

What relationship exists between male early-adolescent ice hockey players' beliefs about aggression and injuries and penalty minutes?

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ABSTRACT

More than 30 million individuals between the ages of 6 and 21 are involved in non-scholastic sports activities and this has led to an increase in injuries. One of the most common sports for injury is ice hockey. Even though critical rules and regulations are established, injuries still occur. Penalty minutes are assigned for the breach of the rules and regulations. The male early-adolescent belief about aggression may present a risk factor for injuries and penalty minutes. The purpose of this research project is to identify if a relationship exists between the beliefs about aggression of early-adolescent male ice hockey players and penalty minutes and injuries while engaged in game participation.

The theoretical framework for this study was L. R. Huesmann's social cognitive theory. According to this theory, the adolescent reacts to a certain environmental cue by retrieving scripts called normative beliefs that are either acceptable or unacceptable.

The method used for the study was a convenience sample of male early-adolescent ice hockey players. The setting was a local ice rink in mid-Michigan. Permission was obtained from the parents of the participants. Demographic data were collected regarding age, grade, level of play and positions. Injuries were self-reported by the ice hockey player and data were collected from coaches regarding penalty minutes on 30 players. The responding coaches were asked the type of coaching style whether North American style or European.

There were a total of 53 male early-adolescents between the ages of 12-14 who responded to recruitment and answered the Normative Beliefs About Aggression Scale (NOBAGS).

One adolescent was removed from the sample who because of female gender, resulting in a sample size $n=53$. All of the testing was performed at one local ice hockey rink.

The mean age of the male early-adolescent ice hockey players in this study was 12.75 years ($SD=.76$). The average grade was 7th (range 6th–9th grade). More Bantam ($n=40$) ice hockey players responded to the questionnaire than Peewee ($n=10$) or Midget ($n=3$). Left or right wings were the position most represented in the study ($n=24$ or 45.3%). Defensemen were second with $n=18$ or 34.0%, centers were third ($n=8$ or 15 %) and goalies were last ($n=3$ or 5.7%). The coaching style ($n = 3$ coaches) was 100% North American style.

A Pearson's r was used to correlate the subscales, general approval of aggression, (GENAPAG), approval of retaliation of aggression (APPRETAG), and total approval of aggression (TOTAPPAG) of the NOBAGS questionnaire with the number of injuries and penalty minutes. The results found no significant difference between the subscales, GENAPAG $p= .390$, $r=-.122$, APPRETAG $p= .772$, $r=.772$, and TOTAPPAG $p= .565$, $r=.565$ and injuries. The results support a significant correlation between the beliefs of aggression and penalty minutes (GENAPAG $p=.000$ $r=.693$, APPRETAG $p= .030$, $r=.397$, and TOTAPPAG $p= .001$, $r= .570$).

In practice, the nurse practitioner (NP) may utilize information regarding prevention of both injuries and unintentional injuries in the male early-adolescent and understand the role aggression may play. The NP in the role of an educator may provide these interventions at the primary care setting or offer teachings at the ice hockey rink.

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CHAPTER I

INTRODUCTION

Over the past 20 years, participation in organized sports by preadolescents and adolescents has greatly increased. More than 30 million individuals between the ages of 6 and 21 years are involved in non-scholastic sports activities. Benefits from participating in sports include “confidence building, learning team and fair play, establishing patterns of a lifelong focus of fitness, providing a controlled outlet for youthful energy, optimizing sports-specific skills, and, occasionally, advancing education through sports-based scholarships” (Hutchinson & Nasser, 2000 p. 1). However this increase in sports participation also has led to increased injuries in the adolescent (Hutchinson & Nasser, 2000). In the United States it is estimated that 10 million primary care visits per year occur from sport injuries (Hambidge, Davidson, Gonzales, & Steiner, 2002). The cost of these sport injuries is approximately 2.7-3.0 million dollars with a loss of 15.7 school days per year (Rampton, Leach, Therrien, Bota, & Rowe, 1997). Adolescents with sports related injury are more likely to be Caucasian (1.9 per 100 person years) and the visits increased with age (3.4 visits per 100 person years in adolescents) (Hambidge, et al., 2002).

The single most common cause of injuries was sports/overexertion. (Hambidge, et al., 2002). The most common sports associated with injuries were basketball, football, baseball/softball, soccer, in-line skating and ice hockey (Ganley, Pill, Flynn & Gregg, 2001). Ice hockey is a collision sport played by approximately 260,000 children and adolescents (Reid & Losek, 1999) in nearly 18,000 teams. Unfortunately, The National Electronic Injury Surveillance System of the United States Consumers Product Safety Commission estimate that 21,311 adolescent ice hockey players are injured annually

(Reid & Losek, 1999). Adolescent ice hockey players have been reported to have the highest incidence of injury of any sport (Smith, Stuart, Wiese-Bjornstal, & Gunnon, 1997). The injuries mostly occurred to male ice hockey players (71%) with an average age of 13.0 years (Pashby, Carson, Ordogh, Johnston, Tator, & Mueller, 2001).

Head injuries and spinal injuries are one of the most serious consequences of playing ice hockey. Concussion injury rates have increased from 0.7 per game in 1986 to 2.6 per game in 2000 (Pashby, et al., 2001). Spinal injuries are still increasing (Watson, Singer, & Sproule, 1996) with 243 spinal injuries occurring between the years of 1966-1996. Sixty-three resulted in permanent spinal cord injury and six obtained fatal injuries (Pashby, et al., 2001).

According to Gissane, White, & Kerr, 2001, most sports injuries are rarely attributed to a single risk factor. Both extrinsic and intrinsic factors attempt to explain injuries in ice hockey to the male early-adolescent. Extrinsic factors are related to the type of activity with the sports injury. Intrinsic factors are psychological characteristics that seek to explain ice hockey injuries (Gissane, et al., 2001).

Since the number of adolescents who specialize in a sport, such as ice hockey, are increasing, consequences from injuries are inevitable. Despite compliance with equipment requirements (100%), 5.5 million visits to the emergency department were reported in Canada per year (Rampton, et al., 1997). One in ten male early-adolescent presents to the primary care office for an ice hockey related injury (Hambidge, et al., 2002). These data present a growing concern to the nurse practitioner (NP) in primary care. A component of the role of a NP is health preventative needs. By assessing the

needs in the primary care office and discussing the importance of preventative needs, the NP can intervene with a plan for decreasing injuries to the male early-adolescent.

Purpose

The purpose of the research project is to identify if a relationship exists between the beliefs about aggression of the male early-adolescent ice hockey player and penalty minutes and injuries while engaged in game participation.

Research Question

“What relationship exists between male early-adolescents beliefs about aggression and ice hockey injuries and penalties?”

CHAPTER II

LITERATURE REVIEW

Theoretical Framework

Dr. L. Rowell Huesmann's social cognitive theory for the development of aggressive behavior provides the framework for the research. Aggressive behavior is defined as "any behavior that is intended to injure or irritate another person" (Huesmann, 1998, p. 84). Others define aggression as "an action or behavior that has many forms" (Garnham, 2001, p. 40). The forms can be physical, verbal, or non-verbal. Physical aggression includes such acts as kicking, punching, slapping, and biting. Verbal forms can be insults, threats or rumors. Examples of non-verbal forms are gestures and hate mail. According to Garnham, (2001, p. 40), "aggression is intended to bring about harm to a person either through pain or loss". These definitions are consistent with the definitions presented by Huesmann (1988; 1998). For the purpose of this thesis, Huesmann's definition of aggressive behavior will be used.

Huesmann presents evidence to support the more aggressive adolescent very likely becomes the more aggressive adult. How then does the adolescent learn aggressive behavior? As a child, learning is said to occur as a result of one's own behavior (enactive learning) and as a result of observing others (observational behavior). The child then encodes this behavior and this behavior may depend on the response of the environment to the aggression, precipitating factors, and other casual factors. This behavior is controlled by programs that have been learned during the adolescents' early life and are described as cognitive scripts. These scripts are then stored in the person's memory and are used to guide behavior and social problem solving (Huesmann, 1988).

The theory suggests that aggressive behavior is controlled to an extent by scripts (See Figure 1). Scripts suggest “what events are to happen in the environment, how a person should behave in response to these events, and what the likely outcome of those behaviors would be” (Huesmann, 1988, p. 15). When an adolescent faces a social problem, scripts are then retrieved from memory. It may happen through certain cues or triggers that promote the use of particular scripts. Depending upon the physiological arousal component (stable predisposition such as neuroanatomy or transient predisposition such as diet), and cognitive component (adolescent’s past reinforcement history), certain scripts are retrieved and then utilized for the given situation. Not all scripts that the adolescent retrieves will be used. Before acting on the given situation, the adolescent reevaluates the appropriateness of the script, social norms and consequences (Huesmann, 1988; Huesmann, 1998).

Scripts are then filtered through self-regulating behavior. Normative beliefs are what the adolescent may use to filter out inappropriate behaviors. This is how the adolescent determines acceptability or unacceptability of a behavior as well as how to regulate actions in a given situation. This may serve to regulate behaviors from the social conventional type behaviors to moral behavior involving harm to others. These beliefs may be situation-specific (“it’s okay to hit others if they hit you first”) or general (it’s okay to hit others”). Adolescents’ normative beliefs may also affect the emotional response to others’ behavior and may stimulate the use of appropriate scripts (Huesmann & Guerra, 1997).

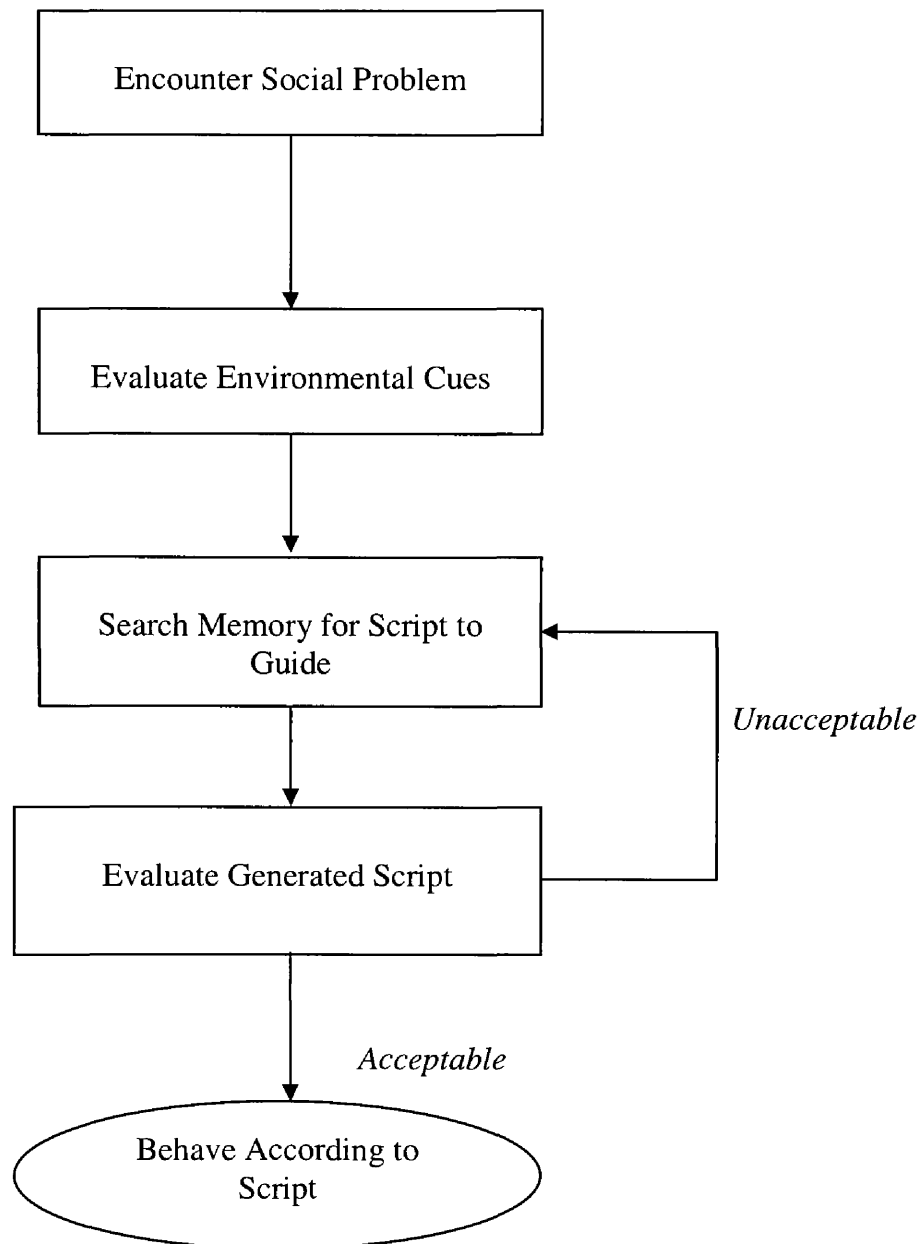


Figure 1. Decision-making processes at the moment of behavior according to the script model. Adapted from "An Information Processing Model for the Development of Aggression," by L. R. Huesmann, 1988, *Aggressive Behavior*, 14, p. 15.

Type of Injuries

It has been estimated that 30 injuries occur per 1,000 early-adolescent ice hockey players per year (Rampton, et al., 1997). Injury is defined as a “hockey related event that kept a player out of practice or competition” and needed the attention of his coach (Smith et al., 1997, p. 502). Injuries are caused by player collisions, collisions with boards, skating at speeds of 30 mph, pucks traveling at 100 mph, sharp skates, and long sticks (Hambidge, et al., 2002). High sticking, slashing, cross-checking and checking from behind (CFB) are the four most common types of illegal play causing injury (Benson, Mohtadi, Rose, & Meeuwisse, 1999). High sticking is the carrying of the stick above the height of the shoulders so that a possible injury to the face or head could occur. Slashing is striking an opposing player with the stick. Cross-checking is a check, block, or blow delivered by a player with both hands on the stick with no part of the stick on the ice. Checking from behind is the same as cross-checking only the blow is delivered to the backside of the opponent and can cause possible neck and spinal injuries.

The ice hockey stick was the most common mechanism of injury in the early-adolescent ice hockey player, accounting for 39% of their injuries. Being hit by the puck caused 30% of the injuries. Both player fights/collision and collision with the boards caused 10% of all injuries and other injuries were 4% (Rampton, et al., 1997). The primary injuries the early-adolescent ice hockey player received were to the face (85%), head (13%), neck (6 %) and other (4%).

One of the most serious injuries in ice hockey is head injuries and spinal cord injuries. A Canadian study (Tator & Cushman, 2000) revealed 42 spinal injuries in ice

hockey players. The median age was 17 years. Out of the 42 players, 28 had spinal cord injuries with 17 having complete paralysis below the level of injury.

Concussion is the most common head injury in ice hockey. High-impact or high-speed collisions to the skull can cause a subdural or epidural hematoma. Although only 10% lose consciousness, the early-adolescent has a four to six times greater chance of sustaining a second concussion (Harmon, 1999). This injury is called the second-impact syndrome. It is caused by the adolescent ice hockey player returning to play and receiving a second head trauma before recovering from the first initial injury (Sullivan & Anderson, 2000).

Hockey may increase the number of unintentional deaths. Unintentional deaths are the number one cause of death in the male from ages 1 and 44 and are twice as high for males as females. According to the United States Department of Health and Human Services (USDHHS, 2000) unintentional deaths are the fifth leading cause of deaths in all age groups (Stiglets, 2001).

Maron, Groham, & Kyle, (2002), reported that sudden cardiac death is now a possible threat to the male early-adolescent ice hockey players. A nonpenetrating chest blow (*commotio cordis*), results in an instantaneous transmission of mechanical energy to the heart. This type of injury is of low energy and low velocity, and is usually caused by being struck in the chest by a puck. However, this does produce enough energy to cause cardiac standstill and unless cardiopulmonary resuscitation (CPR) is initiated, the ice hockey player may die.

Prevention of Injuries

Critical rules and regulations were established by the U. S. A. Hockey, Inc. the national governing body for amateur ice hockey, to protect the male early-adolescent ice hockey player. Despite these increased rules and regulations, there still remains injuries (Smith, et al., 1997).

The U. S. A. Hockey, Inc. has established the following classifications of youth hockey: mite 8 to 9 years of age; squirt 10 to 11 years of age; peewee 12 to 13 years of age; and bantam 14 to 15 years of age. The American Academy of Pediatrics (2000b), limits checking to the level of peewee and above (ages 13 and above). No checking or physical contact of any kind is allowed in the playing level below peewee or ages 12 and below. Since 1965, three important safety related rules have been established by the U. S. A. Hockey, Inc. The first rule established the mandatory use of helmets in 1965-1966. The second, introduced in 1978-1979, was the mandatory use of full-face masks. The helmet-face mask was believed to cause a false sense of protection and additional protection was needed to decrease spinal injuries. In 1970, rule changes prohibited head-first contact to decrease spinal injuries (American Academy of Pediatrics, 2000b). And the third rule, which was introduced between 1985 and 1986, was the requirement of a minor penalty (2 minutes) for checking into the boards or a major penalty (5 minutes) for checking from behind (CFB). With encouragement from the medical profession, a stricter rule in regards to CFB was established between 1989-1990. This rule allowed the referee to assess either a minor or major penalty whether injury occurred or not. If an injury occurred, the referee could issue a major penalty plus a required game expulsion (Watson, et al., 1996).

The early-adolescent ice hockey player is required by the U. S. A. Hockey, Inc. to wear a helmet, face mask, mouthguard, shoulder pads, elbow pads, padded gloves, hip pants or padded hockey pants, cup (male) and shin pads as protective gear. In addition to the named gear, the goalie is required to wear a padded abdominal apron and to wear leg pads instead of the shin pads (Reid & Losek, 1999).

According to Watson, et al., 1996, prior to the third safety rule, regarding checking from behind, the frequency rate and type of injuries reported per game were 6.16% head and neck, 4.98 % back, and 16.11 % shoulder injuries were reported. After the initiation of the rule, the frequency and type of injury was head/neck 4.49 %, back 4.49 %, and shoulder 19.38 %. Although the injury rates for the head/neck and back decreased, the rate for the shoulder injuries increased. Watson, et al., 1996, suggested that facial protection and the CFB rule may have produced a sense of being invulnerable to the adolescent player and may have produced undesirable changes in their behavior. Penalty data, again, collected pre- and post- CFB rule indicated a decrease in frequencies and rates or penalties per game for body contact penalties and stick infractions and an increase for CFB minus penalties (Watson, et al., 1996).

An innovative concept for early-adolescents in ice hockey entitled “fair play” has been introduced in parts of the United States. The purpose of fair play is to improve sportsmanship and to reduce injuries. The concept of “fair play” works by scoring ice hockey games and rewards the teams or individuals with the least penalties and punishes the teams or individuals with the larger number of penalties. The creators of this concept believe it will help decrease penalties, intimidation and violence during hockey and will

help produce an enhanced play atmosphere and foster player development (Roberts, Brust, Leonard, & Hebert, 1996).

Risk Factors for Injury

Risk factors have been attributed to intrinsic (subject related), extrinsic (externally related) factors, and physical characteristics. Intrinsic factors are individual biological, biochemical and psychosocial characteristics and mood states such as aggression (Gissane, et al., 2001; Smith, et al., 1997). Hlilton, Harris & Rice (2000), found male-to-male aggression in adolescent males was more prevalent than male-to-female aggression.

Intrinsic risk factors include how adolescents report their views of possible injury. For example, 24% of adolescent ice hockey players felt that spinal cord injury was not possible due to the protective equipment while 48% felt that brain injury was not possible. Six percent state they would purposefully injure in order to win a game (Reid & Losek, 1999). One study by Maffulli (2001), supported the intrinsic theory by stating the injuries are due to the psychological immaturity of the adolescent. This immaturity may cause adolescents to constantly evaluate themselves and several dimensions including athletics and moral conduct. Due to the psychological immaturity of the male early-adolescent, he becomes frustrated which yields to anger. Certain cues have to be present for anger to lead to aggression (Brennan, 1998). Adolescent development is affected by interplay of familial and non-familial influences. Genetic factors strongly influence aggression. Evidence suggests the aggressive behavior is more biologically driven than other behaviors (Steinberg & Morris, 2001) and is a natural behavior (Brennan, 1998).

And finally, another intrinsic risk factor is the early-adolescent is egocentric and assumes what they think is important, most certainly, is important to everyone else. Part of this egocentrism is the feeling of “being special.” This feeling gives the early-adolescent a false security in being immune to risks and consequences that affect others. The early-adolescent has not yet achieved mastering abstract rules and is unable to apply these rules consistently. (Strasburger & Brown, 1998).

Extrinsic factors are related to the types of activity during the injury and manner of which the sport is practiced. Eighty-six percent of male adolescent ice hockey players stated they would stop a slap shot with their body. Ninety percent stated that they would skate full speed into the boards, and 32% stated that they would illegally check (Reid & Losek, 1999). An adolescents’ skeletal system is still growing and excessive strains to this system may cause serious injury (Maffulli, 2001). In contrast to negative reports of injury, The American Academy of Pediatrics (2000a) has reported no adverse effects on the sexual maturation or the progression of Tanner stages in the male early-adolescent ice hockey player.

In one study, surveyed adolescent ice hockey players stated that their professional role models do not adhere to the rules. Also, 61% of the adolescent ice hockey players, prefer to play North American style hockey with its emphasis on checking and physical play, as opposed to European style hockey with its emphasis on skating and passing skills (Reid & Losek, 1999).

Other risk factors for injuries are physical characteristics of the male early-adolescent which include age, position played on the team, level played, playing time, warm-up, physical fitness, muscle tightness, coaching, skill and exposure (Gissane, et al.,

2001; Smith, et al., 1997). Improper warm-up prior to playing ice hockey, not stopping when tired or in pain, or too much activity “too soon” after an injury may be possible risk factors (Flynn & Ganley, 2002).

Conclusion

One of the objectives of the U. S. Department of Health and Human Sciences Healthy People 2010 (2000) is to reduce the number of unintentional and intentional injury. Many injuries still occur in ice hockey during practice or during the course of playing a game to the male early-adolescent. The type of injury can be as severe as head injury, spinal cord injury or rarely, death. Other minor injuries that occur to the male early-adolescent ice hockey player are fractures, dislocations, lacerations, and contusions. Even though there is 100% compliance with wearing protective equipment, additional penalty minutes have been initiated, and new rules for safety are in place, too many injuries are still occurring.

Intrinsic and extrinsic factors may be responsible for certain types of injuries. One of the risk factors for the male early-adolescent ice hockey player is aggression. There is more male to male aggression and the male early-adolescent is not fully physically or emotionally mature at 12-14 years of age. The social cognitive theory of aggression has shown through environmental cues, an adolescent acts or chooses not act aggressively. It is through these beliefs about aggression that male early-adolescent ice hockey player may be injured or receive penalty minutes.

Thus, the research question examined in this study was: “what relationship exists between male early-adolescents’ beliefs about aggression and ice hockey injuries and penalties?”

CHAPTER III

METHODS

The design selected for the research question guides the data collection, analysis and interpretation of the results. In order to answer the research question, a quantitative, non-experimental design was utilized. Subsequently, the intent was to seek an understanding of the relationship between two variables, the independent variable (IV) or beliefs about aggression and two dependent variables (DV) ice hockey injuries and penalty minutes. A correlational research study was conducted to answer the research question.

The rationale for this decision is in the nature of the question. An attempt is to understand whether or not a relationship exists between beliefs about aggression of the early-adolescent and ice hockey injuries and penalty minutes. Correlation will not prove causation, but will show whether a relationship exists (Polit & Hunger, 1999).

The IV, or beliefs about aggression of the early-adolescent, is still in a maturational process. This maturation or immaturity is something the researcher has no control over and may be a threat to internal validity. The assumption is that all early adolescents go through a capacity to conceive of many different alternatives that are immediately coupled with the ability to assign priorities and decide which choice is more or less appropriate (Strasburger & Brown, 1998). Thus, the ice hockey player participates in scripts with the decision to intentionally “hit” another player during play and possibly cause injury.

All of the participants selected for the study will be male early-adolescent hockey players. There will not be control groups, random assignment or an intervention applied to any groups.

Sample/Sampling Plan

Population is an entirety of people who meet specified set of criteria a researcher seeks to study. The population for this research is male early-adolescent ice hockey players from local rinks. The accessible population is the group of people who meet these specified criteria and are available to the researcher. The accessible population is taken from a local ice hockey rink in Flint, MI, which is governed by the American Hockey League Association. A target population, then, is a group of people to which the researcher would like to make generalizations. The target population in this study is male early-adolescent ice hockey players (Polit & Hungler, 1999).

Strasburger & Brown (1998), define early-adolescent as ages ranging from 12 to 14 years. Sampling for this study was from the accessible population. Eligibility criteria or inclusion criteria are what make up the traits of the population (Polit & Hungler, 1999). To be eligible for the study, the participant had to be 12-14 years of age, male, currently on ice hockey team rosters in the, Bantam, PeeWee, or Midget leagues in the American Hockey League Association and playing defense, right or left wing, center, goaltenders.

Sampling designs are placed into two categories: probability and non-probability sampling. Probability sampling is a method of selection so each participant usually has an equal chance to be chosen for the study. Types of probability are stratified, cluster, simple random and systematic (Polit & Hungler, 1999).

Non-probability sampling is a method in which participants are chosen in a nonrandom manner. Types of non-probability include convenience, quota, purposive and evaluation. With non-probability sampling, not every participant has a chance to be included in the sample, which will cause the population to be underrepresented, thus decrease the accuracy of the study (Polit & Hungler, 1999).

The type chosen for this study is non-probability. The rationale for using non-probability is economy and convenience. The type of sampling design utilized is convenience, since the researcher will draw a sample from the accessible population as defined beforehand. The researcher did not know the ice hockey players included in the study. Convenience sampling is economical and completed in a timely manner. This researcher proposed a sample size of 50 male early-adolescent ice hockey players for cost effectiveness and time utilization which is important as a graduate student. The researcher is aware that this is less, with some respects, than the ideal sample size.

The homogeneity of the sample related only to age and gender. Within the accessible population and within the sample there are variations for family incomes, parental education status, team positions, and parental influence on aggression.

Attrition due to death did not occur during the study interval nor did moving, withdrawing or transferring from the team. One possible reason includes the researcher began the data collection 1-2 months after the season commenced, which was October to December, 2002.

Procedure

After approval by the Internal Review Board (IRB) (Appendix A), a sample of 53 male early adolescent ice hockey players, currently enrolled on a PeeWee, Bantam or Midget league roster, were recruited. A poster or flyer was placed in the ice rink explaining the nature of the study and the benefits (Appendix B). After the placement of the poster, a face-to-face recruitment of the ice hockey players, parents and coaches was executed. Assurance that the data will be used in strict confidence was printed on the poster or flyer and explained by the researcher. An incentive of \$10.00 was given to each participant.

The participant met at a predetermined time and day at the rink well before the established time for play or practice. A letter was sent to the participant's address reminding him of the date and time (Appendix C) and confidentiality was addressed. A small conference room was available for privacy for the participants. The researcher, with a background in pediatrics and teaching, administered the questionnaire.

A confidential log was used to keep participant names and assigned code numbers. These code numbers identified the participants' questionnaires. The log included columns with each name, date of recruitment, letter sent, questionnaire and date of the coach's interview. This log was kept in a locked desk drawer. All interviews began in the fall, in the same room, during the months of October, November and December, which was approximately 1 to 2 months after the season start. This method of timing was used so that players could accumulate penalty minutes. The incentives were rewarded after completion of the questionnaire.

A standardized introduction was given to each participant (Appendix D). After obtaining written permission from both the parents/legal guardians and the participant, a questionnaire was presented to the participant in the form of 20 questions. The permission form was developed with the guidance of the researcher's chairperson and the IRB (Appendix E). After the participant completed the questionnaire, an interview with each participant's coach was scheduled related to the number of penalty minutes each participant has acquired (Appendix F).

The NOBAGS questionnaire (Appendix G) was co-developed by Dr. L. R. Huesmann (Huesmann, Guerra, Miller, & Zelli, 1998). The content of the questionnaire is designed to measure an adolescent's perception of how acceptable it is to behave in an aggressive manner. It tests under certain conditions or provocation and when no conditions are specified (Huesmann, et al., 1998).

The questionnaire had three subsections: general approval of aggression (GENAPAG) includes items 13-20 on the instrument (8 items); approval of retaliation aggression (APPRETAG) includes items 1-12 (12 items); and total approval of aggression (TOTAPPAG) includes items 1-20 (20 items). Questions on beliefs about aggression were rated on a 4-point, Likert-type response scale: "1=it's perfectly OK," "2=it's sort of OK," "3=it's sort of wrong," or "4=it's really wrong".

Reported reliability on the entire tool was $\alpha = .90$ (Cronbach's alpha). The remaining subsections were "general approval of aggression" ($\alpha = .83$) and "approval of retaliation of aggression" ($\alpha = .85$) (Huesmann, et al., 1998). Reported reliability on the entire tool from this study was $.89$ (Cronbach's alpha).

CHAPTER IV

RESULTS

Response Rate/Sample Size

After approval by the Internal Review Board (IRB), permission was received from the parents/legal guardians of 53 male early adolescent ice hockey players. This convenience sample is composed of early male-adolescents, ages 12-14 who play hockey at the PeeWee, Bantam and Midget levels.

Data were collected by administering the Normative Beliefs about Aggression questionnaire (Huesmann, et al., 1998). A brief explanation regarding instructions to complete the Normative Beliefs about Aggression questionnaire was given to both the parents/legal guardians and the players. Both parents/legal guardian and players responded positively to completing the questionnaire. There were no refusals. The setting was at a local Flint ice rink governed by U. S. A. Hockey, Inc.

Data were collected between September, 2002 and November, 2002. Fifty-three players completed the questionnaire and demographics data sheet. Three coaches have provided penalty minutes on 30 male early adolescent ice hockey players.

Data Analysis

Data were analyzed using the SPSS programs at the University of Michigan-Flint with the aid of David Keswick, in the Department of Research. Demographic data, such as age, position played, level of play, grade were summarized and described with descriptive statistics including means, modes, medians standard deviation and frequency distributions.

Data analysis for the Normative Belief about Aggression Scale (NOBAGS) included frequencies and central tendencies. One-way analysis of variance (ANOVA)

was used to examine the difference between the grouping variables of the positions of center, wing, defense and goalie and the means of the subscale scores of the players. A t-test was used to examine the difference between the subscales means and 2 levels of play (Bantam and PeeWee). Pearson's r was used to examine the relationship between the three subscales and injuries and penalty minutes.

Demographic Data Analysis and Results

Descriptive statistics summarized ages, grades, positions, level of play, and injuries. The ages of the ice hockey players ranged from 12-14 years of age with 43.4% 12 years of age, having the largest frequency (Table 1). The mean age was 12.8, the median 13 and the mode was 12, with the standard deviation of .76 (Table 2). Grades of the players varied from 6th grade to 9th grade. Grade 7 was the most represented in the study with 45.3% (Table 3). The mean grade was 7.49, the median 7 and the mode 7 with the standard deviation of .78. Levels of play were categorized as 1=Bantam, 2=PeeWee, and 3=Midget (Table 4). Bantam level of play had the highest representation. Positions were coded as 1=center, 2=wing (either left or right), 3=defense or defensemen, and 4=goalie. The positions of wing (either left or right) had the highest percentage in the study with 45.3% (Table 5). Seventy-one percent of the male early-adolescent ice hockey players have reported injuries (Table 6).

Descriptive Statistics for NOBAGS

Frequency statistics for the NOBAGS are summarized for all questions (Table 7). A t-test was used to examine the equality of means for the subscale scores with two levels of play (PeeWee and Bantam). In all three analyses, there were 40 Bantam and 10 PeeWee players. The Midget level of play ($n = 3$) were not included. The null

hypothesis was: there is no statistical difference between the means of the two levels of play (Table 8). In Levene's Test for Equality of Variances ($p \leq .05$), the significance is .926 for the GENAPAG, .631 for the APPRETAG, and .843 for the TOTAPPAG between Bantam and PeeWee players.. The Levene's Test for Equality of Variances results are not significant, indicating that the variances are equal, so the assumption of homogeneity of variance among the scores of the 2 levels of play has been met (Munro, 1997). Overall, t-tests were used to compare 2 levels of play, PeeWee and Bantam on GENAPAG, APPRETAG, and TOTAPPAG subscales. PeeWees and Bantams did not differ significantly on GENAPAG, APPRETAG, and TOTAPPAG scores.

In the ANOVA, the dependent variable is the subscale scores and the independent variable is the position played of center, wing (right or left), defense and goalie (Table 9). The null hypothesis is that the means for the subscale scores will be the same for all positions played (Polit & Hungler, 1999). In testing the difference among the positions, the F ratio used to reject the null hypothesis at the 0.05 level is 2.96, and at 0.01 level is 4.60. The subscales results were: GENAPAG $F = .293$, APPRETAG $F = 2.314$ and TOTAPPAG $F = 1.423$ (Munro, 1997). None of the F ratios are greater than the given values. There is no difference among mean scores on aggression for any of the positions played. Thus, the null hypothesis is not rejected (Polit & Hungler, 1999).

A correlation for Pearson's r was carried out between the total aggression and subscales and the ice hockey injuries and penalty minutes. The statistical hypothesis that the probability of r calculated from the sample of 53 male early-adolescent ice hockey players' beliefs about aggression to penalty minutes and injuries is that r occurred by chance alone. The meaningfulness of r is the amount of variance the penalty minutes and

injuries share with aggression. The beliefs about aggression accounts for 48% (GENAPAG), 16% (APPRETAG), and 32% (TOTAPPAG) of variance in penalty minutes. This leaves 52%, 68%, and 84% respectively not accounted for by penalty minutes. The strength of the relationship is moderate between penalty minutes and the subscales GENAPAG and TOTAPPAG and the relationship is weak between APPRETAG and penalty minutes. Penalty minutes, however, ($p \leq .05$) did have a statistically significant correlation with the subscales (GENAPAG $p = .000$), (APPRETAG $p = .030$), (TOTAPPAG, .001). A relationship between the beliefs about aggression and penalty minutes was not by chance alone (Polit & Hungler, 1999; Munro, 1997).

The beliefs about aggression and injuries accounts for 1% (GENAPAG), less than 1% (APPRETAG), and 1% (TOTAPPAG) of the variance of the penalty minutes. This leaves 99%, more than 99%, and 99% respectively not accounted for by injuries. The strength of the relationship is weak between GENAPAG, APPRETAG, and TOTAPPAG and injuries. Injuries were not statistically significant ($p \geq .05$) for subscales (GENAPAG $p = .390$), APPRETAG $p = .772$ and TOTAPPAG $p = .565$ (Table 10).

Summary

Results of the study are summarized for each test performed on the available data. "What relationship exists between male early-adolescents beliefs about aggression and ice hockey injuries and penalties?" At this date, 53 male early-adolescent ice hockey players have been administered the questionnaire. Beliefs about aggression for the total and two subscales scores are related to the findings of penalty minutes. There is support that general approval of aggression, approval of retaliation aggression, and the total approval of aggression from the NOBAGS tool, and penalty minutes are related.

CHAPTER V

DISCUSSION AND IMPLICATIONS

The primary objective of this study was to examine if a relationship exists between the male early-adolescent beliefs about aggression and ice hockey injuries and penalty minutes. In this chapter, the findings in relation to the research question are interpreted and summarized. The relationship between the theoretical framework and findings are also explored. Implications of the research for nursing practice, theory, research, and policy are then identified. Limitations and possible alternative explanations are discussed and recommendations presented.

Discussion of Findings/Validity of Findings

Pearson's r was utilized to determine if a relationship exists between penalty minutes and between injuries. This significant finding between beliefs about aggression and penalty minutes is meaningful because penalty minutes are given for a stricter enforcement of rules. The male early-adolescent ice hockey player becomes angry, then becomes frustrated, which in retrieving certain scripts may result in aggression. The male early-adolescent then "hits" another player. This supports the study of aggression by Brennan (1998) and the social cognitive theory of Huesmann (1997). The subscales refer to questions of "hitting" another person and in ice hockey, "hitting" is an illegal contact of another male player. This finding was consistent with the study by Hilton, et al., (2000), that male-to-male aggression is more prevalent than female-to-female or male-to-female, since all the participants were male. However, not all illegal contacts are assigned penalty minutes. It is at the referee's discretion. An antidotal report of a goalie being hit over the head with a stick after the play had stopped only received a two-minute

penalty. Another referee could have assigned ten-minute misconduct and even suspended him from playing in several games. Inconsistencies in the assignment of penalty minutes could lead to serious injury. This inconsistency becomes even more important when one thinks about aggression and penalty minute being related.

A second objective of the study was to examine if a relationship exists between the male early-adolescent ice hockey player beliefs about aggression and injuries. All subscale scores were not related to the number of injuries. Even though almost $\frac{3}{4}$ of the early male-adolescent ice hockey player reported injury (71.7%), not every contact that is penalized by penalty minutes or by a “hitting” of another player, results in an injury. Some of the contacts are considered legal “hits” and therefore are not penalized, but a serious injury may still occur. This may, in part, be a cause for the subscale scores not correlating with injuries. Also, the male early-adolescent ice hockey player only reported to “yes” or “no” in injuries. If a number of injuries per player was obtained for injuries and correlated with beliefs about aggression, the outcome may have had a different finding.

Relationship of Theory to Findings

In this study the researcher utilized the social cognitive theory by L. R. Huesmann, 1988. The concept of this theory is the retrieval of scripts to certain environmental cues to aggression. The male early-adolescent then utilizes acquired normative beliefs to decide which script to use or not to use. The normative beliefs are then examined in the NOBAGS instrument (Huesmann, 1988), with three subscales, general approval of aggression (GENAPAG), approval of retaliation aggression (APPRETAG) and the total approval of aggression (TOTAPPAG), in the study.

The conceptual definition by Huesmann(1988), was applicable to this study. Aggression is defined as “any behavior intended to injure or irritate another” (Huesamann, 1998, p. 84). At times, the male early adolescent ice hockey player in the course of the game “hits” another player, purposefully. Although the intent is not always to injure, injuries still occur. The second part of the definition by Huesmann applies to this situation as the contact, whether legal or illegal, is made to “irritate” the other player and force him into receiving penalty minutes.

The scores of the subscales, GENAPAG, APPRETAG, and TOTAPPAG did not support the relationship between injuries and beliefs about aggression. Perhaps, the reason is certain questions the male early-adolescent answered referred to aggression against females. Again this would be consistent with the study by Hilton, et al. (2000), that male-to-male aggression is more prevalent than female-to-female or male-to-female, since the all the participants were male.

The scores of the subscales, GENAPAG, APPRETAG, and TOTAPPAG supported the relationship between penalty minutes and beliefs about aggression. The most significant subscale was GENAPAG or general approval of aggression. The male early-adolescent believes it is generally acceptable to be aggressive against others. The second significant subscale was TOTAPPAG. The male early-adolescent beliefs of aggression apply both to specific and general situation, such as ice hockey playing and “hitting” an opponent. The third significant subscale, APPRETAG, findings demonstrate the male early-adolescent ice hockey player deems it acceptable to be aggressive towards others in situations where he is provoked (Huesmann, et al., 1998). This may be the rationale for the correlation between the subscales and penalty minutes. By studying 12-

14 year old males, a relationship between aggression and penalty minutes may be more likely than when studying younger males because Huesmann & Guerra (1997) reported that aggression increases with age.

By using the social cognitive theory, an attempt is made to understand the relationship between penalty minutes and injuries and the male early-adolescent beliefs about aggression. Through this understanding, the researcher can begin to identify a knowledge deficit related to the causation of aggression and the effects of aggression.

Therefore, this theory and definition of aggression were appropriate choices for this study. The purpose was to begin to understand the relationship of the male early-adolescent beliefs about aggression and penalty minutes and injuries. The findings of this study allowed the researcher to begin to gain an understanding and make possible recommendations.

Alternative Explanations for the Findings.

There are several possible reasons for the outcome of this study. One of the reasons could be intrinsic factors or the mood state of the male early-adolescent. As cited earlier, (Gissane, et al., 2001), other factors such as anger, frustration, stress, and the willingness to take risks may have had an effect on the male early-adolescent and impact the findings.

Another explanation for the findings may have involved the timing of the response to the questionnaire. Answering the questionnaire before and/or after a game may have an affect on the study. In another study cited earlier by Smith, et al. (1997), tension, depression, vigor, fatigue or the time of day may have an effect on the male

early-adolescent. Since the questionnaire was administered on different times and days this, also, could have possibly impacted the findings.

Another factor affecting the results may be the coaching style. Although, all the coaches reported their coaching style as North American style, individual coaches vary in their interpretation and use of the North American style and possibly have more of an aggressive approach.

Limitations

There are definite limitations to the study. All of the participants were recruited from the same ice rink in one county for four months to draw the sample. Perhaps using different rinks from different counties and extending the time frame may have yielded different results.

Though the selection of the participants was voluntary, it remains a convenient sample. All of the participants were Caucasian males and came from families that are middle class or above. The results can cautiously be generalizeable only to middle class or above male early-adolescents.

The sample size was relatively small ($n= 53$) and represented a small percentage of male early adolescent ice hockey players. Perhaps studying a larger sample size would yield different findings.

The injuries of the participants were self-reported. The definition of injury was explained to all participants; however, it is not known if the replies are 100% accurate. The male early-adolescent ice hockey player may have either over or under reported injuries to be similar to his peers.

Only three coaches responded with penalty minutes and the sample ($n = 3$) is small. All three coaches responded to coaching the North American style. Perhaps if the sample size was larger and more coaches responded, the results would have been different.

Another possible limitation is a possibility some of the participants knew the researcher's son, who also plays at the same rink where the study was conducted.

Finally, the instrument used in the study has not been used to validate beliefs about aggression of ice hockey players. The instrument has mostly been used in non-delinquent or delinquent adolescents.

One final possible limitation was at the time of administering the NOBAGS, several ($n = 5$) inquired if they should answer the questions according to their beliefs everyday such as at school and home or when they are playing hockey. This may indicate that the male early-adolescent has two normative beliefs about aggression. This supports the study by Maffulli (2001), relating to intrinsic factors such as the psychological immaturity of the male early-adolescent.

Implications of Results

Even though this study has limitations, the findings are important to research, practice, theory and policy. The findings of this study should inspire research. No data obtained from the literature review had research regarding the correlation of injuries to penalty minutes. Also, only the data obtained from the study, supported the correlation of beliefs about aggression to penalty minutes. Even though there was no relationship between aggression and injuries in this study, it remains important since there has to be contact to receive penalty minutes and this contact can cause injury. Further research in

this area could provide much needed information in the prevention of both intentional injuries and unintentional injuries.

The findings of further research may impact nursing practice. In practice, the NP may utilize information regarding prevention of both injuries and unintentional injuries in the male early-adolescent and understand the role aggression may play. The NP, in the role of an educator may provide these instructions in the primary care setting or may offer teachings the ice hockey rink or create a video for the coaches to view with the players. The NP can instruct the parents and player in basic techniques of using heat, warming up exercises, nutrition, and interpersonal skills involving the management of aggression.

In the area of theory, the social cognitive theory offers insight into understanding aggression and its relationship with penalty minutes and injuries. By beginning to understand this concept, future research and interventions can be addressed.

Further research is needed to find out if the male early-adolescent has two separate beliefs about aggression. One belief of aggression for his everyday life at home and school and one belief of aggression for his hockey playing.

One of the objectives of Healthy People 2010 is to reduce the number of unintentional injuries. Using the results of this study, coupled with further research may have an impact on policy. Since, penalty minutes and ejection from a game can be entirely up to the referee, stricter rules and regulations may ensue.

Recommendations

There is clearly a need to further research in this area. Future research studies should attempt to determine if there is a relationship between penalty minutes and injuries. Other studies should also be conducted with larger sample sizes, at different ice rinks and for different ages, ethnic groups, and female gender. Future studies should continue to identify these demographics to increase the knowledge base.

Further demographic information could be gathered in the future about male early adolescent ice hockey players. This includes family income, school attended, and perhaps the position in the family (oldest versus youngest). Other important information to obtain is whether or not the male early-adolescent had other siblings that played hockey and the gender of the siblings.

Further studies may attempt to determine why beliefs about aggression have an affect on penalty minutes. Further studies may determine if a relationship exists between beliefs about aggression and injuries. Also, another interesting area for research would be to initiate anger management or coping skills to aid the male early adolescent ice hockey player and see if this intervention would reduce penalty minutes and therefore affect intentional and unintentional injuries.

Conclusion

It is comprehensible that there is a need for further research to investigate the relationship between male early-adolescent beliefs about aggression and penalty minutes and injuries. It remains unclear from this study, if there is a relationship between penalty minutes and injuries. Further research in this area may bring more stringent rule and regulation changes and interventions to help decrease the injuries.

Through this and other research, the researcher can begin to understand how beliefs of aggression are acquired and create interventions for the future to increase the safety of the male early-adolescent.

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Table 1

Age Distribution

<u>Ages in years</u>	<u>n</u>	<u>Percentages</u>
12	23	43.4
13	20	37.7
14	10	18.9

Note. N = 53

Table 2

Descriptive Statistics of Age, Grade, and Injuries

<u>Age</u>	<u>n</u>	<u>M</u>	<u>SD</u>
Age	53	12.8	.76
Grade	53	7.5	.78
Injuries	53	.72	.45

Table 3

Grade Distribution

Grade	<u>n</u>	Percentages
6	4	7.5
7	24	45.3
8	20	37.7
9	5	9.4

Note. N = 53

Table 4

Level of Play

Level	<u>n</u>	Percentages
Bantam	40	75.5
PeeWee	10	18.9
Midget	3	5.7

Note. N = 53

Table 5

Position Played

<u>Position</u>	<u>n</u>	<u>Percentages</u>
Center	8	15.1
Wing (left or right)	24	45.3
Defense	18	34.0
Goalie	3	5.7

Note. N= 53

Table 6

Injuries of Players

Injured	<u>n</u>	Percentages
No	15	28.3
Yes	38	71.7

Note. N = 53

Table 7

Frequency Statistics for NOBAGS Items**Q1: OK for John to scream?**

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Its really wrong	8	15.1	15.1	15.1
It's sort of wrong	25	47.2	47.2	62.3
It's sort of OK	14	26.4	26.4	88.7
It's perfectly OK	6	11.3	11.3	100.0
Total	53	100.0	100.0	

Q2: OK for John to hit him?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	40	75.5	75.5	75.5
It's sort of wrong	11	20.8	20.8	96.2
It's sort of OK	2	3.8	3.8	100.0
It's perfectly OK	0	0	0	
Total	53	100.0	100.0	

Q3: wrong for the girl to scream at him?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	11	20.8	20.8	20.8
It's sort of wrong	18	34.0	34.0	54.7
It's sort of OK	16	30.2	30.2	84.9
It's perfectly OK	8	15.1	15.1	100.0
Total	53	100.0	100.0	

Q4: wrong for the girl to hit him?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	28	52.8	52.8	52.8
It's sort of wrong	14	26.4	26.4	72.9
It's sort of OK	8	15.1	15.1	94.3
It's perfectly OK	3	5.7	5.7	100.0
Total	53	100.0	100.0	

Q5: OK for Mary to scream at her?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	13	24.5	24.5	24.5
It's sort of wrong	24	45.3	45.3	69.8
It's sort of OK	14	26.4	26.4	96.2
It's perfectly OK	2	3.8	3.8	100.0
Total	53	100.0	100.0	

Q6: OK for Mary to hit her?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	35	66.0	66.0	66.0
It's sort of wrong	13	24.5	24.5	90.6
It's sort of OK	3	5.7	5.7	96.2
It's perfectly OK	2	3.8	3.8	100.0
Total	53	100.0	100.0	

Q7: wrong for the boy to scream at her?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	24	45.3	45.3	45.3
It's sort of wrong	21	39.6	39.6	84.9
It's sort of OK	7	13.2	13.2	98.1
It's perfectly OK	1	1.9	1.9	100.0
Total	53	100.0	100.0	

Q8: wrong for the boy to hit her?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	49	92.5	92.5	92.5
It's sort of wrong	2	3.8	3.8	96.2
It's sort of OK	2	3.8	3.8	100.0
It's perfectly OK	0	0	0	
Total	53	100.0	100.0	

Q9: wrong for John to hit him back?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	15	28.3	28.3	28.3
It's sort of wrong	13	24.5	24.5	52.8
It's sort of OK	16	30.2	30.2	83.0
It's perfectly OK	9	17.0	17.0	100.0
Total	53	100.0	100.0	

Q10: OK for the girl to hit him back?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	16	30.2	30.2	30.2
It's sort of wrong	8	15.1	15.1	45.3
It's sort of OK	9	17.0	17.0	62.3
It's perfectly OK	20	37.7	37.7	100.0
Total	53	100.0	100.0	

Q11: wrong for Mary to hit her back?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	15	28.3	28.3	28.3
It's sort of wrong	14	26.4	26.4	54.7
It's sort of OK	16	30.2	30.2	84.9
It's perfectly OK	8	15.1	15.1	100.0
Total	53	100.0	100.0	

Q12: OK for the boy to hit her back?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	38	71.7	71.7	71.7
It's sort of wrong	8	15.1	15.1	86.8
It's sort of OK	4	7.5	7.5	94.3
It's perfectly OK	3	5.7	5.7	100.0
Total	53	100.0	100.0	

Q13: wrong to hit other people.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	24	45.3	45.3	45.3
It's sort of wrong	20	37.7	37.7	83.0
It's sort of OK	5	9.4	9.4	92.5
It's perfectly OK	4	7.5	7.5	100.0
Total	53	100.0	100.0	

Q14: OK to say mean things to other people.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	27	50.9	50.9	50.9
It's sort of wrong	19	35.8	35.8	86.8
It's sort of OK	5	9.4	9.4	96.2
It's perfectly OK	2	3.8	3.8	100.0
Total	53	100.0	100.0	

Q15: OK to yell at others and say bad things.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	30	56.6	56.6	56.6
It's sort of wrong	18	34.0	34.0	90.6
It's sort of OK	4	7.5	7.5	98.1
It's perfectly OK	1	1.9	1.9	100.0
Total	53	100.0	100.0	

Q16: OK to push or shove other people around if you're mad.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	35	66.0	66.0	66.0
It's sort of wrong	10	18.9	18.9	84.9
It's sort of OK	6	11.3	11.3	96.2
It's perfectly OK	2	3.8	3.8	100.0
Total	53	100.0	100.0	

Q17: wrong to insult other people.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	26	49.1	49.1	49.1
It's sort of wrong	20	37.7	37.7	86.8
It's sort of OK	5	9.4	9.4	96.2
It's perfectly OK	2	3.8	3.8	100.0
Total	53	100.0	100.0	

Q18: wrong to take it out on others by saying mean things when you're mad.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	38	71.7	71.7	71.7
It's sort of wrong	10	18.9	18.9	90.6
It's sort of OK	1	1.9	1.9	92.5
It's perfectly OK	4	7.5	7.5	100.0
Total	53	100.0	100.0	

Q19: wrong to get into physical fights with others.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	33	62.3	62.3	62.3
It's sort of wrong	11	20.7	20.7	83.0
It's sort of OK	6	11.3	11.3	94.3
It's perfectly OK	3	5.7	5.7	100.0
Total	53	100.0	100.0	

Q20: OK to take your anger out on others by using physical force.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
It's really wrong	40	75.6	75.6	75.6
It's sort of wrong	5	9.4	9.4	85.0
It's sort of OK	4	7.5	7.5	92.5
It's perfectly OK	4	7.5	7.5	100.0
Total	53	100.0	100.0	

Table 8

Comparison of Level of Play

	PeeWee $\underline{n} = 10$	Bantam $\underline{n} = 40$			
	Mean (SD)	Mean (SD)	t*	df	p
GENAPAG	12.80 (4.24)	12.87 (4.64)	.044	47	.965
APPRETAG	20.60 (5.46)	23.60 (6.55)	1.33	48	.189
TOTAPPAG	34.20 (8.09)	37.18 (9.98)	.872	47	.388

Note. * = equal variances assumed. $P \leq .05$ (2-tailed).

Table 9

Analysis of Variance for Positions and Subscale Scores

Source	<u>df</u>	<u>df</u>	<u>F</u>	Mean Square	Sum of Squares
	Between Groups		Within Groups		
GENAPAG	4	49	.293	5.996	20.489
APPRETAG	4	49	2.314	87.418	37.785
TOTAPPAG	4	49	1.423	125.126	87.949

Table 10

Correlation between Total and Subscales on Aggression and Penalty Minutes andInjuriesPenalty Minutes

<u>Subscales</u>	<u>n</u>	<u>p value</u>	<u>Pearson Correlation <i>r</i></u>
GENAPAG	53	.000	.693**
APPRETAG	53	.030	.397*
TOTAPPAG	53	.001	.570**

Injuries

GENAPAG	30	.390	-.122
APPRETAG	30	.772	-.041
TOTAPPAG	30	.565	-.082

Note. **Correlation is significant at the 0.1 level (2-tailed). *Correlation is significant at the 0.5 level (2-tailed).

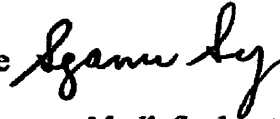
Appendix A

THE UNIVERSITY OF MICHIGAN – FLINT

August 7, 2002

To: Janet Barnfather

From: Suzanne Selig, Chair, Human Subjects Committee



Re: **What relationship exists between male early adolescents' beliefs about aggression and ice hockey injuries and penalties? (Approval #115/01)**

This is to inform you that your proposal "What relationship exists between male early adolescents' belief about aggression and ice hockey injuries and penalties?" has been approved by the Human Subjects Committee. Should you decide to make any changes in the use of human subjects which differ from the approved proposal, please advise this committee prior to making these changes.

Should you observe any negative change in the health or behavior of a human subject attributable to this research, you are required to suspend your project. If this happens, please inform the committee as soon as possible for our further review and decision as to the continuation/termination of your project.

This approval for your project is valid for a period of twelve months. If your project extends beyond this period (twelve months), please re-submit your proposal for reconsideration.

Appendix B

Poster and Flyer for Study

Hello, my name is Susan Jaskiewicz and I'm a graduate student at the University of Michigan-Flint. I'm interested in learning about teens and the choices they make in deciding to "hit" an opposing player. I am currently doing a study to see if there is a relationship between male early adolescents, ages 12-14 and in the PeeWee, Bantam or Midget league, their beliefs about aggression and penalty minutes and injuries.

There are two parts to the study. First, I will give each player 20 questions regarding beliefs of aggression. After this, I will ask for your age, grade, level of play and whether or not you have been injured. Next, I will ask your coach for your total number of penalty minutes. I also will require signed permission from your parents/legal guardian and you. You may decide not to participate at any time.

After you have completed the questionnaire, you will receive a \$10.00 gift certificate to Perani's Hockey Shop.

ALL INFORMATION IS CONFIDENTIAL

Appendix C

Reminder Letter

Dear _____,

This is a reminder of our meeting at _____ at _____.

Please be on time and thank you for part in my study.

Appendix D

Instructions to Participants

Hi, I'm asking you to answer these 20 questions for my study. Please take your time and answer as correct as possible. I will remain in the room and we will not be disturbed. Thank you for helping me with my study

Appendix E

Consent Form

In signing this document, I/we are giving my/our consent for my son to be given a questionnaire by Susan Jaskiewicz, a Master of Science Nursing candidate at the University of Michigan-Flint, who is conducting this research as part of the Family Nurse Practitioner graduate program. I/we understand that my son will be part of a research study that will focus on the beliefs of aggression of male early adolescents and ice hockey injuries and penalties.

I/we understand that my son will be given paper, pencil and a questionnaire in a private room at the ice hockey rink at a prearranged time convenient to us/my son. My son will be asked questions regarding beliefs about aggression. Also included are questions regarding beliefs about hitting. This questionnaire will be given one (1) time and takes approximately 20 minutes to complete.

I/we also understand the researcher will contact my coach regarding my son's penalty minutes and injuries and for my home address.

I/we understand that my son was asked to participate in this study because he is a male ice hockey player between the ages of 12-14 and participates in the Bantam house league. I/we understand that he was recruited from a poster/flyer and parent and child face-to-face recruitment.

I/my son has been informed that the questionnaire is voluntary and that I/my son can withdraw at any time without any negative consequences. I/my son understand that

the answers to the questionnaire will not be given to anyone else and nor will reports of this study ever identify me/my son.

This study will help understand if a relationship exists between early adolescent male ice hockey player's beliefs about aggression and ice hockey injuries and penalties. However, I/my son will not receive any direct benefit as a result of participation. As a means of recognizing the contribution and possible inconvenience associated with participating in this study, I/my son understand that my son will receive a \$10.00 gift certificate to Bob Perani's Hockey Shop immediately after the completion of the questionnaire.

I/my son understands that a summary of the abstract of this study will be given to me/him upon request. Susan Jaskiewicz, MSN candidate in the Family Nurse Practitioner Program and Dr. Janet Barnfather, a professor and advisor at the University of Michigan-Flint, are the people to contact if I/my son have any questions about the study or about the rights as a study participant. Dr. Barnfather can be reached at 810-766-6861. Susan Jaskiewicz, can be reached at 989-288-4369. A self-addressed stamp envelope will be included for the convenience of returning the signed consent form.

Participant's signature _____

Date_____

Parent/Legal guardian signature_____

Date_____

Researcher's signature_____

Would you like a copy of the abstract describing the findings? Yes

No

If "yes" please provide your mailing address below:

Appendix F

Instructions to Coaches

Hi. My name is Susan Jaskiewicz and I would like your cooperation in filling out the penalty minutes on your player, _____ . Thank you for your time.

Your name will be entered in a drawing for 4 Red Wing Tickets.

Appendix G

NOBAGS Instrument

Retaliation Belief Questions

Suppose a boy says something bad to another boy, John.

1. Do you think it's OK for John to scream at him?

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

2. Do you think it's OK for John to hit him?

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

Suppose a boy says something bad to a girl?

3. Do you think it's wrong for the girl to scream at him?

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

4. Do you think it's wrong for the girl to hit him?

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

Suppose a girl says something bad to another girl, Mary.

5. Do you think it's OK for Mary to scream at her?

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

6. Do you think it's OK for Mary to hit her?

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

Suppose a girl says something bad to a boy.

7. Do you think it's wrong for the boy to scream at her?

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

8. Do you think it's wrong for the boy to hit her?

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

Suppose a boy hits another boy, John?

9. Do you think it's wrong for John to hit him back?

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

Suppose a boy hits a girl.

10. Do you think it's OK for the girl to hit him back?

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

Suppose a girl hits another girl, Mary.

11. Do you think it's wrong for Mary to hit her back?

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

Suppose a girl hits a boy.

12. Do you think it's OK for the boy to hit her back?

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

General Belief Questions

13. In general, it is wrong to hit other people.

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

14. If you're angry it is OK to say mean things to other people.

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

15. In general, it is OK to yell at others and say bad things.

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

16. It is usually OK to push or shove other people around if you're mad.

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

17. It is wrong to insult other people.

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

18. It is wrong to take it out on others by saying mean things when you're mad.

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

19. It is generally wrong to get into physical fights with others.

It's really wrong It's sort of wrong It's sort of OK It's perfectly OK

20. In general, it is OK to take your anger out on others by using physical force.

It's perfectly OK It's sort of OK It's sort of wrong It's really wrong

Note. Adapted from "The Normative Beliefs about Aggression Scale (NOBAGS)".

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