EFFECTS OF TELEVISED MODELING COMPONENTS ON CHILDREN'S PHYSICAL RISK-TAKING AND HAZARD IDENTIFICATION

By

LISA M. SWISHER

Bachelor of Arts
University of Oklahoma
Norman, Oklahoma
1994

Master of Science
Oklahoma State University
Stillwater, Oklahoma
1996

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Thesis Approved:

Thesis Adviser

Wayne B. Powell

Dean of the Graduate College

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CHAPTER I

INTRODUCTION

The primary cause of death in children is unintentional injury (National Safety Council, 1988). Research suggests that many injuries may primarily be due to learned behaviors and other psychological factors (Matheny, 1988; Peterson & Roberts, 1992). It has been suggested that risk-taking behavior may be one of many behaviors that ultimately facilitates injuries (e.g., Baltimore & Meyer, 1969; Husband & Hinton, 1972). The ability to identify hazards in the environment has also been argued to be a necessary criteria for injury prevention (Sheehy & Chapman, 1985).

In order to understand ways in which injuries may be prevented, it is important to examine ways in which risk-taking and hazard identification may be influenced. One way that children's behavior is influenced is through modeling. Modeling is a process in which one observes another perform a behavior; the observer stores this information to memory, and then uses this knowledge as a guide for behavior in subsequent situations. Parents, teachers, and television characters all serve as significant behavioral models for children. Of particular interest to this present research is the role of television models. Televised characters engaging in risky acts have been shown to increase children's self-reported risk-taking (Potts, Doppler, & Hernandez, 1994). Also, televised educational models behaving safely have been shown to decrease children's self-reports of physical risk-taking (Potts &

Swisher, 1998). The changes in risk-taking behavior in these studies was attributed to the effects of modeling. As of yet, it is not known which modeling components (e.g., positive consequences, negative consequences, etc.) or combinations of modeling components (e.g., positive consequences and alternate behavior, etc.) were responsible for the changes observed on the risk-taking measure.

Similar to risk-taking, hazard identification is a factor which has been cited as important in injury prevention. The ability to identify hazards was also found to be amendable via observed safety on television. In Potts and Swisher's (1998) study, children who viewed safety behaviors on television significantly increased their ability to identify hazards. These findings are consistent with a priming process, in which exposure to a small amount of safety TV content increased the availability of children's thoughts related to injury and safety, which then improved their ability to identify hazards on a pictorial measure. However, it is not known which components or combination of components portrayed in the stimulus tapes were necessary for improving the children's hazard identification scores. It is important to investigate the modeling components that produce desirable changes in risk-taking and hazard identification scores in order to understand such influences on children's behavior, as well as for injury prevention.

Knowledge of the modeling components that produce the greatest amounts of change in risk-taking and hazard identification have important implications for educators, who seek to improve safety curricula that are presented to children. Specifically, they are interested in determining what type of curricula produces increases in safety knowledge, as well as improving safety behavior. Knowledge of the modeling components that result in

greater desired changes could be used by educators to develop new safety curriculum that fits their specified needs.

In the following sections, the societal significance of childhood injury will be discussed. Two types of injury prevention, passive and behavioral, will be examined. Research on risk-taking and hazard identification will be explored, as they have both been identified as important factors in behavioral approaches to injury prevention. Modeling and priming processes will be discussed as behavioral approaches to injury prevention. Specifically, their roles in influencing injury relevant behavior, including risk-taking and hazard identification, in children via television will be examined.

CHAPTER II

REVIEW OF THE LITERATURE

Childhood Injury

The mortality rate from childhood injury is higher than the next nine leading causes of death combined (National Safety Council, 1988). Injuries are responsible for approximately 22,000 deaths and 600,000 hospitalizations annually in children between the ages of 1 and 19 years (Rodriguez, 1990). In addition to the physical harm caused by unintentional injuries, the monetary costs are also high. The annual costs for medical services and loss of productivity due to injuries have been estimated to be between $75 billion to $100 billion (U.S. Department of Health and Human Services, 1986).

Because the cost of childhood injury is so high, researchers have begun to examine causes of childhood injury, as well as methods for preventing injury. Despite the commonly used term "accident," unintentional injuries in childhood are rarely chance events and are avoidable in most cases (Haddon & Baker, 1981; Roberts & Brooks, 1987). Most childhood injuries are can be explained in terms of cause and effect relationships, which are largely preventable (Coppens, 1985). For example, a rollerblader who does not wear protective gear has an increased chance of becoming injured when he/she falls than a rollerblader who wears protective gear. Historically, research on childhood injuries focused on characteristics or traits of the child, such as accident

proneness (e.g., Klonoff, 1971; Matheny, 1988). However, a conclusive relationship between such dispositional characteristics and injuries has not been found. In fact, evidence suggests that learned behaviors, such as risk-taking, activity level, and aggressiveness, may be a primary cause of injury, which implies that such behaviors can be identified and modified to prevent injury occurrence (Matheny, 1988).

One approach to injury prevention has focused on efforts in which the individual remains passive in preventing the injury, such as the introduction of child-proof medicine containers which decreased the number of medicine poisonings (Matheny, 1988). These types of injury preventions have proven to be very effective (McFarland & Moore, 1962; McIntire, 1977; Consumer Product Safety Commission, 1979; Bergner, 1982). However, children cannot be physically isolated from all potential hazards. Therefore, there is no way to protect every child from every injury hazard using this passive approach, and thus the study of active, behavioral approaches to injury prevention is necessary.

In light of the recent knowledge that a majority of unintentional injuries are caused by voluntary, learned behaviors, coupled with the fact that passive injury prevention cannot prevent all injury, contemporary injury research has recently begun examination of behavioral approaches to injury prevention. For example, in a review of childhood injury prevention, Peterson and Roberts (1992) concluded that many behavioral interventions aimed at educating children in safe behaviors have proved successful.

One such behavioral intervention, the "Safe at Home" program, was found to be more effective than a discussion-oriented intervention in producing increases in "safe" skills. The goal of "Safe at Home" program is to teach children the skills necessary to properly and safely care for themselves while they are home alone. This program requires

children to role play the correct skills and uses verbal and tangible rewards contingent on correct responses. While the "Safe at Home" intervention was found to be effective in increasing children's safety skills in the specific problem areas in which they were trained, it did not seem to lead to generalization of skills for untrained problems. At five months follow-up, the skills evident for both groups during training were either present or could be brought back to the level obtained after training with one training session (Peterson, 1984). From this and other similar studies, it is clear that behavioral training can result in the acquisition of skills that may reduce injuries in children. However, more research is needed to determine which methods are best for teaching children safety skills that will generalize to a variety of situations.

In sum, childhood injury is a serious problem, causing thousands of deaths and costing billions of dollars. Thus, it is important to study the relationships between children's voluntary behavior and unintentional injuries. Knowledge of these relationships is likely to provide information that may be used to determine what methods are best for reducing the behaviors that are likely to result in injuries (Peterson & Roberts, 1992; Spielberger & Frank, 1992). In the following two sections, two factors that have been targeted in injury prevention research, risk-taking and hazard identification, will be discussed.

Risk-Taking

Several behaviors have been found to be associated with childhood injury. Among these are higher than average rates of activity, aggression, impulsivity, and inattentiveness (Baltimore & Meyer, 1969; Husband & Hinton, 1972; Manheimer & Mellinger, 1967;

Sibert, 1975). Another behavior that has been found to be associated with unintentional injuries, and is the focus of the present research, is risk-taking. Historically, risk-taking has been conceptualized by researchers in many different ways. It has been equated with "daringness" (Slovic, 1966), and has also been described as a general tendency towards "boldness" (Eysenck & Eysenck, 1977, 1978; Dahlback, 1990a,b). Knowles, Cutter, Walsh, and Casey (1973, p. 131) conceptualized risk-taking simply as "a tendency to approach rather than avoid risk situations." Thus, risk-taking has been examined differently in various types of populations. Risk-taking research with children has looked at risk-taking as physically daring behavior (Baltimore & Meyer, 1969; Ginsburg & Miller, 1982) and as gambling with low chances of success in order to win a prize (Kearney & Drabman, 1992). Adolescent risk-taking literature has largely focused on participation in unsafe behaviors such as unprotected sexual intercourse (Alexander et al., 1990; Johnson & Green, 1993), illicit substance use (Irwin & Millstein, 1991; Sokol-Katz & Ulbrich, 1992), and driving recklessly (Lavery, Siegel, Cousins, & Rubovits, 1993). Research with adult populations has, in some cases, examined thrill seeking (Zuckerman, 1983), but has most often focused on decision-making risks and measured these risks through gambling games (Knowles et al., 1973) and other economic scenarios (Horvath & Zuckerman, 1993).

If one considers all of the ways risk-taking has been examined and conceptualized, it seems that one common element of risk-taking emerges. This definition may be expressed as: Risk-taking is a behavior that is committed in order to obtain some reward or goal, yet also increases the chances of a negative or harmful outcome (Keinan, Meir, & Gome-Nemirovsky, 1984).

Evidence that risk-taking behavior may often result in harmful outcomes comes from a review of research examining children's accidents, in which Matheny and Fisher (1984) reported that risk-taking behavior was among the behaviors that seem to be consistently related to injuries in several studies (Fuller, 1948; Marcus et al., 1960; Manheimer & Mellinger, 1967; Baltimore & Meyer, 1969; Husband & Hinton, 1972).

Although correlations between risk-taking and injury have been reported in the above studies, there are certain problems with this body of literature. These include risk-taking measures of unknown validity and the lack of a common definition of risk-taking across studies. An example of a measure of questionable validity is the one used in Baltimore and Meyer's (1969) study. In this study, physical risk-taking was measured only by mothers' reports of children's behavioral characteristics, such as "daringness" and "physical activity." In this instance, children were not directly asked to indicate their own physical risk-taking, nor were they directly observed, which taken together with their mothers and others' reports, might yield a more accurate picture of the children's physical risk-taking. Using only the mothers' reports of risk-taking may have questionable validity because their reports are not confirmed by others' reports and/or objective observations. Also, the mothers may give socially-desirable responses that are inaccurate.

Another related problem with the risk-taking literature is that there is not a common definition of risk-taking across studies. The differences in the definitions of risk-taking can be seen in the way risk-taking was conceptualized by Baltimore and Meyer (1969) and how it was differently conceptualized by Marcus et al. (1960). Baltimore and Meyer (1969) defined risk-taking as daring behaviors which increases the chances of being subjected to dangers in the environment. On the other hand, Marcus et al. (1960, p. 44)

described risk-taking in children, as children who, "are more likely to take chances," because their ability to think of possible consequences to their actions is impaired. A similar problem with definition and measurement of risk-taking may seen in Dahlback's (1991) study. In this study, a weak, positive correlation between risk-taking and injuries in children was found. Possible reasons for the weak correlation found may be because risk-taking was conceptualized as a personality trait and was measured using gambling games. This type of measurement may not adequately assess the risk-taking behaviors that lead to injury. Also, risk-taking may be situationally determined rather than manifestations of a general trait (Matheny, 1988).

A more specific measure of physical risk-taking was used in a study reported by Potts, Martinez, and Dedmon (1995). Physical risk-taking was measured with a questionnaire that examined the subjects' self-reported behaviors in common scenarios where the potential for injury actually exists. Self-reports of physical risk-taking in children were found to be positively, but weakly correlated with parents' reports of children's physical injury. Also, self-reports of physical risk-taking were positively correlated with reports of informants concerning subjects' risk-taking. Risk-taking is just one of many behaviors, including aggressiveness and impulsivity, that results in injury (Matheny and Fisher, 1984). The weak correlations found between risk-taking and injury may be because many other unmeasured behaviors contribute to injury.

In sum, it appears that because risk-taking has been studied differently with many types of populations, no single definition of risk-taking exists. However, it does seem that there are common elements of risk-taking used by most researchers. Another difficulty that arises when examining the concept of risk-taking is that it is measured inconsistently

across studies. This inconsistency in measurement has made it difficult to compare the variables that are correlated with risk-taking. However, these different measures of risk-taking point to the face validity of the concept of risk-taking because subjects and informants have shown a common conceptualization of risk-taking, and these reports have been correlated with injury. This association between risk-taking and injury makes risk-taking a worthy topic for research. As risk-taking is a voluntary behavior, behavioral interventions may prove very successful in modifying physical risk-taking and subsequently reducing injuries.

Hazard Identification

The ability to correctly identify hazards is, like risk-taking, just one of many factors currently being investigated in injury prevention. Most injury researchers would argue that the ability to perceive hazards is a necessary, but not sufficient, step in injury prevention. It has been suggested that children suffer more injuries than adults because they make more errors when identifying hazards in the environment, which leads to more risky decisions and behavior. However, little research has been conducted that demonstrates a causal relationship between hazard identification and accidental injury (Sheehy & Chapman, 1985).

Although direct evidence of a relationship between hazard identification and injury does not exist, there are some findings which point to the role of hazard identification in injury prevention. These studies have yielded important information including the age at which these measures can be administered to children, the relationship between causal reasoning and hazard identification, and the order in which children learn about safety

rules. Thus far, it has been found that children as young as 3 and one-half years of age are able to correctly identify a pictorial scene (including a poisoning, traffic accident, drowning, and burning) as hazardous, thereby demonstrating their understanding of the concept of hazard (Schreiber & Lukin, 1978). Hazard identification may also involve causal reasoning. In Coppens (1985) study, a positive correlation was found between children's hazard identification scores and their level of causal reasoning. Younger children (preschool age and younger) are less adept at causal reasoning than older children (elementary school age and older). The relationship found between causal reasoning and hazard identification may help explain why preschool children have such a high rate of accidents. Coppens' findings suggest that the aim of safety education programs may differ depending on the age of the child, with more of a focus on teaching cause and effect relationships in the environment to children aged four years-old and younger. The focus of safety education for older children should be how to correctly identify and prevent hazards in the types of situations they may encounter. A follow-up to this study was conducted by Coppens (1986). Again, a positive correlation was found between causal reasoning and hazard identification. It was also found that the ability to identify hazards occurs before children are able to indicate how accidents are prevented. This finding supports the assertion of safety researchers that the ability to correctly identify hazards is a necessary first step in preventing unintentional injuries.

Many efforts of safety education have been aimed at teaching children to identify and avoid hazards in various situations. Experts have outlined how safety should be taught by parents, teachers, and other key individuals to children. This plan involves teaching children about dangers (hazard identification) and teaching and training them how

to act in potentially dangerous situations (Garling, 1985). It has been suggested that children should be taught about dangers that exist in certain situations, so that they can learn behaviors to prevent harm from occurring (Holden, 1985). Thus, it appears that accident prevention researchers are in agreement that children should be taught how to perceive possible threats in their environment. However, a method of how best to teach or influence children's ability to identify hazards has not yet been determined.

In sum, a direct relationship between hazard identification and injury has not yet been found. However, evidence does support the face-valid notion that hazard identification must occur before injuries can be prevented. While many have argued that safety education must focus on teaching children to correctly identify hazards in the environment, a successful method of meeting this goal has not been identified. Hazard identification and risk-taking are similar in that they are both behaviors that are factors in injury prevention and are subject to modification through behavioral interventions. Therefore, it is important to look for influences on risk-taking and hazard identification.

Mechanisms of Injury Behavior

As stated previously, injury researchers have recently focused their attention on behavioral mechanisms of injury because most injury relevant behaviors, such as risk-taking and hazard identification, are voluntary and modifiable (Peterson & Roberts, 1992). A theoretical context useful for the study of behavioral acquisition and change, including injury relevant behavior, is social cognitive theory. According to social cognitive theory (Bandura, 1986), humans learn much of their behavior through a process of modeling or observational learning. Modeling is a process, often unintentional, that consists of four

phases. The first three phases are attention, retention, and motor reproduction. Modeling begins when one observes another perform a behavior (attention) and then the observer stores this information to memory (retention). The third phase occurs when the observer rehearses or refines his/her performance to match the observed behavior (motor reproduction).

The final phase of modeling is the motivational phase. This phase consists of the factors that determine whether or not a person engages in the observed behavior. These factors include whether or not the model and/or observer is punished or rewarded for their behavior. Persons are more likely to imitate modeled behaviors that are rewarded and are less likely to imitate behaviors that are punished (Bandura, 1977). A study of self control conducted by Walters and Parke (1964) demonstrated this principle. Boys who watched a filmed model rewarded for playing with prohibited toys played with the prohibited toys more than boys who viewed a model who was punished for playing with prohibited toys. Thus, many behaviors can be influenced by observing models, especially if the functional value of those behaviors is demonstrated (i.e., rewarded or punished).

Many sources serve as models for children such as parents, peers, teachers, and television characters (Bandura, 1977). The present proposal will examine televised models. Child development specialists have for many years recognized the importance of television as an agent of socialization for children (Huston et al., 1992). Among the behaviors that TV has been shown to influence are aggression (Parke, Berkowitz, Leyens, West, & Sebastian, 1977), sharing (Bryan & Walbek, 1970), consumption preferences (Chapman & Fitzgerald, 1982), and unhealthy practices (Atkin, Hocking, & Block, 1984).

These studies have shown that television has both short and long term influences on many behaviors and thoughts of children and adults.

Although little is known about the effects of television on injury, TV models have been shown to influence behaviors that are conceptually related to safety and risk-taking. For example, in a study of children's self-control conducted by Wolf (1973), it was found that when children viewed a televised rule-abiding model they increased their rule following as well. In Wolf's study, a group of children viewed a model that abided by the rule of not playing with a certain toy. When left alone by the experimenter, the children who had viewed this model played with the prohibited toy less than the children who did not see a rule abiding model. Thus, modeling of self control behavior has relevance to children's learning of safety behaviors from TV, in that children must exert self control in order to follow safety rules that often require the inhibition of risky behaviors.

Very few studies have directly examined modeling effects on risk-taking behaviors. However, evidence suggests that television models affect children's risk-taking behavior. In Montgomery and Landers' (1974) study, children who viewed a TV model taking chances on a risk task performed significantly more risky on the same task than children who did not observe a risky model. A limitation of this study is that risk-taking was measured using a game, which may assess a variable quite different than physical risk-taking. Therefore, conclusions about TV models and children's physical risk-taking cannot be drawn from this study.

In one of two studies that looked directly at children's physical risk-taking as a function of televised models, it was found that children's self-reports of physical risk-taking were affected by TV models (Potts, Doppler, & Hernandez, 1994). In this study,

children were given a pretest self-report measure of physical risk-taking and were randomly assigned to one of three conditions. The subjects in the first condition watched TV programs with frequent risk-taking, children in the second condition viewed TV programs with infrequent risk-taking, and subjects in the third condition did not view any TV. It was found that the subjects who viewed the TV models engaging in risky behavior increased their risk-taking from pre- to post-test significantly more so than the children who did not observe risky models. This study revealed that physical risk-taking can be influenced by televised models.

To date, only one study has examined whether children's risk-taking decreases after watching televised safety content. That study serves as a foundation for the present proposal. In Potts and Swisher's (1998) study, children between the ages of 5 years and 8 years were given pre- and post-test self-report measures of physical risk-taking. One group of children was exposed to an edited educational video about safety. A second group of subjects was exposed to an edited network cartoon that contained safety behaviors that were not central to the story line. The final group of subjects was exposed to an edited network cartoon that did not contain any safety or risk-taking behaviors. The subjects who were exposed to the educational safety video showed significant decreases in their self-reported willingness to take physical risks from pre- to post-test. These effects were not observed for the subjects in the remaining two groups. These findings suggest that brief exposure (approximately 8 minutes) to an educational videotape with models who are engaging in safety behaviors may reduce children's willingness to take physical risks. The educational videotape contained a variety of components, relevant to the modeling process, which were used to convey the safety messages. These components

included showing children behaving in an unsafe manner, the implied or explicit injury consequences for doing so, as well as children behaving safely with the implied or explicit safety consequences. Because the study did not examine independent effects of these different components, it is not known, specifically, which components or combinations of components were responsible for the changes on the risk-taking measure. It is important for educators, parents, and those in the television industry to know which components are crucial for producing the greatest effects on children's injury prevention behavior.

Thus, it is clear that televised models influence children's behavior, including risk-taking behavior that may lead to injury. However, modeling is not the only process that occurs as viewers watch TV. In the next section, priming, which may occur concurrently with modeling, will be discussed as another process by which TV may influence injury and safety.

Priming

In addition to modeling effects of TV, described by the social learning theory, priming effects may also represent a common effect of cognition and behavior. Berkowitz and colleagues (Jo & Berkowitz, 1994) postulate that when individuals observe events on television, ideas similar to the ones being observed are primed or activated in the viewer's cognitive system. These ideas can then prime other related thoughts, feelings and/or action tendencies that were previously stored in memory. Support for this theory has been found in studies which have examined television's influence on aggression. For example, Bushman and Geen (1990) had subjects watch either a videotape with a great amount of violence, a videotape with moderate amounts of violence, or a videotape without violence.

Subjects were asked to write down their thoughts after viewing the videotape. The participants who watched the highly violent videotape generated significantly more aggressive thoughts than those who viewed the less violent films.

Other studies have shown that priming not only influences cognition, but also influences overt behavior. For example, Herr (1986) exposed subjects to names of famous persons with varying levels of association to hostility (e.g., Joe Frazier had a moderately high association with hostility). The participants then evaluated an ambiguously described person. Herr found that the subjects who were primed with names associated with hostility rated the target person as more hostile than the subjects who were primed with nonhostile names. Furthermore, the subjects who were primed with the hostile names behaved more aggressively toward their partners in a laboratory game than those who were primed with the nonhostile names. Thus, observation of televised events can prime related thoughts and can also influence subsequent behavior.

Regarding the present research, it is speculated that viewing safety material on television will result in priming of other safety related thoughts, although little research has been conducted to examine this possibility. Some evidence that safety thoughts are primed when viewing safety content was found in Potts and Swisher's (1998) study. In this study children were exposed to one of three edited videotapes with varying levels of safety content. Children were given pre- and post-test measures of hazard identification, in addition to the risk-taking measure previously described. Children showed increases in hazard identification scores as a function of the amount of safety content they viewed in the stimulus videotapes. The results of this study suggest that the observation of the safety models primed thoughts of safety, which may have lead the children to more readily

notice safety omissions on the hazard identification measure. However, as mentioned earlier, it is not known which TV components were most important for this priming effect.

Knowing which modeling components produce desired changes in children's risk-taking and hazard identification will have implications for many groups. Those who are producing safety education videotapes with the intent of increasing children's safety related knowledge and behavior can use this information to create videotapes that will be more successful in producing desired changes. Examining the components that maximize the effects of modeling and priming also have implications for the unintentional effects of commercial TV, which also affect viewers' knowledge and behavior.

Safety Education

In contrast to the unintended effects of safety behaviors shown on commercial TV, safety education in the schools is an intentional method for teaching injury prevention to children. Della-Giustina and Yost, safety educators, (1991, p. 3) provide a definition for safety education: "the area of experience through which boys and girls learn to make wise choices when possible injury to self or others, or property damage, may be involved."

This definition emphasizes the importance of decision-making skills, but neglected to include the relationship between these skills and actual behavior change. According to this definition, the role teachers play in safety education is to help students learn the facts and skills which are needed to prevent accidental harm (Della-Giustina & Yost, 1991).

The U.S. Department of Education recognizes the need for educators to focus not only on the knowledge children need to learn, but also on the behaviors they should display (U.S. Department of Education, 1993). This present research is examining both of

these factors, hazard identification (knowledge) and risk-taking (behavior). In addition, the U.S. Department of Education acknowledges that a large portion of the youth's health problems are preventable and can be attributed to a small set of behaviors, including "accidents" that lead to injuries. The Comprehensive School Health Education Program (CSHEP) was developed by the U.S. Department of Education as a prevention method for instructing children and parents on the necessary skills for leading a healthy life. CSHEPs were developed to be implemented at schools for students in grades kindergarten through twelfth. There are several priorities of the CSHEP, including improving teacher's training on subjects, such as accident prevention and safety, and providing parents with ideas to improve their children's health at home. Again, the U.S. Department of Education makes it clear that efforts at safety education should be aimed at improving both the knowledge and behaviors of children. This is an important distinction and only a few studies have examined whether or not children actually demonstrate the safety behaviors they are taught at school.

A study of whether a safety curriculum taught at school resulted in students' increasing their safety knowledge, as well as adopting actual safety behaviors was conducted by Errecart, Walberg, Ross, Gold, Fiedler, and Kolbe (1991). Junior high/middle and senior high school students were given a school health education curriculum which focused on the importance of using seat belts, reducing consumption of fried foods, and abstaining from the use of nicotine, illegal drugs, and alcohol. The goals of the curriculum were to produce increases in knowledge and more healthful attitudes and practices regarding the target areas mentioned above. It was found that the students who received this curriculum significantly improved their knowledge. Significant changes

in the health practices were seen for the senior high school students, but not for the junior high school students. However, significant changes in attitudes were not found for junior high or high school students. This study provides promising evidence that curriculum which is introduced in the classroom can be effective in increasing students' knowledge and, to some degree, producing behavioral changes. However, efforts were not made to determine which methods of teaching or which components of the curriculum were effective at producing changes in behavior and knowledge.

There are several objectives in safety education, some broad and some specific. Furthermore, some safety educators endorse the use of models, including TV models, for teaching these safety objectives to children. A general objective is to help children develop a "safety sensitivity," which is an ability to recognize potential hazards that may lead to accidents (Della-Giustina & Yost, 1991). Examples of specific objectives include the proper use of tools, wearing pads and helmets when engaging in certain recreational activities, and recognizing substances which should not be ingested. Several methods have been employed to teach these safety objectives to children, these include class discussions, practicing safety skills at home and school, role plays, individual and class projects, video tapes, and television. Many experts in education acknowledge that children should be active participants when safety is being taught and should observe safe models in order for maximum learning to occur (Comer, 1987; Della-Giustina & Yost, 1991). However, little research has been conducted on the effectiveness of these methods.

In one of a few studies conducted to address the use of media models on children's health practices, Flynn, Worden, Secker-Walker, Badger, Geller, and Costanza (1992) examined the effects of media models on children's smoking behavior. This study

compared the use of classroom instruction alone and classroom instruction combined with a mass media intervention on the prevention of children's cigarette smoking. In this study, the children of two communities received a mass media intervention and a school smoking prevention program. The media intervention and school program contained shared educational goals, such as improving skills for refusing cigarettes when they are offered. The media intervention consisted of TV and radio segments designed to teach the goals shared with the school program. The children of two matched communities received only the school smoking prevention. It was found that the media campaign combined with classroom instruction was more effective in reducing students' smoking than was the classroom instruction alone. The results of this study suggest that classroom instruction of safety can be enhanced by incorporating media efforts.

In sum, safety curricula in schools address some of the same processes of injury prevention that psychologists have identified as important. Safety education researchers have also found that the media can play a significant role in teaching safety to children. Results of this present research will be beneficial to safety educators by discovering the optimal content needed in safety education videotapes in order to produce maximum changes on the variables deemed important by safety education researchers and psychologists.

CHAPTER III

METHODOLOGY

Statement of the Problem

Unintentional childhood injury is a significant problem in society. Previous research on injury prevention has found that efforts in which the individual remains passive are successful. However, passive injury prevention is not applicable to all situations. As a result, researchers have begun to focus on behavioral approaches to injury prevention. In fact, many childhood injuries appear to be the result of some type of voluntary behavior. Thus, it is important to examine what behaviors are related to injury and to study how these behaviors can be modified.

One behavior that has been shown to be related to injuries, and is believed to be one cause, is physical risk-taking (Baltimore & Meyer, 1969; Husband & Hinton, 1972). It also seems reasonable to assume that the ability to identify hazards is associated with a lower number of injuries. It has already been demonstrated that children's risk-taking and hazard identification can be modified in desired directions by exposing them to TV characters who demonstrate safety behaviors (Potts & Swisher, 1998). Changes in children's risk-taking scores were attributed to modeling by TV characters, while changes in hazard identification scores were attributed to priming effects of the TV content. Because children in that study viewed several modeling components, including children

behaving in an unsafe manner, the implied or explicit injury consequences for doing so, and children behaving safely with the implied or explicit safety consequences, it is not known which modeling components were most important for the modeling and priming effects. Thus, the purpose of this study is to determine which modeling components produce the largest modeling effect, as measured by physical risk-taking self-reports, and which modeling components produce the largest priming effect, as measured by the hazard identification measure. In order to test these effects, subjects will first be given pretest measures of risk-taking and hazard identification, will then be exposed to one of five edited videotape segments with various levels of modeling components, and then will be given post-test measures.

The following hypotheses will be made regarding the relationships between the modeling components and risk-taking. These hypotheses are based on social cognitive principles. These principles state that observers can use models as guide for their own future behavior, are more likely to engage in a behavior if the observed model is rewarded, and are less likely to engage in a behavior if the model is punished (Bandura, 1986). The hypotheses are as follows:

H1. Exposure to safety models who engage in unsafe behaviors with a voice over that labels the behavior as unsafe will result in decreases from pretest to post-test in physical risk-taking. This condition will be referred to as Labeling Only;

H2. Exposure to content seen in Labeling Only plus exposure to the negative consequences of the unsafe behaviors will result in decreases from pretest to post-test in physical risk-taking. This effect will be larger than the

Labeling Only. This condition will be referred to as Negative Consequences;

H3. Exposure to content seen in Negative Consequences plus exposure to the alternate safe behavior and its implied positive consequences will result in decreases from pretest to post-test in physical risk-taking. This condition will be referred to as Negative plus Positive. Because the effects of showing both negative and positive consequences on modeling are not known, a hypothesis about the effects of Negative plus Positive in relation to other conditions will not be made;

H4. All conditions that involve a safety message or component will result in less risk-taking at post-test than exposure to the control condition.

One principle of social cognitive theory is that persons are more likely to engage in a behavior if they view another being rewarded for that behavior. There is plenty of evidence to support this principle (Bandura, 1986). However, it is not known how explicit the reward has to be made in order to produce a behavioral change. The present study will examine the effects of an implied reward (i.e., the absence of physical harm) on risk-taking behavior. This research question is as follows:

The effects of exposure to safe behavior and its implied positive consequences on physical risk-taking will be examined. This condition will be referred to as Positive Consequences.

A set of hypotheses regarding priming effects will also be made. In Potts and Swisher's (1998) study, priming of safety related knowledge took place not only when the safety behaviors were explicit, but also when they were implicit. Therefore, it is expected

that the viewing of any amount of safety stimuli will produce priming effects. Because it is not clear what type of effect the various modeling components will have on priming, hypotheses will not be made about the relationships between the conditions. The following set of hypotheses will be made about the priming effects:

H5. Exposure to any experimental treatment condition (Labeling Only, Negative Consequences, Negative plus Positive, and Positive Consequences) will result in increases from pretest to post-test in hazard identification.

H6. All conditions that involve any safety message or component will result in more hazard identification on the post-test than exposure to the control condition.

Subjects

Eighty-eight children, 42 boys and 46 girls, ages 6 to 8 years, served as subjects. Subjects were recruited from a local elementary school, first via parental informed consent forms, in compliance with the ethical guidelines established by the American Psychological Association, sent home from school. Children with parental consent were then verbally invited to participate in the interview session during school hours. Age was the only selection criterion. This age range for subjects was selected for two reasons. First, children in this age range have been found to be particularly susceptible to the modeling effects of TV characters' behaviors (Condry, 1989). Secondly, the measures in this study have been previously used to test children within the same age range (Potts, et al., 1994; Potts, et al., 1995; Potts & Swisher, 1998).

Measures

A self-report measure of risk-taking for children has been developed by Potts et al., (1995). The risk scores obtained from this measure have been found to be positively correlated with other self-report and informant measures of risk-taking (Potts et al., 1995). This measure consists of ten pictures of everyday situations, such as swimming in a pool, riding a bike down a hill, climbing a tree to get a kite, etc. (see Appendix A for examples of items). In each picture, the children used a 1 to 5 scale to verbally indicate how much risk they would take. For example, one item depicts a pool marked by five increasing levels of depth and the children are asked how deep they would swim. Answers for each item were scored from 1 to 5 and a total score was derived from summing the individual item scores.

A hazard identification measure was developed by Potts and Swisher (1998). This measure assesses the children's ability to identify hazards in a variety of situations. This measure consists of twelve pictures showing children in common situations. In half of the pictures, important safety content was missing (see Appendix B for examples of items). For example, one picture showed a bicycle rider who is not wearing a helmet or pads. In another picture, a child not wearing a life jacket is riding in a boat. Neutral pictures are also included so that children do not develop a response pattern in which they recognize that the only missing items are ones that concern safety. Neutral items include pictures, such as a doll with only one arm and a child coloring without paper. For every picture, children were asked to identify, "what is missing," from each scene. Scores were the sum of the correctly identified missing safety items. The possible range of scores per subject

on the pretest and post-test measure is from 0 to 12. Coppens (1985), described a similar measure in which photographs were used to assess children's identification of safety hazards.

Television Stimuli

Subjects were exposed to one of five TV conditions. Each of the five 10-minute TV stimulus were edited segments from an educational video tape about children's safety in recreational settings. These five conditions are described below:

1. Labeling Only- This segment includes children who engage in unsafe behaviors, such as throwing a baseball bat in the air, with a voice over that announces that the behavior shown is unsafe and that children should not engage in that behavior. Eighteen children (8 boys and 10 girls) served as subjects in this condition.
2. Negative Consequences- This segment includes the same content as Labeling Only, and also includes the negative consequences of the unsafe behaviors, such as a child gets hurt by the falling baseball bat. Eighteen children (9 boys and 9 girls) participated as subjects in this condition.
3. Negative plus Positive- This segment includes the same content as Negative Consequences, and also includes the alternate safe behavior with its implied positive consequences, such as handing the next batter the baseball bat, so that no one is injured. Eighteen children (9 boys and 9 girls) were subjects in this condition.

4. Positive Consequences- This segment includes only the safe behavior and its implied positive consequences. Seventeen children (8 boys and 9 girls) served as subjects in this condition.

5. Control- This segment shows only neutral (i.e., not explicitly safe or unsafe) behaviors of children engaging in recreational activities. Seventeen children (8 boys and 9 girls) were subjects in this condition.

The content depicted in all segments did not differ from that available to virtually all children on a daily basis.

Procedures

Each child participated in an individual session at their school, lasting about 20 minutes. After obtaining the verbal assent, subjects completed pretest measures. Pretest measures consisted of answering 5 of the 10 items on the physical risk-taking measure and 6 of the 12 items on the hazard identification measure. The individual items on both measures were systematically rotated across pretest and post-test positions for different subjects. Also, the order of the risk-taking and hazard identification measures were counterbalanced. After the pretest items were administered, the subjects were exposed to one of the five conditions described previously.

After the TV treatment segment, each child was administered the remaining items from the risk-taking and hazard identification measures, which served as the post-test. The experimenter then debriefed the child, which included a discussion about safety rule adherence.

CHAPTER IV

FINDINGS

Risk-Taking

The predicted effects of the TV treatment conditions on subjects' risk-taking were analyzed in a series of planned comparison tests using both Dunn's method and Dunnett's method. The mean square error term used for these tests was derived from a 2 (gender) X 5 (TV condition) X 2 (pretest/post-test) repeated measures analysis of variance of the subjects' pretest and post-test risk-taking scores. Gender and TV condition served as between-group factors. A preliminary analysis indicated a difference between the two experimenters who tested subjects, in which one experimenter appeared to elicit lower risk-taking scores at pretest than was found in previous studies. Therefore, experimenter was included as a covariate in the analyses.

Planned comparisons were used to test each risk-taking hypothesis (H1 through H4). Dunn's method was used for hypotheses H1 through H3 to control for overall Type I error rate. Mean pretest and post-test risk-taking scores for all TV conditions are presented in Table I. The first hypothesis (H1) predicted that exposure to the Labeling Only condition would result in decreases from pretest to post-test in physical risk-taking. This effect was not found, $t(4,78) = -.29$, $p > .05$. The second hypothesis (H2) proposed that exposure to the Negative Consequences condition would result in

decreases from pretest to post-test in physical risk-taking. This effect was not significant, $t(4,78) = 1.64$, $p > .05$. It was further stated that this effect would be larger than the effect observed in the Labeling Only condition. This comparison was not significant, $t(4, 155) = -.86$, $p > .05$. The third hypothesis (H3) tested stated that exposure to the Negative plus Positive condition would result in decreases from pretest to post-test in physical risk-taking. Again, this effect was not observed, $t(4,78) = .06$, $p > .05$.

TABLE I

MEAN PRETEST AND POST-TEST RISK-TAKING SCORES AS A FUNCTION OF TV CONDITION

TV Condition	Pretest		Post-test	
	M	SD	M	SD
Control	12.06	5.20	13.12	5.57
Labeling Only	12.00	5.55	11.72	4.52
Negative Consequences	11.39	4.52	9.83	4.31
Negative plus Positive	11.22	5.68	11.17	3.98
Positive Consequences	9.65	3.88	11.76	5.09

The final risk-taking hypothesis (H4) predicted that exposure to any of the experimental conditions would result in less risk-taking at post-test than exposure to the control condition. As this hypothesis involved comparing each experimental condition to the control condition; Dunnett's method was used to test this hypothesis in order to

control for overall Type I error rate. No significance was found for any of the comparisons:

1. Labeling Only versus Control, $t(5,78) = -.92$, $p > .05$;
2. Negative Consequences versus Control, $t(5,78) = 2.15$, $p > .05$;
3. Negative plus Positive versus Control, $t(5,78) = -1.01$, $p < .05$; and
4. Positive Consequences versus Control, $t(5,78) = -.70$, $p < .05$.

The effects of exposure to safe behavior and its implied positive consequences on physical risk-taking were examined. It was found that exposure to the Positive Consequences condition did not result in a significant change from pretest to post-test, $t(4,78) = -2.16$, $p < .05$, using Dunn's method.

A significant main effect of gender in the overall analysis of variance was observed, $F(1,77) = 8.22$, $p < .005$. Males reported higher levels of risk-taking averaged across pretest and post-test, with an overall mean of 12.52 (SD = 5.10), compared to females, with an overall mean of 10.31 (SD = 4.65).

Hazard Identification

The predicted effects of the TV treatment conditions on subjects' hazard were analyzed in a series of planned comparison tests using both Dunn's method and Dunnett's method. The mean square error term was derived from a 2 (gender) X 5 (TV condition) X 2 (pretest/post-test) repeated measures analysis of variance on subjects' pretest and post-test hazard identification scores. Gender and TV condition served as between-group factors. A preliminary analysis indicated a difference between the two experimenters who tested subjects, in which one experimenter appeared to elicit greater hazard identification

scores at pretest. Therefore, experimenter was included as a covariate in all subsequent analyses.

Planned comparisons were used to test each of the hazard identification hypotheses (H5 and H6). Mean pretest and post-test hazard identification scores as a function of TV condition are presented in Table II. Hypothesis 5 stated that exposure to any experimental treatment condition (Labeling Only, Negative Consequences, Negative plus Positive, and Positive Consequences) will result in increases from pretest to post-test in hazard

TABLE II

MEAN PRETEST AND POST-TEST HAZARD IDENTIFICATION SCORES AS A FUNCTION OF TV CONDITION

TV Condition	Pretest		Post-test	
	M	SD	M	SD
Control	.41	.50	.88	.85
Labeling Only	.72	.89	1.61	.97
Negative Consequences	.61	.77	1.72	.66
Negative plus Positive	.83	.78	1.56	.92
Positive Consequences	.71	.84	1.65	.93

identification. Dunn's method was used for these comparisons in order to control for overall Type I error rate. The differences between pretest and post-test scores were found to be significant for all experimental conditions:

1. Labeling Only, $t(4,78) = -4.45$, $p < .05$;
2. Negative Consequences, $t(4,78) = -5.56$, $p < .05$;
3. Negative plus Positive, $t(4,78) = -3.60$, $p < .05$; and
4. Positive Consequences, $t(4,78) = -4.27$, $p < .05$.

Change from pretest to post-test in the Control condition was not significant, $t(4,78) = -2.14$, $p > .05$.

The final hypothesis (H6) concerning the hazard identification measure stated that exposure to any of the experimental conditions would result in more hazard identification on the post-test than exposure to the control condition. Dunnett's method was used to control for overall Type I error rate for these comparisons. All experimental conditions were found to result in significantly more hazard identification at post-test than the Control condition:

1. Labeling Only versus Control, $t(5,78) = 2.51$, $p < .05$;
2. Negative Consequences versus Control, $t(5,78) = 2.90$, $p < .05$;
3. Negative plus Positive versus Control, $t(5,78) = 2.31$, $p < .05$; and
4. Positive Consequences versus Control $t(5,78) = 2.62$, $p < .05$.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Overview

The two dependent variables in this study, risk-taking and hazard identification, were not equally influenced by the experimental stimuli. Risk-taking scores were not affected as predicted. However, hazard identification scores were influenced as predicted in the hypotheses. One explanation for these findings may be that risk-taking scores are more difficult to influence than hazard identification scores. Risk-taking scores can be viewed as harder to influence via a short modeling experience because they represent, to some extent, a well-established, dispositional behavior pattern. Hazard identification scores may be easier to influence because hazard identification is not a behavior, but rather represents a cognitive change in awareness or perception of the environment.

The dissimilar findings of risk-taking and hazard identification provide further support for the notion that injury-relevant behavior is made up of many different psychological and behavioral components. Each of these factors is likely to operate either fully- or semi-independently in determining safety behavior. Risk-taking and hazard identification are but two of several factors that effect safety behavior (e.g., Peterson, Farmer, & Mori, 1987). The findings in this study suggest that risk-taking and hazard identification may be influenced differentially by the same stimuli. Thus, it would seem

that risk-taking and hazard identification can affect behaviors related to injury prevention in different ways. This suggests that in the future, when more is known about each component of safety behavior, injury prevention taught to children should focus on the many different parts of safety behavior. Also, safety education should be constructed so as to influence each behavior and process in an optimal manner.

Risk-Taking

Risk-taking was not influenced as was predicted in the hypotheses. Significant changes on the risk-taking measure from pretest to post-test were not found in any of the experimental conditions. In addition, post-test risk-taking scores for the experimental conditions were not significantly different than post-test risk-taking scores for the control condition. One factor that may have contributed to the lack of significant risk-taking findings is that subjects' mean pretest risk-taking scores were somewhat lower than the mean scores seen in a previous, similar study conducted by Potts and Swisher (1998). These lower risk-taking scores may have made it more difficult to produce a change from pretest to post-test, as there was less range for observing a decrease in scores. There are several factors that may have contributed to the different means found in the two studies, although these represent only speculation. In the present study, children were taken out of class and tested alone in a room at school, whereas, in the Potts and Swisher study, children were tested at after school daycare centers in semi-private rooms where they could see other children. The children tested at their schools may have had lower pretest risk-taking scores because they were in an environment where their behavior is more closely monitored and controlled compared to a daycare environment. Children in school

were less likely to be aroused by other events around them during the testing situation, such as the sight of other children playing. Thus, the specific environment may have led to more inhibition on the risk-taking measure items in the school setting. The children tested at the daycare were, on the other hand, in a less controlled setting, where their behavior is not highly monitored and where the potential to be aroused by other children during the testing situation was greater. Thus, their risk-taking answers may have been somewhat disinhibited by these factors.

The insignificant effects of the TV stimuli on risk-taking are not commensurate with results found in the previous study by Potts and Swisher (1998). That study found that children who had viewed a tape with multiple modeling components (labeling of unsafe behavior, negative consequences of unsafe behavior, and positive consequences of safe behavior) evidenced significant decreases from pretest to post-test on the risk-taking measure. Several differences in the two studies may have contributed to the different results. One possibility is that some of the stimulus scenes used in the present study were different than the scenes used in Potts and Swisher (1998) study. Perhaps the scenes used in the present study contained information with which the children had already had experience. These scenes were not able to influence risk-taking scores as strongly as scenes did in the previous study, which may have contained new information about situations with which the children had little experience. Another difference is that the length of the stimulus used in the Potts and Swisher (1998) study was approximately two minutes longer than the length of the stimuli used in the present study. Another factor that may have contributed to the different findings of the two studies is that the present study measured generalization of modeled risk-taking more stringently than the previous study.

In the present study, risk-taking items that were similar to scenes viewed in the stimuli videotapes were purposely given to the children only in the pretest risk-taking measure. In the previous study, no effort was made to place these risk-taking items in the pretest. Therefore, the current study measured only generalization effects of safety modeling (i.e., all post-test risk-taking items were dissimilar to the TV scenes). In sum, the different scenes in the stimuli combined with the shorter time of the stimuli and the lack of specific (to the TV stimuli) post-test risk-taking items used in this study may have made for less impact than the Potts and Swisher (1998) study. The stimuli used in the present study may have not been powerful enough to influence children's willingness to take risks.

Although no overall significance between conditions was obtained, there are several trends in the risk-taking means that are consistent with social cognitive theory. Children exposed to the Negative Consequences condition showed a decrease in risk-taking, unlike children who were exposed to all other conditions. This is consistent with social cognitive theory which suggest that persons are less likely to imitate modeled behaviors that are punished (Bandura, 1965). The studies used to support this tenet have typically been ones in which the intent is to discourage individuals from engaging in a behavior that is not well-ingrained in the individual by punishing models who engage in that behavior. For example, in a study conducted by Walters and Parke (1964), males who viewed a model who was punished for playing with prohibited toys were less likely to play with the prohibited toys when given the opportunity, compared to males who viewed a model who was rewarded for playing with the prohibited toys. The crucial difference between Walters and Parke's (1964) study and the present study is that the present study attempted to influence well-established behavioral tendencies. There appears to be a

dispositional quality to risk-taking, as it overlaps greatly with sensation seeking which is a personality trait (Zuckerman, 1983; Arnett, 1990); whereas playing with specific toys in a specific manner is not likely to represent a stable disposition. Thus, risk-taking, as a stable, behavioral tendency, is likely to be less amendable to change by only viewing punished models than less dispositional behaviors.

Several possibilities for the lack of significant risk-taking findings were explored. In future studies that aim to decrease children's willingness to take physical risks, TV stimuli that are longer and more powerful than the stimuli used in this study should be used. Trends in the risk-taking means suggest that showing children negative consequences to unsafe behavior has the most impact on their willingness to take physical risks. Therefore, negative consequences to unsafe behavior should be included in a safety curriculum.

A gender main effect was found, with males reporting higher levels of willingness to take risks across pretest and post-test than females. This finding is consistent with previous research (Potts & Swisher, 1998). Such findings are likely the result of differences in the socialization of males and females. Males tend to be socialized to take more risks, whereas females are taught to inhibit risky behavior (Ginsburg & Miller, 1982).

Hazard Identification

The hypothesis that exposure to any experimental treatment condition would result in increased hazard identification from pretest to post-test was supported. In addition, the hypothesis that exposure to any of the experimental conditions would result in more

hazard identification on the post-test than exposure to the control condition was also confirmed. These results suggest that brief exposure to different forms of safety behavior on TV may increase children's ability to identify hazards. Children's ability to identify hazards appears to improve after observing any type of safety model, be it followed by negative consequences, positive consequences, no consequences, or both negative and positive consequences. This finding is consistent with the Potts and Swisher (1998) study. That study found that children who viewed either a videotaped segment about safety (including negative consequences for unsafe behavior and positive consequences for safe behavior) or a videotaped segment of a cartoon in which safety behavior was incidental to the story line, showed increases in their ability to identify hazards.

Viewing safety content on TV likely represents a priming effect on child viewers. The observation of safety models may prime or cue thoughts of safety, which may lead children to notice safety omissions on the hazard identification measure. This appears similar to Jo and Berkowitz's (1994) proposal that observing violence on TV serves to prime an associative network in the observer, leading to aggressive cognitions and/or actions. Thus, observing safety content on TV may prime thoughts of safety which may, in turn, affect children's judgments about safety. Altering perceptions about hazards in the environment may be the necessary first step in injury prevention. If one is not able to perceive a hazard then one is not likely to change their judgments about that hazard. These judgments may then lead children to alter their behavior in order to cope with that hazard.

One limitation of the hazard identification findings is that the exact role of hazard identification in injury prevention is not well understood. Little research has been

conducted that demonstrates a causal relationship between hazard identification and injury (Sheehy & Chapman, 1985). However, most injury researchers would agree that the ability to perceive hazards is a necessary step in injury prevention. Although a direct relationship between hazard identification and accidental injury has not yet been found, evidence does support the face-valid notion that hazard identification must occur in order for injuries to be prevented (Coppens, 1985; 1986). Future studies should examine hazard identification as a causal factor in accidental injury.

Another limitation of the hazard identification findings is that the hazard identification measure used here has not yet been validated. In future studies, it would be useful to further validate this measure using injury history of the children and educational tests designed to measure children's knowledge of general safety. It may be useful to obtain reports from others about the child's actual safety behaviors because the hazard identification measure is not a direct measure of behavior. By obtaining these reports, it may be determined whether this measure is also related to the child's actual safety behavior.

There are several limitations to the present study. One such limitation is that the long-term impact of the effects of the TV stimuli was not examined. The duration of the TV stimuli seen in this study represents a small fraction of the amount of television that the typical child watches each day. Thus, it would be interesting to examine whether the effects observed in this study persisted even after children have had the opportunity to engage in their regular television viewing habits.

While this study may address how to improve upon instructional safety televised messages, it is likely to have poor ecological validity with respect to the types of content

children typically view on mainstream television. A content analysis of programs popular with children was conducted by Potts, Runyan, Zerger, and Marchetti (1993) in order to learn about the types of safety messages and behaviors that occur on TV. This study revealed that about 12 safety messages or behaviors occurred each hour, with most being of an incidental nature (i.e., these were not direct messages to the viewer). However, only 44% of these safety events pertained to children. Another interesting finding is that 83% of the safety behavior that occurred were not followed by any consequences. These findings suggest that young viewers may be less likely to learn about how to behave safely from watching TV because most of the safety behaviors that they see are not followed by any type of consequences. According to social learning theory, these results may suggest more safety events that are relevant to children and are followed by consequences should be aired on TV in order for children to learn more about and to imitate safety behaviors.

Gender differences in hazard identification were not found. The lack of cognitive differences between males and females is consistent with previous research (DiLillo, Potts, & Himes, in press) in which no gender differences were found in children's perception of danger. It is of interest that there is no gender difference at the cognitive level, however there are significant gender differences in risk-taking and injury, with males having higher levels of both risk-taking and injury. Future research should examine other variables that may influence risk-taking and injury in children, such as the socialization process.

Summary

In sum, children's willingness to take physical risks was not significantly influenced by any of the safety messages viewed in this study. However, children's ability to identify

hazards were significantly affected by all of the safety messages in this study. Changes in hazard identification due to exposure to televised models were seen regardless of gender.

Injury has been conceptualized to be caused by many different factors, including dispositions of the child, learning history, and so on (Peterson, Farmer, & Mori, 1987). It is not difficult to conceive that a slight increase in the ability to identify hazards, such as that observed in this study, may enable children to behave more cautiously and thus prevent possible injury. The use of television as a means to influence children to behave more safely has both economical and practical benefits. First, televised messages are able to influence a great number of children at the same time. Secondly, television, as a medium, has the ability to provide children with salient safety messages. These televised messages are likely to better capture and maintain children's attention than other media. Television programming could have a large impact on childhood injury rates at the societal level if TV programs geared toward children included more safety messages. For example, if a safety message on a TV program resulted in avoidance of only 1 out of 1,000 injuries then this would translate into 22 fewer deaths, 600 less hospitalizations, and 160,000 fewer injuries each year (Rodriguez, 1990). Potent safety messages are likely to affect more than 1 of 1,000 injuries, resulting in an even greater impact on the societal injury rate. Repeated exposure to televised messages that include consequences for both risky and safe behavior is likely to influence children's behavior, representing a culmination effect of observational learning. Such a process is likely to lead to greater long-term behavioral changes (Bandura, 1986).

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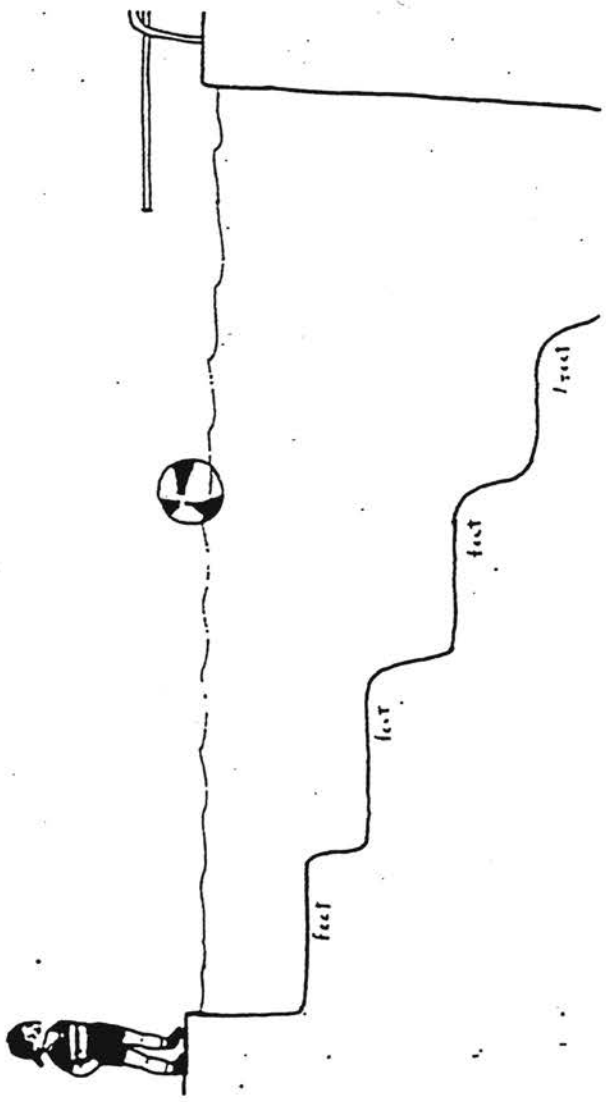
APPENDIXES

APPENDIX A

SAMPLE RISK-TASKING ITEMS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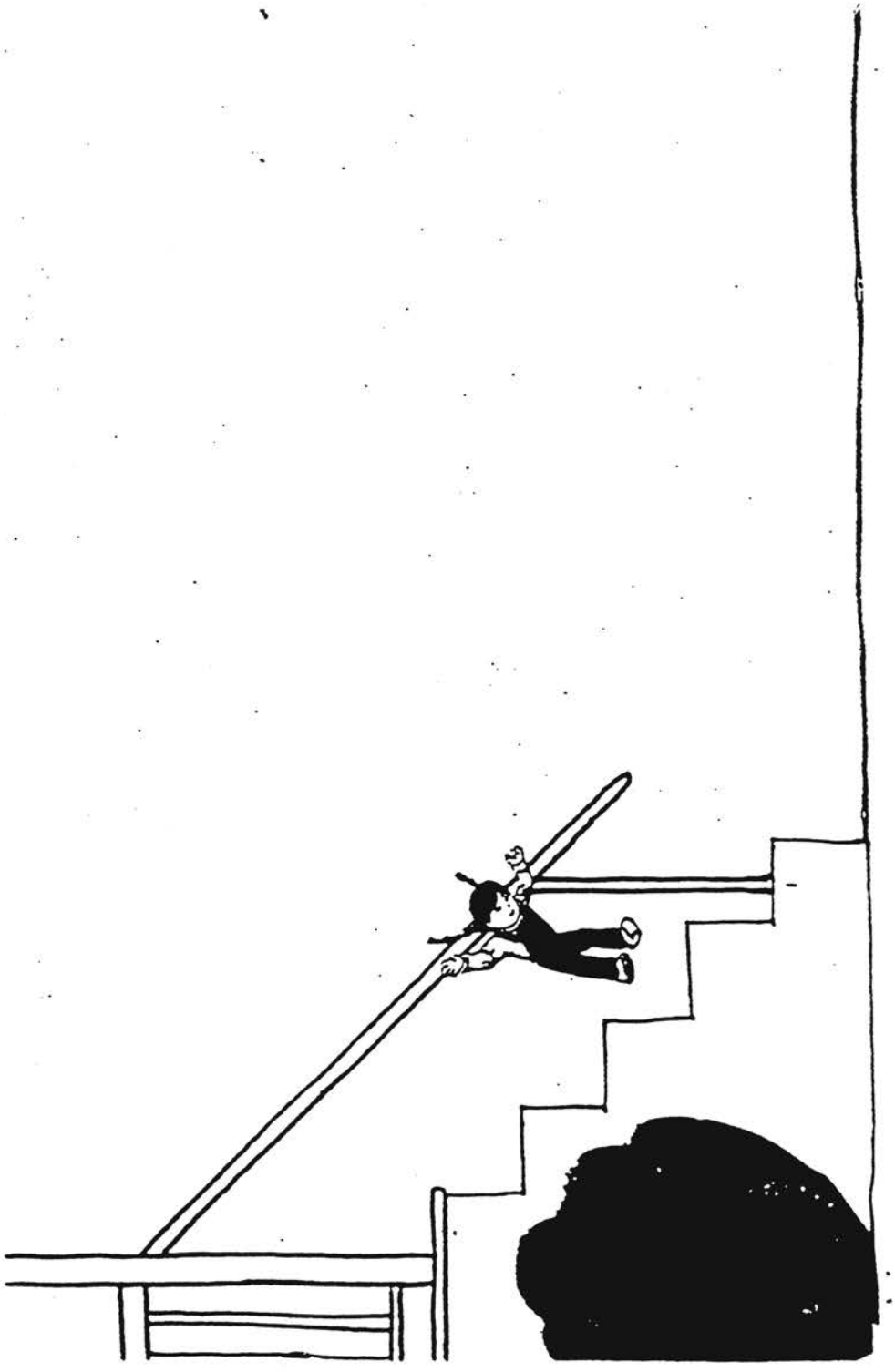
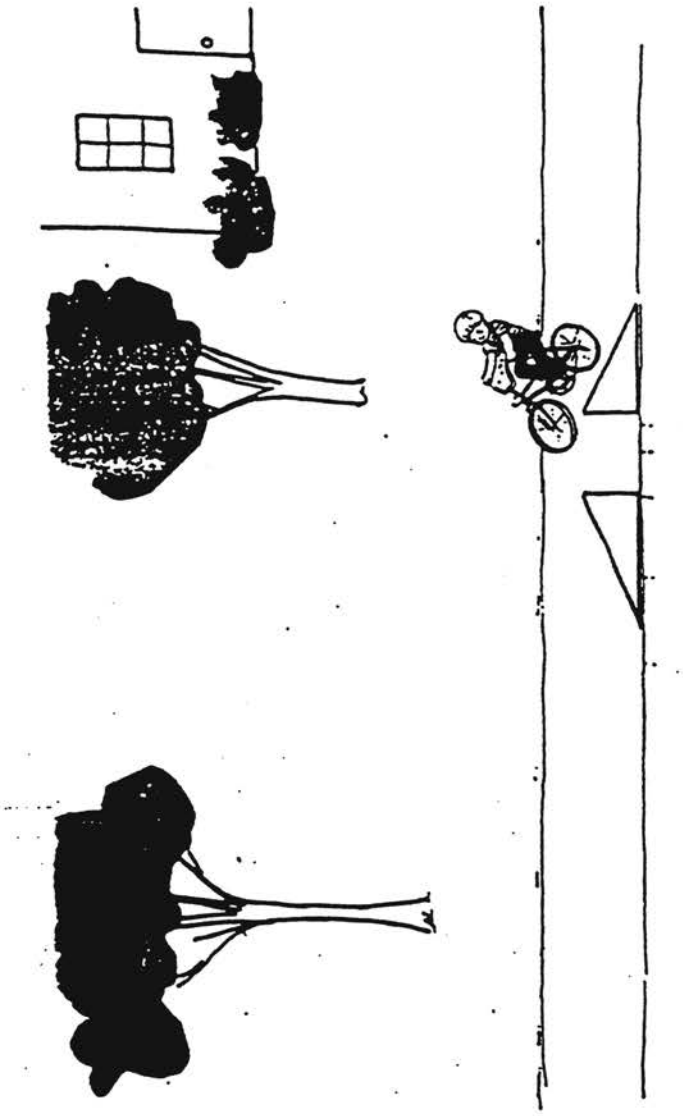
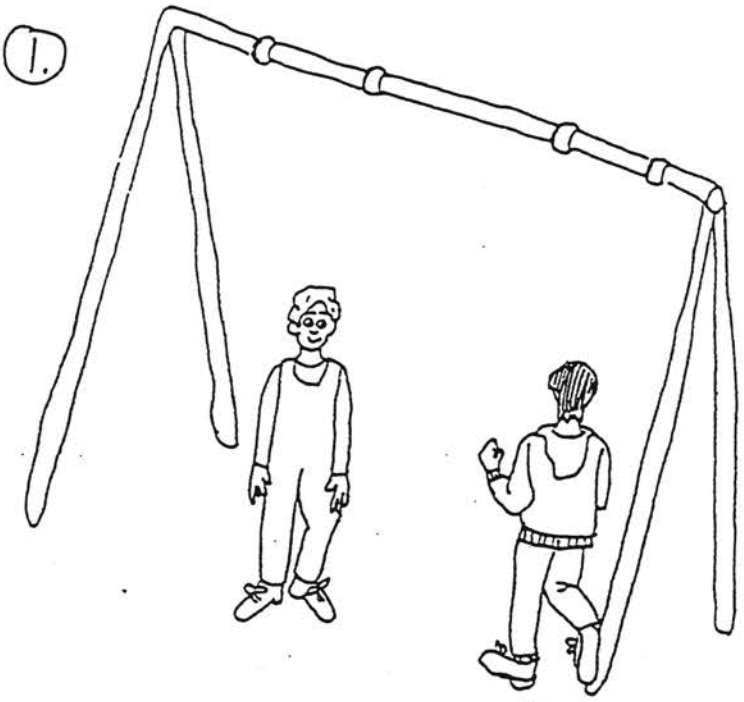




APPENDIX B

SAMPLE HAZARD IDENTIFICATION

ITEMS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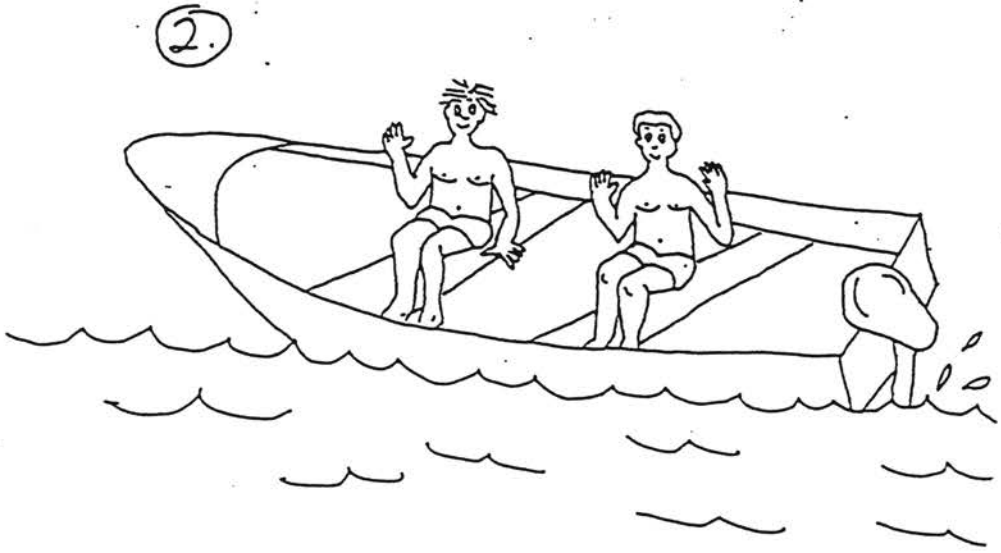
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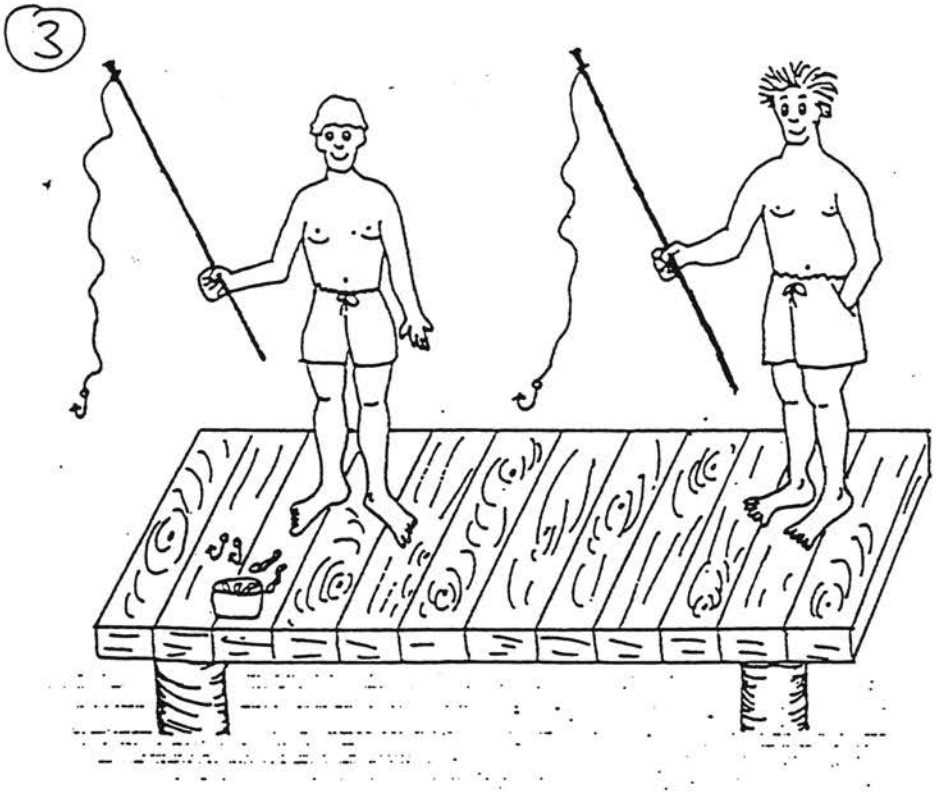
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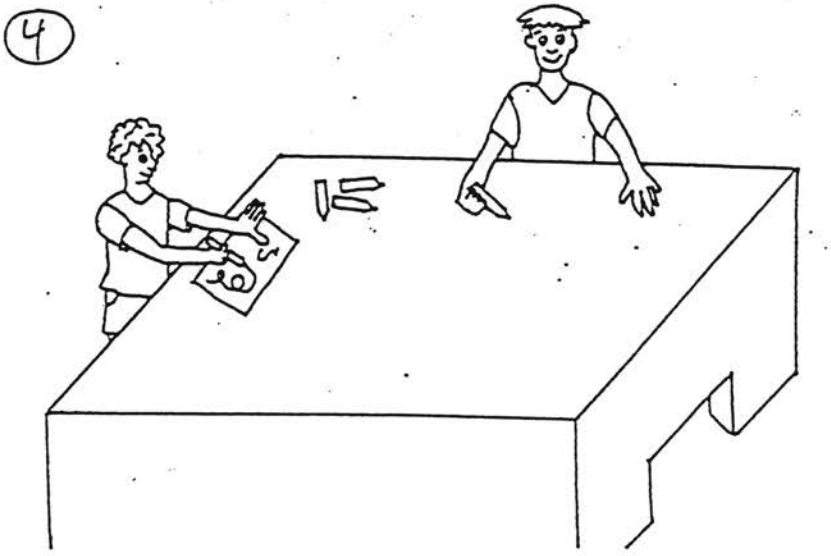
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APPENDIX C

INSTITUTIONAL REVIEW BOARD

APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 08-08-97 **IRB#:** AS-98-000

Proposal Title: EFFECTS OF VARIOUS TV SAFETY MESSAGES ON CHILDREN'S RISK-TAKING AND HAZARD IDENTIFICATION

Principal Investigator(s): Richard Potts, Lisa Swisher

Reviewed and Processed as: Expedited - Special Population

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD 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 Disapproval are as follows:

Signature: _____ Date: August 12, 1997
Chair of Institutional Review Board
cc: Lisa Swisher

VITA

Lisa M. Swisher

Candidate for the Degree of

Doctor of Philosophy

Thesis: EFFECTS OF TELEVISED MODELING COMPONENTS ON CHILDREN'S PHYSICAL RISK-TAKING AND HAZARD IDENTIFICATION

Major Field: Psychology

Biographical:

Education: Received Bachelor of Arts degree in Psychology from the University of Oklahoma, Norman, Oklahoma in May 1994. Graduated with a Master of Science degree with a major in Psychology at Oklahoma State University in May, 1996. Completed the requirements for the Doctor of Philosophy degree with a major in Clinical Psychology at Oklahoma State University in July, 1999.

Professional Memberships: American Psychological Association, Association for Advancement of Behavior Therapy, and Oklahoma Psychological Association.