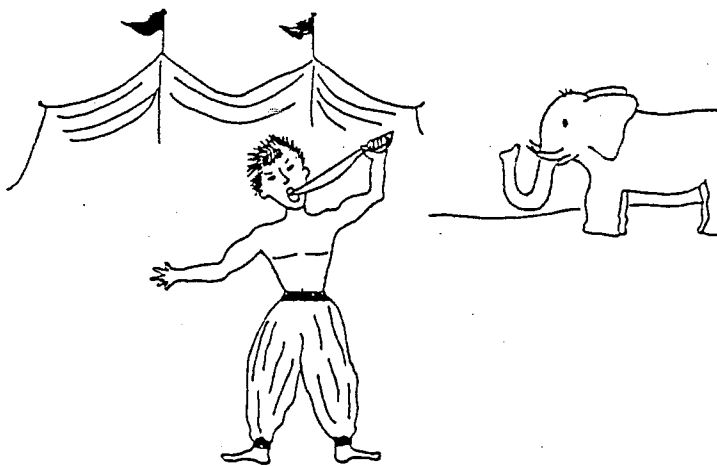
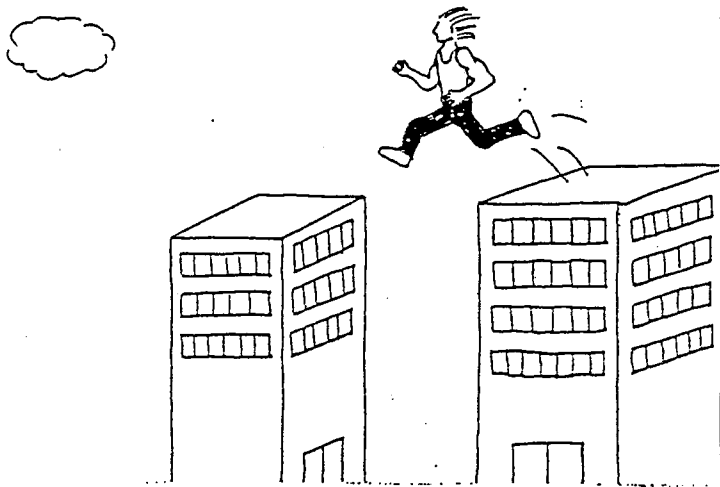
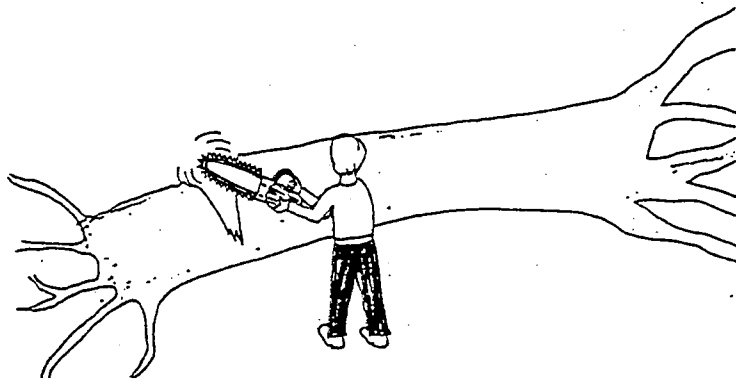
Thank you sincerely for providing this information. It will be treated in a completely confidential manner. Please have your child return this form to his/her teacher in the envelope provided.

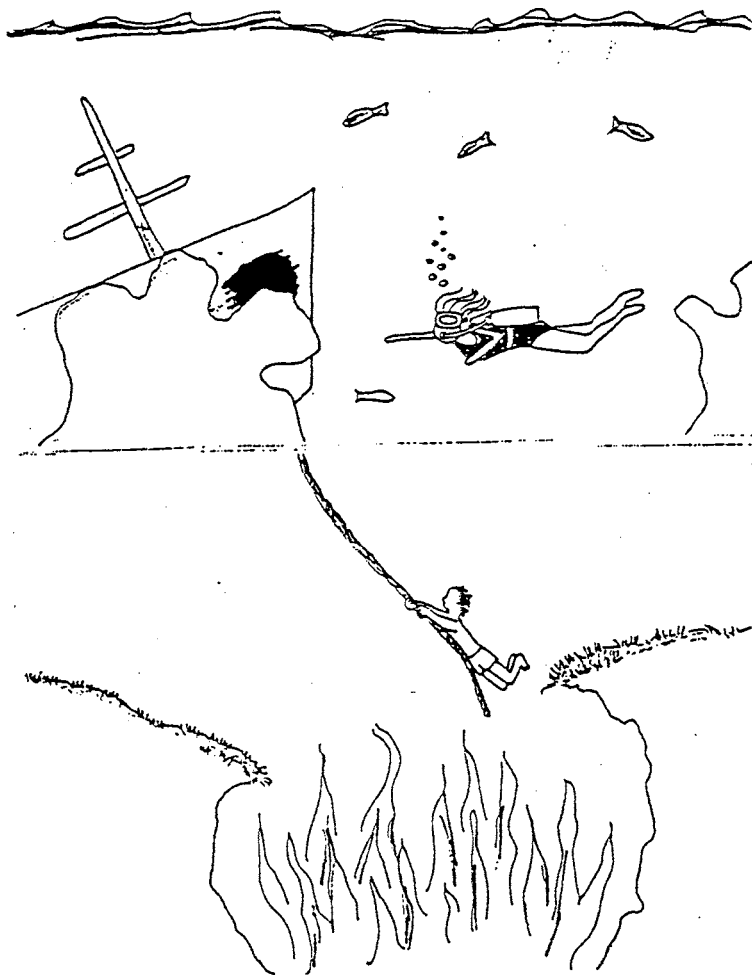
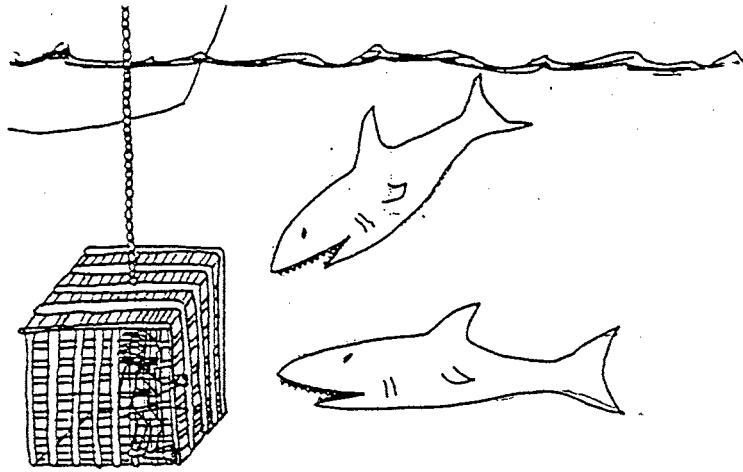
Appendix E: Risk Appraisal Items











Appendix F: Rating Scale Used to Measure Risk Appraisal



definitely
will not get hurt.



probably
will not get hurt



might or
might not
get hurt

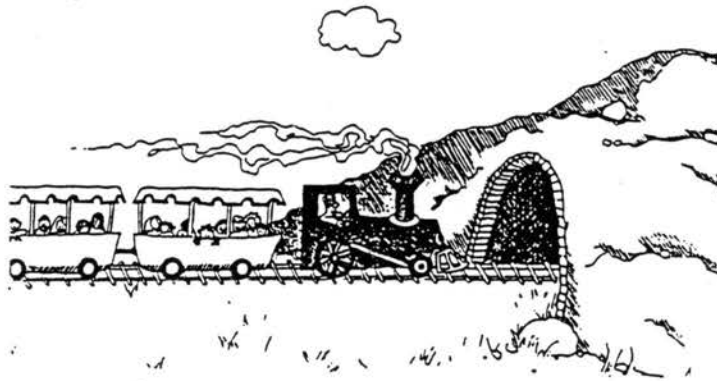
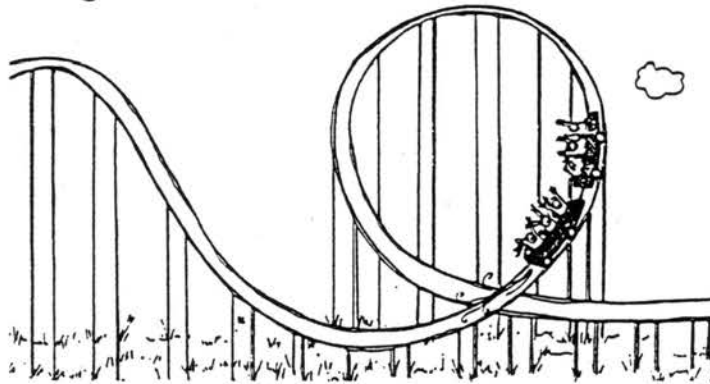


probably
will get hurt



definitely
will get hurt

Appendix G: Sample Sensation Seeking Items



Appendix H: Television Viewing Questionnaire

Television Viewing (Use card showing response scale "always, sometimes, never")

2 = almost always
 1 = sometimes
 0 = never

TUESDAY AFTERNOON AND NIGHT

X-Men	2	1	0
Power Rangers	2	1	0
Wheel of Fortune	2	1	0
News	2	1	0
Carmen San Diego	2	1	0
*			
Entertainment Tonight	2	1	0
Coach	2	1	0
Roseanne	2	1	0
Star Trek Next Generation	2	1	0

SATURDAY MORNING

Bugs Bunny	2	1	0
Eek the Cat	2	1	0
Aladdin	2	1	0
Kitten Cousins	2	1	0
Masked Rider	2	1	0
Sea Monkeys	2	1	0
Beakman's World	2	1	0
Gladiators	2	1	0

THURSDAY AFTERNOON AND NIGHT

Batman and Robin Cartoon	2	1	0
Blossom	2	1	0
Space Commando	2	1	0
Jeopardy	2	1	0
Wishbone	2	1	0
Maury Pauvich	2	1	0
The Simpsons	2	1	0
*			
Living Single	2	1	0
Friends	2	1	0
Murder One	2	1	0
Cops	2	1	0
ER	2	1	0
Jay Leno	2	1	0

SUNDAY NIGHT

60 Minutes	2	1	0
Married w/Children	2	1	0
Am. Funniest Videos	2	1	0
Lois & Clark	2	1	0
Sports	2	1	0
(basketball, baseball)			

2

VITA

Candidate for the Degree of
Doctor of Philosophy

Thesis: PREDICTORS OF CHILDREN'S RISK APPRAISALS

Major Field: Psychology

Biographical:

Personal Data: Born in Chestertown, Maryland,
September, 2, 1967, son of Leonard and Vivian
DiLillo.

Education: Graduated from Danville High School,
Danville, Kentucky in May 1985; received Bachelor
of Arts degree in History from Rhodes College,
Memphis, Tennessee in May 1989; received a Master
of Science in Counseling Psychology from the
University of Kentucky and a Master of Science
degree in Psychology from Oklahoma State
University in May 1991 and July 1992,
respectively. Completed the requirements for the
Doctor of Philosophy degree in Clinical Psychology
from Oklahoma State University, Stillwater,
Oklahoma in December 1997.

Experience: Raised in Danville, Kentucky; employed as
a pharmacy clerk during summers; employed as a
parole officer for the State of Tennessee October
1989 - August 1990; Counseling practicum student,
University of Kentucky Counseling Psychology
Services Center, spring 1992; Research assistant,
graduate teaching assistant, and clinical
experience through Oklahoma State University,
Department of Psychology 1992 - 1996; Clinical
Psychology internship at the University of
Tennessee Professional Psychology Internship
Consortium, Memphis, Tennessee, September 1996 -
August 1997.

Professional Memberships: Student Member, American
Psychological Association.

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 10-09-95

IRB#: AS-96-017

Proposal Title: PREDICTORS OF CHILDREN'S RISK APPRAISALS

Principal Investigator(s): Richard Potts, David DiLillo

Reviewed and Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.

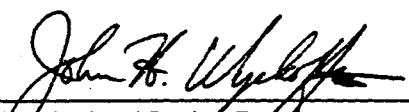
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.

ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Revisions received and approved.

Signature:


Chair of Institutional Review Board

Date: November 3, 1995