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Aggression in Amateur and Professional Hockey

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Abstract

Aggressive behaviour (as measured by "minutes in aggressive penalties") and players' perceived attitudes were investigated at four levels of hockey - pee wee and midget (major All Star), Junior A (Jr. A) and the National Hockey League (NHL). No support was found for hypotheses suggesting that minutes in aggressive penalties occur as a function of differences in weight (light or heavy), position (forward or defense), skill ("less-skilled" or "more-skilled"), or years in league (rookie or veteran). The midget sample incurred significantly more minutes in aggressive penalties per player per 60 minutes of game time than did the other three samples.

Analyses of players' responses to questionnaire items indicated that the Jr. A sample revealed the most aggressive attitudes, the pee wee sample the least aggressive, while the midget and NHL samples fell between the two. The midget and NHL samples demonstrated a very similar pattern of responses. It is suggested that these results cannot be explained by a simple modeling paradigm. Rather, they are discussed in terms of a process wherein players, as they progress towards professional status, over-emphasize qualities which they believe to be typical of a professional player.

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Introduction

Recently, a considerable amount of concern has been expressed with respect to violence in sports. In Canada, this controversy has focussed particularly on the sport of hockey (eg. McMurtry, 1974; Vaz, 1976a, 1976b; Smith, 1975). It is the purpose of the present paper to investigate possible contributing factors to the violence in hockey.

Traditional approaches to the study of aggressive behaviour are first critically reviewed. An examiniation of the recent literature concerning aggression in sports follows, leading to a focus on the sport of hockey. An attempt is then made to place the present study in the context of previous theoretical approaches to aggression, and the more recent literature on aggression in sports. The method describes the participants, the two dependent measures and the data collection procedure. Finally, the results are presented and discussed in the context of social learning theory (Bandura, 1973) and the previous studies in this area.

Review of the Literature

Theoretical Perspectives

The omnipresence of human aggression has generated a considerable amount of psychological research in the last 35 years, most of it designed to delineate the causes of aggression.

Lorenz (1963): the instinct approach. Konrad Lorenz (1963) gathered evidence to support the theory that aggression is a spontaneously generated drive. This has become known as the instinct approach. To support his theory, he studied coral fish, among which the function of aggression is one of preservation. His observations led to the conclusion that the bright colourings of the coral fish

> elicit furious reactions of territorial defense in every fish of the same species ... when the reacting individual is in its own territory; and to the intruder encroaching on foreign ground it proclaims fear-inspiring readiness to fight (Lorenz, 1963, pp. 15-16).

The various patterns of aggression led Lorenz to conclude that the "aggression drive is a true, primarily species - preserving instinct" (1963, p. 40). He claimed that animal and human behaviour were similar;

he therefore concluded that human aggression is instinctive, and is subject to the same biological laws that govern aggression in animals. The rather indiscriminant generalization Lorenz makes from animal to human behaviour may in part account for the lack of acceptance of this theory by social scientists.

Dollard, Miller, Doob, Mowrer, and Sears (1939): the frustration-aggression hypothesis. An earlier theory proposed by Dollard, Miller, Doob, Mowrer and Sears (1939) has experienced more acceptance. The basic principle is that aggression is always a consequence of frustration. The authors claimed that the opposite was also true: every frustration would cause aggression of some form. Dollard et al. also identified four groups of factors, which, in addition to frustration, were hypothesized to affect aggressive behaviour: (1) those that govern the strength of instigation; (2) those that are related to the inhibition of aggressive acts; (3) those that determine the object towards which aggression is directed, and the form this aggression takes; and (4) those that are related to the reduction of instigation to aggression.

Berkowitz (1962): the frustration-aggression hypothesis. According to Berkowitz (1962), the work of Dollard et al. (1939) provided what was "still the

best theoretical framework for the analysis of social aggression" (p. ix). Nonetheless, some theorists (eg. Miller, 1941) felt that the basic principle was too sweeping to provide an accurate analysis of complex human behaviour. In particular, two disputes which evolved from the original conceptualization resulted in Berkowitz (1962) modifying the hypothesis. The first dispute focussed on whether all aggression was the result of frustration. For example, Durbin and Bowlby (1939) claimed that disputes over the possession of objects, and resentment at the intrusion of a stranger into one's group (referring to children and apes) were examples of non-frustrational causes of aggression. This, of course, opposed the basic postulate that "the occurrence of aggressive behaviour presupposes the existence of frustration" (Dollard et al., 1939, p. 1). Berkowitz (1962) claimed that these so-called non-frustrational causes of aggression were, in fact, frustrations, since they ultimately represented an interruption of an internal response sequence or the blocking of some drive (eg. the drive for acquisition of objects in the cases cited by Durbin and Bowlby (1939)).

However, Berkowitz (1962) did modify the hypothesis at this point. He proposed that frustration usually,

if not always, produced an emotional reaction, anger. Anger in turn, was regarded as an internal condition, making aggressive responses likely to occur.

The second dispute which resulted in a modification of the original hypothesis centered on whether or not every frustration would cause aggression of some form. On this point Berkowitz (1962) wrote that one of the more obvious problems of the Dollard et al. thesis centered on the differentiation between aggressive responses and fear responses. He suggested that the intensity of the fear produced by a frustrating situation was a direct function of the intensity of the noxious stimulation experienced in the situation, or anticipated because of it. The noxious stimulation is frustrating, producing both anger and fear. As the intensity of the noxious stimulation increases, fear rises more rapidly in intensity than does anger. It may therefore appear that anger may <u>not</u> have resulted from the frustration when, in fact, it is present but masked by the existence of a more predominant reaction, fear.

To summarize, Berkowitz (1962) supported the frustration-aggression hypothesis, even as it was originally proposed in 1939: aggression is always a consequence of frustration. He did, however, modify it in two ways. First, an intervening variable, anger,

must be considered in the prediction of the consequences of a frustrating situation. Secondly, frustration can, in particularly noxious situations produce both anger and fear. The presence of fear will over-ride the instigation to aggression and will then appear to be the only consequence of frustration in this situation.

Continued controversy concerning the hypothesis prompted Berkowitz to re-examine his position.

Berkowitz (1969): the frustration-aggression hypothesis revised. He maintained that "a frustrating event would increase the probability that the thwarted organism will act aggressively soon afterward" (Berkowitz, 1969, p. 2). He did, however, modify his earlier work. First, he claimed that the existence of frustration did not always lead to some form of aggression. A frustrated individual may have learned to make a nonaggressive reaction in a particular situation (Otis and McCandless, 1955). Also, a frustrating agent may not have the appropriate stimulus qualities to elicit aggression (Azrin, Hutchinson, and Hake, 1966). In both cases, frustration would result in nonaggressive responses.

Second, Berkowitz (1969) claimed that the occurrence of aggressive behaviour did not necessarily presuppose the existence of frustration. He referred to a study

wherein children learned to make aggressive responses without the condition of frustration (Bandura, Ross, and Ross, 1963a). Berkowitz (1969) concluded that "people may learn to aggress much as they learn to display any other type of behaviour" (p. 13).

It appears that Berkowitz (1969) acknowledged that learning could affect both the original frustration-aggression hypothesis (Dollard et al., 1939), and the additional theoretical formulations he made earlier (Berkowitz, 1962).

Bandura (1973): the social learning analysis of aggression. Bandura (1973) argued in favour of a social learning analysis to explain most aggressive behaviour. He wrote that

> it is evident from informal observation that human behaviour is to a large extent socially transmitted, either deliberately or inadvertently, through the behavioural examples provided by influential models (p. 68).

Learning by example, or modeling, was dependent upon four interrelated subprocesses. The first was the attentional process. In order that a person successfully imitated the behaviour of an influential model, it was necessary that he attended to the important features of the model's behaviour.

Secondly, long-term retention of activities that have been modeled at one time or another was a necessary concomitant. People who mentally rehearse or enact modeled patterns of behaviour are much less likely to forget than those who neither think about nor practise what they have seen.

The third component of the modeling process was concerned with the behavioural enactment of what one has learned. To achieve behavioural reproduction, a learner must put together a given set of responses according to the modeled patterns. The amount of observational learning that a person could exhibit behaviourally depended on whether or not he had the required component skills. If he had the subskills, modeled behaviour could be more faithfully enacted than if they were lacking.

The fourth process required for the occurrence of observational learning was reinforcement. A person could acquire, retain, and process the capabilities for skilled execution of modeled behaviour, but the learning may rarely be activated into overt performance if it was negatively received. When positive incentives are introduced, observational learning that previously remained unexpressed is likely to emerge.

The social learning analysis of aggressive behaviour

was supported by a now classic study conducted by Bandura, Ross and Ross (1963a). After viewing both live and filmed aggression, it was discovered that children demonstrated both imitative and non-imitative aggressive behaviour towards an inanimate object. Further research along similar lines has shown, for example, that filmed violence, particularly in realistic forms, is emotionally arousing to young children, and that they tend to retain more aggressive than non-aggressive content.(Osborn and Endsley,1971). In addition, viewing interpersonal assaults apparently fostered imitative aggressive conduct towards human targets (Hanratty, O'Neal and Sulzer, 1972).

Taken in their entirety, the experiments dealing with the social learning analysis of aggression lend substantial support to the theory that children will learn by observing. They may subsequently exhibit aggressive behaviour, and this learned behaviour can be directed toward a human target.

The social learning approach to aggressive behaviour seems to have gained wide acceptance among social scientists. In the context of the present paper, potential theoretical contributions of this analysis to aggression in sports will be examined.

Aggression in Sports

Research dealing with aggression in sports is only now in its formative stages. Smith (1975) reported that "relatively little serious attention has been paid to this behaviour in the sport context" (p. 72). The few studies that have been conducted have mainly focussed on identifying factors resposible for aggressive behaviour in various sports. For example, Howe (1972) discovered that rugby players who considered themselves to be better than the average player in the league demonstrated a more aggressive set of responses than those who considered themselves to be below the average player. Another area of research centered on measuring athletic aggression. Collis (1972) devised the Collis Scale of Athletic Aggression, designed to measure aggression in various sports. He found that at three age groups (1-10, 11-14, 15-18) hockey players scored significantly higher in extra-legal aggression than other sports' participants involved in the study (soccer players, swimmers, gymnasts and a control group).

The dynamics of some sports (eg. baseball, basketball) do not invite research in aggression, nor does the occurrence of aggression appear to be an area of concern within many sports. Recently,

however, a number of researchers have investigated the incidence of aggression in hockey, a sport in which there is growing concern about the proliferation of aggression.

Aggression in Hockey

Hockey is a sport which provides ample opportunity for physical contact and thus, for the occurrence of physically aggressive behaviour. It is quite possible that a number of specific incidences of extreme aggression in hockey were catalytic in the recent upsurge in this area of research. In 1969, during an exhibition professional hockey game, Wayne Maki of the St. Louis Blues apparently deliberately, and in retaliation, swung his stick, striking the head of Ted Green of the Boston Bruins. Green sustained a fractured skull, which necessitated considerable medical treatment and a relatively prolonged recovery period (New York Times, Novermber 23, 1969). In February of 1973, a midget house league (for players of 15 and 16 years of age and non All Star proficiency) hockey game was played in Mississauga, near Toronto. During the game, a Negro player, Paul Smithers, was apparently heckled consistently by one player in particular, then by the opposing team, after which the parents and friends of the home team joined the heckling.

Smithers and Barry Cobby, the original agitator, fought once during the game, each receiving minor penalties for roughing. Each wanted to continue fighting. Smithers apparently sought out Cobby after the game, finding him in a parking lot with some teammates. A fight ensued during which Cobby was kicked in the groin. He died shortly thereafter, choking to death on his own vomitus (McMurtry, 1974). In an ensuing court case, Smithers was convicted of manslaughter (New York Times, October 27, 1973). He served six months in reformatory.

On April 16, 1975, a Junior B playoff game took place between Hamilton and Bramalea. The game was clearly a violent one, with 189 minutes in penalties being assessed. Yet, nearly all the witnesses present believed that more penalties should have been called. Several vicious fights resulted in only minor penalties, and at least three players admitted to participating in fights with no resulting penalties. Injuries were received by five players and one team official as the result of the brawling. The approximately 750 fans were orderly until the game became violent, and by the end of the second period, large numbers of them were out of control. The two policemen on duty were forced to call for reinforcements. At one time,

14 police officers were present at the arena. The Bramalea management subsequently withdrew from the playoffs, noting that they actually feared for the lives of their players (McMurtry, 1974).

It was shortly after (and due to) the latter two incidents that the Honourable Rene Brunelle, Minister of Community and Social Services for the Province of Ontario, commissioned William McMurtry, a Toronto lawyer, to launch an investigation into violence in amateur hockey. McMurtry's report is an encompassing one, dealing with various incidents of violence in amateur hockey, interviews with professional players, coaches and other personnel, perceived causes of violence and recommendations which may curb violence.

McMurtry concluded that the influence of professional hockey, with its emphasis on winning and the use of violence as a tactical instrument to achieve that goal, is a prime cause of violence in amateur hockey. He also mentioned other factors, including reciprocal violence, the failure of referees to apply existing rules, the failure of coaches to control players, and pressure from parents, fans and coaches with an over-emphasis on winning. Based on these findings, McMurtry made the following recommendations:

(1) define the objectives and purposes of

> amateur hockey; (2) create a rule structure consistent with the philosophy and objectives of true amateur hockey. eg. fighting should result in an automatic game misconduct; (3) * expand coaches clinics; (4) establish procedures * whereby coaches are responsible for the conduct of their players; (5) make efforts to educate fans and parents as to the purpose and objectives of amateur hockey; (6) support further research in the field of sports psychology, physical education and coaching methods; (7) consider a more school-oriented program; (8) make representation to the media relating to their responsibility (McMurtry, 1974, p. 29).

In the context of the present paper, two objections to McMurtry's report are apparent. First, the focus of the report was on amateur hockey, and as such, most of the research involved amateur hockey personnel. The recommendations made by McMurtry are clearly applicable to only amateur hockey (see particularly recommendations 1, 2, 3, 5, 7). McMurtry earlier claimed that the influence of professional players and the emphasis on winning in professional hockey were prime causes of violence in amateur hockey. Since the focus of the report was on amateur hockey,

research in professional hockey was necessarily overlooked, even though McMurtry claimed that professionals were the influential models. Secondly, McMurtry's findings are based on thorough, but subjective, interviews with hockey personnel. In essence, McMurtry has little or no empirical data to support his conclusions. Thus, the validity of his conclusions is undermined.

An earlier study investigated the issue somewhat more empirically, but perhaps not so successfully. Wankel (1972) attempted to identify factors relating to the occurrence of aggression. The official records for the 133 Ontario University Athletic Association league hockey games for the 1971-1972 season were analyzed and the frequency of aggressive penalties (boarding, butt-ending, charging, cross-checking, fighting, high-sticking, interference, roughing and slashing) for each team was tabulated. Why Wankel included interference as an aggressive penalty but not spearing is not discussed. A series of chi-square analyses was then calculated to assess the relationship between the frequency of aggressive penalties and situational variables. Wankel found that (1) more aggressive penalties occurred as the game score differential increased (i.e. the difference in goals

between the two teams); (2) teams incurred fewer penalties in games tied than in games won or lost; (3) the frequency of aggressive penalties increased as the standing differential (i.e. the difference in standing between the two teams) increased; (4) more aggressive penalties occurred in the third period than in either the first or second periods; and (5) more aggressive penalties occurred in the first half of the season than in the last half (Wankel, 1972).

While this study does provide a thorough descriptive analysis of when aggressive penalties occur, its importance to hockey in terms of recommendations which may inhibit aggressive acts is somewhat limited.

Vaz (1973) published a paper wherein he states his initial subjective observations of minor league hockey. These he formulated during a massive data collection from which would springboard a series of studies concentrating on aggression and related issues in hockey. Ultimately, questionnaires were returned from 1,915 boys in the Minor Hockey League of a medium sized city in Ontario. The data collection took place during the 1970-1971 hockey season. Based on his subjective observations of the data, Vaz (1973) suggested that aggression is normative,

institutionalized behaviour which is learned during the formal and informal socialization of young hockey players. The term socialization referred to the activities of a group through which are transmitted skills, attitudes and beliefs. Vaz cited the selection of professionals as role models and the formal teaching of coaches as major sources of learning in the socialization process.

In a subsequent study dealing with the same data Vaz (1974) was concerned with the value of winning to Minor League players and its relationship with the role of the coach in the socialization process. Specifically, Vaz investigated the relationship between the importance of winning and (1) players' perception of the coach's emphasis on success and (2) players' perception of the coach's emphasis on aggressiveness. Unexpectedly, it was discovered that the importance of winning to players decreased as one advanced from the lowest to highest level teams (i.e. from tyke to midget) in the Minor Hockey League. Vaz (1973) had hypothesized that the importance of winning to players would <u>increase</u> from the lowest to highest levels. He explained the present finding in terms of the institutionalization of winning. At the upper levels, winning is widely institutionalized - it is "understood"

that winning is important; it does not need to be openly emphasized. Further, it was precisely at the upper levels that the value of winning ranked low relative to more instrumental skills. Individual success, as measured by technical skills, became more important. This was plausible, according to Vaz, since players also reported that coaches of upper level teams place comparatively greater emphasis on technical skills such as aggressiveness than they do on winning. It was also discovered that the greater the coach's emphasis on victory, the more likely were players to be victory oriented. Finally, analysis revealed no relationship between the players' reports of coaches' emphasis on playing aggressively and the players' attitude towards winning the game.

Clark, Vaz, Vetere and Ward (1976) analyzed the same data used in the previous study (Vaz, 1974) but focussed on the occurrence of illegal aggression in minor league hockey. In particular, Clark et al. examined two areas in which aggressive behaviour is learned: (1) the role models for learning (coach, father, teammates) and (2) previously learned attitudes that may influence a child's effort to overcome obstacles and reach goals (aspirations to play professional hockey, perceived objectives of amateur

hockey, lack of respect for rules and officials). The dependent variables were responses to questionnaire items concerning when the use of aggressive behaviour was justified. For the independent variable, players were asked how they thought their fathers, coaches, and teammates felt about illegal aggressive behaviour. They discovered that aspirations to play professional hockey, and teammates', fathers', and coaches' sanctions for the use of aggressive behaviour all had a significant effect on the use of illegal aggression. That is, players' responses to questionnaire items became more aggressive the more they perceived teammates, fathers and coaches as sanctioning aggression, and also as aspirations to play professional hockey increased.

Vaz (1976a) then concerned himself with the issue of controlling aggression in hockey. He explored the inefficiency of existing control systems (i.e. penalties of various durations) and suggested that a change in the structure of the present control system is required to reduce the extent of institutionalized rule violation. Failure of the present system to inhibit aggression is the result of players not being motivated to do so by the system, the rewards of aggressive behaviour overriding the inhibiting strenth of the control system.

Vaz (1976a) suggested a system which was based on a redistribution of team points gained for a victory or a tie. Under the present system, two points are awarded for a win, one for a tie and none for a loss. Under the proposed system, team points would be allocated as follows:

> (1) the maximum number of points is allocated to the team that wins the game if it violates fewer rules than the losing team; (2) the least number of points is allocated to the team that loses the game and violates more rules than the winning team; (3) however, points are allocated to the losing team if it violates fewer rules than the winning team; (4) in case of a tie game, the team with the lesser number of infractions receives more points than the other team; and (5) a fifth outcome is a tie game in which each team has committed an equal number of infractions. (Vaz, 1976a, pp. 10-11).

Eventually, according to Vaz, as heavily penalized roles grow dysfunctional to team success, so will the criteria for recruitmant and evaluation of players. Players would no longer be recruited simply because of their aggressiveness, as he suggested in 1973. Thus, the occurrence of aggressive behaviour will gradually

decline.

To summarize, Vaz (1973) suggested that aggressive behaviour was normative, institutionalized behaviour, and that the importance of winning would increase as players advanced to the upper levels of minor hockey. Vaz (1974) found that the importance of winning decreased and individual success increased as players progressed through the minor hockey system. It was also discovered that the greater the coach's emphasis on victory, the more likely were players to be victory oriented. Clark et al. (1976) found that aspirations to play professional hockey, and teammates, fathers and coaches who felt that aggression was an acceptable part of the game had a significant effect on the use of illegal aggression. Finally, Vaz (1976a) outlined a method of controlling aggression in hockey.

A study by Smith (1975) also merits consideration. He interviewed 83 high school hockey players in Toronto, Canada. The interview sought information relating to sanctions for assault from players' reference groups. The main dependent variable was the number of assaultive (i.e. aggressive) penalties. Smith contended that the player's "perceptions of his normative group's sanctions for various acts should have a significant impact on his behaviour" (1975, p. 73). Analysis

revealed that the players' views of their normative group sanctions for aggression were a function both of the reference group in question and the specific type of aggressive act (eg. bodychecking, starting a fight, not backing down from a fight). Smith concluded that players tended to regard their fathers, teammates and coaches as being favourably disposed toward legal and defensive aspects of assault, but in opposition to illegal acts, including initiating fights. Mothers and non-playing peers present a contrast: the former were viewed as generally disapproving and the latter approving of violence (Smith, 1975).

According to this study, most <u>illegal</u> aggression is apparently the result of sanctions from non-playing peers, as they were the only reference group that sanctioned illegal aggression. It seems somewhat unlikely that this could be the case, since many games, especially at the lower levels of hockey, are played with virtually no non-playing peers present. Yet, illegal aggression may still be in evidence without the actual presence of non-playing peers.

Statement of Purpose

Few studies have empirically investigated aggression in hockey from a psychological perspective. No study has incorporated both amateur and professional hockey. The present study scientifically examines the occurrence of aggression in hockey from a psychological perspective. In an attempt to study the development of aggression, it includes both amateur and professional players. The three amateur leagues represent points in the path a player would most likely follow to become a professional. The social learning theory of aggression (Bandura, 1973) provides the theoretical context of the research. In establishing a broader perspective than is typical in this area, the study investigates a large number of issues that might be involved in the occurrence of aggression in hockey.

Statement of Hypotheses

Hypotheses were generated to assess the effects of four factors: physical size, role playing, skill and attitude change. These factors are not conceived to be mutually exclusive but rather interactive. That is, these factors will be operative in varying degrees in each player in such a way that together they will determine the extent to which a particular player will exhibit aggressive behaviour. In this investigation however, they are studied as separate factors in an effort to assess the effect they might have individually.

For the young player, the professional players and related personnel (coaches and scouts) may serve as appropriate models, an appropriate model being a necessary component of imitative learning (Bandura, 1973). If the player perceives that professional players and personnel emphasize aggressive behaviour as being important for a player to achieve professional status, the younger players might learn to be aggressive. Important in the formulation of the hypotheses is the possibility that the player in each level of hockey studied here becomes increasingly more attentive

to the appropriate models as he approaches professional status. Thus, each hypothesis is stated such that there will be a progressive increase in that dependent measure from pee wee to midget to Jr. A to the NHL.

A. Physical Factor

Hypothesis 1. The difference in mean minutes in aggressive penalties per player per 60 minutes game time between players who are above the league sample median in weight and those who are below the league sample median in weight will increase from pee wee to the NHL.

It is contended here that participation in aggressive encounters - not only fighting, but also in such aggressive behaviour as charging and boarding - is a function of differences in body weight. If aggressive behaviour results in unrewarding, or punishing consequences to a player, he may tend to decrease his participation in aggressive behaviour. Contrarily, a successful aggressor might receive rewards in terms of approval from a home crowd, respect from teammates and maybe recognition from his coach (see Hypothesis 6). Since success in these encounters is reinforcing, the heavier players will engage in aggressive behaviour more than lighter players.

B. Role Playing Factors

Previous researchers have concluded that there are aggressive roles that players act out, either to conform to expectations (Smith, 1975) or because being aggressive is part of the perceived role of the hockey player (Faulkner, 1971). The following two hypotheses investigate two roles which may escalate aggressive behaviour.

Hypothesis 2. The difference in mean minutes in aggressive penalties per 60 minutes game time per player between defensemen and forwards will increase from pee wee to the NHL.

It is contended here that aggressive behaviour is implicit in the role of the defenseman. Vaz (1976a) made the statement that "the role performance of the defenseman must include both legitimate and illegitimate manoeuvers in 'taking a man out' " (p. 4). This statement was not substantiated empirically. "Taking a man out," or "slowing him down" will render opposing forwards less effective. It is therefore expected that, in general, defensemen commit more aggressive infractions than forwards.

Hypothesis 3. The difference in mean minutes in aggressive penalties per 60 minutes game time per player between rookies and veterans will increase from

pee wee to the NHL.

Being overly aggressive toward rookies (first year players in the league in which they currently play) is a strategy which is employed to make the rookie aware that he might be "hit" at any time. This may cause him to lose his concentration on the game and thus render him less effective. Rookies, being aware of this, do not want to become prone to intimidation. They may therefore become very aggressive and retaliatory, both behaviours leading to the incurring of aggressive penalties.

C. Skill Factor

Hypothesis 4. The difference in mean minutes in aggressive penalties per player per 60 minutes game time between players who scored less than the league sample median number of points and players who scored more than the league sample median number of points will increase from pee wee to the NHL.

This factor has received little empirical attention. Vaz (1976b) subjectively noted that "fighting in professional hockey is usually characteristic of inferior calibre players" (p. 12). No observations have been made at the amateur level in this regard. Knowledge of hockey would lead one to the contention that the relatively skilled player does not necessarily

have to engage in aggressive behaviour (used as a tactical instrument) to be of value to his team. His value lies in his ability to be on the ice to score, or to assist in scoring. The relatively unskilled player might be of more value to his team by eliciting retaliatory aggression from a relatively skilled player, thus eliminating him from the play for (probably) a five minute duration. Dave Schultz, a relatively unskilled player, totalling only 21 and 36 points in 1972-1973 and 1973-1974 respectively, while leading the NHL in minutes in penalties both years, once stated:

> I'm more valuable in the penalty box than I am sitting on the bench ... I'm not going to stop fighting even if I could. It's one of my assets and if it helps win games, I'm going to keep fighting (McMurtry, 1974, p. 5).

D. Differential Perception of Attitudes

Hypothesis 5. There will be an increased emphasis on winning by a) players, b) coaches, and c) parents from pee wee to the NHL.

This has been an interesting and controversial question in the past. Vaz (1973) suggested that "as boys progress from bantam to midget ranks, the cultural value of winning increases even more" (p. 229).

Similarly, Clark et al. (1976) concluded that "as players advance to higher level teams ... the value of winning is more strongly emphasized" (p. 18). It is not immediately apparent how Clark et al. arrived at the conclusion. The issue of winning was not among the variables investigated. However, Vaz (1974) concluded that "the importance of winning to the players decreases noticeably as one advances from the lowest to the highest level teams" (p. 40).

Superior athletes are typically characterized as having an intense desire to compete and to be successful. It is understood that hockey players who progress through the minor hockey system to Jr. A and eventually professional leagues are more proficient than those players who drop out along the way. At the same time, these superior players may possess a greater desire to win. Despite Vaz's (1974) conclusion, it is contended here that as the player achieves levels of hockey ever closer to professional status, he will emphasize winning more and more.

Hypothesis 6. Players perceive that a) parents b) coaches and c) NHL scouts emphasize aggressive behaviour increasingly from pee wee to the NHL.

A recent development in professional hockey underlines the influence of one's coach. In January,

1975, the Boston Bruins played the Minnesota North Stars. Several fights developed in the first period between Dave Forbes of Boston and Henry Boucha of Minnesota. Forbes apparently swung his stick at Boucha, inflicting a serious eye injury. Forbes was subsequently charged with aggravated assault with a dangerous weapon - his hockey stick. During the trial, the Boston coach, Don Cherry, said he felt his job was in jeopardy because his team was on a losing road trip. He testified he told his players they were not aggressive enough last season and expressed the view that hard body checking wins hockey games. Cherry stated that it has always been his philosophy to win at all costs. He later said that he in fact pushed his players to the edge of violence (Kitchener-Waterloo Record, July 16, 1976). The trial has since ended in a hung jury.

Included in this hypothesis is the investigation of parents' influence on players' attitudes towards aggression. Smith (1975) found that players tended to regard their fathers as being favourably disposed toward legal and defensive aspects of "assault," but as being against illegal acts. As the hockey player grows older, it is contended that parents will encourage aggressive behaviour in an effort to make their son a more effective player, one more closely

approximating the perceived role of the professional.

Thirdly, this hypothesis investigates players' perceptions of scouts' emphasis on aggressive behaviour. If being aggressive is part of the perceived role of the professional, then it is expected that younger players would perceive that NHL scouts would emphasize aggressiveness as being important.

Hypothesis 7. There will be an increase in retaliatory aggression from pee wee to the NHL.

McMurtry (1974), in a conversation with Clarence Campbell, president of the NHL, contended that:

> right now it is extremely difficult for the player who is being provoked and being pushed to turn his back and appear to be running. The presence of his own teammates and the many millions of fans make it an almost impossibility to do that (p. 19).

Because McMurtry's contentions were based on several interviews which were restricted to professional players, research is needed to clarify the issue, particularly at the amateur level. Retaliatory aggression is defined here as aggression which is elicited by a prior aggressive act by another player.

Method

Subjects

Subjects were drawn from each of four progressively more skilled levels of hockey. Specifically, major pee wee (age 12), major midget (age 16), Jr. A (age 15 to 20, although there is actually no lower age restriction) and National Hockey League (no age restriction) players were sampled. The first three levels are of amateur status, the latter, professional.

A. Subjects for the minutes in aggressive penalties measure. Twenty-nine pee wee and 27 midget players on the Kitchener or Waterloo major All Star teams were used. At the Jr. A level, 31 players on the Hamilton Fincups or Kitchener Rangers, and at the NHL level, 34 Toronto Maple Leaf or Montreal Canadien players were used. Players who were recorded on game sheets as having played more than one-half of their team's games during the 1975-1976 season were considered to be regular players and were therefore included as subjects.

B. Subjects who completed the questionnaire. At the pee wee and midget levels, players on the Kitchener and Waterloo major All Star teams completed the questionnaire. Twenty-eight players participated at each of these levels. Thirty-one Jr. A players

who were members of the Hamilton Fincups of Kitchener Rangers completed the questionnaire.

Administrators of various NHL teams were contacted and asked to participate in the study. However, these teams declined to take advantage of the opportunity. Questionnaires were therefore mailed directly to 51 players on the 1976-1977 team rosters for the Montreal Canadiens, Detroit Red Wings and Buffalo Sabres. Nineteen were returned. In addition, seven players from the Toronto Maple Leafs who participated in a local exhibition fastball game in July, 1976 completed the questionnaire and returned it by mail. Hence, there were 26 participants at this level.

Questionnaires were not distributed to goaltenders at all levels as it was thought that their attitudes towards aggression and related issues in hockey would be qualitatively different from other players.

Dependent Measures

An objective, quantified measure of illegal aggression in hockey is "minutes in aggressive penalties." For the purpose of this study, a behaviour was considered aggressive if the physical characteristics of that action included hitting, kicking, or striking, and which actions were directed at an opposing player or referee; and when the intent of that behaviour included

inflicting some physical pain or injury on the player or referee. By this definition, the following penalties were considered aggressive: slashing, boarding, fighting, roughing, spearing, butt-ending, cross-checking, kneeing, charging, elbowing and high-sticking.

In addition, a questionnaire (see Appendix A) was administered to all players. The questionnaire was devised specifically for use in this study. It was employed in a pilot study involving 28 major pee wee and 27 major midget house league players. Some changes in the wording of certain items were made on the basis of questions asked of the researcher by the players. Most of these centered on word comprehension. Therefore, while it may appear that the questionnaire could be considered rather simplistic by Jr. A and NHL players, it must be remembered that the same questionnaire was administered to players 12 years old. To combat older players taking the questionnaire lightly, it was pointed out to these players that the questionnaire was purposefully and necessarily made simple in some respects.

Procedure

A. For the minutes in aggressive penalties measure. Managers of the pee wee, midget and Jr. A teams were

contacted at the end of the 1975-1976 season to obtain game sheets for the regular season. Game sheets for two NHL teams, the Toronto Maple Leafs and the Montreal Canadiens were obtained from the Referee-in-Chief of the NHL. The total minutes in aggressive penalties, total points scored and games played for each player were tabulated by the researcher from these game sheets.

B. For the questionnaire. All pee wee, midget and Jr. A participants completed the questionnaire in their dressing rooms after a practice. All teams were nearing the end of 1975-1976 regular season play. The questionnaires were completed in the presence of the researcher, but not in the presence of the coach. Instructions which appear on the front of the questionnaire (see Appendix A) were read by the researcher. The players were then asked to begin. A small number of questions were asked by the pee wee players, most involving word interpretation. No questions were asked by the midget or Jr. A samples. Pee wee players took approximately 30 minutes to complete the questionnaire. Midget and Jr. A players took approximately 20 minutes.

The procedure used with the NHL players necessarily differed from that of the other levels of hockey.

Part of this sample was contacted at a banquet which followed an exhibition fastball game in Kitchener, Ontario. Players were contacted individually and asked to participate in the research. Each player was given a questionnaire in a stamped, self-addressed envelope. Questionnaires were also mailed to all players (except goaltenders) on the 1976-1977 team roster of the Montreal Canadiens, Detroit Red Wings and Buffalo Sabres.

Before the actual administration, pee wee, midget, Jr. A and the NHL players who participated in the fastball game were told that the research was an examination of players' attitudes towards hockey. No mention was made of the issue of aggression in hockey. Questionnaires mailed to NHL players were accompanied by a similarly worded letter.

Of all the questionnaires returned to the researcher, only one was eliminated from the data analysis. This one was from an NHL player and was not included because it had a large number of unanswered items.

Results

A. Minutes in Aggressive Penalties

A series of 4 x 2 factorial analyses of variance (ANOVA) (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975) was conducted with minutes in aggressive penalties as the dependent variable. In each case league (pee wee, midget, Jr. A and NHL) constituted one independent variable. It was included in each analysis to assess its possible interaction with other independent variables.

Hypothesis 1. Thus the first 4 x 2 ANOVA included weight (heavy or light) as the second independent variable. Players were categorized as heavy or light according to a median split within each of the league samples. Table 1 gives the relevant means and standard deviations, while Table 2 is the summary table for the ANOVA.

Hypothesis 2. A second analysis utilized position (forward or defense) as the second independent variable. See Table 3 for relevant means and standard deviations and Table 4 for the ANOVA summary table.

Hypothesis 3. A third analysis included years in league (rookie or veteran) as the second independent variable.[1] Players in each sample were grouped as

Table 1

Mean Minutes in Aggressive Penalties per Player per 60 Minutes Game Time and Standard Deviations by League and Weight (light or heavy)

Group	n	Mean	Standard Deviation
Pee Wee			
Heavy	14	.39	.38
Light	15	.56	.61
Midget			
Heavy	13	1.11	.95
Light	14	1.38	.76
Junior A			
Heavy	13	.65	.37
Light	18	.90	.60
National Hockey League			
Heavy	16	.54	.73
Light	18	.38	.30

Table 2

Summary Table for League by Weight

ANOVA

Source	df	Mean Square	F	Significance of F
Main effects	4	3.07	8.09	.001
League	3	3.95	10.42	.001
Weight	1	.40	1.07	.304
League by weight Interaction	3	.31	.82	.485
Within cells	113	.38		
Total	120	.47		

Table 3

Mean Minutes in Aggressive Penalties per Player per 60 Minutes Game Time and Standard Deviations by League and Position (forward or defense)

Group	n	Mean	Standard Deviation
Pee Wee			
Forward	19	.55	.51
Defense	10	.33	.51
Midget			
Forward	19	1.22	.98
Defense	8	1.32	.47
Junior A			
Forward	20	.73	.50
Defense	11	.94	.56
National Hockey League			
Forward	21	.54	.64
Defense	13	.32	.33

Table 4

Summary Table for League by Position

ANOVA

Source	df	Mean Square	F	Significance of F
Main Effects	4	2.98	7.79	.001
League	3	3.92	10.25	.001
Position	1	.41	.11	.743
League by Weight Interaction	3	.34	.88	.455
Within cells	113	.38		
Total	120	.47		

rookies if they had played one year or less in the league in which they were now competing, or as veterans if they had played more than one year. See Table 5 for the relevant means and standard deviations and Table 6 for the ANOVA summary table.

Hypothesis 4. The last two 4 x 2 factorial ANOVA's utilized skill as the second independent variable. Forwards and defensemen were divided by a median split into players who scored less than the median number of points ("less-skilled") and players who scored more than the median number of points ("more-skilled"). See Tables 7 and 8 for the relevant means and standard deviations, and Table 9 and 10 for the ANOVA summary tables.

In each of the five analyses of variance, the interaction between the two independent variables was not significant, nor was the main effect for the second independent variable in each case. The main effect for league, however, was consistently significant at the .01 level of confidence or better. For example, in the first of these ANOVA's (league by weight), the main effect was significant, $F(3,113) = 10.416$, $p<.001$.[2]

A posteriori analysis of the significant main effect,

Table 5

Mean Minutes in Aggressive Penalties per Player per 60 Minutes Game Time and Standard Deviations by League and Years in League (rookie or veteran)

Group	n	Mean	Standard Deviation
Pee Wee			
Rookie	29	.48	.51
Veteran			
Midget			
Rookie	27	1.25	.85
Veteran			
Junior A			
Rookie	13	.74	.47
Veteran	18	.84	.57
National Hockey League			
Rookie	4	.43	.64
Veteran	30	.46	.55

Table 6

Summary Table for League by Years in League

ANOVA

Source	df	Mean Squares	F	Significance of F
Main Effects	4	2.99	7.77	.001
League	3	3.57	9.30	.001
Years in League	1	.64	.11	.684
League by Years in League Interaction	1	.11	.03	.869
Within cells	115	.38		
Total	120	.47		

Table 7

Mean Minutes in Aggressive Penalties per Player per 60 Minutes Game Time and Standard Deviations by League and Skill ("less-skilled" or "more-skilled") for Forwards

Group	n	Mean	Standard Deviation
Pee Wee			
Less-skilled	9	.56	.56
More-skilled	10	.54	.48
Midget			
Less-skilled	10	1.09	1.11
More-skilled	9	1.36	.86
Junior A			
Less-skilled	10	.45	.39
More-skilled	10	1.00	.46
National Hockey League			
Less-skilled	10	.78	.85
More-skilled	11	.31	.25

Table 8

Mean Minutes in Aggressive Penalties per Player per 60 Minutes Game Time and Standard Deviations by League and Skill ("less-skilled" or "more-skilled") for Defensemen

Group	n	Mean	Standard Deviation
Pee Wee			
Less-skilled	5	.26	.27
More-skilled	5	.41	.70
Midget			
Less-skilled	4	1.10	.33
More-skilled	4	1.55	.52
Junior A			
Less-skilled	5	.88	.27
More-skilled	6	.98	.75
National Hockey League			
Less-skilled	7	.42	.43
More-skilled	6	.21	.11

Table 9

Summary Table for League by Skill (Forwards)

ANOVA

Source	df	Mean Squares	F	Significance of F
Main Effects	4	1.51	3.36	.014
League	3	1.99	4.43	.006
Skill	1	.12	.26	.611
League by Skill Interaction	3	.97	2.15	.101
Within cells	71	.45		
Total	78	.52		

Table 10

Summary Table for League by Skill (Defensemen)

ANOVA

Source	df	Mean Squares	F	Significance of F
Main Effects	4	1.73	7.67	.001
League	3	2.27	10.05	.001
Skill	1	.69	.30	.587
League by Skill Interaction	3	.19	.84	.481
Within cells	34	.23		
Total	41	.37		

league, using the Newman-Keuls (N-K) multiple comparison test (Nie et al., 1975) indicated that the midget players incurred a significantly greater number of minutes in aggressive penalties per player per 60 minutes game time ($\bar{X}$ = 1.23) than the pee wee ($\bar{X}$ =.47), Jr. A ($\bar{X}$ = .80), and NHL ($\bar{X}$ = .45) players. This and further a posteriori comparisons utilized the N-K test at the .05 level of significance.

B. Responses to Questionnaire Items

A series of one factor analyses of variance were conducted with league (pee wee, midget, Jr. A and NHL) the independent variable and players' responses to questionnaire items the dependent variable. Table 11 gives the relevant means and standard deviations for the questionnaire items. Table 12 is the summary table for the relevant ANOVA's.

Hypothesis 5. Analyses revealed significant differences in responses to items #2 (How important is it for you to win?), $F(3,109) = 3.73$, $p<.05$; #6ii (When you play hockey what part of your game do you emphasize: (ii) winning?), $F(3,109) = 5.194$, $p<.01$; and #4ii (How much is your coach's emphasis on: (ii) winning?), $F(3,106) = 28.204$, $p<.001$. There was not a significant difference in analysis of item #5ii (How much is your parents' emphasis on: (ii) winning?), $F(3,109) = 2.341$,

Table 11

Means and Standard Deviations of Questionnaire Items Used in Analyses of Hypotheses 5, 6, and 7.

Questionnaire Item	League							
	Pee Wee		Midget		Jr. A		NHL	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
2[e] (How important is it for you to win?)	3.96[a]	..88	4.10[ab]	.99	4.54[b]	.68	4.54[b]	.70
6ii[e] (When you play hockey, what part of your game do you emphasize - (ii) winning?)	3.86[a]	1.11	4.25[ab]	.75	4.48[b]	.77	4.69[b]	.55
4ii[e] (How much is your coach's emphasis on: (ii) winning?)	2.61[a]	1.32	3.96[b]	.94	4.61[c]	.67	4.75[c]	.85
5ii[e] (How much is your parent's emphasis on : (ii) winning?)	2.75[a]	1.08	3.36[a]	1.25	3.42[a]	.77	3.08[a]	1.16
4vii[e] (How much is your coach's emphasis on: (vii) being aggressive?)	3.46[a]	1.33	3.93[ab]	.94	4.33[b]	.80	3.58[a]	1.14
5vii[e] (How much is your parent's emphasis on: (vii) being aggressive?)	3.37[b]	1.36	3.36[b]	1.34	3.39[b]	.92	2.40[a]	1.08

Table 11

(continued)

Questionnaire Item	League							
	Pee Wee		Midget		Jr. A		NHL	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
3iii[e] (What do you think NHL scouts are looking for in future NHL players: (iii) being aggressive?)	3.79[a]	1.25	4.25[ab]	.80	4.40[b]	.56	3.68[a]	.90
7iii[e] (What is expected of a rookie in your league: (iii) being aggressive?)	3.68[ab]	1.36	3.75[ab]	.93	4.27[b]	.74	3.46[a]	.76
8i[f] (I would respect a rookie who backed down from a fight.)	4.04[c]	1.48	2.86[b]	1.18	1.53[a]	.86	2.52[b]	1.08
8ii[f] (I feel a rookie would be doing the right thing by backing down from a fight.)	4.21[d]	1.26	3.07[c]	1.15	1.33[a]	.61	2.26[b]	1.01
9i[f] (A rookie on your team would be treated with respect by other teams if he backed down from a fight.)	2.59[b]	1.50	2.32[b]	1.16	1.37[a]	.77	2.05[b]	1.20

Table 11

(continued)

Questionnaire Item	League							
	Pee Wee		Midget		Jr A		NHL	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
9ii[f] (A rookie backing down from a fight would cause other teams to continue picking on him.)	2.93[a]	1.47	3.12[a]	1.52	4.16[b]	1.24	4.09[b]	1.23
13i[f] (I would respect any player who backed down from a fight.)	4.15[c]	1.23	2.93[b]	.89	2.10[a]	1.13	2.52[ab]	1.20
11[f] (Players who have been knocked down are encouraged to act aggressively towards the other team by their teammates.)	3.04[a]	1.34	3.36[a]	1.13	3.36[a]	.99	3.33[a]	1.13
12[f] (Players who have been knocked down are encouraged to act aggressively towards the other team by their coach.)	2.48[a]	1.25	2.64[ab]	1.16	3.32[b]	.91	3.08[ab]	1.18

Table 11

(continued)

Note. Subsets with the same superscript do not differ significantly within each item.

[e] 1 = not at all important

2 = of little importance

3 = of some importance

4 = quite important

5 = very important

[f] 1 = strongly disagree

2 = disagree somewhat

3 = neither disagree nor agree

4 = agree somewhat

5 = strongly agree

Table 12

Summary Table for Analyses of Variance of Responses to Questionnaire Items

Questionnaire Item	df	F	Significance of F
2[e] (How important is it for you to win?)	3,109	3.73	.013
6ii[e] (When you play hockey, what part of your game do you emphasize - (ii) winning?)	3,109	5.19	.002
4ii[e] (How much is your coach's emphasis on: (ii) winning?)	3,106	28.20	.001
5ii[e] (How much is your parent's emphasis on: (ii) winning?)	3,109	2.34	.078
4vii[e] (How much is your coach's emphasis on: (vii) being aggressive?)	3,104	3.80	.012
5vii[e] (How much is your parent's emphasis on: (vii) being aggressive?)	3,107	4.35	.006
3iii[e] (What do you think NHL scouts are looking for in future NHL players: (iii) being aggressive?)	3,107	4.09	.012
7iii[e] (What is expected of a rookie in your league: (iii) being aggressive?)	3,108	3.47	.018

Table 12

(continued)

Questionnaire Item	df	F	Significance of F
8i[f] (I would respect a rookie who backed down from a fight.)	3,105	22.46	.001
8ii[f] (I feel a rookie would be doing the right thing by backing down from a fight.)	3,105	40.28	.001
9i[f] (A rookie on your team would be treated with respect by other teams if he backed down from a fight.)	3,102	5.80	.001
9ii[f] (A rookie backing down from a fight would cause other teams to continue picking on him.)	3,104	6.00	.001
13i[f] (I would respect any player who backed down from a fight.)	3,104	17.25	.001
11[f] (Players who have been knocked down are encouraged to act aggressively towards the other team by their teammates.)	3,106	.51	.675
12[f] (Players who have been knocked down are encouraged to act aggressively towards the other team by their coach.)	3,106	3.41	.02

Table 12

(continued)

Note. Subsets with the same superscript do not differ significantly within each item.

[e] 1 = not at all important
2 = of little importance
3 = of some importance
4 = quite important
5 = very important

[f] 1 = strongly disagree
2 = disagree somewhat
3 = neither disagree nor agree
4 = agree somewhat
5 = strongly agree

$p < .08$.

A posteriori analyses indicated that (1) Jr. A ($\bar{X} = 4.55$) and NHL ($\bar{X} = 4.54$) players placed significantly more importance on winning than the pee wee players ($\bar{X} = 3.96$), but they did not differ significantly from the midget players ($\bar{X} = 4.11$) (item#2); (2) Jr. A ($\bar{X} = 4.48$) and NHL ($\bar{X} = 3.86$) players reportedly emphasized winning when they play hockey significantly more than pee wee ($\bar{X} = 3.86$) players. Midget players ($\bar{X} = 4.25$) did not differ from any league (item #6ii); (3) Jr. A ($\bar{X} = 4.61$) and NHL ($\bar{X} = 4.75$) players perceived that their coaches placed significantly more importance on winning than the midget players ($\bar{X} = 3.96$). The midget players, in turn, perceived that their coaches placed significantly more importance on winning than the pee wee players ($\bar{X} = 2.61$) (item #4ii).

Hypothesis 6. Analyses revealed significant differences in responses to items #4vii (How much is your coach's emphasis on: (vii) being aggressive?), $F(3,104) = 3.80$, $p < .05$; #5vii (How much is your parents' emphasis on: (vii) being aggressive?), $F(3,107) = 4.35$, $p < .01$; and #3iii (What do you think NHL scouts are looking for in future NHL players: (iii) being aggressive?), $F(3,107) = 4.09$, $p < .01$.

A posteriori analyses indicated that (1) Jr. A

players perceived their coaches to place significantly more importance on being aggressive ($\bar{X}$ = 4.33) than pee wee ($\bar{X}$ = 3.46) and NHL ($\bar{X}$ = 3.58) players. The midget ($\bar{X}$ = 3.93) sample was found between the Jr. A and NHL players. They did not differ from any group (item #4ii); (2) pee wee ($\bar{X}$ = 3.37), midget ($\bar{X}$ = 3.36) and Jr. A ($\bar{X}$ = 3.39) players perceived that their parents emphasized aggressive behaviour significantly more than did the NHL players ($\bar{X}$ = 2.40) (item #5vii); (3) Jr. A players ($\bar{X}$ = 4.40) perceived that NHL scouts placed significantly more importance on being aggressive than did the NHL ($\bar{X}$ =3.68) and pee wee ($\bar{X}$ = 3.79) players. Midget players ($\bar{X}$ = 4.25) were found between the pee wee and Jr. A players and did not differ from either sample (item #3iii).

Hypothesis 7. Analyses revealed significant differences in responses to items #7iii (What is expected of a rookie in your league: (iii) being aggressive?), $F(3,108) = 3.47$, $p<.05$; #8i (I would respect a rookie who backed down from a fight.), $F(3,105) = 22.46$, p .001; #8ii (I feel a rookie would be doing the right thing by backing down from a fight.), $F(3,105) = 40.28$, $p<.001$; #9i (A rookie on your team would be treated with respect by other teams if he backed down from a fight.), $F(3,102) = 5.80$, $p<.001$; #9ii (This,

i.e. a rookie backing down from a fight, would cause other teams to continue picking on him.), $F(3,104) = 6.00$, $p<.001$; #13i (I would respect any player who backed down from a fight.), $F(3,104) = 17.25$, $p<.001$; and #12 (Players who have been knocked down are encouraged to act aggressively towards the other team by their coach.), $F(3,106) = 3.41$, $p<.05$.

Analysis also indicated that there was not a significant difference in responses to questionnaire item #11 (Players who have been knocked down are encouraged to act aggressively towards the other team by his teammates.)

A series of a posteriori analyses conducted on items #7iii, #8i, #8ii, #9i, #9ii, #13i and #12 revealed the following findings: (1) the Jr. A sample ($\bar{X} = 4.27$) felt it was significantly more important for a rookie to be aggressive than did the NHL sample ($\bar{X} = 3.46$). The pee wee ($\bar{X} = 3.68$) and midget ($\bar{X} = 3.75$) players were found between the two and did not differ significantly from them (item #7iii); (2) players progressively and significantly lost respect for a rookie who backed down from a fight from pee wee ($\bar{X} = 4.04$) to midget ($\bar{X} = 2.86$) and NHL ($\bar{X} = 2.52$) to Jr. A ($\bar{X} = 1.53$). The midget and NHL players did not differ significantly (item #8i); (3) similarly, players grew significantly

stronger in reporting that a rookie would not be doing the right thing by backing down from a fight from pee wee ($\bar{X}$ = 4.21) to midget ($\bar{X}$ = 3.07) to NHL ($\bar{X}$ = 2.26) to Jr. A ($\bar{X}$ = 1.33) (item #8ii); (4) Jr. A players ($\bar{X}$ = 1.37) felt that a rookie would be treated with significantly less respect by other teams if he backed down from a fight than did the pee wee ($\bar{X}$ = 2.59), midget ($\bar{X}$ = 2.32) and NHL ($\bar{X}$ = 2.05) players (item #9i); (5) Jr. A ($\bar{X}$ = 4.16) and NHL ($\bar{X}$ = 4.09) players felt that if a rookie backed down from a fight, it would cause other teams to continue picking on him. They differed significantly from the pee wee ($\bar{X}$ = 2.93) and midget ($\bar{X}$ = 3.11) players; (6) players progressively and significantly lost respect for any player (not just a rookie) who backed down from a fight from pee wee ($\bar{X}$ = 4.15) to midget ($\bar{X}$ = 2.93) to Jr. A ($\bar{X}$ = 2.10). The NHL players ($\bar{X}$ = 2.52) were found between the midget and Jr. A players, and did not differ significantly from them. The NHL players did differ significantly from the pee wee players (item #13i); (7) finally, the Jr. A players' ($\bar{X}$ = 3.32) coaches were perceived to encourage retaliatory aggression significantly more than the pee wee players ($\bar{X}$ = 2.48). The midget ($\bar{X}$ = 2.64) and NHL ($\bar{X}$ = 3.08) players did not differ themselves nor from the pee wee and Jr. A leagues that they were found between.

Discussion

A. Minutes in Aggressive Penalties

The use of minutes in aggressive penalties as an objectified dependent measure was described in the method section of this paper. While this is apparently the best measure of illegal aggressive behaviour in hockey, there is still some concern over its use. First, while rules for hockey are generally universalized, there are some modifications that various leagues have adopted, apparently in an effort to inhibit aggression. For example, a fight at the pee wee level results in expulsion from the game, while in the NHL it results in a five minute penalty. How this affected the dependent measure for pee wee players in relation to other players should be considered. Aggressive players would be involved in more fights and this would of course increase their minutes in aggressive penalties total. They would also be banished from the game, and thus would be prevented from incurring any further penalties. However, since only three fights were recorded at this level, this rule change probably did not alter the dependent measure substantially. The other three leagues adhere to professional rules.

The dependent measure was therefore not subject to rule differences.

Second, a point of contention arises in that there are certain penalties which may be considered to be aggressive but the assessment for incurring these penalties is a game misconduct to which no time penalty is attached. Rather, the player is simply banished from the game. Among these penalties are: third man in a fight, being the first player to leave the players' bench to enter a fight, pushing or hitting a referee or linesman, and incurring two misconducts in one game. However, it could be hypothesized that the incurring of these penalties by players might be at the same rate as the incurring of other aggressive penalties for which there are quantified penalties. Thus, the dependent measure could still be used as a measure relative to other players.

Third, while the dependent measure is an objectified measure, it is assessed somewhat subjectively by the referee. The referee's judgment of an act as being an illegal one is of course subject to his perceptions of the act and interpretation of the rule which was violated. A penalty is often determined by the extent to which the act violates the rule. For example, a certain amount of body contact is allowed before

a player would be assessed a boarding or charging penalty. At what point an act becomes illegal is determined by the referee. Referees might vary in skill within each league. Also, it is quite likely that referees advance in skill from one league to the next, similar to the process involved with the players. The manner in which these factors might affect a study such as the present one is unknown. However, referees at all levels attend clinics and must achieve a certain level of competence before being sanctioned as a referee for a particular level. The clinics focus on rule comprehension and interpretation in an effort to maintain consistency in the assessment of penalties. Also, less experienced referees at the pee wee and midget levels have the advantage of refereeing a "slower" game than at the Jr. A and NHL levels. This would aid in the accuracy of the referee's "calls."

The above problems are not judged to be serious, and, in spite of these shortcomings, minutes in aggressive penalties is the best operationalized measure of aggression in hockey.

Hypotheses 1, 2, 3 and 4 (based on the physical, role playing and skill factors) were not confirmed. That is, aggressive behaviour, as measured by minutes in aggressive penalties, did not differ between leagues as

a function of differences in weight, position, years in league or skill within leagues. It is possible that extraneous factors may have affected the results. For example, Hypothesis 4 is confounded by one very important extraneous variable - actual playing time. To win hockey games, a team must outscore the opposition, not be represented in the penalty box more than the opposition. The players who can score (i.e. "more-skilled") would therefore be given more playing time, not only on regular shifts, but also on "power plays" (when the opposition has a penalty). These players are probably given more ice time when the game is closer in score. "Less-skilled" players are not used extensively in this situation because the probability of them scoring a much needed goal is, of course, low. Therefore, the "more-skilled" players may have had more actual playing time, even if players played approximately the same number of games. To some extent the rate at which a player incurs penalties is related to his amount of playing time. If a player gets only two or three shifts a game, it is unlikely he will amass many penalties, aggressive or otherwise. A player who receives a considerable amount of playing time may receive more penalties due to the occurrence of retaliatory aggression, or simply due to the

physical nature of the game. While some NHL teams keep playing time statistics, few amateur teams do. Further, difficulty in obtaining these statistics may make their existence academic.

Hypothesis 3 was also complicated by extraneous factors. First, at the pee wee and midget levels no difference exists between players with regards to the number of years in the league: players can play only one year in each league. Therefore, analysis was conducted only on the Jr. A and NHL samples Second, this hypothesis may have been confounded by the playing time variable, as rookies may get less playing time than veterans. A rookie might not be played during a critical situation (eg. power play, playing short-handed, playing with the score close). Third, only 13 rookies at the Jr. A, and four at the NHL level were involved in the research. This presents a problem statistically because of the unequal n's. The representativeness of the rookie sample, particularly at the NHL level, is questionable.

To control for these problems in future investigations, it would seem pertinent to match an equal number of veterans and rookies on points scored. One could then be reasonably assured of including "regular" players and the statistical problem would be eliminated.

In the cases of Hypotheses 3 and 4, a similar method of controlling for playing time differences might be possible. The researcher could simply disregard the records of players considered to be "fringe" players. He could call on knowledgeable hockey personalities to assist in the categorization. A number of aggressive, yet seldom played players were included in the present study. For example, one player in the present study was a defenseman with the Montreal Canadiens. He is included in this study because statistically he "played" in over one-half of his team's games during the 1975-1976 season. It is important to note that a player is considered to have "played" in a game if he "dresses" for that game. He may not have actually participated in the game. This player was considered a "less-skilled" defenseman according to the median split on total points scored, but only incurred five minutes in aggressive penalties. This decreased the mean minutes in aggressive penalties for "less-skilled" defensemen, thus working against the rejection of the null hypothesis. However, this player also received very little actual playing time, sometimes not even making an appearance on the ice during a game. He did not even "dress" for the playoffs and was traded immediately after the playoffs. His

minutes in aggressive penalties total is therefore confounded by the playing time factor. Generally, players who might receive a smaller amount of playing time are the same players who were hypothesized to amass a greater number of minutes in aggressive penalties.

A second method of controlling for actual playing time differences might be possible. One could use a ratio of minutes in aggressive penalties to total penalty minutes as the dependent measure. Even if a player received only a small amount of actual playing time, he might incur a relatively large ratio of aggressive penalties to total penalties if he were aggressively inclined. Thus, hypotheses 3 and 4 might not be confounded by playing time differences as might be the case in the present study.

From the present results, it appears that differences in physical size and position are not involved in the occurrence of illegal aggression. The role played by differences in years played in a particular league is still an inconclusive issue due to a small number of rookies involved in the study and because of possible playing time differences between rookies and veterans. Similarly, the effect of differences in skill on aggressive behaviour was probably confounded by the playing time variable. It

should be noted that in spite of this, the league by skill (forwards) interaction approached significance, $F(3,71) = 2.15$, $p < .10$. This should provide an impetus for further research in this area.

B. Responses to Questionnaire Items

The expectation that there would be a progressive increase in the dependent variables from pee wee to the NHL was generally not revealed. Only analysis of item #8ii (I feel that a rookie would be doing the right thing by backing down from a fight) revealed this pattern. Generally, a fairly consistent pattern of increased emphasis on the issue in question (eg. winning, use of aggressive behaviour) developed from pee wee to midget to Jr. A, with the NHL between the pee wee and Jr. A samples.

Hypothesis 5 investigated players' attitudes towards winning. In comparing players' attitudes, Vaz (1974) concluded that "the importance of winning to the players decreases noticeably as one advances from the lowest to the highest level teams" (p. 40). Vaz arrived at this conclusion by asking players, "what are the three most important qualities of playing in the Minor Hockey League?" Of the nine possible choices the respondents' replies that included the category, "trying to win at all costs," comprised

the dependent variable (p. 40). Analysis of item #2 in the present study ("How important is it for you to win?") does not substantiate Vaz's findings. The results indicated that the Jr. A sample felt that winning was significantly more important than the pee wee players. Similarly, Jr. A (and NHL) players emphasized winning when playing the game (item #6ii) significantly more than the pee wee players. The only direct comparison to Vaz's study is between the pee wee and midget players. The results certainly do not substantiate Vaz's conclusions. While differences on these two items are not large enough to be significant, the results tend in the opposite direction: players tended to emphasize the importance of winning more from lower leagues to higher leagues. Further, in the present study, a "ceiling effect" might have been operative, such that players may have clustered around the two responses that represented an importance on winning (i.e. 4 and 5 on the 5 point scale). This may have interferred with a wider distribution of scores and hence, greater variability among leagues.

Vaz (1974) also concluded that as players advance through the minor hockey system, their perception of the importance of winning to the coach decreases considerably. Again the present study does not

substantiate these findings. The comparison of interest in this study is between the pee wee and midget leagues. The present results are significant in the opposite direction: midget coaches were perceived to emphasize the importance of winning more than pee wee coaches.

Vaz's (1974) study differed from the present study in the selection of the target population. He used all players in a city Minor Hockey League. This includes both All Stars and non All Stars. The present study involved only All Star players at the pee wee and midget levels. Differences in ability may have contributed to differences in results between the two studies. Also, the dependent measure differed. Vaz's questionnaire included an item which asked the players what they thought were the three most important qualities a coach looks for in selecting players for All Star teams. Responses that included "trying to win at all costs" was the dependent measure. As players advanced from the lowest (tyke) to the highest level team (midget) there was a decrease in the frequency of their selection of the quality "trying to win at all costs." It should be noted that the quality "wanting to win" decreased relative to other qualities, such as aggressiveness and scoring ability.

The results say little about the differential emphasis on winning considered independent of other qualities. Finally, whether the players of lower level teams (eg. tykes, ages 7-9) had sufficient comprehension of the questionnaire is a pertinent question. This is particularly important when attitudes are compared from one group to another.

What motivates players to be aggressive? Smith (1975) suggested that they felt it was expected of them by significant others. Fathers of players were perceived to be favourably disposed towards the legal and defensive aspects (i.e. defending oneself from aggression) of assault. Results from Hypothesis 6 in the present study found that parents were apparently non-instrumental in developing the use of aggressive behaviour. Parents of pee wee, midget and Jr. A players were perceived to be remarkably consistent in their attitudes towards the use of aggression. In all cases, parents were perceived to have placed little importance on being aggressive. This result is interesting when one considers the popular concept which depicts parents shouting verbal encouragement for the players to be aggressive during a game. McMurtry (1974) implied that the crowd viewing a midget game (presumably many of whom were parents of players) was involved

in the occurrence of fighting, which eventually led to the death of one of the players after the game. According to the present results, this is not necessarily so - parents are not perceived at any level as encouraging aggression. It is, of course, possible that players' perceptions of parental emphasis on aggression and parents' actual influence in this regard are different.

Smith (1975) also concluded that coaches sanctioned legal aggression. The present study lends some support to this finding. Coaches reportedly encouraged aggression significantly more from pee wee to Jr. A. Further, the absolute scores indicate that coaches at all levels reportedly emphasized being aggressive, as the means ranged from 3.46 (pee wee) to 4.33 (Jr. A). It is important to note that coaches also apparently placed significantly more importance on being aggressive than parents at the midget ($t(27) = 2.46$, $p<.01$), Jr. A ($t(30) = 4.29$, $p<.001$) and NHL ($t(25) = 3.75$, $p<.001$) levels. Along the same line, coaches similarly placed significantly greater importance on winning (investigated in Hypothesis 5) than parents at the midget ($t(26) = 2.35$, $p<.05$), Jr. A ($t(30) = 7.61$, $p<.001$) and NHL ($t(25) = 6.54$, $p<.001$) levels.

Along with parents and coaches, a third group of

what Smith (1975) would refer to as significant others might be NHL scouts. According to the absolute scores, midget and Jr. A players perceived that NHL scouts felt that it was significantly more important for players to be aggressive than did pee wee and NHL players. This finding lends some support to Faulkner's (1971) observation that being aggressive is part of the perceived role of the professional.

It would be informative to discover if players, particularly at the Jr. A level are attempting to conform to this expectation. Midget players are also watched by scouts, and some midgets surely have expectations of becoming professional in the future. Conforming to perceived expectations of NHL scouts could be involved in the occurrence of aggressive behaviour, particularly at these two levels.

Hypothesis 7 focussed on retaliatory aggression. All leagues responded that other teams would not respect a rookie who backed down from a fight. The Jr. A players responded significantly stronger on this issue than did the other three leagues. Further, that backing down would cause other teams to continue "picking on" the rookie was agreed upon by the Jr. A and NHL players. They differed significantly from the pee wee and midget players. These results indicate

that as a rookie progresses from pee wee to Jr. A, it possibly becomes less acceptable for him to back down from a fight. If he does, it may very well elicit more aggression against him. It becomes more important to one's hockey career to "stand up and fight." The fact that the NHL sample placed significantly less emphasis on standing one's ground and fighting than did the Jr. A sample (although the NHL sample did agree that a rookie should not back down) may indicate that once a player has reached that level, he has proved himself as a hockey player, and backing down may not be as harmful to his career as it would be to a Jr. A player who has not proven himself in the professional ranks.

However, while players generally emphasized the importance of not backing down from pee wee to Jr. A, similar differences did not appear with regards to teammates encouraging aggressive behaviour in players who have been aggressed upon (item #11). In fact, the absolute scores of all four samples indicate that teammates reportedly do not encourage retaliatory aggression, (means ranged from 3.04 for pee wee to 3.36 for midget and Jr. A). The pattern of means is in the hypothesized direction, but differences between them are not significant.

The coach of a hockey team is of course an important figure. He dictates not only the strategy that his team will use on the ice, but to some extent also shapes his players' attitudes. If a player wants to be successful on a particular team, he may, to some extent, have to adopt the coach's philosophy and attitudes towards the game. The present study discovered that Jr. A coaches were perceived by Jr. A players to encourage retaliatory aggression significantly more than the pee wee and midget coaches, by players in those leagues. However, the absolute scores indicate that, generally, players did <u>not</u> perceive their coaches as encouraging retaliatory aggression, since means ranged from 2.48 (pee wee) to 3.32 (Jr. A) on the 5 point scale.

If teammates and coaches are not strongly involved in encouraging retaliatory aggression, what does motivate a player to retaliate? The results indicated that other players - both teammates and opposing players - reportedly lost respect for a rookie who backed down from a fight (item #8i) and for <u>any</u> player who backed down from a fight (item #13) significantly more from pee wee to midget to Jr. A. This finding may be involved in the occurrence of retaliatory aggression. One might speculate that the

encouraging of retaliatory aggression is more subtle than is popularly thought. According to the present study, teammates and coaches apparently do not overtly and emphatically encourage retaliatory aggression. Motivation to stand one's ground and fight may come in the form of avoiding a perceived loss of respect. This process may not be unlike the socialization process to which Vaz (1974) referred, wherein attitudes of a group are transmitted through the activities of the group.

Importantly, it should be noted that players lost respect for players who backed down from a fight significantly from pee wee to midget to Jr. A. Pee wee players apparently would respect both a rookie ($\bar{X}$ = 4.04) and any player ($\bar{X}$ = 4.15) who backed down. This attitude is not shared by midget ($\bar{X}$ = 3.07, $\bar{X}$ = 2.93) and Jr. A ($\bar{X}$ = 1.53, $\bar{X}$ = 2.10) players. The process involved in the occurrence of retaliatory aggression, be it one of motivation or socialization, apparently strengthens as players progress through levels of hockey such that, at the Jr. A level, the feeling that one should not back down is apparently a strongly inculcated attitude (refer to items #8i, #8ii, #9i and #9ii).

In accordance with the modeling paradigm, it was

expected that the NHL players would demonstrate the most aggressive responses, and that the Jr. A, midget and pee wee players would follow in the order of decreasing aggressive responses. However, it appears that a simple modeling paradigm is inadequate in explaining the results. In many cases (14 of 19 items) the NHL and midget responses were not significantly different. At first glance, this might seem to imply that the hockey world was perceived differently by the models (professional players) and the modelers (the younger players). However, while this is a possibility, a reconsideration of the pattern of responses led the researcher to speculate that the modelers were, in fact, quite accurate in their perceptions of professional attitudes. In terms of their response set, the midget league appears to be quite accurate in the modeling of perceived attitudes of NHL players. The Jr. A players surpassed the midget and NHL players in the degree of their aggressiveness. This may be due to Jr. A players modeling, to the point of exaggeration, perceived attitudes of professional players.

Jr. A players are in their last year(s) of amateur hockey, and are being watched closely by NHL scouts. The NHL is stocked mainly by players from three Jr. A leagues, and the O.H.A. Major Junior A league, from

which the two Jr. A teams were drawn for this study, is one of them. If they hope to become professionals, they must impress professional team management and scouts, and do so consistently. One way to do this would be to quite clearly demonstrate, to the point of exaggeration, those attitudes and characteristics of hockey which they perceive to be typical of professional players.

Earlier, the statement was made that as players progress through levels of hockey closer to professional status, they would demonstrate more aggressive responses. The fact that the midget players did not over exaggerate the perceived NHL characteristics may be a function of their distance (in leagues) from professional status. Midget players are 16 years old and are probably aware that only a small percentage will ever play professional hockey. Their hopes and aspirations to play professional hockey might not be as strong as they are for Jr. A players. The pee wee response set is consistent with this rationale - they demonstrated the least aggressive response set. It could be that the extent to which a player exhibits aggressive attitudes (and behaviour) is a function of the distance he has to progress to become a professional. Then, having "proved" himself, he no longer has to

exaggerate perceived professional attitudes. This is consistent with the NHL responses. They frequently did not differ from the midget responses, and did not exceed the Jr. A players on any item.

It is evident that the results between the two dependent measures are inconsistent. According to the questionnaire data, the Jr. A sample was apparently more aggressive than the midget and NHL samples, who were similar in their attitudes towards aggression. The pee wee sample apparently represented the least aggressive response set. Yet, according to the behavioural measure, minutes in aggressive penalties, the midget players incurred significantly more minutes than did the Jr. A, pee wee and NHL players. It is felt that the questionnaire data reflect valid attitudes, and that the cause of this discrepancy might lie in the behavioural measure. It is possible that referees at the midget level are more predisposed to calling penalties than are referees at the Jr.A and NHL levels. The point has already been made that whether a penalty is called or not is somewhat dependent upon the extent to which an act is considered to be aggressive by the referee. The referee is thus given some control in the judgment of rule infractions. Referees at the midget level might be predisposed to

calling a penalty where a Jr. A or NHL referee might not. Two officials, one each at the Jr. A and NHL levels, indicated to the researcher during the data collection process that each year they are given instructions from league administrative personnel to overlook relatively minor infractions. In this way, the game progresses more quickly and the fans can witness crowd-pleasing swift and aggressive action.

On the other hand, many spectators at midget games are probably parents of the players. It is possible that this league would be more sensitive to calling penalties in order to avoid an escalation of aggressive play. In this case, parents in the crowd would probably be satisfied that the game would not be allowed to escalate into a potentially injurious situation for their sons. Thus, referees' predispositions towards calling penalties at these levels may have contributed to the midget sample incurring a significantly larger number of minutes in aggressive penalties than the other three leagues.

Implications for the Social Learning Analysis of Aggression

Bandura (1973) claimed that four subprocesses must be present before modeling would occur. A person has to (1) attend to the important features of the model's behaviour; (2) rehearse the behaviour; (3) possess the

skills necessary to perform the behaviour; and (4) be reinforced for enacting the behaviour. These subprocesses are apparently present in the hockey hierarchy. Further, professional players can probably be referred to as models, and young players as modelers. Yet, according to the present study, the modeling process was not as operative as it could theoretically be expected to be.

The classic studies which tested the modeling process (eg. Bandura et al., 1963a; Bandura, Ross and Ross, 1963b; Bandura and Walters, 1963) all involved laboratory investigations. From these studies, a number of contingencies were posited (i.e. the subprocesses involved in modeling; the presence of models) such that if they were present the modeling process could result. In view of the present study, one might speculate that these contingencies alone are not sufficient for the modeling process to occur in the more complex real world situations.

Berkowitz (1962) maintained that the original frustration-aggression hypothesis (Dollard et al., 1939) was too general to apply in real world situations since they are far more complex than the original laboratory studies. He referred to differential reactions to frustration during World War II as evidence

for the necessity of introducing an intervening variable, anger. One could speculate that the social learning analysis of aggression, as presently stated, may similarly require the addition of an intervening variable before the theory can provide an accurate analysis of real world aggressive behaviour. For example, in terms of hockey, Jr. A players may develop a strategy in order to favourably impress professional scouts. In the present study they may have purposefully over-emphasized attitudes which they perceived to be typical of professional players. This would argue for the existence of an intervening variable, cognition. It may have played a part in modifying modeled behaviour.

It seems that to the present, the social learning analysis of aggression has received very little real world experimentation. The value of a theory lies in its ability to generalize from the specific laboratory conditions wherein it is tested to real world situations. Thus, it would seem important to encourage research in this area.

Limitations of the Present Study

When questionnaires are mailed to the target population, as with the present NHL sample, one must be concerned with the representativeness of the respondents. It is possible that a tendency existed

for those players who are concerned with aggression in hockey (who may also be the less aggressive players) to respond. This of course would result in a biased NHL sample. It is of particular importance in this study, when not only are the attitudes of that league of interest themselves, but also since they are used as a comparison to other leagues. For example, item # 6vii ("I emphasize being aggressive when I play") is of interest in this regard. The NHL mean was significantly lower (i.e. "does not emphasize") than the other three leagues while these leagues did not differ among themselves. According to this item, the NHL sample is comprised of players who perceive themselves as less aggressive than the self-perception of the players in the other three leagues. However, item #10 ("I feel I am an aggressive hockey player") revealed no significant differences between leagues with respect to aggressive players. It cannot be concluded whether or not the NHL sample is representative of the NHL.

A second consideration in using questionnaire data is the content validity of the data. The researcher was present during the completion of the questionnaire for pee wee, midget and Jr. A players, while the coaches were not present. Players were

assured their responses would be confidential. The absence of facetious comments and blank questionnaires and the comportment of players during the session indicated the questionnaire was taken seriously. The management of the teams also took the questionnaire seriously, to the extent that two teams had tables and chairs brought into their dressing rooms for the administration. Of course it is impossible to determine if players did not want to implicate teammates and coaches on certain issues. NHL players would probably not have gone to the trouble of completing and mailing the questionnaire if they did not approach the task seriously. It would seem more likely that they would have merely discarded it.

In general, the study is based on the assumption that players' questionnaire responses validly reflect their attitudes and perceptions of the issues. While this assumption may be questionable, it has served as the basis for other research in the area (eg. Vaz, 1974, 1976a; Smith, 1975).

Recommendations for Future Research

In light of the present study, a number of suggestions can be offered for future related projects. First, it would be desirable to increase the sample size. All amateur teams contacted were cooperative.

Only the professional sample was difficult to obtain. An extensive data collection by mail might be successful in obtaining a larger number of professional participants. If this were done at one level, it should also then be done at all other levels involved in the research. In addition to the possibility of obtaining a larger number of participants, players from a number of teams at each level might respond and in this way, one would have a larger number of respondents' coaches and teammates involved in the study. Unfortunately, the representativeness of the samples would suffer with such a data collection because of the selection process involved. This is, of course, a major drawback.

Second, if a Likert-type questionnaire format is employed, it might prove beneficial to use a seven point scale. A five point scale was used in this study because it was felt the pee wee players would have difficulty in making any finer discriminations. Some players (mostly at the Jr. A and NHL levels) created a six point scale by entering a fraction between two points on the scale (eg. "4.5") and circling it. A five point scale might not have a large enough range of values to be sensitive to real differences. For example, questionnaire item #2

("How important is it for you to win?") might have been subject to a ceiling effect wherein 89 of 113 respondents were clustered around the upper end of the scale (i.e. "quite important" or, "very important").

An area of research which should be investigated is the issue of differences in skill, and the involvement it may play in the occurrence of aggression. As has been mentioned, the league by skill interaction in the present study approached significance in spite of the limitations of the dependent measure which may have worked against the rejection of the null hypothesis.

The dependent measure that is used in research is, of course, an important consideration. The measure 'minutes in aggressive penalties' (or a ratio to total penalty minutes) is certainly an operationalized measure of aggressive behaviour. Such quantified behavioural measures are valued by social scientists. However, with respect to the issue of aggression in hockey, it is felt an additional measure should be used, an attitudinal one. This type of measure was useful in the consideration of retaliatory aggression in the present study. For example, it was discovered that this type of aggression may not be as openly encouraged as might have been thought.

Education of players concerning various issues discussed in the present study might be a useful method of modifying their attitudes towards the use of aggressive behaviour. For example, according to the present results, players may feel that they have to be overly aggressive to play the role of the future professional. This may not necessarily be so according to the responses of the NHL players. These players generally did not emphasize aggressiveness (in terms of their attitudes) as much as Jr. A players.

Of course, future research is needed to substantiate this finding before such an educational process could take place. Educational goals must be well defined before they can be achieved.

Summary and Conclusion

The contention that illegal aggression in hockey has escalated recently has resulted in a multitude of articles and rebuttals from personnel "on the inside". The rebuttals usually argue that the game is no more violent now than it ever was, and that the hockey culture is competent in handling its own aggressive incidents. Recently, "severe" suspensions have become the mode in dealing with extreme cases. The plea for legal non-interference notwithstanding, some incidents have recently been prosecuted legally. Few

convictions have resulted. These measures have apparently been relatively ineffective. Recent statistics indicate that to the half-way point of the 1976-1977 season, the frequency of most types of penalties had decreased as compared to the first half of the 1975-1976 season. However, roughing, fighting and gross misconduct are three of the four penalties to increase, the other being number of penalty shots (Morrison, 1977). It appears that excessive aggression is still a problem. It is therefore felt that further research should be conducted. As mentioned earlier, a specific area of concern might be the contribution to aggression made by differences in skill. The present paper found little support for the contention that relatively less-skilled players employ illegal aggressive behaviour as a technique to improve their own, and their team's effectiveness. However, the limitations of the dependent measure may have contributed to the present finding.

According to responses to questionnaire items, the Jr. A sample demonstrated the most aggressive responses. The NHL and midget leagues were less aggressive and responded similarly on many items. Little support was found for the original contention that there would be a progressive increase in both

dependent measures from pee wee to the NHL.

The hockey world is a complex one. At the professional level, team owners define success in financial terms. Management defines it as winning. Players may define it as All Star recognition. At the Jr. A level, players are striving for recognition of their individual ability and spirit. Use of aggressive behaviour by Jr. A players may be involved in the attainment of these goals. Pee wee players are probably less concerned with defining and attaining goals. The winning or losing of games may not be viewed as being crucial to one's future, as it is sometimes viewed at the Jr. A and NHL level. Midget players are in the transition from the relative simplicity of the pee wee and bantam levels to participation in the league that is closely observed by professional scouts. According to the present study, a change in players' attitudes towards aggressive behaviour may take place during this transition. They will apparently come to place more importance on being aggressive.

The process that apparently takes place may not be fully explained in terms of a social learning analysis (Bandura, 1973). The occurrence of illegal aggressive behaviour in hockey may indeed defy explanation by any one theoretical perspective. Still, it is possible

that a learning process is integrally involved in the apparent development of attitudes towards aggression. Behaviour which is learned can be modified. Hockey need not be fraught with uncontrolled aggression. Perhaps, more importantly, the present study has shown that it is possible that a learning process may be involved, to some extent, in the occurrence of aggression in a real world situation. Perhaps the real world need not be fraught with aggression.

Footnotes

[1]This hypothesis was re-analyzed as a 2 x 2 factorial design with league (Jr. A and NHL) as one independent variable and years in league as the second. The pee wee and midget leagues were eliminated because there was no distinction between rookies and veterans in these leagues. Players can play only one year in each of these leagues. This design had little effect statistically on the main effects (league, years in league), or the two-way interaction, $F(1,61) = .036$, $p < .851$.

[2]The assumption of homogeneity of variance which is required for the F test was violated within each of the four levels of hockey as determined by Cochran's C and the Bartlett-Box F (Nie et al., 1975). Therefore a transformation of the data was required. Since the means and standard deviations within each level tended to be proportional, the logarithmic transformation was used (Kirk, 1968). The same series of 4 x 2 factorial ANOVA's was conducted. While none of the ANOVA's reached significance, the results generally were moved towards the hypothesized direction as compared to the original analysis. For example, for the league by skill (forwards) interaction (i.e. Hypothesis 4), $F(3,71) = 2.67$, $p < .054$.

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Appendix A

Questionnaire: A Survey of Players' Attitudes Towards Hockey

SURVEY OF PLAYERS' ATTITUDES TOWARDS HOCKEY

This questionnaire includes a variety of items about yourself, about the sport of hockey and why you are a hockey player. Please answer these items as frankly and as honestly as possible. Your answers will be held in strict confidence. If you feel an item does not allow you to express your attitude clearly, please check the alternative which comes closest to your view, and feel free to add comments in the margin.

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SECTION A

In each of the following items, please answer by circling one number for each alternative.
Circle number: 1 -- if you feel that alternative is of no importance.
2 -- if you feel that alternative is of little importance.
3 -- if you feel that alternative is of some importance.
4 -- if you feel that alternative is quite important.
5 -- if you feel that alternative is very important.

For example, in the following item, if you feel that "enjoyment of competition" is of little importance as a reason why you play hockey, you would answer like this:

	not at all important				very important
	1	(2)	3	4	5

****

1. Why do you play organized hockey?

	not at all important				very important
i) enjoyment of competition	1	2	3	4	5
ii) to make money (now or in the future)	1	2	3	4	5
iii) parents want (or wanted) you to play	1	2	3	4	5
iv) for recreation or fun	1	2	3	4	5
v) to be with friends who play hockey	1	2	3	4	5
vi) to experience winning (to be on a winning team)	1	2	3	4	5
vii) it's what you do best in life	1	2	3	4	5
viii) to wear a uniform	1	2	3	4	5
ix) to get glory by scoring	1	2	3	4	5

x) other things _____

_____

_____

2. How important is it for you personally to win when you are playing hockey?	not at all important				very important
	1	2	3	4	5

3. What do you think N.H.L. scouts are looking for in future N.H.L. players?

	not at all important				very important
i) skating ability	1	2	3	4	5
ii) scoring ability	1	2	3	4	5
iii) aggressiveness (playing rough and tough, lots of bodychecking and physical contact)	1	2	3	4	5
iv) physical durability (doesn't get injured much)	1	2	3	4	5
v) playmaking ability	1	2	3	4	5
vi) good team leaders	1	2	3	4	5
vii) intelligence ("smart" hockey players)	1	2	3	4	5

viii) other things_____

_____

_____

4. Is your coach's emphasis on:

	not at all important				very important
i) sportsmanship	1	2	3	4	5
ii) winning	1	2	3	4	5
iii) developing individual skills	1	2	3	4	5
iv) good team effort	1	2	3	4	5
v) having fun	1	2	3	4	5
vi) scoring goals	1	2	3	4	5
vii) being aggressive (playing rough and tough, lots of body checking and physical contact)	1	2	3	4	5
viii) making money (now or in the future)	1	2	3	4	5

ix) other things_____

_____

_____

5. Is (or was) your parents' emphasis on:

	not at all important				very important
i) sportsmanship	1	2	3	4	5
ii) winning	1	2	3	4	5
iii) developing individual skills	1	2	3	4	5
iv) good team effort	1	2	3	4	5
v) having fun	1	2	3	4	5
vi) scoring goals	1	2	3	4	5
vii) being aggressive (playing rough and tough, lots of bodychecking and physical contact)	1	2	3	4	5
viii) making money (now or in the future)	1	2	3	4	5

ix) other things _____

_____

_____

6. When you play hockey what part of your game do you emphasize (concentrate on the most):

	not at all important				very important
i) sportsmanship	1	2	3	4	5
ii) winning	1	2	3	4	5
iii) developing individual skills	1	2	3	4	5
iv) good team effort	1	2	3	4	5
v) having fun	1	2	3	4	5
vi) scoring goals	1	2	3	4	5
vii) being aggressive (playing rough and tough, lots of bodychecking and physical contact	1	2	3	4	5
viii) making money (now or in the future)	1	2	3	4	5

ix) other things _____

_____

_____

7. What is expected of a "rookie" (a first year player) in your league? (How should a rookie act?)

	not at all important				very important
i) respect for veterans	1	2	3	4	5
ii) hard work	1	2	3	4	5
iii) being aggressive (playing rough and tough, lots of bodychecking and physical contact)	1	2	3	4	5
iv) score goals	1	2	3	4	5
v) set up goals for veterans	1	2	3	4	5

vi) other things_____

_____

_____

****

SECTION B

In the following questions, please answer by circling one number for each alternative.

Circle number: 1--if you strongly disagree (really disagree).
2--if you disagree somewhat (disagree a little bit).
3--if you neither disagree nor agree (can't decide).
4--if you agree somewhat (agree a little bit).
5--if you strongly agree (really agree)

8. If a rookie in your league backed down from a fight during a game, how would you feel about the rookie?

	strongly disagree				strongly agree
i) I would respect him for backing down.	1	2	3	4	5
ii) I feel he would do the right thing by backing down.	1	2	3	4	5

iii) How else might you feel about him?_____

_____

_____

9. How would a rookie on your team be treated by other teams if he backed down from a fight?

	strongly disagree				strongly agree
i) He would be treated with respect.	1	2	3	4	5
ii) This would cause other teams to continue "picking on" him.	1	2	3	4	5

iii) How else do you think other teams might act towards him?_____

_____

_____

10. I feel I am an aggressive (rough, tough, physical) hockey player.	strongly disagree 1	2	3	4	strongly agree 5
11. Players who have been knocked down are encouraged to act aggressively towards the other team by his <u>teammates</u>.	strongly disagree 1	2	3	4	strongly agree 5
12. Players who have been knocked down are encouraged to act aggressively towards the other team by their <u>coach</u>.	strongly disagree 1	2	3	4	strongly agree 5

13. How would you treat any player who backed down from a fight?

	strongly disagree				strongly agree
i) I would treat him with respect.	1	2	3	4	5

ii) How else might you treat him?_____

_____

_____

****

SECTION C

14.	There would be less violence in hockey if things like fighting and spearing meant an automatic suspension.	strongly disagree				strongly agree
		1	2	3	4	5
15.	Attempts should be made to reduce the violence in hockey.	strongly disagree				strongly agree
		1	2	3	4	5

16. What do <u>you</u> feel would be the best way to reduce the violence in hockey?_____

_____

_____

17. Is there anything you would like to say about hockey that has not been covered? If so, please feel free to do so now._____

_____

_____

_____

18. i) your weight_____lbs.
    ii) your height_____ft. _____inches
    iii) position usually played_____
    iv) years in this <u>particular</u> league_____