Participant Motives and Behaviour in Varied Forms of Canadian Ice Hockey

By

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A Thesis Submitted to the Faculty of Graduate Studies and Research in Partial Fulfilment of the Requirements for the Degree of Master of Arts (Education)

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July, 1993

SUGGESTED SHORT TITLE

MOTIVES AND BEHAVIOUR IN HOCKEY

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MEMORANDUM

TO: Thesis Office DATE: September 17, 1993

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MOTIVES AND BEHAVIOUR IN HOCKEY

ABSTRACT

This study examined the multiple roles of adult ice hockey in the Canadian context. More specifically, it investigated the importance attached to victory versus play elements, specific motives for playing, as well as Machiavellian behaviour during play in eight different forms of ice hockey. The sample consisted of 214 players in hockey forms ranging from the least structured and organised, such as "pick-up hockey", to that of the highly competitive inter-university variety. The Ideal-Type Play/Game Paradigm, proposed by Salter (1980), was used as a basis to investigate players' importance attached to victory versus play elements. To study specific motives for participation and Machiavellian behaviour across hockey forms, a Participation Questionnaire was developed by the investigator. Results indicate that, as the activity became more structured and organised: 1) the importance of victory as compared to play elements became more pronounced ($F=11.09$, $p<.001$); 2) motives changed ($F=5.55$, $p<.05$); and 3) Machiavellian tendencies increased ($F=50.71$, $p<.001$). Results further indicate that, across hockey forms: 1) achievement/status ($F=22.68$, $p=.00$) and skill development ($F=22.29$, $p=00$) motives increased in importance with structure and organisation for play; 2) excitement/challenge ($F=4.58$, $p=.00$) and social affiliation ($F=3.85$, $p=.00$) motives changed somewhat; and 3) fun ($F=2.38$, $p=.02$), team affiliation ($F=3.25$, $p=.00$) and energy release ($F=2.26$, $p=.03$) motives were fairly common and important. It was also found that to improve fitness as a motive for participating was not a significant discriminator since it was felt to be important by players in all hockey forms. It was further suggested that playing for fun and to win are not mutually exclusive in the views of the participants. On the basis of the results obtained in the various parts of the study, a model of participant motives and behaviour across structure and organisation for play was proposed.

RESUME

L'objectif de cette étude est de déterminer les rôles multiples que joue le hockey sur glace "pour adultes" dans le contexte canadien. Spécifiquement, elle a examiné dans huit différentes formes de hockey, l'importance relative de la victoire par rapport aux éléments des jeux libres, d'autres motivations ainsi que le comportement machiavélique. Le groupe consistait en 214 sujets jouant dans une des huit formes de hockey présentant des structures de jeu organisées, telles que le "Shinny", jusqu'au hockey inter-universitaire très compétitif. Le "Ideal-Type Play/Game" Paradigme proposé par Salter (1980) fut utilisé pour rechercher l'importance relative attachée à la victoire par rapport aux autres éléments des jeux libres. Pour étudier des motivations de participation et des tendances machiavéliques, un questionnaire fut développé par l'investigatrice. Les résultats ont indiqué que, si le hockey devient plus structuré et organisé: 1) l'importance relative de la victoire par rapport aux éléments des jeux libres devient plus prononcée ($F=11,09$, $p<.001$); 2) les motivations changent ($F=5,55$, $p<.05$); 3) le machiavélisme s'accroît ($F=50,71$, $p<.001$). De plus, l'étude a indiqué que l'importance de la victoire et de l'amusement ne s'excluent pas mutuellement. Il a aussi été démontré que, à travers les huit formes de jeu: 1) "statut" ($F=22,68$, $p<.001$) et "développement de l'habileté" ($F=22,29$, $p<.001$) changaient le plus; 2) "amusement" ($F=2,38$, $p<.001$), "affiliation à l'équipe" ($F=3,25$, $p<.001$) et "détente" ($F=2,26$, $p<.05$) étaient courant. Il a été de plus démontré que "conditionnement physique" ne constituait pas un facteur de discrimination à travers les différentes formes de hockey lorsque ce critère était importante pour tous les joueurs. A partir de ces résultats, un modèle des motivations et du comportement des participants en fonction du niveau de structure et d'organisation du jeu fut proposé.

ACKNOWLEDGMENTS

I would like to thank my thesis supervisor, Dr. Graham Neil, who taught me much more than is evident in this thesis.

Many thanks to all the people who helped me in the data collection: experts, coaches, delegates, and, of course all the players who completed the questionnaire before jumping under the showers.

Thanks also to Dr. Peggy Downey and Dr. David Montgomery for their guidance and help in enhancing the instruments of the study.

The financial support from the "Ministère de l'Enseignement supérieur et de la Science" made studying so much easier.

Heel veel dank aan mijn ouders, Mies, Jen en Snurk voor hun steun.

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CHAPTER 1

INTRODUCTION

1.1. Ice Hockey in the Canadian Context

Societies differ in the number of games that exist and in the degree of involvement in them (Chick, 1984). Variations of specific games have also been developed because of changing needs of societies. Ice hockey in Canada seems to have been played in its earliest unorganised form in the mid-1780s, and its first public showing is said to have taken place in 1875 (Eitzen & Sage, 1986). The abundance of lakes and the cold climatological conditions of the north lead to a very high participation rate so that ice hockey quickly became a favourite sport of Canadians of all ages (Howell & Howell, 1985). The past 20 or more years have also been characterised by a boom in adult participant sports. This development has been the product of increased leisure, construction of facilities as well as the manufacture of equipment inexpensive enough for the large mass of working-class people. The awareness of the increasingly sedentary life-style of adults and the rise of diseases related to this way of living further stimulated people to get involved in sport (Eitzen & Sage, 1986). Because of the popularity of the game and as a result of the developments mentioned, today, many forms of ice hockey are available to the adult population. These forms range from pure play, such as found

in "pick-up" hockey on an outdoor rink or a frozen pond, river or lake; to more organised ice hockey, such as "fun and fitness" programs, community and industrial leagues; to the highly organised play, such as found in college, varsity and professional hockey. Another form of play, "old timer hockey" has become very popular at the local, regional, national and international levels. Canadians can thus participate in one type of ice hockey or another in relation to age, level of skill and personal interest.

If one examines carefully adult ice hockey in all its forms, there seem to be certain aspects of the game which change when moving from free play to highly competitive hockey. In pure play, for example, rules tend to be implicit whereas in highly competitive hockey the rules become very explicit and strict. During free play, rules vary depending on the number of players, facility and equipment available, and the level of skill of the participants. The more one moves towards highly competitive play, however, the more people are involved with the game and the more organised the activity becomes (Metcalfe, 1976). Moreover, the nature of the game varies tremendously from one form of play to another. In Quebec college intramural hockey, for example, there is frequently an agreement that no physical contact is allowed. Players who do not obey this rule can be excluded from the competition. As a result of this rule and others such as the ban on slap shots, the activity becomes much less rough or aggressive and violent in nature.

In addition to the nature, structure and organisation

which can be very specific for each form of ice hockey, it should also be noted that any given activity can have different functions depending on the perspectives of the people involved in it (Berkhofer, 1969; Metcalfe, 1976; Salter, 1980). A spectator may see ice hockey in terms of pure entertainment whereas an intramural team participant may take part to stay physically fit.

This brief overview of ice hockey as it is played by adults in Canada has demonstrated that there is a wide variety of forms available. At the same time, it has been noted that the nature of the game and the motives of the participants' appear to vary with the form of ice hockey played.

1.2. The Ideal-Type Play/Game Paradigm

To date, there has not been agreement upon exactly what play is, why people play, and the nature of its function. Over the years, many classifications of play activities have been advanced (Glassford, 1970; Schwartzman, 1978; Salter, 1980; Chick, 1989; Figler & Whitaker, 1991). Games and play activities have been categorised in a number of ways, such as in terms of structure, developmental characteristics, or how outcomes are determined (i.e., the classification of games by Roberts et al., 1959).

Salter (1980) has proposed an "Ideal-Type Play/Game paradigm" that attempts to classify different types of play activities ranging from unrestricted play through various

forms of games to what he describes as the terminal contest (figure 1). The elaboration of this play-continuum was based on writings by Keating (1963), McMurthy (1973), and Metcalfe (1976) who discussed the importance attached to winning in sport and athletics and the consequences of this on other aspects of the game such as excellence of performance and having fun.

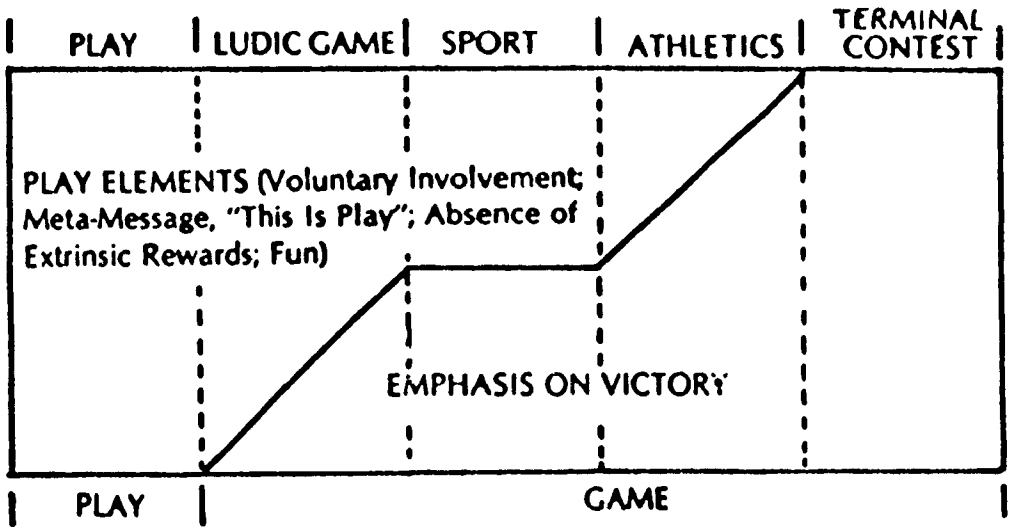

Figure 1: The Ideal-Type Play/Game Paradigm (Salter, 1980:72).

Salter has identified a number of elements that have to be present if an activity is to be considered a pure play form. These elements are: 1) voluntary involvement; 2) participant exchanges of meta-signals that serve to identify the event as being ludic in nature; 3) absence of extrinsic rewards; 4) fun. As one moves through the five

frames of the continuum, some of the play elements disappear and are replaced by an increased emphasis on winning to the point where the success component overrides all else. At this stage, winning becomes the sole purpose of the activity and the end is said to justify the means. This type of activity is labelled a terminal contest. Although the list of elements of play could be extended, the paradigm provides a basic framework for the study of different forms of ice hockey play.

1.3. Nature and Scope of the Problem

As was pointed out earlier in this paper, ice hockey in Canada takes on many different forms. There is a wide variety of hockey play in which adults can participate. At colleges and universities, activities range from pick-up hockey, to intramural games, to the more competitive inter-collegiate or inter-university variety. Outside of educational institutions, many forms of old timer and other non-contact as well as contact hockey have evolved over the last twenty years. This study is concerned with the different forms of play in which adults get involved. When considering these activities, one can identify changes in the amount and nature of organisation and structure of the game when moving from one form to another. An analysis of several types of ice hockey ranging from the "pick-up" variety through low organised play to inter-university hockey, suggests that rule changes are generally related to at least the following

aspects of the game: 1) the eligibility of players; (2) the composition of the teams (spontaneous or not); (3) equipment and enforcement of the use of all necessary equipment; (4) penalties and penalty time; (5) type of shots allowed; (6) rules related to body contact; (7) line rules.

Similarly, organisational changes appear mostly related to the following aspects: (1) presence or absence of people involved in the organisation of the activity; (2) schedule of games (fixed beginning and ending or not) and competition; (3) amount of coaching or instruction involved; (4) awards given to players and/or teams; (5) the enforcement of game rules (presence or absence of qualified officials); (6) retention of team and/or player statistics; (8) travel of teams; (9) place and importance of game scores.

In "shinny hockey", for example, the division of the teams and the start of the game changes from one week to another depending on the players available while in structured fun and fitness hockey the same players usually come to play at a prescheduled time. In contrast, in competitive league hockey, the teams, their composition and the schedule of the games are decided prior to the beginning of the competition. Using the elements mentioned above it would seem possible to obtain a classification of different forms of ice hockey based on their structure and organisation for play. For example, the following forms of ice hockey are ranked according to the researcher's understanding of increased structure and organisation: 1) free play hockey in the community; 2) fun and fitness hockey; 3) old timer league

hockey; 4) university intramural hockey; 5) women's inter-collegiate hockey; 6) men's inter-university hockey.

The importance of winning appears related to increased structure and organisation of play. A person playing pick-up hockey on an outdoor rink with other people who happen to be available for a game knows that the major purpose of the game is probably to have a bit of fun and exercise. This is placed in contrast to the emphasis placed on winning in an inter-varsity game. Metcalfe (1976:2) was very aware of this interrelatedness when he wrote that *"the tendency toward emphasis on winning in a game is increased by several external circumstances, such as the administrative and competitive structure, which are completely independent of the game itself and the behaviour of the players"*.

Playing for fun or to win are only two reasons why people may get involved in certain forms of play. Other motivations include participating to stay in shape, meet new people, be part of the team, get rid of tensions and/or frustrations, improve one's level of skill, achieve personal goals, and compete with others. It is not known, however, if there are particular reasons for participation in each different form of ice hockey or if participant motivation changes when the activity gets more structured and organised.

In general, information on participant motivation is limited. Reasons for involvement in sport have been examined using various approaches (Martens, 1970; Weick, 1975; Sonstroem & Kampper, 1980; Youngblood & Suinn, 1980; Soudan & Everett, 1981; Leary, Wheeler & Jenkins, 1986), but these

studies have focused mainly on organised sport participation and the assessment of general motives or attitudes rather than specific reasons for participation in an activity.

Although some good questionnaires have been used to study specific motivations for participation in sports, most have focused upon youth rather than adults (Gill, et al., 1983; Klint & Weiss, 1987). No questionnaire has been found to identify adult participant motivation in different forms of an activity ranging from pure play to highly organised sport.

When considering the emphasis on winning as a function of increased structure and organisation of play, changes in behaviour can be anticipated. More specifically, with increased pressure to win, one might expect growing emphasis on the use of any method necessary to attain that goal. Machiavellianism is the term that is increasingly been associated with "win at all costs" behaviour in sports. Some forms of Machiavellian behaviour in sports which have been described in a number of studies include violence (Lefebvre et al., 1980; Bredemeier 1985), aggression (Russell, 1972; Smith, 1974; Teipel et al., 1983; Worrel & Harris, 1984), cheating (Levi, 1982; Creekmore, 1984), gamesmanship (Fielding, 1984; King, 1984; Neil & Balfour, 1987; Contoyiannis, 1991), and drug use (Ross, 1989).

More and more authors have suggested that, in addition to the structure of the game which may be the basis for certain forms of Machiavellian behaviour, goals of sports in contemporary society have come to emphasise victory over

fairness; a win-at-all-costs ethic over moral behaviour, regardless of the level of competition (Martens, 1976; Chissom, 1978; Kleiber, 1978; Heinila, 1979). When taking the above remark into consideration as well as the nature of the activity, aggression, cheating and gamesmanship, seem to be elements worth considering when looking at Machiavellian behaviour in ice hockey.

Ice hockey indeed is a sport in which one can engage in virtually a full range of verbal and physical aggression. The speed at which the players skate make it the fastest game in the world. This makes it harder to control and oversee the physical contacts between the players. In addition, hockey has always been recognised as an ideal vehicle for the demonstration of "manly" qualities, and this "manliness" can quickly become man's "roughness" and "brutality" (Metcalfe, 1987).

Cheating in sport is the second category of Machiavellian behaviour that will be looked at in this study. It can be viewed as an intentional departure from the rules and norms of the game in question (Jones & Pooley, 1982). The game of ice hockey, like any other game, has its own set of rules to which participants are supposed to adhere. In addition, the ice hockey game has an unwritten code of behaviour required of all players. Cheating, therefore, might be regarded as violating the laws and/or the norms and mores of the sport. Due to the fact that hockey is a fast paced activity, being able to control for all possible rule violations during the game is almost impossible.

The third category which will be considered in the study is the use of psychological manoeuvres on opponents in an effort to defeat them in sports and games. This behaviour is increasingly recognised as part of every athletic contest (McMurthy, 1973; Allison, 1982; Malloy, 1992). Potter (194") was the first to deal with the psychological side of sport under the title of Gamesmanship. He described it as "the art of winning games without actually cheating". Although both the sportsman and the gamesman recognise and accept the explicit rules, Dizikes (1981) claims that the difference between them lies in the fact that the sportsman accepts both the explicit rules of the games and the unwritten code of conduct associated with them, whereas the gamesman refuses to recognise the existence of any code of conduct. This means that gamesman-like behaviour, which to the user may be seen as a good tactic, may be identified as a reflection of poor sportsmanship by the observer.

As was pointed out in previous paragraphs, little is known about adults' reasons for getting involved in a particular form of ice hockey. Moreover, little has been documented about the Machiavellian behaviour of adults in various forms of ice hockey. The present study, therefore, focused on the motivation for participation in different forms of adult ice hockey as well as on the presence of Machiavellian behaviour in relation to increased structure and organisation for play.

1.4. Statement of the Problem

The purpose of this study was to examine the varying roles of ice hockey play in the Canadian cultural context. More specifically, this study examined the effect of different structure and organisations of hockey upon emphasis on winning versus play elements, motivations for participation, and Machiavellian behaviour.

1.5. Hypotheses

In general it was believed that, when the ice hockey activity became more structured and organised, players would demonstrate different attitudes toward the importance of winning, motivation to participate and "win at all costs" behaviour.

More specifically it was hypothesised that:

1. With increased structure and organisation of play in the game of ice hockey, the relative emphasis on winning would become more evident and, at the same time, the importance of play elements would diminish;

2. With increased structure and organisation for play in the game of ice hockey, participants' reasons for taking part would change;

3. With increased structure and organisation of play, Machiavellian tendencies in the form of aggression, cheating, and gamesmanship would become more pronounced.

1.6. Limitations and Delimitations

Since self-report questionnaires were used in the study, limitations such as response bias are applicable to this study.

The geographical delimitation of this study was that most of the data were collected from subjects playing in the province of Quebec, Canada. Some of the subjects in the old timer tournament and fun and fitness play categories came from the province of Ontario, Canada. All players had to be fluent in English. Secondly, data were not always obtained for complete teams and, consequently, different schools and/or leagues had to be contacted to get an acceptable sample size. In addition, a wide range of age was used in the study. Since data were collected from Cegep (collège d'enseignement général et professionnel) or College age players or older, the minimum age was approximately 17 years. Thus, all inferences from the results may refer only to the specific population of College, University, fun and fitness and old timer players within the sport of ice hockey.

1.7. Definitions

The following terms are to provide a common ground from which this study may be approached.

Play Elements: The amount of play present in a certain activity. The key elements of play included are: 1) voluntary involvement; 2) meta-message, "this is play"; 3) absence of

extrinsic rewards; 4) fun.

Hockey Participant Motivation: The reasons for participating in a certain form of ice hockey. Specific reasons which were considered are: 1) achievement/status; 2) fitness; 3) social affiliation; 4) excitement/challenge; 5) energy release;6) fun; 7) skill development; 8) team affiliation; 9) extrinsic rewards.

Machiavellianism in sports: The "win at all costs" behaviour consisting of the following elements: aggression, cheating and gamesmanship (intentional use of psychological manoeuvres, in a manipulative and exploitive effort to win in sports and games).

Forms of Hockey: The eight forms of hockey play which were considered are: 1) pick-up hockey; 2) fun and fitness hockey (league standings not kept); 3) old timer league hockey; 4) old timer tournament hockey; 5) men's university intramural hockey; 6) women's inter-university hockey; 7) men's inter-collegiate hockey; 8) men's inter-university hockey.

Cegep: Colleges of general and professional education; found in the province of Quebec as a required step between high school and university and somewhat comparable to the junior colleges which exists in the rest of Canada and the United States. For simplicity, the term college is used throughout this paper pertaining to data collected in Cegeps.

CHAPTER 2

REVIEW OF THE LITERATURE

Games as well as other forms of play activities are nearly universal components of societies. The study of games has been concerned with aspects such as cultural change, cultural complexity, child-rearing practices, religion, ritual, recreation, warfare, politics, and economics. The anthropological interest in games and play activities, however, can largely be explained by the strong feeling of the interrelatedness of the various subsystems existing in each society (Chick, 1984). Stumpf and Cozens (1947), for example, indicated that sports, games and recreational activities among the Maori of New Zealand served in training for war, acquiring skill, as a means of promoting tribal loyalty and solidarity, and as an outlet for healthy competitive urges. Other studies have looked at how games may be altered as they are taken from one culture into another (Maccoby et al., 1964; Heider, 1977). Intracultural analogs to the cross-cultural situations exist as well, wherein preexisting games have been altered, played or not played in accord with the changing needs of the participants. A perfect example in Canada is the increasing popularity of the no-hit, no slapshot hockey leagues. Indeed, studies have shown that a great many boys have dropped out of youth hockey programs because of an overemphasis on a possible future professional career in the sport when this was not realistic for many of

them. These programs too often emphasised competition and taught youngsters to play a game like the professionals. As a consequence, violent behaviour was often stressed more than learning the basic hockey skills. This meant that many players quit hockey indefinitely or re-entered at a later stage in a non-contact league (Hansen, 1970; Hall et al., 1991).

In general, a strong interest in the study of various forms of play activities as they exist in society has led to the development of play theories and the elaboration of classifications which attempted to allow inclusion of all possible forms of physical activities.

Focus of the present study was to gain a better understanding of a wide variety of adult ice hockey forms as they are played in Canadian society. Aspects such as the importance of winning versus just playing, participant motivation, and Machiavellian behaviour were felt important study topics. In this chapter, an overview of the literature related to play classification research as well as the elements just mentioned are provided.

2.1. Play Classifications

When trying to define play in all its forms, a number of writers have attempted to define these activities by looking at the origin of the words describing them. This method has proven to often be more confusing than helpful because the the words change over time and geographical context (Figler &

Whitaker, 1991). Definitions also depend upon the area of study and the theory adhered to by the researcher. In anthropological research, play has usually been ignored in favour of games, which are more formal and easier to record (Chick, 1984). One illustration of this phenomenon was the game categorisation, developed by Roberts and his colleges (1959), which was based on how outcomes (winning or losing) are determined. The following four categories of games were proposed: 1) games of physical skill, in which the outcome is determined by the player's motor activities; 2) games of chance, in which guesses or uncontrolled artifacts such as a die determine the outcome; 3) games of strategy, in which the outcome is determined by rational choices among possible courses of action; and 4) any combination of the above. It seems very difficult, however, to categorise certain games, especially those in which the outcomes are determined by a combination of the three components.

Scholars such as Huizinga (1960), Caillois (1961), and more recently Garvey (1977) have attempted to analyse play on the basis of its components and characteristics. In their descriptions, one characteristic, its separateness from reality, was apparent. Play was thus considered as a "not serious", outside "ordinary" life activity. This idea was rejected by other scholars such as Novak (1976) who strongly believed that play was reality because it was concerned with living and life in its present form. Although these theories have attempted to clarify what play is, they did not include discussion on other forms of physical activities.

Good overviews of the different systems used over the years to classify play and other physical activities are described in Glassford (1970), Schwartzman (1978) and Chick (1984; 1989). Most helpful for the present study is the consideration of play, games, sport, and athletics as positions upon a continuum of physical leisure activity (Figure 2). This approach also seems to be fairly well accepted since it is described in several recent works in the area of sociology of sport (Figler & Whitaker, 1991; Hall et al., 1991).

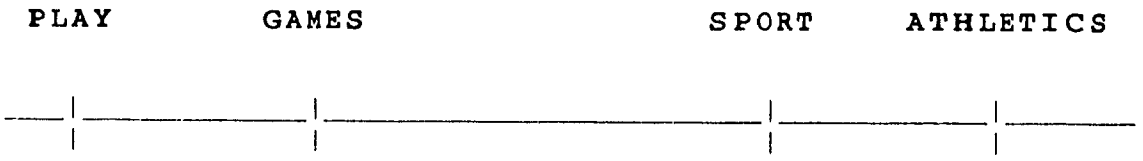

Figure 2: Continuum of Physical Leisure Activity (Figler & Whitaker, 1991: 12).

In relation to the continuum, Edwards (1973) pointed out that although some aspects of these activities may be different in gradation only, other categories have particular aspects that absolutely distinguish them from the others. One example is fun, which is part of each category on the continuum. But, while a participant in all four categories may have fun, in play, fun is a necessary component. It is, according to the same author, clearly not a necessary component for the other three categories. In addition, certain elements may exist in some physical activities but

may be totally absent in others. Competition, for example, is a necessary component of games, sports and athletics, but is completely absent in play in its purest form (Figler & Whitaker, 1991). According to the same authors, attributes which help to distinguish among the four activities of the continuum include the following: 1) freedom of participation; 2) time and space limitations; 3) amount of rules and presence of an authority figure; 4) importance of the outcome; 5) motivation for play (fun or not); 6) investment involved. A game, for example, usually has a specific beginning and ending which makes it almost impossible for a player to quit the game. It also is mostly played within a well defined boundary and by rules that may be changed on agreement, and it is understood that there will usually be a winner and a looser at the end. In addition, from the viewpoint of the participants, the degree of emotion or ego-investment generally increases with the amount of competition.

Differentiating among physical activities, however, is not always easy. With the growth of organised sport in clubs, schools and colleges in the last hundred years, and the dichotomisation between amateur and professional sport, it has become difficult to differentiate between sport and athletics. In this regard, Keating (1963) has differentiated the two activities based on external attributes , while Weiss (1969) has been mainly concerned with the player's importance attached to excelling in the activity. The importance attached to victory by the participants, however, seems to be

of major concern when discussing the difference between sports and athletics. Vanderzwaag (1972) and Metcalfe (1976) add to this that sport and athletics have to be considered as multidimensional concepts which are made up of different levels. Indeed, not only the participant is important, but conditions extrinsic to the game; attitudes and values individuals bring to the activity as well as behaviour exhibited by them, are to be considered. The tendency towards an emphasis upon winning, for example, can be increased by the competitive structure (i.e.pick-up game, intramural game, intra-college game); the nature (i.e.intrinsic, extrinsic) and importance of awards for the player, the coach, and the club; as well as the administrative structure.

In Salter's classification of different types of activities, the amount of emphasis on victory is one of the major characteristics which differentiates among the five forms of play (Salter, 1980; Duthie & Salter, 1981). As mentioned in a previous chapter, Salter's paradigm was designed in an attempt to classify different forms of play activities ranging from unrestricted play through various forms of games to the terminal contest (see Figure 1). According to Salter, there are a number of play elements that have to be present if an activity is to be considered a pure play form. As one moves through the various frames of the paradigm, some of these play elements disappear and are replaced by an increasing emphasis on success until such time as the success component overrides everything else. At this stage, victory becomes the sole purpose of the activity; and

the end justifies the means. This activity has been labelled the terminal contest. The author has used the paradigm to study perceptions of non-jumpers and jumpers with varied experience of a skydiving event. The non-jumpers possessed no common overall view of the activity and their perceptions of skydiving ranged from "pure play" to "terminal contest". The beginning jumpers, on the other hand, classified the activity as "athletics" because they felt that the need for success was higher than the play element. The experienced jumpers considered skydiving as an activity in which the play aspects were far more important than the success component. Therefore they classified the activity as a "ludic game" (Duthie & Salter, 1981). The paradigm has also been used by the same author to study the interrelationship between certain games and rituals of native peoples of eastern North America (Salter, 1980). It was concluded that the ritual games were highly competitive athletic activities which sometimes resembled more a terminal contest.

In summary, the most comprehensive way to classify different forms of play activities seems to be to consider them as positions upon a continuum of physical leisure activities. Several characteristics can then be used to enable the researcher to distinguish between the different forms. These may include the importance of victory, the number of play elements--reflected in the absence of extrinsic rewards, fun, voluntary involvement, and the meta-message "this is play"--time and space limits, the amount of rules and authority, among others. Secondly, play activities

have to be considered as multi dimensional concepts embracing a variety of interrelated levels. Those levels include the conditions which are extrinsic to the activity; attitudes and values which players, coaches, spectators and referees may bring to the activity, as well as their behaviour exhibited during the game (Metcalfe, 1976).

2.2. Ice Hockey in Canada

If we think about sports in Canada, we automatically think of ice hockey. Hockey is something most Canadians share almost from birth. From the first frost in October to ice break-up in April, boys--and now also more and more girls--over the whole country learn to skate with the support of hockey sticks. To the outsider, it almost seems that Canadians learn to skate before they walk. Moreover, hockey can be considered as a unique expression of the Canadian culture, as a means of passing values from one generation to the next. Through the game, children learn attitudes toward team play, fair play and dirty play, toward winning and losing, tolerance and prejudice, success and failure (Kidd & Mcfarlane, 1972). Through friends, coaches and the media, they know about the professional hockey teams and their players.

In general, geographical and climatological factors were of major importance in providing Canada with games such as ice hockey. The vast number of lakes and rivers in combination with the long, harsh winter certainly encouraged

the development of the game. Although most sports were initially subjected to a north and south influence and, therefore, weren't truly Canadian in character, localised ice hockey play developed in all parts of the country.

It is thought that the first ice hockey game was played in 1855, but records in older papers suggest that even English troops stationed in Kingston from 1783 to 1855 played a hockey-type game (Shinty or Shinny) (Howell & Howell, 1975). The soldiers had elastic rules, and as many as 15 or 20 players could compete for each side. The clubs they used were crooked limbs or roots of trees. A knot was perhaps the first puck; afterwards, corks, bungs and cricket balls were used (Bull, 1934). As the soldiers' assignments shifted across Canada, they took the game with them. A hockey game in Montreal in 1879, was the first played in a form, more or less as we know it today, since it was played under formalised rules and with a puck rather than a ball (Morrow et al., 1989). It was held between graduates and undergraduates of McGill university, 30 to a side, and led to the formation of the first recognised team, the McGill University Hockey Club in 1880. Eventually, the McGill students codified the rules and permitted a maximum of nine players (Benton & Hemingway, 1973-1974). Long before these first formally-recorded games, however, shinny was being played throughout the rural districts, wherever young people were able to get together its basic elements: a sheet of ice, skates, a stick, and an object to be moved along the ice (Bull, 1934).

In 1885 a group of hockey men met in Montreal to further codify the game. This lead to the formation of the Amateur Hockey Association of Canada, the first national hockey organisation (Benton & Hemingway, 1973-1974). The interest in organised hockey remained initially centred in the east where, by the late 1880's, many teams were formed and inter- and intra-city competitions were organised. As a result, eastern Canada witnessed the beginnings of a sport equipment industry. Hockey sticks and skates were being manufactured in Montreal during that time. This localised interest in organised play changed in 1892, when the Canadian governor general, Frederick Arthur, Lord Stanley of Preston, donated a cup to be given annually to the top Canadian team. This trophy became known as the Stanley cup. It was first played for in 1893-94, and the first winner was the Montreal Amateur Athletic Association team. Since 1917 it has gone to the winner of the National Hockey League playoffs.

Important to the future development of the game was the emergence of inter-school leagues. These were important because it meant that hockey was recognised as part of the education of boys in Canada (Howell & Howell, 1969). The Protestant schools in Quebec formed their first school hockey league off the Island of Montreal during the 1931-32 school year. From 1955 two leagues were sponsored by the Quebec Association of Protestant School Boards. High schools with more than 30 boys were playing in the senior league whereas smaller schools played hockey in the intermediate league. All players had to be younger than 19 years of age at the time of

the competition (Neil, 1963).

Although all hockey in Canada was "amateur" during the first years of its existence, it gradually became common practice for players to be paid. The leagues, however, insisted on the term amateur. This was probably due to the fact that it was considered "ungentlemanly" to accept pay for athletic services. The first acknowledged professional hockey team in the world was formed in the United States, in 1903. This Michigan team, the Portage Lakes, was owned by the dentist Gibson, who imported players from Canada. In 1904, he formed the first acknowledged professional league, the International Professional Hockey League. The idea of professional teams, however, was still not well received in Canada, even though many players had been playing for Gibson's team. Finally, the country accepted professional hockey and the Ontario Professional Hockey League was formed in 1908. The National Hockey Association, the forerunner of the National Hockey League (NHL), was organised in 1910 and became the strongest association in North America. Just before the outbreak of World War I, separate rival professional leagues existed in western and eastern Canada (Metcalfe, 1987; Morrow et al., 1989). In 1925, however, the National Hockey League became the premier professional league and included the first team from the United States.

It would appear that the modern game played at every level, minor, collegiate, international and professional, has been influenced heavily by the National Hockey League. At different periods in time, the NHL has set the standards of

the basic rules to be followed by most minor and junior hockey leagues; has had agents of professional clubs sign teenagers to professional contracts; and has assisted in financing amateur hockey (The Canadian Hockey Association, 1964-1965; Howell & Howell, 1969; Hansen, 1970; Kidd & McFarlane, 1972; Vaz & Thomas, 1974; Vaz, 1979, Ronberg, 197[illegible]). In addition, many young players have adopted techniques invented or at least popularised by professional players. Budding players were helped by television as well as books written in the 1950's and since which provided detailed descriptions of how to "play hard but fair" by executing techniques such as the slap-shot, and the bodycheck (Royal Canadian Air Force, 1958).

As a reaction to the growing importance attached to professional hockey play and its increasingly business like character, recreational hockey forms emerged. Inter-school and church leagues, among others, were organised as early as the 1930's (Neil, 1963; Howell & Howell, 1969). Gradually, beginning in the 1960's, amateur hockey included regulations concerning hockey sticks, skates, and other equipment. In 1960-61 the Canadian Amateur Hockey Association rule book specified officially approved headgear and other protective equipment, to be worn by all players under CAHA jurisdiction for the first time (CAHA, 1960-1961). Bertrand's (1977:263) statement--although discussing developments of ice hockey between 1918 and 1939--illustrates well the situation of the sport in later periods and is perhaps still valid today: *"between World Wars I and II it became more and more apparent*

that there were two types of hockey to be played in Canada--hockey "for play", but also hockey "for pay".

The number of people becoming involved with ice hockey in one form or another constantly increased. In 1953, the Canadian Amateur Hockey Association, which was organised in 1914 and had been subsidised by the NHL, counted 600,000 members, from which 53 percent were under the age of twelve, 35 percent were from twelve to fifteen, and 11 percent were over fifteen years of age (Proulx & Soucie, 1978).

Throughout the late 1960's and 1970's non-contact hockey categories emerged. It was suggested that these forms of hockey were a welcome alternative for hockey enthusiasts who otherwise might have stayed away from the game where bodychecking and slapshots were permitted, or where the individual performance is most important and therefore the requirements of the players too excessive (Proulx & Soucie, 1978). Since its first formalised appearance in the late 1960's, old timer play, in all its possible forms, has evolved into one of the most important types of adult hockey. Some old timer leagues have a number of team representatives, have a formal competitive schedule, one or more sponsors and are thus very well structured and organised. Old timer tournament play is another variation of old timer hockey which has become very well established in Canada. The idea of an old timer's tournament was conceived in the late 1960's and the alleged world's first tournament was held in 1970 at Pointe Claire, Canada (Pointe Claire Tournament Program, 1992). The purpose of most of such tournaments is to bring

people together, to have fun playing hockey, and to raise money for various projects in the local community. Comparable to this form of play are the tournaments, organised by firms or agencies to promote their products and to become known as community contributors in the business world.

In the province of Quebec, attempts have also been made to promote hockey and related sports for girls and women (Ministère de l'Education, 1990). In this regard, ringuette was created in 1963 (Grand Soleil, 1977). Today, a growing number of girls are getting involved in ice hockey since more and more universities and colleges are competing with womens' teams. McGill University is at present even organising intramural competitions for girls.

Broomball is another variation to ice hockey which is being played more and more. It is played with a ball instead of a puck and players wear sports shoes instead of skates. Another game, comparable to ice hockey but played in the gymnasium, is cosom floor hockey. Sticks with plastic ends are used along with a plastic ball or puck. In 1973 sixteen teams were playing this type of hockey in one college in Montreal alone (Richard & Prieur, 1973). Other variations include dognut type floor hockey and ball hockey played in gymnasiums, on the streets or in ice arenas without ice in the off-season (Neil, personal communication).

Today, virtually every Canadian can participate in one form of hockey or another, depending upon personal needs and interests. In colleges and universities, ice time is usually divided among pick-up, intramural, and inter-institution

league play, allowing for as much participation as possible. Across the country, most ice rinks are used throughout several hours of the day by different groups which may or may not be part of broomball, hockey and ringuette leagues.

An attempt was made to give an overview of Canadian ice hockey, from its early beginnings to its contemporary developments. Although it is now played in many countries throughout the world, ice hockey truly is a national sport of Canadians. Virtually every Canadian can relatively easily get involved in one form of hockey or another depending on his/her personal interests and capacities.

2.3. Participant Motivation

Although adult leisure-time activity has increased in the last two decades with women getting more and more involved, little is known about specific reasons for participation (Stephens, 1987). The same is true for Canadian ice hockey which exists in so many different forms and is, therefore, made accessible to most people.

In general, most leisure research has looked at the relationship between race, social class, cultural complexity and choice of physical activity (West, 1984; Stamps & Stamps, 1985; Chick, 1986). Other studies have tried to relate motivations for involvement in recreational activities with the amount of experience in the activity (Schreyer & Lime, 1984; Ewert, 1985; Kerr, 1987). In his study using mountain climbers, Ewert (1985) concluded that experienced climbers

were motivated by intrinsically related factors such as challenge, personal testing, and locus of control. The inexperienced climbers, on the other hand, were motivated by extrinsic factors such as recognition and socialising.

Other researchers interested in specific reasons for participation have used samples of university students who were involved in physical education classes. Weick (1975) found that having fun and getting regular exercise were the most important reasons for adherence to those programs. Soudan and Everett (1981) reported that getting regular exercise and keeping good health and physical condition were the highest rated objectives.

More recently, studies have been carried out in light of planning for adult physical activity programs. Some studies have looked at reasons for adhering to exercise programs and dropping out. Pemberton (1986), for example, concluded that social approval, task mastery and intrinsic motivation were the most important reasons for participation in university and YMCA adult fitness programs. Ability orientation, on the contrary, did not emerge as an important reason for participation. Also, there did not seem to be differences in goal orientations between the exercise adherers and the people who dropped out. Differences between the two groups on perceived opportunities to satisfy their goal orientations did, however, help to explain why people did or did not drop out. James (1986) used older subjects (55-75 years old) in his study and concluded that, in general, the following five purposes for engaging in short term movement classes

organised by Elderhostels and senior citizen centres, were the most important: circulo-respiratory efficiency; self-integration; weight control; enjoyment; participation. The least important motives were object manipulation, challenge, and competition. The "Personal Purposes and Meanings in Movement Inventory" used in this study had been developed by a curriculum study group at the university of Georgia (Jewett & Mullar, 1977). Variations of it have since been used by researchers interested in reasons for participating in various physical activity programs (LaPlante, 1973; Chapman, 1974; Mangham, 1979; Norton, 1982). The original inventory contained 23 items reflecting 18 different purposes for participation. Although other terminology was employed, the purposes could basically be classified in one of the following categories of motives: 1) health and fitness; 2) skill development; 3) challenge; 4) socialising; 5) energy release; 6) fun.

Piepkorn (1990) used the "Personal Incentives for Exercise Questionnaire" to look at gender and age differences in motives for participation of adults in structured and unstructured YMCA fitness programs. She found that women put more emphasis on appearance, affiliation, weight management, flexibility and mastery incentives than men who, in turn, rated competition incentives higher than women. In general, mastery was more important for the younger participants than for the older ones who, in turn, felt that flexibility was an important incentive. It was also concluded that adults exercised for different reasons depending upon the type of

exercise program chosen.

Other studies have been more concerned with gender differences and reasons for participation in specific sports (Gill et al., 1983; Clough et al., 1989; Vehnekamp, 1991). Most research has indicated that males, in general, tend to place greater emphasis on ego-involved as opposed to mastery-involved goals than do females (Ewing, 1981; Duda, 1985; 1987). Also, studies have suggested that females place greater emphasis on fun and friendship than do their male peers (Gould et al., 1982). According to Vehnekamp's study, women's reasons for participation in regular exercise programs were mainly related to fitness factors such as weight management whereas men's reasons were related to competition and strength building. In this study, the same questionnaire as the one used by Piepkorn (1990) was employed. This inventory contained 48 items which were related to the following incentives: 1) competition; 2) appearance; 3) mental; 4) health; 5) flexibility/agility; 6) weight management; 7) social; 8) strength; 9) mastery; 10) affiliation.

Using youngsters, studies have also focussed on age differences in relation to motives for participation in physical activities (Wankel & Kreisel, 1985; Wankel & Sefton, 1989). Results have been somewhat contradictory. Alderman (1978) and Petlichkoff (1982), for example, have reported that achievement, affiliation, and excitement were the most important incentives for sport participation across different age levels. Other studies have suggested that extrinsic

factors become less important relative to intrinsic motivational factors as age increases (Gould et al., 1982; Passer, 1982). The study done by Wankel and Kreisel (1985) using four different age groups (7-8, 9-10, 11-12, and 13-14 years) including soccer, baseball, and hockey players revealed that intrinsic factors such as excitement of the sport, personal accomplishment, and skill testing were consistently rated as being most important. The extrinsic or outcome-related factors were rated least important, and social items were of intermediate importance.

In summary, studies on adult participant motivation have assessed motives for participation in organised activity programs, and other contemporary recreational pursuits such as long distance running. The major reason for carrying out those studies was to gain an understanding of peoples' reasons for participation so that programs could be improved and drop outs prevented. Most motivation studies, however, regardless of age and sport type, seemed to have been focussed around the following factors:
1) achievement/status; 2) health and fitness; 3) social affiliation; 4) excitement/challenge; 5) catharsis or energy release; 6) fun; 7) skill development; 8) team affiliation; 9) importance of winning; 10) extrinsic rewards.

2.4. Sport Machiavellian Behaviour

> In North America...to be an individual--to realise himself to be unique and special and necessarily autonomous...this is measured by the subject's success through competition for domination. Indeed, it is through competition that the self is made and its value

> assessed. This is apparent in the everyday comment: 'What have you made of yourself?' To fail in competition is to fail as a person.
>
> (Klein, 1987:53)

Statements like the above are not unique. Several papers have dealt with the "win at all costs" notion in sport and have discussed it in relation to existing attitudes and norms in society (Keating, 1963; Metcalfe, 1976; Lüschen, 1981; Le Clair, 1992; Malloy, 1992). The Dubin report (1990:518) which studied the use of banned drugs in sport stated that *"as a society we have created a climate in sport in which the only good is perceived to be winning and the manner of doing so of no consequence"*. Webb (1969) developed his concept of "professionalisation of attitudes toward play" when he studied extremely achievement oriented attitudes of children toward play and games and linked those to the values emphasised in the economic sector of society. He concluded that success over others and a high degree of skill were the most important values in play and game participation and that those value orientations were congruent with those emphasised in the adult role of work. Maloney and Petrie (1972) came to similar conclusions in their survey of Canadian school children. In the case of ice hockey, the concern that the sport was moving away from its original purpose of recreation, intrinsic satisfaction, and informal team games, to business was already expressed by Bull in 1934. The organising of rural hockey leagues was clearly a reaction to the development toward professional hockey in those days (Bull, 1934).

When winning becomes this important at all levels of sport, Machiavellian behaviour can be anticipated. Indeed, Machiavellianism in athletics would seem analogous to the "win at all costs" behaviour increasingly described in all forms of play. The term Machiavellianism finds its origins in the attempts made by Niccolo Machiavelli at finding means to succeed in political affairs regardless of the methods used. Synonyms of Machiavellianism include guile, deceit, and opportunism in interpersonal relations (Christie & Geis, 1970). A Machiavellian person is someone who is thoughminded, aggressive, manipulates and exploits others for personal gain (Vleeming, 1979). Several Mach scales using examples of manipulative tactics described by Machiavelli have been developed by Christie and Geis. The scales have subsequently been used to a limited extend to assess Machiavellian tendencies among athletes (Russel, 1972; Kleiber, 1978; Wallace, 1978; Neil & Balfour, 1987; Contoyiannis, 1991). Russel (1972), for example, found low, but significant positive relationships between Mach V scores and measures of physical aggression and challenge to authority among high level amateur ice hockey players. However, research has suggested that, to measure the Machiavellian trait in the sport setting, situation specific scales are needed (Vleeming, 1979; Ray, 1983; Allison, 1982).

Machiavellianism in specific sports may be present in various forms, ranging from aggression, cheating, use of performance enhancing substances or psychological manoeuvres to work on the mind and emotions of opponents. Gamesmanship

is the term used to describe the latter form of Machiavellianism.

Although hockey violence has been the subject of numerous books, inquiries and commissions, it is said to exist in much the same form it did fifty years ago (Hall et al., 1991). According to Ronberg (1975:10) the name hockey may even have emerged from the Iroquois Indians who cried "ho-gee!" (it hurts!) when they were hit by sticks during early forms of the game. Typically, hockey violence seems to be related to illegal body contact and use of sticks, as well as fighting.

Smith (1983:9), in trying to answer what sport violence is, has developed a typology consisting of four categories ranging from relatively legitimate to illegitimate acts. In ice hockey, an example of the relatively legitimate brutal body contact category are hard body checks. Still legitimate, in some forms of hockey, but identified as borderline violence (second category) could be a fight between equally willing and capable opponents. The latter example, normally violating the official rules of hockey and the law of the country, leads to a five minute penalty if not ejection from the game. It is, however, fairly widely accepted in professional play and is often positively commented upon by sport broadcasters.

Closely related to Webb's theory of the professionalisation of attitudes toward play described at the beginning of this section, are ideas expressed in papers which deal with the social determinants of hockey violence.

The mass media, the social organisation of the hockey system, and the influence of professional players all seem to contribute to a social environment in which hockey players at all levels perceive that the use of violence often outweighs its costs (Néron, 1978; Russell, 1979; Smith, 1979; Vaz, 1982; Hall et al., 1991). More specifically, a governmental report on the situation of minor hockey in Quebec concluded that victory had become more important than respect for the rules of the game and the opponent. As a result of the inquiry, various changes in values and morals of the game, participant behaviour, girl participation, as well as rules and structure of the sport were proposed (Ministère de l'Education, 1990). The results of yet another investigation carried out in Quebec and Ontario revealed that 30 % of the injuries occurring in collision sports such as ice hockey were a result of illegal actions and not "accidents" (cited in Beaudin & Marcotte, 1982).

As a result of the latter study's findings, as well as others from investigations being carried out since the nineteen-sixties, the "Régie de la Sécurité dans les Sports du Québec", and the sociologist Vaz developed a completely new scoring system for hockey games wherein an attempt was made to promote sportsmanship. This resulted in identifiable behavioural changes among participants after three years of application. In this system, victory did not necessarily go to the team with the most goals. The team's score also took into account the number of minor and major infractions received by its members. Unfortunately, such projects usually

get funding for a few years and are not generalised through wider application.

Certain cultural changes which have occurred in the last decade or so hopefully signal a change toward a less violent game. These include the introduction of no-hit, no slapshot play in an increased number of organisations, ranging from youth leagues to school intramural hockey and various forms of old timer play, and immediate ejection from the game for fighting in any form in most play. The changes also allow for increased participation of girls and women which will hopefully diminish the emphasis in hockey on virility and violence as a legitimate and "typically masculine practice". Also, more coaches now have university degrees and/or have had coaching experience in university and European leagues and are less likely to advocate the old style "rockem-sockem" hockey. Professional players are also taking an increasingly militant stance against violence in the NHL through their union which may lead to ways to temper violence (Hall et al., 1991).

In general, speeding up the process of reduction in hockey violence requires a collaborative effort of league executives, players, coaches, parents, fans and media personnel.

Cheating is another form of Machiavellian behaviour which involves getting around the rules or breaking them. It can be performed by individuals, by the whole team, as well as by those who guide a team or club (Jones & Pooley, 1982). Taking the puck away from behind the line as a goal keeper or

scoring with the skate instead of the stick are examples of cheating in hockey. According to Luschen (1971) "cheating in sport is the act through which the manifestly or latently agreed upon conditions for winning such a contest are changed in favour of one side". McIntosh (1979) added that rule breaking may or may not be morally wrong but when it is done with the intention to deceive it raises questions. Again, cheating looks inevitable when winning becomes very important (Jones & Pooley, 1982). It also appears to depend upon the ethics of the society and the specific sport. A federal report on values and ethics in amateur sport concluded that "there are different interpretations of ethics in sport and fairness can mean playing by the rules, doing what everyone else does or doing whatever you can get away with" (cited in Le Clair, 1992). In general, it will always be very difficult to control for cheating in sport since it seems that coaches, administrators, and even officials are often found guilty of such deception.

Gamesmanship and Machiavellianism in sport appear to have similar meanings since both are related to interpersonal manipulative behaviour. In general, studies have shown positive correlations between Mach scores and use of gamesmanship ploys in sport. The best historical overviews of this behaviour can be found in the works of Dizikes (1981), Fielding (1984) and Neil (1989). In America, players often have attempted to exploit the rules of games. This is certainly reflected by complicated and detailed rules in sports such as basketball, football and hockey. In addition,

sports have always had a great influence on a large number of people on this continent. Because of the close link between sport and society, rules have sometimes been changed to please the public and not necessarily to serve the players. Gamesmanship in sport, therefore, is very much a social psychological and philosophical issue. The controlling of gamesmanlike behaviour in sport appears to emerge from the norms in society as a whole as well as those of the subcultures which developed in specific sports. In fact, similar remarks were made in the previous section on violence in hockey. Allison (1982) made a very important statement when mentioning the following:

> we cannot label such discrete patterns as sportsmanlike or unsportsmanlike, as ethical or deviant until we understand the nature and structure of the specific sport, the changing norms which surround the game world, and finally the interpretations of that world as seen through the eyes of the participants.
>
> (Allison,1982:162)

Neil (1989) has written a detailed overview of the psychological aspects of Machiavellianism in sports and included a taxonomy of gamesmanship ploys. These ploys can be used for different reasons in different situations. Some reasons include: 1) to gain advantage over others when insecure with skill alone; 2) because of the pressure related to losing in high levels of competition; 3) to entertain the public; 4) personal satisfaction when devising and implementing original ploys; 5) fun in finding psychological weaknesses of opponents; 6) as natural and legitimate tactics; 7) to obtain power over others (Frazier, 1974; Geist

& Martinez, 1976; Siegel, 1984; Neil, 1989). The effects of the use of gamesmanship ploys on the athlete may range from a loss of attentional focus; emotional arousal in feelings of guilt, anxiety, embarrassment, suspicion, and irritation; loss of confidence; break in rhythm and momentum of the game; to confusion and deception (Cath et al., 1977; Bunker & Rottela, 1982; Parsons, 1984; Brody, 1987; Weinberg, 1988; Neil, 1989).

The prevalence of gamesmanship in sports seems to depend upon the nature of the activity and investments of the players in it (Cath et al., 1977; Heinila, 1979; Allison, 1982; Morris, 1981; Brown, 1983; Neil & Balfour, 1987). While it is generally not accepted to openly admit the use or encouragement of this type of behaviour in most sports, many authors on tennis indicate that gamesmanship is an accepted part of the game and should therefore be recognised, practised and perfected if one wants to be successful (cited in Neil, 1989). Neil and Balfour (1987) reported fairly high positive correlations between gamesmanship ploys usage and level of play and involvement among tennis players. Similar results were obtained in Contoyiannis' study of soccer players (Contoyiannis, 1991).

Different age ranges have been used to study the relationship between Machiavellianism in general, gamesmanship and age. Browne (1977), for example, with an age range of 18 to 48 found students over 21 years less Machiavellian than those under 21 years. In the lack of contrary results, studies appear to indicate that the

prevalence of Machiavellianism and acknowledged gamesmanship correlate negatively with age when examining a fairly large age range (Christie & Geis, 1970; Neil & Balfour, 1987; Mudrack, 1989; Contoyiannis, 1991).

In conclusion, Machiavellianism includes a tremendous variety of behaviour that is intended to negatively affect the performance of others or give advantage to the perpetrator. Its prevalence seems to depend on the amount of involvement of the athlete, level of competition, age, type of sport, as well as the cultural setting. Although this type of behaviour is used for a variety of reasons, its most important and ultimate purpose seems to be to win. As it appears that Machiavellianism in sport is very much a social psychological issue, its prevalence will remain as long as some parts of society promote winning over sportsmanship and fairness.

2.5. Summary

This chapter has attempted to clarify the history and functions of ice hockey in the Canadian context. It was indicated that there are a tremendous variety of hockey forms available each with its different structure and organisation. It was also suggested that one way to study these different types of hockey is to consider them as part of a continuum of physical activities. In this context, the Ideal-Type Play/Game Paradigm was explained in some detail. Major elements of this model of physical activities include the

importance attached to winning versus play elements. There are, however, other reasons why people might get involved in one or another type of hockey. Most research which has looked at involvement in physical activities has focussed on general motives for participation in organised fitness programs or reasons for dropping out. From those studies, however, a set of motives can be identified. They include the following: 1) achievement/status; 2) health and fitness; 3) social affiliation; 4) excitement/challenge; 5) catharsis or energy release; 6) fun; 7) skill development; 8) team affiliation; 9) importance of winning; 10) extrinsic rewards. Most studies on participant motivation have indicated that motives change with amount of experience, gender, age, and type of activity. Some motives such as fun, however, seem to be very important for most exercise adherers.

Machiavellianism is a form of behaviour which may be anticipated when activities become more structured and organised and the pressure to win increases. Although Machiavellianism is not a new concept, systematic research on the phenomenon in specific sport settings is limited. This sort of behaviour may be present in sports in various forms ranging from aggression, cheating, use of performance enhancing substances to psychological manoeuvres to work on the mind and emotions of opponents. A review of the literature indicates that the place or importance of its different forms in various sports is dependent upon the nature of the activity, the level of play, as well as the investment of the participants in the activity (Heinila,

1979; Dubois, 1986; Neil & Balfour, 1987; Neil, 1989; Contoyiannis, 1991). Over the years, a series of scales have been developed to assess Machiavellianism in general, but very limited work has been done to develop sport specific measures of such behaviour. The literature on the topic seems to be divided into those works which support its use in sports, those taking a neutral stance, and those clearly against it and concerned with how to recognise and deal with it (Neil, 1989). The entire concern of Machiavellianism in sport, therefore, is very much a social psychological and philosophical issue.

CHAPTER 3

METHODS AND PROCEDURES

In order to examine changes in emphasis on winning versus play elements, motivation for participation and Machiavellian tendencies as a function of increased structure and organisation for ice hockey play, the procedures indicated below were followed.

3.1. Subjects

A total of 214 adult subjects who were participants of ice hockey from its least organised forms to that of the highly competitive inter-university variety were used in the study. Groups were selected to represent as wide a variety of forms of hockey structure and organisation as possible. At the time of the data collection, however, the hockey season was approaching its final weeks. This meant that some teams had already finished their regular game schedule. This was especially true for pick-up, intramural, and some inter-university teams. Consequently, no data could be obtained for men's college intramural and women's university intramural hockey. In addition, for pick-up hockey, among other forms, several groups had to be asked to complete the questionnaire so that an acceptable sample size could be obtained. Although the McGill university team had finished their schedule, they agreed to complete the questionnaire at one of their

debriefing sessions. Again, to increase the sample size, questionnaires were also obtained from another university team. From the university intramural form of hockey the best teams at each level completed the questionnaire since they were the ones still competing in the playoffs.

Samples ranging from 17 to 37 subjects were obtained from the following eight forms of hockey play: 1) pick-up; 2) fun and fitness (league standings not kept); 3) old timer league; 4) old timer tournament; 5) men's university intramural; 6) women's inter-university; 7) men's inter-college; 8) men's inter-university.

Although these forms seemed to be distinct types of play, tremendous variation within one form is often found. The number of players and organisers, the use of rules and official referees can be different from one league to another. Some old timer leagues, for example, are very well organised and can have as many as five games in one evening. Although players generally have to be over 35 years of age to be eligible for old timer play, each league can set its own age criteria. As much information as possible was therefore obtained about each group from which data were collected.

Since the questionnaire was in English, all subjects had to be English speaking. Most of the subjects lived in the greater Montreal area, with the exception of some of those in the fun and fitness category who lived in eastern Ontario, and subjects in the old timer tournament category (Pointe Claire Old Timer Tournament) who may have come from different provinces in Canada and the United States. Although a total

of 138 respondents were available in this old timer category, only 30 questionnaires completed by Canadian players were retained for analysis in this study. To get a fairly homogeneous sample which would best represent this form of play, the strongest and weakest skill categories were excluded and 10 questionnaires were taken at random from each of the three middle ability categories.

3.2. Instrumentation

Two instruments were used in this study. One was used to obtain preliminary information to establish a hierarchy of hockey forms based on increased structure and organisation. The major instrument was a questionnaire to assess hockey players' motives for participation, and their feelings about and perceptions of Machiavellian tendencies within this play. This instrument, although consisting of four relatively distinct parts was administered as one Hockey Participation Questionnaire. A description of the Hockey Structure and Organisation Hierarchy inquiry and the Hockey Participation Questionnaire follow.

3.2.1. Hockey Structure and Organisation Hierarchy

As mentioned in the previous section, tremendous variation exists, between and even within the various hockey forms played in Canada, in the use and enforcement of certain

rules, amount of organisation, as well as the number and age of participants. To obtain a hierarchy of hockey forms based on increased structure and organisation, six hockey organisation experts were asked to rank the eight hockey forms of interest. The experts were chosen based on their experience in the game and knowledge of the various forms of hockey being used in this study. They all had played at least one form of ice hockey and were involved in the organisation of at least one of the eight forms of ice hockey listed. They were given various criteria that may be used to help identify structure and organisation for play, and asked to rank the eight forms of hockey play from the most to the least structured and organised. These criteria were obtained through a review of the literature and interviews with people involved with the organisation of ice hockey. The same experts were also asked to classify each form of hockey play into one of five categories based on their perception of the emphasis on winning versus play elements in each. The latter part of this instrument was included to be able to compare the experts' opinions with those of the participants on the same question (see 3.2.2.2). The content and format of the present investigation was developed through pilot work with others knowledgeable in hockey and data collection through questionnaires completed by a group of graduate students (see Appendix A).

3.2.2. Hockey Participation Questionnaire

This self-report instrument was designed to obtain information on respondents' hockey playing backgrounds, perceptions of the nature of present play, motives for hockey participation and Machiavellian behaviour during play (Appendix B). The nature of and rationale for each part of this questionnaire follows.

3.2.2.1. Respondent Demographic Data

The first five items of the questionnaire were designed to clarify the age, gender, hockey playing background and present form of hockey play of respondents.

3.2.2.2. Perception of Element of Play Versus Emphasis on Winning

The sixth item of the questionnaire asked respondents to identify, on a five part graph, their own relative emphasis on winning versus play elements in their present form of hockey play. The format of the five point scale was based on the paradigm proposed by Salter but was slightly modified as a result of pilot work and written communication with the author.

As mentioned earlier, Salter's Ideal-Type Play/Game Paradigm classified various forms of play and games as a function of their relative emphasis on winning versus play

elements (Salter, 1980). Salter identified five forms of activities ranging from pure play, through games, sports, athletics, and the terminal contest. The general idea is that, when one moves from unrestricted play toward terminal contest, the elements of play characterised by fun, absence of extrinsic rewards, meta-message "this is play", and voluntary involvement, gradually disappear to be replaced by emphasis on winning. In the activity labelled as sport, for example, the emphasis on the element of play is equal to the emphasis on winning. In the activity identified as athletics, winning becomes more important than the element of play, and in the terminal contest, winning becomes the sole purpose of the activity.

Although the names of the forms of play were replaced by letters and brief statements of the relative importance of winning versus play elements, the five categories were maintained. The names were not included because it was felt that the term "terminal contest" was somewhat an overstatement for an activity in which winning is extremely important.

From this five point scale, a score ranging from one indicating that the play element is all important to five indicating that victory is all important was obtained. A score between 1.00 and 1.99 indicated that the play element is all important. A score between 2.00 and 2.99 suggested that the play element is still more important than winning. A score between 3.00 and 3.99 indicated that the play element is equally important to winning. That the play element was

less important than victory was reflected by a score ranging from 4.00 to 4.99. Finally, the category in which victory is all important was indicated by a score of 5.00.

3.2.2.3. Motives for Hockey Participation

To assess participant motives for playing hockey a modified version of the Participant Motivation Questionnaire used by Gill and his colleges (1983) and Klint and Weiss (1987) was used. The target groups of the original studies were children between the ages of 8 and 18 years. Separate principal component analyses and varimax factor rotations done by Gill et al. (1983) on their 32-item scale yielded the following eight factors: 1) achievement/status; 2) fitness; 3) friend affiliation; 4) energy release; 5) fun;6) skill development; 7) team affiliation; 8) situational factors. With the proposed respondents being adults, it was decided that some modifications in content and wording were necessary. Analysis of the literature on adult motives for participation in physical activities, and reworking of the Gill, Gross and Huddleston questionnaire lead to the development of a 32-item scale. To further establish content validity, the questionnaire was given to 10 graduate students in sport psychology to add, delete, or revise items based on their understanding of participant motivation. Also in recognition of the limitations imposed by having an unequal number of items assessing the various motives, each possible factor in the present questionnaire contained the same number

of items. This resulted in a 36-item scale consisting of four items on each of nine motives for sport participation.The nine categories of motives examined were the following: 1) achievement/status; 2) fitness; 3) social affiliation; 4) excitement/challenge; 5) energy release;6) fun; 7) skill development; 8) team affiliation; 9) extrinsic rewards.

Subjects were asked to rate on a 5-point Likert-type scale similar to the one used by Klint and Weiss (from not at all important to extremely important) the degree of importance each of the 36 items had for explaining their involvement in a particular form of ice hockey.

3.2.2.4. Ice Hockey Machiavellian Behaviour

The fourth part of the Hockey Participation Questionnaire was a self-report of ice hockey behaviour, developed by the investigator. It was used to ascertain the Machiavellian tendencies in hockey of the subjects. The questionnaire focused on three aspects of Machiavellian sport behaviour in sport namely aggression, cheating, and gamesmanship.

Several studies have indicated that physical aggression is socialised behaviour among hockey players and that this is linked with the organisational and competitive structure within which the individuals have participated (Vaz, 1979; Tyler & Duthie, 1978, 1980). In addition, Smith (1979) concluded that the mass media and the influence of referent others such as coaches, parents and teammates also contribute

to a social environment in which hockey players perceive that the rewards of aggression and violence often outweigh the costs.

Each form of ice hockey has its own set of rules to which the participant is supposed to adhere. In addition, there are other, unwritten rules which are expected to be obeyed. Because hockey is a fast paced and tactical game that is not always well officiated, violating the rules as well as the norms and mores of the sport is possible. Certain forms of cheating, or rule violating behaviour are said to be common place. In addition, writers have suggested that several situational factors such as teams winning a game and players holding a superior position in society, may enhance violation of the norms of the game (Cullen & Cullen, 1975).

The use of psychological manceuvres on opponents in an effort to defeat them in sport and games is a less obvious Machiavellian behaviour, but nonetheless increasingly recognised as part of every contest. If athletes cannot find victory in themselves, they may search for ways to take it away from their opponents. Neil (1989) suggests that there are several categories of psychological, or mental and emotional effects of gamesmanship on opponents. These categories include, 1) over arousal which can be brought about by stimulating feelings of anxiety, anger, irritation, guilt, suspicion or unworthiness; 2) loss of concentration or attentional focus; 3) confusion or deception because of purposefully avoiding to signal one's true intention; 4) loss of confidence; 5) break in rhythm, momentum or tempo; and, 6)

drawing illegal action and penalisation which is basically any attempt that makes an opponent violate the rules of the game and be penalised and/or ejected from the game. The five items pertaining to gamesmanlike behaviour used in the present questionnaire attempted to assess some of the actions designed to bring about such effects in hockey players.

In order to compile a list of Machiavellian ploys that would reflect aggression, cheating and gamesmanlike behaviour in hockey, a review of the literature in the sport was carried out and these types of behaviour observed in other team sports were studied for their possible occcurence in ice hockey. Existing questionnaires assessing Machiavellian tendencies in basketball and soccer were also studied. In addition, experienced ice hockey players and others involved in the organisation of ice hockey were interviewed in search of practical examples of aggressive, cheating and gamesmanlike behaviour. The selected ploys on the various forms of Machiavellia.. behaviour were put into question format. The original 12-item questionnaire was critiqued by a group of graduate students in sport psychology. Upon their feedback, the questionnaire was revised. A 15-item questionnaire was retained in which each of the three types of behaviour was assessed in five items. All items were posed in a manner so as to obtain the intentions of the subjects as they responded concerning their behaviour in the specific ice hockey activity in which they were involved.

The scoring was based on a 5-point Likert-type scale from never (1 point), rarely (2 points), sometimes (3

points), often (4 points) to always (5 points) on each item. The Machiavellianism in hockey scale thus had possible total scores ranging from 15 (15 items x item mean 1.0) to 75 (15 items x item mean 5.0). The higher a subject's score on the questionnaire, the more the subject acknowledged use of aggression, cheating, and gamesmanlike behaviour on his/her opponents. Anonymity was emphasised and the specific intent of the questionnaire was not mentioned. This was done because of the possible perceived non-socially desirable nature of Machiavellian behaviour.

3.3. Collection of the Data

The data collected from the hockey players dealt with their motives to participate in a certain form of play and their Machiavellian behaviour during play. The procedure which was followed for the data collection is outlined in subsequent paragraphs. A brief description of how the hierarchy of hockey forms based on increased structure and organisation for play was obtained is explained first.

The investigator personally contacted six people who met the criteria for being experts for the purposes of this study and who completed the tasks asked of them. They ranked the various forms of ice hockey according to increased structure and organisation as they perceived it and classified the same forms of ice hockey play based on their perceptions of the emphasis on winning versus the importance of play elements in each.

The Hockey Participation Questionnaire was given to 214 different subjects playing in eight different forms of hockey. Although an attempt was made to obtain at least 20 respondents for each form of play and several teams playing the same form of hockey were approached, only 17 completed questionnaires were obtained for the men's inter-college sample. In addition to the fact that the hockey season was almost completed at the time of data collection, other factors may have influenced the nature of the data obtained. They include the importance of the game outcome for the players, the precise moment of questionnaire completion, the teams' standing in the competition, and the proximity to school exams. Nevertheless, an attempt was made to adhere to the following data collecting procedure. In addition, precise notes were taken of any particular circumstances which prevailed at the time for each group from which data were collected.

For the more organised forms of play, questionnaires were given to a team representative prior to a practice or a game and returned to the researcher after completion. In all other instances, they were distributed after the game by the researcher to each player individually and collected the same day. Respondents were in all instances asked to focus on the specific form of hockey in which they had just participated. This was important because some players participated in two or more different forms of hockey. At the same time, it was made clear to respondents that the intent of the study was to assess why subjects played in the specific type of ice hockey

and how they behaved in that activity. The investigator further provided players and team representatives with pencils and short, precise instructions for completion of the questionnaire. Approximately 15 minutes were required to complete the questionnaire.

3.4. Treatment of the Data

The data collected from the hockey organisation experts were used to establish a hierarchy of hockey forms on the basis of increased structure and organisation for play. This hierarchy was then the basis for determining if participants in the eight forms of hockey differed in the importance attached to winning versus play elements, motivations for participation and Machiavellian behaviour during play.

3.5. Analysis of the Data

This section discusses which descriptive statistics were calculated, what statistical procedures were used to answer the three hypotheses of this study and how the reliabilities and validity of the instruments developed by the researcher were determined.

3.5.1. Hockey Structure and Organisation Hierarchy

To determine the extent of agreement among the six

experts (inter-expert objectivity) of their classification of ice hockey forms based on increased structure and organisation, Kendall's W Coefficient of Concordance was employed (Streiner, 1986).

3.5.2. Hockey Participation Questionnaire

Concerning the subjects' demographic data, means, standard deviations and ranges were computed of the age of the players and the number of years they had played organised ice hockey. Data on the gender and levels of play of the participants in each form of play were also collected.

Means and standard deviations of the participants' scores on winning versus play elements were calculated for each form of play. A one way ANOVA was performed to verify if differences in the importance attached to winning versus the elements of play existed among the players in the different forms of ice hockey activities as they were ranked by the experts based on increased structure and organisation for play. Post Hoc tests were employed to determine the means between which there were significant differences.

Means and standard deviations of each item on the motivation part of the Hockey Participation Questionnaire were calculated for each form of play. Principal Component Factor Analysis of the motivation data was performed to identify validity of the nine categories of motives (Streiner, 1986). Internal consistency of each motive for hockey participation was verified by calculating correlations

among all possible pairs of items within each motive and by calculating the mean inter-item correlations for each. Cronbach alpha values were also calculated to verify internal-consistency reliability of the motives. In addition, average scores for each motive were calculated for each form of hockey once the factor structure was known.

Discriminant Function Analysis was used to determine which motives for participation were identified with each level of the hierarchy of hockey forms established by the experts (Tatsuoka, 1970; Schutz et al., 1983). Once it was known which motives were significant discriminators, Post Hoc tests were used to determine between which pairs of hockey forms there were significant differences.

A Principal Component Factor Analysis of the Machiavellian part of the questionnaire was performed to determine if the three behaviour categories making up this part of the instrument could be identified as separate factors. Since this factor analysis did not cluster the items into identifiable factors, means and standard deviations of the overall score on the Machiavellian questionnaire for each form of hockey play were calculated. A split-half test was also carried out to determine the reliability of this part of the instrument. In addition, a one way ANOVA was performed to verify if differences in Machiavellian tendencies exist among the players in the different forms of ice hockey activities as they were ranked by the experts on the basis of increased structure and organisation of play. Post Hoc tests were employed to determine the means between which there were

significant differences.

Kendall's tau was computed to determine the strength of the relationship between amount of structure and organisation and Machiavellian tendencies. A Pearson correlation coefficient was calculated to study the relationship between importance of winning and Machiavellian behaviour. In addition, a Pearson correlation coefficient was calculated to determine the relationship between age and Machiavellian tendencies.

For the major statistical analyses, the SYSTAT software package (Systat Inc., 1990-1991) was used on a Macintosh personal computer. The SPSSX statistical package was used to determine the Cronbach alpha coefficients of the motivation questionnaire.

In this study, the .05 level was deemed significant for all statistical tests.

CHAPTER 4

RESULTS

The first data collected for analyses contained the experts' classifications of the eight forms of hockey used in this study ranked according to degree of structure and organisation. Based on these results, a hierarchy of the hockey forms was established and maintained for the major analysis which looked at the players' perceptions of the importance attached to winning, motivation for play, and Machiavellian tendencies during play. A separate section relating importance attached to winning, amount of structure and organisation and Machiavellian behaviour is also included. The results of the preliminary inquiry as well as the major study are described in separate sections.

4.1. Hockey Structure and Organisation Hierarchy

The experts' rankings (N=6) based on increased structure and organisation for play as well as the total rankings of each of the eight forms of hockey are presented in Table 1.

Table 1

Experts' Hierarchy of Eight Forms of Hockey Based on Amount of Structure and Organisation for Play

HOCKEY FORM	EXPERT						SUM OF RANKS	HIERARCHY[a]
	1	2	3	4	5	6		
pick-up	1	1	1	1	1	1	6	1
fun and fitness	2	2	2	2	2	2	12	2
old T league	3	4	3	3	4	3.5	20.5	3
old T tournament	4	3	4.5	5	3	3.5	23	4
men's un.intram.	5	5	4.5	4	5	5	28.5	5
women's inter-un.	6	6	7	6	6	6	37	6
men's inter-col.	7	7	6	7	7	7	41	7
men's inter-un.	8	8	8	8	8	8	48	8

[a] hierarchy is from the least structured and organised (1) to the most structured and organised (8).

The obtained Coefficient of Concordance among the six experts was highly significant (Kendall's W =.97, $p<.001$) indicating a very high degree of agreement concerning the amount of structure and organisation involved in the eight forms of hockey. The hierarchy of forms of hockey, in order of increasing structure and organisation, is the following: pick-up hockey; fun and fitness hockey (no standings kept); old timer league hockey; old timer tournament hockey; men's university intramural hockey; women's inter-university hockey; men's inter-collegiate hockey; men's inter-university hockey.

As may be seen in Table 1, there seemed to be complete agreement among the experts at both ends of the hierarchy.

Pick-up and fun and fitness play, on one hand, and, men's inter-university play on the other, seemed fairly distinct forms of hockey as the uniform classification of all the experts indicate. Placement of the hockey forms in the middle of the hierarchy is less clear as seen in the disagreement among the experts as to where each form of play should be classified.

Table 2 presents the experts' (N=6) classification of the eight forms of hockey into one of five categories based on their understanding of the importance attached to winning versus play elements.

Table 2

Experts' Classification of Eight Forms of Hockey Based on Increased Importance Attached to Winning Versus Play Elements

HOCKEY FORM	EXPERT						MEAN CLASSIFICATION[a]	RANK ORDER[b]
	1	2	3	4	5	6		
pick-up	2	1	1	1	1	1	1.20	1
fun and fitness	2	1	2	2	2	3	2.00	2
old T league	2	2	3	4	2	2	2.50	3
old T tournament	2	3	4	4	3	3	3.26	4
men's un. intramural	4	2	3	5	3	4	3.50	5
women's inter-un.	4	3	5	5	4	4	4.17	6
men's inter-col.	5	3	5	5	5	4	4.50	7
men's inter-un.	5	3	5	5	5	5	4.67	8

[a] 1-1.99:play element is all important; 2-2.99:play element more important than winning; 3-3.99:play element equal to emphasis on winning; 4-4.99:play element less important than winning; 5: winning all important.

[b] rank order from winning least important (1) to most important (8).

Table 2 also includes the mean classification for each form of hockey and a rank order of the forms of hockey based on increased importance attached to winning. The experts' hierarchy of the eight forms of hockey based on increased structure and organisation (Table 1) and their mean classification of the same forms based on the importance of winning versus play elements (Table 2) are identical. Again, there was greater agreement and thus less variability in the classification of the top and the bottom forms than of those in the middle. All experts agreed that the play element is very important in pick-up hockey and winning very important in inter-university play. The most variability was found in the classification of men's university intramural, which received scores ranging from two (play element is more important than winning) to five (winning is all important).

4.2. Hockey Participation Questionnaire

This self-report instrument, which was the major assessment tool of the study, contained four distinguishable parts. The first part was designed to obtain information on respondents' ages and playing experience. The second part assessed the players' feelings of the importance attached to winning versus play elements. The last parts were aimed at the motivation for participation and Machiavellian behaviour of participants in the different forms of hockey. Results for each of the four parts are represented in separate sections.

4.2.1. Respondent Demographic Data

Results from the first part of the Hockey Participation Questionnaire are presented in Table 3. The hockey hierarchy determined by the experts is maintained in this Table.

Table 3
Demographic Data of Participants in Eight Forms of Hockey

HOCKEY FORM		AGE			YEARS OF ORGANISED PLAY		
	n	M	SD	RANGE	M	SD	RANGE
pick-up	23	43.3	10.89	43	13.4	14.29	45
fun and fitness	23	41.8	12.96	47	25.3	13.76	44
old T league	37	42.4	5.63	27	25.4	10.32	37
old T tournament	30	42.7	4.62	18	29.6	10.91	49
men's un.intram.	30	25.9	3.71	17	14.6	6.65	31
women's inter-un.	26	22.2	1.89	8	5.8	4.64	16
men's inter-col.	17	19.3	1.26	3	13.5	1.84	8
men's inter-un.	28	21.8	1.70	6	15.0	2.54	10

Of the eight forms of hockey considered for analyses, men's inter-collegiate hockey represented the smallest sample (n=17). Participants in the first four forms of play had comparable mean ages of approximately 42 years. The age range of pick-up and fun and fitness players was greater than anticipated. As was expected, the youngest players were those in the inter-collegiate sample which had a mean age of 19 years. The mean age of approximately 26 years for men's university intramural hockey was slightly higher than

anticipated. Some of the players at Concordia University, from which most of the sample was drawn, were well into their thirties with the oldest player being 36 years of age.

The players of the two old timer forms had comparable hockey experiences, with a mean experience of 25.4 years for the league players and 29.6 years for those in the tournament category. As was anticipated, the group having the least amount of hockey experience was that of the inter-university women. Their average number of years of play was 5.8. The standard deviation and the range of the number of years of hockey play for the women, however, were greater than both the men's inter-collegiate and inter-university samples.

4.2.2. Perception of Element of Play Versus Emphasis on Winning

Results obtained from the second part of the Hockey Participation Questionnaire which asked respondents to indicate how important winning versus play elements were for them in their present form of hockey are presented in Table 4. Scores could range from one, indicating that the play element was all important, to five meaning that winning was all important.

Table 4

Importance Attached to Winning Versus Play Elements Mean Scores Across Forms of Hockey Play and Level of Probability of Differences Between Each Pair

HOCKEY FORM[a]	WINNING/PLAY[b]		TUKEY POST HOC LEVELS OF PROBABILITY							
	M	SD	1	2	3	4	5	6	7	8
1	1.74	.62		.00	.00	.00	.00	.00	.00	.00
2	2.70	.82			.99	.99	.30	.99	.00	.01
3	2.86	.77				1.00	.60	1.00	.00	.04
4	2.90	.89					.76	1.00	.02	.08
5	3.27	1.20						.76	.45	.90
6	2.89	.77							.02	.09
7	3.82	.81								.99
8	3.57	1.07								

[a] 1:pick-up; 2:fun and fitness; 3:old timer league; 4:old timer tournament; 5:men's university intramural; 6:women's inter-university; 7: men's inter-collegiate; 8:men's inter-university.

[b] 1-1.99:play element is all important; 2-2.99:play element more important than winning; 3-3.99:play element equal to emphasis on winning; 4-4.99:play element less important than winning; 5: winning all important.

In general, there is increased importance attached to winning when the activity becomes more structured and organised as the means for each form of hockey at the left of Table 4 indicate. The overall F-value obtained in the one way analysis of variance was highly significant ($F_{7,204} = 11.093$, $p<.001$) indicating that there was a significant increase in the importance attached to winning versus play elements from the least to the most structured and organised forms of play.

Although considered more structured and organised than

men's intramural play, the women's inter-university sample had a lower mean score on the importance of winning versus play elements. When a second analysis of variance on the importance attached to victory versus play elements is computed, excluding the womens' sample, a slightly higher F-value of 12.438 ($p<.001$) is obtained.

Although men's inter-university hockey was rated the most structured and organised, the mean score for the importance attached to winning was only second to that of the inter-collegiate sample. The importance of winning for the old timer league (mean=2.86) and tournament (mean=2.90) samples were comparable as were their rankings based on structure and organisation (see Table 1).

To further determine which pairs of samples had significantly different mean scores on the importance of winning versus play elements, Tukey Post Hoc tests were computed. The results of these pairwise comparisons are presented in the right hand part of Table 4. As the probability values indicate, there are 13 pairs of groups which differ significantly in the importance attached to winning versus play elements, with the pick-up sample being significantly different from all other samples. The middle four groups of the hierarchy do not differ from each other in the importance attached to winning but most differ from men's inter-collegiate and inter-university players. Men's university intramural players, who where playing their final games at the time of the sampling, do not differ from men's inter-collegiate and inter-university players.

To provide a clearer picture of the distribution of the players' feelings about playing hockey to win or just play in each form, percentages of players who classified themselves in each category of the paradigm are presented in Table 5.

Table 5

Participants' Classifications of the Importance of Winning Versus Play Elements in Percent of Players of Each Hockey Form

HOCKEY FORM	PERCENTAGE OF PLAYERS IN EACH CATEGORY OF THE PARADIGM[a]				
	ONE	TWO	THREE	FOUR	FIVE
pick-up	36	56	9	0	0
fun and fitness	0	48	39	9	4
old timer league	0	34	49	14	3
old timer tournament	7	16	63	7	7
men's univ. intramural	7	17	43	10	23
women's inter-university	0	31	54	11	4
men's inter-collegiate	0	0	41	35	24
men's inter-university	0	14	43	14	29

[a] one:play element all important; two:play element more important than winning; three:play element equal to emphasis on winning; four:play element less important than winning; five:winning all important.

As shown in Table 5, 98 % of the pick-up players indicated that the play element was all important or at least more important than winning. A shift towards more importance attached to winning occurred in the old timer league players and continued throughout the other more organised forms of play. There also seemed to be more agreement among the

players in the least structured and organised forms of hockey. Although the mean scores were slightly higher, similar results were obtained when the group of experts were asked to classify the same forms of hockey on the paradigm (see Table 2).

4.2.3. Motives for Hockey Participation

Average scores and standard deviations for each hockey form on the 36 items of the motivation questionnaire are presented in Appendix C.

Principal Component Factor Analysis with varimax rotation was performed for the entire sample to identify significant motivation factors. Although the questionnaire was composed of nine motivation categories, only eight distinguishable factors were identified by the procedure. Three of the four items reflecting extrinsic rewards seemed to be highly related to the status items of the motivation questionnaire. The eight factors thus remaining were labelled according to their item contents as follows: 1) achievement/status; 2) fitness; 3) social affiliation; 4) excitement/challenge; 5) energy release; 6) fun; 7) skill development; 8) team affiliation. Rotated factor loadings of each item on the eight factors or principal components are given in Table 6. The items are presented in the same order as the eight factors just mentioned.

Table 6

Rotated Factor Loadings of Each Motivation Questionnaire Item Grouped by Factor

ITEM	FACTOR LOADINGS							
	1	2	3	4	5	6	7	8
Doing someth.I'm good at	**.57**	-.12	.23	.24	-.14	.09	.11	.26
To feel important	**.62**	-.21	.04	-.04	.16	.04	.40	.17
To gain status	**.81**	.09	.06	-.06	-.04	-.04	.22	-.01
To be popular	**.80**	.06	.13	-.04	.03	-.05	.17	.06
To win covated awards	**.77**	-.03	.03	.18	.12	-.11	-.01	.07
recognition accomplishm.	**.82**	.06	.14	.01	-.01	-.12	.23	.01
To receive extr. rewards	**.79**	-.04	-.03	.10	.06	-.07	.05	.04
To stay in shape	-.04	**.84**	.08	.08	.06	.18	.22	.10
For my health	-.04	**.85**	.03	.09	.14	.17	-.00	.06
To get physically fit	-.06	**.88**	-.07	.16	.13	.11	.14	.10
For the social contact	.13	.03	**.83**	.10	.12	.11	-.14	01
To make friends	-.03	.01	**.87**	.01	.03	.14	-.06	.14
To meet new people	.09	.02	**.72**	-.12	.30	.03	.19	.21
To be with people I like	.02	.23	**.54**	.13	.16	.08	.05	.49
To identify with a team	.30	-.21	**.50**	.13	.12	-.05	.22	.22
For the exhilaration	.03	.16	.09	**.80**	.18	.14	.06	.06
I like the action	.03	.06	.06	**.73**	.01	.22	.17	.27
For the challenge of it	.16	.08	.03	**.75**	.10	.13	.26	.25
I like the excitement	.14	.30	-.04	**.43**	.25	.25	.34	.23
To forget problems	.16	-.05	.13	.10	**.77**	.25	-.06	-.03
As an outlet for energy	-.08	.23	.11	.12	**.68**	.09	.28	.15
To release tension	.07	.11	.19	.15	**.86**	.02	.01	.02
To relax	-.08	.29	.08	-.10	**.56**	.33	-.31	.15
To feel good	.06	.17	-.02	.21	.32	**.56**	.01	.18
For the enjoyment	-.13	.10	.18	.18	.01	**.78**	-.02	.01
For the fun of it	-.17	.09	.12	.06	.08	**.81**	.01	.11
For the pleasure of it	.04	.16	-.05	.12	.19	**.80**	-.01	.11
To develop pers. skills	.25	.14	.15	.22	.05	.02	**.74**	.12
To improve level of skill	.30	.21	.07	.22	-.04	-.03	**.77**	.11
To play at a higher level	.52	-.06	-.17	.09	-.09	.04	**.58**	.17
To try out dif techniques	.40	.25	-.03	.14	.08	-.04	**.64**	.09
I like the teamwork	-.02	.15	.17	.38	-.01	.26	.06	**.65**
I like the team spirit	.12	.04	.21	.20	.09	.16	.14	**.76**
To be part of a team	.31	.16	.31	.14	.12	.07	.16	**.67**
I like to compete	.35	.03	-.07	.41	.02	-.01	.28	.46
To go to diff. places	.43	-.04	.46	.01	-.03	-.11	.39	.07

Most of the items which made up each motivation category of the questionnaire were also identified within the same factor. Two items, however, did not cluster into any of the eight factors and hence were put at the bottom of Table 6.

The analysis further revealed that 14.3 % of the variance was explained by the achievement/status factor. Specific items with high loadings on this factor were; "to gain status", "to be popular", "for possible public recognition through my accomplishments", and "to receive extrinsic rewards". The fitness motive (8.0 % of the variance) included three fitness related reasons of "to stay in shape", "for my health", and "to get physically fit". The item of the questionnaire "to feel good" loaded highly on the fun factor and not on the fitness factor as was expected. The four social affiliation items ("for the social contact", "to make friends", "to meet new people", and "to be with people I like") and one team affiliation motive item ("to identify with a team") dominated factor three which accounted for 8.9 % of the variance. Three challenge related items ("I like the action", "for the challenge of it", and "I like the excitement") and one item which was intended to reflect fun ("for the exhilaration of it") loaded highly on factor four (7.7 % of the variance). Factor five included the four items related to energy release and accounted for 7.3 % of the variance. Fun items were identified as factor six and accounted for 7.7 % of the variance. The four items with high loadings on this factor were "to feel good", "for enjoyment", "for the fun of it", and "for the pleasure of it". Four items

which were considered as skill development factors accounted for 8.5 % of the variance. The eighth factor, team affiliation, included three of the four proposed items and accounted for 7.0 % of the variance.

The eight thus identified clusters of related items identifying motives for participating are henceforth labelled as participation motives in this paper.

Internal-consistency (reliability) of the eight motives for participation, obtained through the factor analysis, were examined. Correlations among all possible pairs of items within each motive were calculated, and mean inter-item correlations are presented in Table 7. Reliability was further calculated using analysis of variance procedures on each motive (Items X Subjects ANOVA). The Cronbach alpha coefficients, thus obtained, are presented in the same Table. The motives were highly reliable as is indicated by the obtained Cronbach Alpha's. A Cronbach Alpha of .60 has been used as the minimum acceptable in several other studies (Gould et al., 1981; Highlen & Bennett, 1983; Klint & Weiss, 1987).

Table 7

Internal Consistency/Reliability of Eight Participation Motives

MOTIVE	MEAN INTER-ITEM CORRELATION	CRONBACH ALPHA
1 Achievement/Status	.54	.88
2 Fitness	.75	.89
3 Social Affiliation	.56	.83
4 Excitement/Challenge	.54	.82
5 Energy Release	.48	.77
6 Fun	.51	.82
7 Skill Development	.62	.86
8 Team Affiliation	.58	.80

Mean scores on each motive were calculated for each form of hockey. That is, the mean score of all the items making up each motive for the sample for each form of hockey was obtained. These results are presented in Table 8.

Table 8

Mean Scores and Standard Deviations on the Eight Motives for Participation for Each Form of Hockey Play

HOCKEY FORM	MOTIVES FOR PLAY							
	[illegible]	FITNESS	[illegible]	[illegible]	[illegible]	[illegible]	SKILL	TEAM
pick-up	1.33	4.58	3.25	3.94	3.51	4.57	2.50	3.52
	(.35)	(.48)	(.93)	(.80)	(.77)	(.56)	(.69)	(.77)
fun and fitness	1.47	4.17	3.01	3.80	3.17	3.99	2.17	3.35
	(.31)	(.68)	(1.09)	(.57)	(.93)	(.77)	(.68)	(.88)
old T league	1.84	3.92	3.72	3.79	3.72	4.41	2.19	3.90
	(.55)	(.71)	(.75)	(.70)	(.77)	(.48)	(.73)	(.73)
old T tournam	1.76	4.10	3.45	4.03	3.33	4.45	2.31	3.91
	(.52)	(.70)	(.93)	(.76)	(.88)	(.57)	(.73)	(.78)
men's un.intram	2.04	3.94	3.35	4.19	3.44	4.22	2.81	3.72
	(.67)	(.89)	(.74)	(.70)	(.86)	(.59)	(.84)	(.99)
women's inter-un	1.98	4.22	3.80	4.61	3.58	4.45	3.72	4.18
	(.77)	(.81)	(.82)	(.54)	(.89)	(.73)	(.75)	(.73)
men's inter-col	2.86	4.06	3.00	4.53	2.87	4.07	4 03	4.06
	(.95)	(1.01)	(.72)	(.52)	(.80)	(.73)	(.96)	(.82)
men's inter-un	2.99	4.10	3.83	4.25	3.52	4.33	3.54	4.13
	(.64)	(.71)	(.64)	(.75)	(.81)	(.54)	(.85)	(.68)

Mean scores on the achievement/status motive were fairly low for the eight forms of play although they generally got higher with increasing structure and organisation for play. Most players considered fitness, challenge, and fun as the

three most important reasons for play with little apparent variation from one form of play to another. Variability among the eight forms of hockey appears mainly related to the importance attached to skill development and status/achievement.

To further examine differences in participation motivation among the eight forms of hockey, a Discriminant Function Analysis was carried out. The eight forms of hockey differed multivariately, $F_{56,1044} = 5.55$ ($p<.05$) on the eight motives. A summary of the descriptive univariate F-tests with dF = 7, 200 is presented in Table 9. Seven of the eight motives discriminated significantly among the groups of hockey players. The fitness motive was the only one which was not a significant discriminator.

Table 9

Results of Discriminant Analysis of Motive Scores for Eight Forms of Hockey Play

MOTIVE	UNIV. F	PROBABILITY
1 Status	22.68	.00
2 Fitness	1.84	.08
3 Social Affiliation	3.85	.00
4 Excitement/Challenge	4.58	.00
5 Energy Release	2.26	.03
6 Fun	2.38	.02
7 Skill Development	22.29	.00
8 Team Affiliation	3.25	.00

To determine between which pairs of hockey play there were significant differences on each of the seven discriminating motives, Tukey Post Hoc tests were computed.

Achievement/Status

Figure 3 shows the mean scores on the status motive across forms of hockey. The eight forms of play represented on the X-axis go from the least to the most structured and organised. The Figure clearly indicates that items such as "to feel important", to "win extrinsic rewards", and "to gain status", among others, become relatively more important with increasing structure and organisation. The players in even the most structured and organised form of play, however, only indicated that these items were somewhat important.

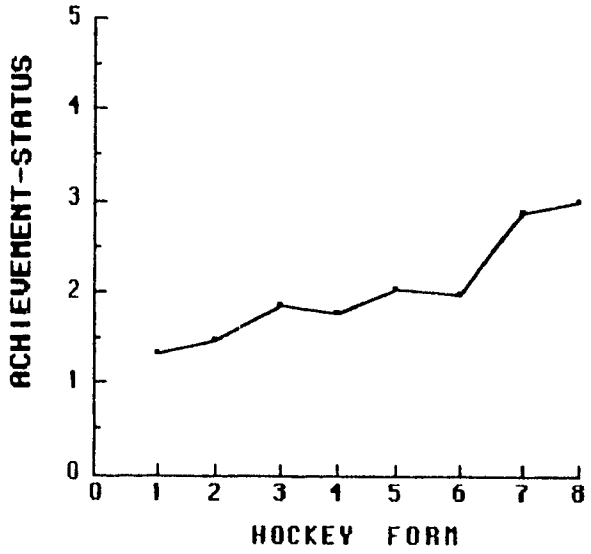

Figure 3: Mean Scores on the Achievement/Status Motive for Participation Across Forms of Hockey Play.

Post Hoc analysis results on the status motive are presented in Table 10.

Table 10

Achievement/Status Motive Means and Levels of Probability of Differences Between Each Pair of Forms of Hockey

HOCKEY FORM[a]	STATUS	TUKEY POST HOC LEVELS OF PROBABILITY							
	M	1	2	3	4	5	6	7	8
1	1.33		.99	.04	.17	.00	.00	.00	00
2	1.47			.32	.68	.02	.08	.00	.00
3	1.84				1.00	.90	99	.00	.00
4	1.76					.67	.89	.00	00
5	2.04						1 00	00	00
6	1.98							.00	.00
7	2.86								.99
8	2.99								

[a] 1:pick-up; 2:fun and fitness; 3:old timer league; 4 old timer tournament; 5:men's university intramural; 6:women's inter-university; 7: men's inter-collegiate; 8:men's inter-university.

Table 10 indicates that a total of 16 pairs were significantly different on the importance attached to status with players in men's inter-university and inter-collegiate hockey although not being different from one another were significantly different from those in all other forms of play. Players in the six lesser structured and organised forms of hockey attach significantly less importance to status than those in the two most organised forms of play.

Skill Development

The univariate F-test results showed that the skill

development motive was a highly significant discriminator across the eight forms of play. Figure 4 represents the mean scores on this motive for each form of play. The values ranged from 2.17 in the fun and fitness group (form 2) to 4.03 in the inter-collegiate sample (form 7).

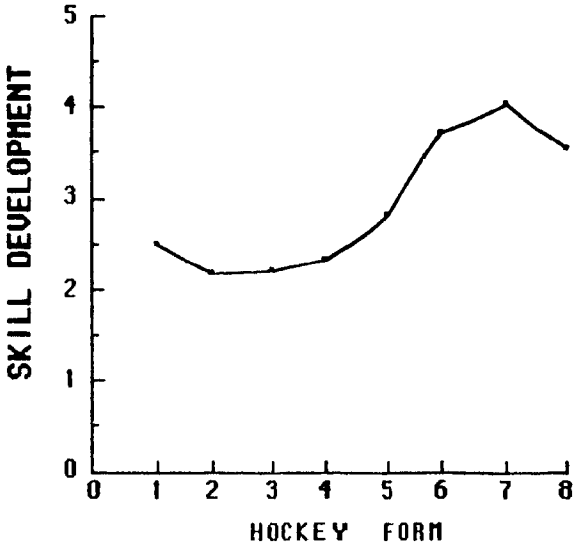

Figure 4: Mean Scores on the Skill Development Motive for Participation Across Forms of Hockey Play.

The levels of probability at the right in Table 11 indicate that 16 pairs of hockey forms differed significantly on the skill development motive. As could be anticipated, players in the four least structured and organised forms of play did not differ significantly from one another in the importance attached to developing personal ice hockey skills and indicated that this motive was only minimally to somewhat important. Players in the three most structured and organised forms of play did not differ significantly from one another

and indicated that improving their level of skill was somewhat to very important. Significant differences are noted between the three most structured and organised groups and all those lower on the hierarchy.

Table 11

Skill Development Motive Means and Probability of Differences Between Each Pair of Forms of Hockey

HOCKEY FORM[a]	SKILL M	TUKEY POST HOC LEVELS OF PROBABILITY							
		1	2	3	4	5	6	7	8
1	2.50		.85	.82	.99	.86	.00	.00	.00
2	2.17			1.00	.99	.08	.00	.00	.00
3	2.19				.99	.04	.00	.00	.00
4	2.31					.23	.00	.00	.00
5	2.81						.00	.00	01
6	3.72							.91	.99
7	4.03								.43
8	3.54								

[a]: see Table 10.

Excitement/Challenge

The mean scores on the excitement/challenge motive are represented in Figure 5. Although they are high across forms of play, the women's inter-university players scored highest on this motive indicating that participating for excitement and challenge was very important to extremely important for them. Post Hoc analyses resulted in six significant differences on the excitement/challenge motive (Table 12). The women's group appeared mainly responsible for the

significant F-value obtained since they were involved in four of the six significant differences . The inter-collegiate players were significantly different from the fun and fitness and old timer league players in this respect as well.

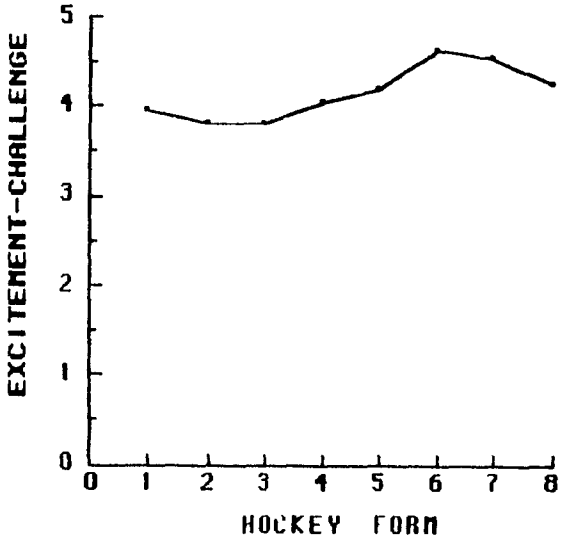

Figure 5: Mean Scores on the Excitement/Challenge Motive for Participation Across Forms of Hockey Play.

Table 12

Excitement/Challenge Motive Means and Probability of Differences Between Each Pair of Forms of Hockey

HOCKEY FORM	CHALLENGE	TUKEY POST HOC LEVELS OF PROBABILITY							
	M	1	2	3	4	5	6	7	8
1	3.94		.99	1.00	1.00	88	01	.12	.73
2	3.80			1.00	.92	.46	.00	.02	.27
3	3.79				.99	62	.00	.03	39
4	4.03					99	.04	.25	.93
5	4.19						.36	.76	1.00
6	4.61							1.00	54
7	4.53								.89
8	4.25								

Social Affiliation

Figure 6 illustrates that the mean scores on the social affiliation motive for participation varied between values of three and four indicating that playing to meet people was somewhat to very important.

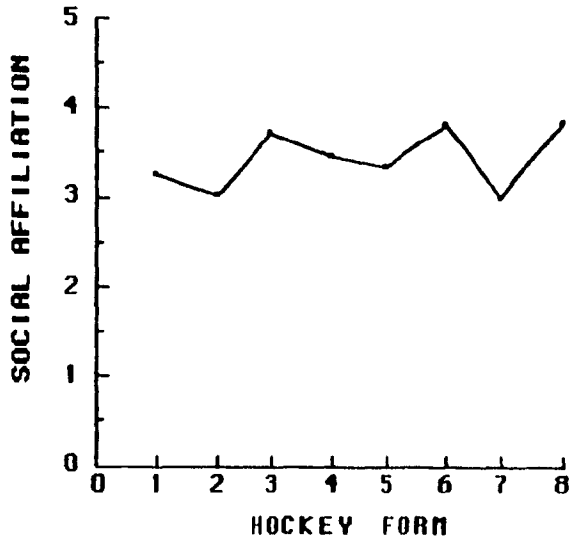

Figure 6: Mean Scores on the Social Affiliation Motive for Participation Across Forms of Hockey Play.

The Post Hoc tests revealed five significantly different pairs of hockey forms with the fun and fitness group attaching significantly less importance to participating in hockey for social reasons than old timer league, and women's as well as men's inter-university players (see Table 13). It is worth noting that the men's inter-collegiate group found social affiliation related motives for participation significantly less important than both men and women's inter-

university groups.

Table 13

Social Affiliation Motive Means and Probability of Differences Between Each Pair of Forms of Hockey

HOCKEY FORM	SOCIAL	TUKEY POST HOC LEVELS OF PROBABILITY							
	M	1	2	3	4	5	6	7	8
1	3.25		.98	.40	.99	1.00	.29	.98	.20
2	3.01			.04	.56	.84	.02	1.00	.01
3	3.72				.89	.66	1.00	.06	1.00
4	3.45					1.00	.77	.63	.66
5	3.35						.51	.87	.39
6	3.80							.04	1.00
7	3.00								.03
8	3.83								

Team Affiliation

Figure 7 represents the mean scores on the team affiliation motive for participation across eight forms of play. The scores for all hockey forms are slightly higher than those on the social affiliation motive. Table 14 indicates that only two significant differences were found between all possible pairs of hockey forms. As was the case with the social affiliation motive, the fun and fitness group scored significantly lower than both of the inter-university groups (men and women). Players in this form of play appear to attach somewhat less importance to affiliation related motives than players in some of the more competitive forms of play.

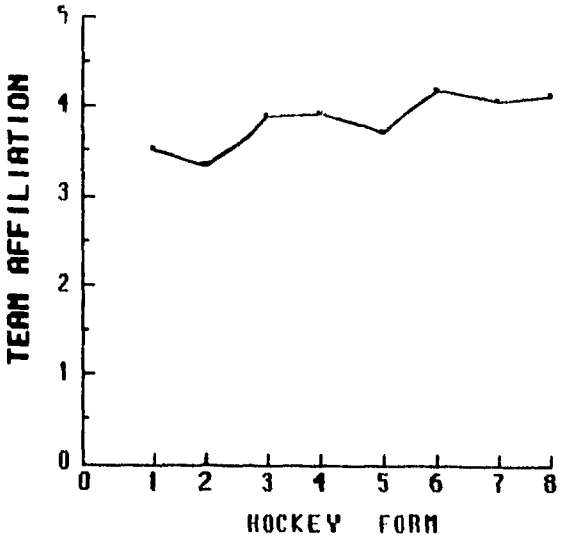

Figure 7: Mean Scores on the Team Affiliation Motive for Participation Across Forms of Hockey Play.

Table 14

Team Affiliation Motive Means and Probability of Differences Between Each Pair of Forms of Hockey

HOCKEY FORM	TEAM	TUKEY POST HOC LEVELS OF PROBABILITY							
	M	1	2	3	4	5	6	7	8
1	3.52		.99	.66	.65	.99	.08	.41	.12
2	3.35			.19	.19	75	.00	.11	.01
3	3.90				1.00	.99	.87	.99	.94
4	3.91					.98	.91	.99	.97
5	3.72						.40	.86	.53
6	4.18							1.00	1.00
7	4.06								1.00
8	4.13								

Fun

The mean scores on the fun motive for participation were quite high and consistent across forms of play (Figure 8).

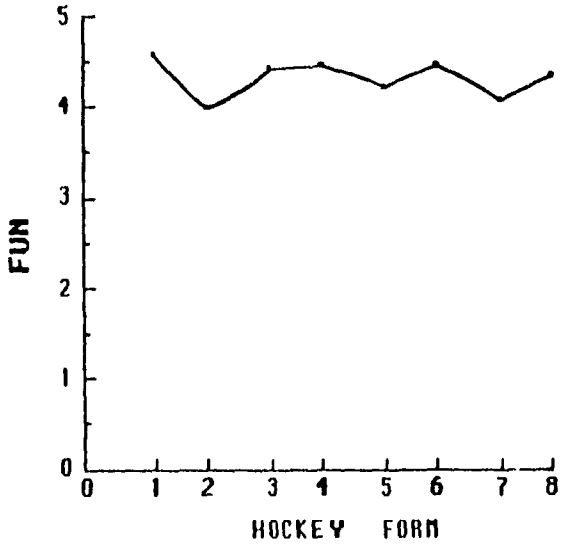

Figure 8: Mean Scores on the Fun Motive for Participation Across Forms of Hockey Play.

Figure 8 indicates that fun was felt to be a very important element regardless of the amount of structure and organisation for play. Post Hoc tests indeed indicated that the significant F-value was due to only one significant difference among hockey pairs (Table 15). The players in fun and fitness hockey indicated that they attached significantly less importance to fun than the pick-up players.

Table 15

Fun Motive Means and Probability of Differences Between Each Pair of Forms of Hockey

HOCKEY FORM	FUN	TUKEY POST HOC LEVELS OF PROBABILITY							
	M	1	2	3	4	5	6	7	8
1	4.57		.04	.98	.99	.51	.99	.20	.88
2	3.99			.19	.13	.89	.16	1.00	.52
3	4.41				1.00	.94	1.00	.60	1.00
4	4.45					.86	1.00	.47	.99
5	4.22						.88	.99	.99
6	4.45							.50	.99
7	4.07								.88
8	4.33								

Energy Release

Although the univariate F-test revealed that energy release is a significant discriminator across forms of hockey play, only one hockey form appeared significantly different from any other. Players in the old timer league had a significantly higher mean score than did the and inter-collegiate players on this motive (Table 16).

The mean scores on the energy release motive are represented in Figure 9.

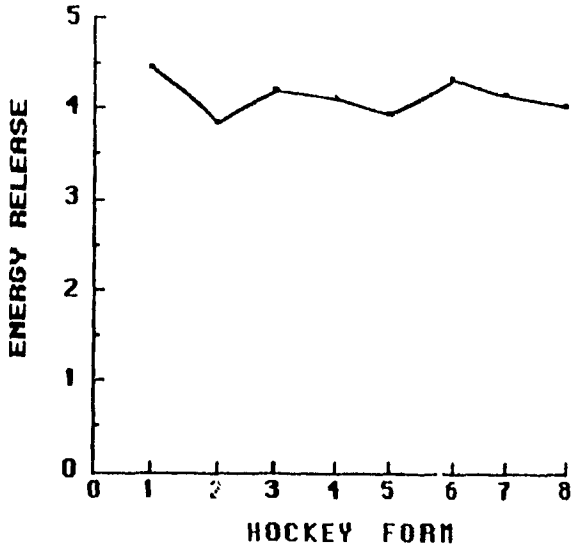

Figure 9: Mean Scores on the Energy Release Motive for Participation Across Forms of Hockey Play.

Table 16

Energy Release Motive Means and Probability of Differences Between Each Pair of Forms of Hockey

HOCKEY FORM	ENERGY	TUKEY POST HOC LEVELS OF PROBABILITY							
	M	1	2	3	4	5	6	7	8
1	3.51		.87	.98	.99	1.00	1.00	.24	1.00
2	3.17			.23	.99	.95	.70	.95	.83
3	3.72				.55	.90	1.00	.01	.98
4	3.33					1.00	.95	.62	.99
5	3.44						1.00	.34	1.00
6	3.58							.12	1.00
7	2.87								.19
8	3.52								

4.2.4. Ice Hockey Machiavellian Behaviour

Means and standard deviations on each of the 15 items of the hockey Machiavellian behaviour questionnaire can be found in Appendix D.

The Principal Component Factor Analysis did not identify separate factors reflecting items of cheating, aggression and gamesmanship of which the questionnaire was composed. A mean score based on the 15 items of the questionnaire was thus obtained reflecting players' overall Machiavellian tendencies in their form of play (Table 17). The split-half technique, using odd and even numbered items, yielded a Reliability Coefficient of .94. The Machiavellian questionnaire thus appeared to be very reliable.

Table 17

Machiavellian Behaviour Mean Scores Across Eight Forms of Hockey Play and Level of Probability of Differences Between Each Pair

HOCKEY FORM[a]	MACH SCORE		TUKEY POST HOC LEVELS OF PROBABILITY							
	M	SD	1	2	3	4	5	6	7	8
1	1.72	.59		.99	.00	.51	.00	.00	.00	.00
2	1.57	.42			.00	.08	.00	.00	.00	.00
3	2.37	.57				.26	.01	.10	.00	.00
4	2.03	.64					.00	.00	.00	.00
5	2.88	.40						.99	.00	.00
6	2.79	.53							.00	.00
7	3.63	.71								.93
8	3.85	.71								

[a] 1:pick-up; 2:fun & fit; 3:old T league; 4:old T tourn.; 5:men's un. intram.; 6:women's inter-un.; 7: men's inter-col.; 8:men's inter-un.

Mean scores at the left in Table 17 indicate that players in the more structured and organised forms of play report sometimes to often using Machiavellian behaviour in their hockey play. Mean scores for pick-up and fun and fitness hockey players are similar and indicate that players in these forms of play report almost never getting involved in such behaviour. Although still having low scores, old timer league and tournament players appear more willing to use Machiavellian behaviour than those from the less structured and organised forms of play. The highest average score was found in the most structured and organised form of hockey, the men's inter-university group.

A one way ANOVA indicated that players in the most structured and organised forms reported getting significantly more involved in Machiavellian behaviour than those in the less organised forms ($F_{7,203} = 50.71$, $p<.001$). The levels of probabilities of differences between the various forms shown at the right in Table 17 indicate that there were significant differences from one level to another in many cases. The inter-collegiate and inter-university players differed significantly from all but each other in Machiavellian tendencies. Also, female university players appear significantly less Machiavellian than their male counterparts although they are more so than players in most other forms below them in the hierarchy.

Changes in Machiavellian tendencies with age have been reported. In this study, the Pearson correlation resulted in a significant negative relationship ($r=-.63$; $p=.000$) between

age and Machiavellian tendencies.

4.3. Relationship of Emphasis on Winning, Amount of Structure and Organisation and Machiavellian Behaviour

Machiavellian behaviour in sport appears to depend upon the emphasis attached to winning. The literature on this topic has suggested that an increased emphasis attached to victory would lead to an increased use of Machiavellian ploys. Machiavellianism in sport, therefore, has been associated with the "win at all cost" behaviour. A significant positive correlation of .34 ($p=.000$) was obtained in this study between emphasis on winning and Machiavellian behaviour.

Results in this study have further indicated that winning was more important when the hockey activity was more structured and organised. It would appear that the amount of structure and organisation is related to the endorsement of Machiavellian ploys. This was demonstrated by a Kendall's Tau of .79 ($p<001$) between amount of structure and organisation and reported Machiavellian play endorsement among ice hockey players.

The results strongly suggest that the importance of winning, amount of structure and organisation are positively related to Machiavellian behaviour.

CHAPTER 5

DISCUSSION

This chapter discusses the results obtained in relation to the three stated hypotheses. It was hypothesised that, as the ice hockey activity became more structured and organised, players would report different attitudes toward the importance of winning, different motivations for participation and increased Machiavellian behaviour. Results are also discussed in relation to previous research findings. A continuum of physical activities based on structure and organisation is further proposed. This paradigm of participant motives and behaviour across structure and organisation for play is based on results obtained on the various parts of this study and builds upon the ideas expressed in the Ideal Type Play/Game Paradigm.

5.1. Perception of Elements of Play Versus Emphasis on Winning

The hypothesis that, when the activity became more structured and organised, players' emphasis on winning would become more evident and the importance they attached to play elements would decrease was by-and-large supported. Post Hoc analyses, however, rarely showed significant differences from one level of the hierarchy to the next. While results provide support for some ideas expressed in the Ideal-Type Play/Game

Paradigm, they also point out some of the shortcomings in its use for this study. A discussion of the major results obtained follows.

It was found that the pick up group was clearly different from the samples from all other forms of hockey. Those players were the only ones who indicated that play elements were all important. In this form of play, there are no formal teams, no official referees, and players basically just "play". In all other forms there is usually a sense that one is playing for a team and there is thus more than just "play".

Players in fun and fitness and both forms of old timer hockey indicated that play elements were more important than winning. This was not so for players in inter-collegiate and inter-university hockey who scored significantly higher than the former and indicated that winning was of equal importance to the play elements. These results may be explained by a greater commitment of players in the more structured and organised forms of play. Inter-collegiate and inter-university hockey players have to be present at practices in order to participate in later official games. In addition, they know that if they play on a winning team and perform well, their future chances of playing at a higher level will be increased. The latter was also reflected in the increased importance attached to the achievement/status and skill development motives for participation in this form of play when compared to the lesser structured and organised forms of play.

Men's university intramural players were not significantly lower than the players higher in the structure and organisation hierarchy in their emphasis on winning. This could have been due to the fact that the intramural players sample were playing for their league playoffs at the time they completed their questionnaires or just that winning is very important to at least some players in this form of play. Observation of their games indicated that, for some players, the importance attached to winning was fairly high. Referees had difficulties keeping the games under control and avoiding excessive body contact in what was supposed to be non-contact hockey. One of the games had to be stopped and discontinued because players of both teams got involved in a "donnybrook". This aggressiveness, an apparent result of an emphasis on winning, may be caused by some players still having hopes of eventually moving up to higher levels of play. The relatively large standard deviation obtained on this measure suggests that there were considerable differences of opinion on the importance of winning among players in this hockey category. The experts demonstrated a similar variation in opinion about the importance of winning in this form of play. The varied responses within each group may be due to the number of intramural divisions in each university, the different rules of eligibility of players and rather great variation in the level of skill and the enforcement of the no-contact and no slap-shot rules.

Although it was anticipated that inter-university players would attach more importance to winning than inter-

collegiate players, this was not found. The standard deviation of the university players was greater and a higher percentage classified themselves in the fifth category which indicated that winning was all important. A higher mean score would possibly have been obtained if the university players had been competing at the time of data collection, as was the case with the college players.

It is worth noting that, although a significant increase in the importance of victory was recorded across play forms, in no form did players consider winning more important than the play elements (score of 4-4.99), let alone, that winning is all important (score of 5). These results suggest that, regardless of the outside pressure to win, all players felt that playing for fun was important. (The scoring system used with this variable could also partially account for this result. See next paragraph.) This was also reflected by the high scores obtained across all forms of hockey on the "fun" factor of the participant motivation questionnaire (see Figure 8). Over the last decade, research has shown that enjoyment or fun is consistently reported as one of the primary motivations for engaging in sport by both children and adults (Gill et al., 1983; Gould et al., 1985; Scanlan & Lewthwaite, 1986; Brustad, 1988; Scanlan et al., 1989). This study's results clearly support these previous research findings.

With regard to the classifications of players on the paradigm across hockey forms, the mean scores of emphasis on winning for players in the most structured and organised

hockey forms were lower than anticipated. The reason for this result may partly have been due to the way the paradigm was structured. Each category of the continuum was quantified so that comparisons across hockey forms would be possible. The first category contained scores between 1.00 and 1.99; the second category scores between 2.00 and 2.99; and so forth for the two other categories. For the fifth category in which winning was all important, however, only a score of 5.00 was possible. This meant that it was virtually impossible to obtain an average score of five unless all players classified themselves in the last category, whereas an average of four could still be obtained with scores lower and higher than four (see Table 5).

Also worth noting is the comparison between experts' and players' opinions about the importance of victory versus play elements in each form of hockey. When comparing the data from the two groups, the experts clearly suggested more extreme variation (Table 2) than the players acknowledged in their responses (Table 4). In his case study of Lacrosse in Canada, Metcalfe (1976) found that opinions on the importance of winning of players, officials, coaches and spectators are dependent upon conditions extrinsic to the game, as well as attitudes, values and behaviour of all people involved with the activity. The extrinsic conditions described by Metcalfe included elements of structure and organisation similar to those for hockey play described in this study. The hockey experts classified the three most structured and organised forms of hockey as "athletics", meaning that winning was more

important than the play elements. This may be explained by the fact that their classification was largely based on extrinsic conditions of structure and organisation. The classification by the players of their involvement in their hockey form was possibly a result of several factors beyond structure and organisation such as the importance of the game outcome, as well as their attitudes, values and behaviours. This was reflected in high scores on some of the motives for participation obtained. Fun, fitness, and energy release motives were fairly common to all players.

Overall, the classification by players in the eight forms of hockey on the Ideal-Type Play/Game Paradigm has indicated that the relative importance of winning versus the play elements increased with the amount of structure and organisation for play. Although the overall F-value was significant, differences were not always significant from one level of the hierarchy to the next. While pick-up players, indicating that play elements were all important, were significantly different from all the others, players in all four of the least structured and organised forms of play attached significantly less importance to winning than did those in the two most structured and organised forms of play. Different levels of commitment have been suggested as a possible explanation for these differences. Timing of questionnaire completion appears also partly responsible for the high scores obtained by those in the intramural category. It was also suggested that the scoring system of the Paradigm may have lead to lower scores on the importance of victory

relative to the play elements than anticipated in the most structured and organised forms of play. It was further shown that playing for enjoyment was very important regardless of the amount of structure and organisation for play. This suggests that playing for fun and to win are not dichotomous and mutually exclusive.

5.2. Motives Across Forms of Ice Hockey Play

It was hypothesised that the motives of participants in different forms of hockey would vary. Results of this study demonstrate this to be true, but also show more similarity of motives across hockey forms than was expected. In turn, while this provides some support for Salter's Play/Game Paradigm, it also points out some of its limitations. For a quick visual picture of motivational changes across levels of structure and organisation, the reader is referred to the graphs in Figures 3 to 9.

5.2.1. Motives Varying Across Forms of Play

Achievement/status and skill development motives showed the greatest differences across forms of hockey play. Figure 3 illustrates that there was a tendency for those in the least structured and organised forms of play not to involve themselves for purposes of extrinsic rewards, achievement and status seeking. Players in the more structured and organised forms of play, however, appear to find these motives

increasingly important. Post Hoc analyses showed that pick up players were significantly different in this regard from players in the old timer league category as well as those in the four most structured and organised forms of play. These results appear to be related to those obtained concerning the relative importance of winning versus play elements. Pick up players were significantly different from those in all other forms of play and indicated that play elements were all important. Players apparently participate in this type of hockey for reasons other than to improve their status. Results further indicate that, although players from the old timer categories up to women's inter-university play did not differ significantly one from another on the status motive, they attached significantly less importance to it than players in the two most structured and organised forms of play. As discussed in the previous section, an explanation for the relatively high level of importance attached to achievement and status by inter-collegiate and inter-university players may again be that those players have hopes of playing at a higher level in the future. Consequently, to gain status and to receive extrinsic rewards may be very important for them.

Although no previous studies have been found looking at motives for participation in sport across levels of structure and organisation, motivational differences with gender have been reported. These studies have indicated that women put less emphasis on status and competition motives than men (Ewing, 1981; Duda, 1987; Vehnekamp, 1991). Results of this

study seem to support gender differences. Post Hoc tests indicated that the women inter-university players attached significantly less importance to achievement/status motives than did both men inter-collegiate and inter-university players (see table 10).

Scores on the skill development motive changed significantly from the three most structured and organised forms of hockey to those lower on the hierarchy (Figure 4). Players in pick-up to men's university intramural hockey categories indicated that playing to develop personal skills was minimally to somewhat important, whereas those in the three most structured forms of play felt that this motive was somewhat to very important. Similar explanations as for the differences found on the status motive appear to be valid here. If players in the more structured and organised forms want to compete at higher levels in the future, getting better at hockey skills appears necessary. Also, coaches of these school teams may realise the educational value of the sport in such settings and therefore spend considerable time at practices trying to enhance skating, shooting and other hockey playing skills.

The results on the skill development motive seem to confirm previous findings which have reported that older people tend to be less motivated by mastery incentives than younger people (James, 1986; Piepkorn, 1990). The older players in the four least structured and organised forms of hockey, as suggested by the mean age of each group, attached significantly less importance to mastery motives such as "to

improve my level of skill", and "to develop personal skill" than did the younger players from college and university.

The excitement/challenge (Figure 5) motive showed some variation which was indicated by several significant differences across hockey forms. The women's sample was responsible for the majority of significant Post Hoc differences as they scored higher than players in the four least structured and organised forms of play. Although girls may have played other games on ice when they were younger, their experience with ice hockey is generally limited as compared to that of the boys (see years of organised hockey play, Table 3). This could explain why ice hockey was found significantly more challenging for the women in this study than it was for the men in the first four hockey forms.

Five significant differences were noted on the social affiliation motive. The fun and fitness sample were involved in three of the five significant differences found between hockey forms. For this type of hockey, several groups were approached to obtain an acceptable sample size resulting in the wide age range of subjects who completed the questionnaire. It is therefore suggested that a wide age range in the fun and fitness group may have influenced some of the results obtained on the social affiliation motive. Time of sampling may also have affected the scores obtained on this motive for both men and women inter-university players when compared to those of the fun and fitness group. All university players completed their questionnaires at social gatherings of their teams after their season was over

while the fun and fitness players were still in their season of play. This timing of data collection may also explain why the collegiate players scored significantly lower on the social affiliation motive than both men and women's university players. The college players were still competing when the data were collected.

In conclusion, when looking at various motives for participation across hockey structure and organisation, it was found that achievement/status and skill development motives changed most from one form of play to another. Playing for these reasons became increasingly important when the activity got more structured and organised. The findings on these motives were explained mainly in terms of anticipated different future playing opportunities for players in the various forms of hockey. Other motives showing some variation include excitement/challenge and social reasons for participation. The women appeared mainly responsible for the significant differences noted on the excitement/challenge motive and it was suggested that this was due to the fact that organised hockey for girls and women has only been made possible in the last few years.

5.2.2. Motives Common Across Forms of Play

Although three other motives, team affiliation, fun, and energy release, were significant discriminators across hockey forms, only a few significant differences between hockey forms were found.

Team affiliation motives were rated as somewhat to very important across hockey forms. The fun and fitness players attached significantly less importance to this motive than players in men and women's inter-university hockey. As was the case for the differences noted on the social affiliation motive, time of sampling may have been partly responsible for the differences obtained.

Fun was considered very to extremely important regardless the amount of structure and organisation. The players in fun and fitness hockey indicated that they attached significantly less importance to fun than the pick-up players. It appears that this difference may be accidental and related to the varied sample obtained for fun and fitness play.

Old timer tournament players were involved in the only significant difference found on the energy release motive as they found this motive more important than college players. For the old timer tournament players, this form of hockey may be the only physical activity in which they feel they can release tensions and get rid of possible frustrations.

The eighth motive, fitness, did not discriminate between the varied forms of hockey as it was felt to be very to extremely important across all forms of play.

It thus appears that these motives, as well as the fitness motive which was not a significant discriminator, are common to all hockey forms.

5.3. Changes in Machiavellian Behaviour Across Hockey Forms

Studies have indicated that Machiavellian behaviour increases with amount of sport involvement and level of play (Neil & Balfour, 1987; Contoyiannis, 1991). Machiavellian differences with gender and age have also been reported. Researchers have further suggested that this type of behaviour becomes more pronounced when pressure to win increases (Metcalfe, 1976; Allison, 1982). In relation to the present study, it was thus hypothesised that players in the most structured and organised forms of hockey would more frequently report using Machiavellian behaviour than those in the least structured and organised forms of play. Although the overall F-value obtained indicated this to be true, the change from one level or form of play to another of the hierarchy was not always significant.

The one way ANOVA indicated that Machiavellian tendencies increased with amount of structure and organisation. Post Hoc tests further showed that, with the exception of the old timer league players, players in the first four forms of hockey indicated significantly less involvement in Machiavellian behaviour than those in the four most structured and organised forms of play. Furthermore, players in men's university intramural and women's inter-university were similar in their Machiavellian behaviour reported, but showed significantly less Machiavellian tendencies than players in inter-collegiate and men's inter-

university hockey forms.

The lower Machiavellian tendencies in the least structured and organised hockey forms (i.e. pick-up, fun and fitness, and old timer hockey) are believed partly due to a lower level of involvement and hense commitment of the players to their sport in these categories compared to players in the more structured and organised forms of play. This explanation was also suggested for some of the differences found on the status and skill development motives. Results of this study thus appear to support other research findings which have indicated positive relationships between level of sport involvement and measures of general Machiavellianism and gamesmanship in tennis (Neil & Balfour, 1987) and soccer (Contoyiannis, 1991). As involvement in the activity increases and the perceived importance of the outcome becomes greater, athletes seem more and more willing to adjust their values and behaviour in order to try to succeed.

5.3.1. Gender and Machiavellian Tendencies

This study found that the female players were significantly less Machiavellian than male inter-university and inter-collegiate players, but more so then three of the five categories of players below them on the hierarchy. When using general measures of Machiavellianism, results in previous studies on gender differences among sport participants have been somewhat contradictory. Wallace (1978)

found that male adolescents possessed slightly stronger Machiavellian beliefs than females, regardless of their sport participation. In another study, female non-athletes were found to be more Machiavellian than male non-athletes (Neil et al., 1987). Among athletes alone, results are less equivocal. Neil and Balfour (1987) found that female tennis players scored significantly lower on a general Machiavellianism scale than did men tennis players. They also found that, when sport specific scales were used, there were no gender differences in ploy usage among male and female players. It was suggested that the level of sport involvement accounted for the similar scores obtained among male and female athletes. The fact that the average number of years of hockey experience for women in this study, and their skill levels were lower than for the men players in the two most structured and organised types of hockey may be partly responsible for the differences in Machiavellian tendencies found. In addition, although women inter-university play was indicated as fairly structured and organised, the number of teams competing, the available ice time, and the number of coaches per team are generally less than for players in the other two highly structured and organised forms of hockey studied. This may have contributed to a lower level of commitment in women's hockey as compared to in men's play and this may have been reflected in their readiness to demonstrate Machiavellian behaviour.

5.3.2. Age and Machiavellian Tendencies

Age differences in Machiavellianism in general (Christie & Geis, 1970; Browne, 1977), as well as this form of behaviour measured as gamesmanship in the sport setting (Neil & Balfour, 1987; Contoyiannis, 1991) have been found. Christie and Geis (1970) reported that Machiavellian scores increased from preadolescence to the onset of maturity. They also indicated that older people score lower on Machiavellian scales than do younger people. Browne (1977), with an age range of 18 to 48 years found students over 21 years to be less Machiavellian than those under 21 years. Machiavellian scores were found negatively related to age among tennis players between 13 and 55 years of age. Age was also negatively related to gamesmanship ploy usage among these tennis players (Neil & Balfour, 1987). Similar results were found among Greek soccer players (Contoyiannis, 1991). In general, it appears that age and Machiavellianism as a personality characteristic, as well as gamesmanship in particular sport settings, are negatively related when a large age range is studied. Although different levels of sport commitment were suggested as a possible reason for different Machiavellian tendencies reported between the least and the most structured and organised forms of play, age differences were possibly also partly responsible for the differences found. This was indicated by a significant negative Pearson correlation ($r=-.63$, $p=.000$) found between age and Machiavellian behaviour tendencies of hockey players

in this study. It should be noted, however, that the sample consisted of players who were, on the average, between 19 and 43 years of age. This means that, in relation to previous findings, a general decrease in Machiavellian behaviour would have been anticipated, regardless of the amount of structure and organisation for play or level of involvement.

5.4. Paradigm of Participant Motives and Behaviour Across Structure and Organisation for Play

An attempt has been made in this section to bring all the major results obtained in the study together into a model of motives and behaviour of participants in different play activities having varying levels of structure and organisation for play. The paradigm was also build upon the existing Ideal-Type Play/Game Paradigm proposed by Salter.

Results obtained were generally consistent with the hypotheses of the study. It was indicated that, with increasing structure and organisation for play, hockey players put more emphasis on winning relative to play elements, showed varied motives for participation, and reported more frequently getting involved in Machiavellian behaviour. Results further indicated that there were often more similarities in motives for participation from one level of the hierarchy to another than were expected. Although achievement/status and skill development motives became increasingly important, excitement/challenge and social affiliation motives only changed somewhat across hockey

forms. Playing for fun, fitness, and to release energy, on the other hand, were common and important across hockey forms.

Although these results have provided support for the Ideal-Type Play/Game Paradigm, they also have demonstrated some of its limitations. For example, the idea that, when winning was increasingly important, playing for enjoyment would become less important, was not supported. Playing for fun and to win appeared not mutually exclusive. Although fun was important across forms of play, participating to gain status, to receive extrinsic rewards, and to develop skills, increased in importance with greater structure and organisation. It appears that the "absence of extrinsic rewards", indicated on the paradigm as a necessary element in pure play, should be maintained and that the "absence of achievement/status" and "skill development not important" could be included as necessary play elements. These motives, along with some play elements identified by Salter, could be labelled "varying play motives". Salter's play elements (voluntary involvement, meta-message,"this is play") reflected elements of structure and organisation used in this study (see Appendix A). Fun, fitness, and energy release motives could be identified as "common play motives" since they were included as important reasons for participating regardless of the amount of structure and organisation for play.

When importance of winning, structure and organisation were related to Machiavellian behaviour, results indicated

significant positive relationships (See section 4.3). The positive correlation between importance of winning and Machiavellian behaviour would possibly have been higher if subjects in the most competitive hockey forms, such as among professional athletes, had been included in the study. Based on these results, Machiavellianism could be included as a behaviour which becomes increasingly pronounced as winning becomes more important.

The labels "play", "game", "sports", "athletics" and "terminal contest", identifying different forms of physical activities used by Salter (1980), could be replaced by a scale indicating the amount of structure and organisation for play. This would allow the study of a wide variety of play forms without creating confusion in terminology. In a preliminary inquiry, it was indicated that the label "terminal contest" was somewhat of an overstatement for an activity in which winning is all important. Amount of structure and organisation in team activities seem dependent upon factors such as the number of people involved with the team, formal game and practice schedules, presence or absence of referees, enforcement of certain rules, use of game and player statistics, to name a few. A list of elements of structure and organisation could be developed for the activity in which the researcher is interested. It appears logical to say that, when an increasing number of elements of structure and organisation are present, pressure to win is increased. Machiavellianism is a behaviour which has been associated with a "win at all costs" behaviour in sports.

Although Machiavellian behaviour which was manifested in cheating, aggression and gamesmanship were focussed upon in this study, other expressions of the same behaviour, such as use of drugs and violent behaviour may be included.

A paradigm of participant motives and behaviour across structure and organisation for play, based on the above, might be as follows:

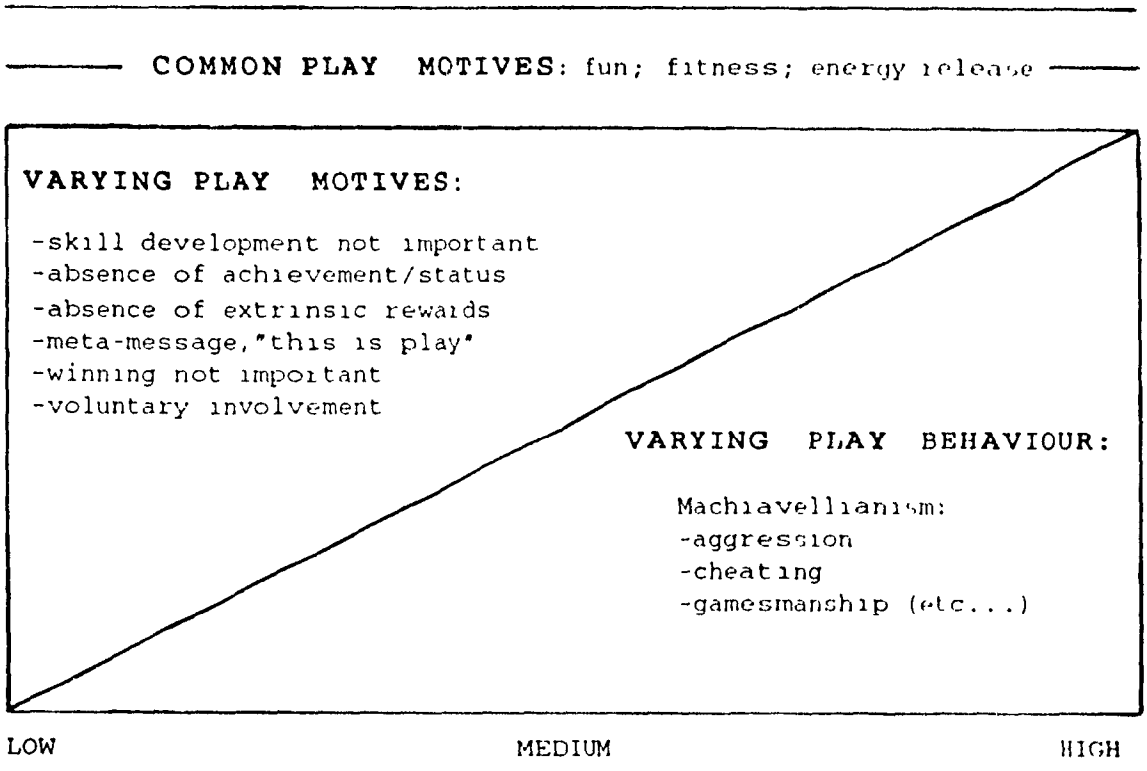

Figure 10: Paradigm of Participant Motives and Behaviour Across Structure and Organisation for Play.

CHAPTER 6

SUMMARY

CONCLUSIONS

IMPLICATIONS - RECOMMENDATIONS

Ice hockey is a very popular sport in Canada. Over the years the sport has evolved so that now it is enjoyed in various forms by a vast number of adults as well as youth.

When examining adult ice hockey in all its forms, changes in the amount of structure and organisation of the game can be identified. A classification of hockey forms based on the amount of structure and organisation of the game thus appears possible. Another way to classify varied forms of play activities, has been to consider them as parts of a continuum of physical activities. One example is the Ideal-Type Play/Game Paradigm which has labelled various activities ranging from pure play to the terminal contest as a function of the importance attached to victory versus play elements. The importance attached to winning appears related to increased structure and organisation of play. Consequently, this model provided a basic framework for the study of the importance attached to winning versus play elements of players as a function of increased structure and organisation of the ice hockey game.

Besides the emphasis on winning versus play elements as motives for participation in various hockey forms, people may get involved in the game for a wide variety of reasons. While

players in the pick-up type may play to have fun and get physically fit, those in the more structured and organised forms of play may get involved mainly for reasons of achievement and status seeking. Since information on motives for participation in adult ice hockey is lacking, this study assessed specific reasons for participation in hockey forms ranging from free play to the more structured and organised inter-university variety. The importance of the following motives was compared across hockey forms: 1) achievement/status; 2) fitness; 3) social affiliation; 4) excitement/challenge; 5) energy release;6) fun; 7) skill development; 8) team affiliation.

With the varying importance attached to victory versus play elements as well as changing structure and organisation for play, increasing use of gamesmanship ploys as well as other Machiavellian tendencies was anticipated. Machiavellianism or the "win at all costs attitude in sport seems to have increased over the years and may even be associated with more general changes in a society which has become more and more competitive. Inquiries on behaviour in ice hockey have focussed mainly on excessive violence in the sport. Other Machiavellian tendencies in hockey have not been studied extensively.

The purpose of this project was therefore to study adult ice hockey in the Canadian context. It looked at the importance of winning versus play elements, motives for playing hockey, and Machiavellian tendencies of participants in various forms of play.

6.1. Summary of the Procedures

A total of 214 adult players in eight forms of ice hockey, ranging from its least organised forms to that of the highly competitive inter-university variety, were used in the study. Approximately equal numbers from each form of hockey play completed the Hockey Participation Questionnaire which consisted of four parts and provided information on participants' playing backgrounds, emphasis on victory versus play elements, motives for play and Machiavellian behaviour during play. The questionnaire, developed by the investigator, took approximately 15 minutes to complete. The subjects were given the form by the investigator personally or, in the case of formal teams, by the team captain or coach after a hockey game. Any questions were answered by the experimenter and detailed notes were kept of particular circumstances surrounding its completion.

In a preliminary inquiry, six experts were asked to rank the eight forms of hockey from which data were to be collected based on their understanding of the amount of structure and organisation of each form. This enabled the researcher to establish a hierarchy of hockey forms based on increased structure and organisation for play. This hierarchy of hockey forms was maintained for the analyses of the data obtained from the 214 hockey players. The experts also classified the same forms of hockey according to their perceptions of the importance of victory versus play elements they contained.

6.2. Summary of Results-Discussion

All hypotheses of the study were supported by the research findings. A summary of the results obtained on each part of the study is presented in a separate section.

In general, results indicate that the instruments used in this study were reliable. Cronbach alpha values of the motives for participation questionnaire, for example, ranged from .77 to .89. The split-half technique revealed a reliability coefficient of .94 on the hockey Machiavellian behaviour questionnaire.

6.2.1. Importance of Winning Versus Play Elements

Results obtained on the Ideal-Type Play/Game Paradigm indicated that the players increasingly attached more importance to winning relative to play elements when the activity became more structured and organised. Post Hoc tests, however, indicated that there were seldom significant differences from one level of the hierarchy of structure and organisation to the next. While pick-up players were clearly different from all other players, those in the four least structured and organised forms of hockey indicated that playing to win was significantly less important than for those in the two most structured and organised forms of play. Different involvements and commitments to hockey by the players in the various forms were suggested for most differences found. The men's university intramural players

were not significantly lower than the players higher in the structure and organisation hierarchy in their emphasis on winning. Time of questionnaire completion in their playing season was indicated as a possible reason for the results obtained. In general, scores on the paradigm were fairly low. Results indicated that in no form did players, on the average, indicate that winning was more important than play elements, let alone, that winning was all important. This was also reflected by the high scores obtained across all forms of hockey on the fun factor of the participant motivation questionnaire. It was thus found that playing for fun and to win are not dichotomous and mutually exclusive. It was also suggested that the scoring system of the paradigm may have lead to lower scores than anticipated for the importance of winning versus play elements in the most structured and organised forms of play.

6.2.2. Participant Motives Across Hockey Forms

It was hypothesised that motives of participants in different hockey forms would vary. Results of this study demonstrate this to be true, but also show more similarity of motives across hockey forms than was expected. From the eight motives for participation, achievement/status and skill development reasons for playing changed most across hockey forms. Playing for those reasons was increasingly important in the more structured and organised forms of play. A significant increase on the status motive was obtained when

scores in the six least structured and organised forms of hockey were compared to those in the two most structured and organised forms of play. This was also the case for scores in the first five forms of play on the skill development motive when compared to those in the three most structured and organised. The findings on both of these motives were explained in terms of different future playing ambitions and opportunities for players in the various forms of play.

Other motives for participation showing some variation from one form to another were excitement/challenge and social affiliation. The inter-university women appeared mainly responsible for the significant differences obtained on the first of these motives. It was proposed that this was due to the fact that girls and women have only got involved in organised hockey in the past few years and hence they are relatively highly motivated by its excitement and challenge. The fun and fitness players were mainly involved in the significant differences noted on the social affiliation motive. Results on this motive were explained in terms of timing of the data collection.

Fun, team affiliation, and energy release motives were common and important across hockey forms. Circumstances related to the data collection appeared mainly responsible for the few significant differences found on these motives. The eighth motive for playing hockey, fitness, did not discriminate significantly between hockey forms as it was felt very to extremely important by all groups.

6.2.3. Machiavellian Behaviour Across Hockey Forms

Results on the Machiavellian questionnaire indicated that players in the more competitive forms of hockey increasingly reported getting involved in this type of behaviour. With the exception of old timer league players, respondents in the first four forms of hockey indicated getting significantly less involved in Machiavellian behaviour than those in the four most structured and organised forms of play. Participants in men's university intramural and women's inter-university hockey were similar in their reported Machiavellian behaviour, but showed significantly less Machiavellian tendencies than players in the two most structured and organised forms of play. The major significant differences obtained were discussed in relation to previous findings which have related Machiavellianism and gamesmanship to level of sport involvement. They were also partly explained by age and gender of players in relation to acknowledged Machiavellian tendencies.

6.2.4. Paradigm of Participant Motives and Behaviour

Based on the results obtained in the various parts of the Hockey Participation Questionnaire, Salter's model was modified. This resulted in a Paradigm of Participant Motives and Behaviour Across Structure and Organisation for Play. A list of varying and common motives across structure and

organisation was included. Machiavellian behaviour was found significantly related to structure and organisation for play and importance placed on winning. Machiavellianism was therefore included as a characteristic behaviour which becomes more pronounced with increased structure and organisation for play.

6.3. Conclusions

Based on the findings of this study and taking the limitations into consideration, it can be concluded that:

1. The more structured and organised the ice hockey activity, the more emphasis is put on winning as compared to play elements.

2. Specific motives for participation change with the amount of structure and organisation for play. Status and skill development motives change most across hockey forms. Although they are minimally important motives for players in the least structured and organised forms, they become increasingly important for those in the more structured and organised forms of hockey. Excitement/challenge and social affiliation motives change somewhat across hockey forms. Although significant discriminators across hockey forms, fun, team affiliation, and energy release motives for participation are fairly common across forms of play.

3. To become fit, as a motive for playing hockey, is not a

significant discriminator among different forms of hockey ranging from free play to the highly organised and structured inter-university game as it is reported as an important motive in all forms of play.

4. Playing for fun remains very important across forms of play regardless of the emphasis placed on victory. Playing for fun and to win are thus not mutually exclusive.

5. The more structured and organised the ice hockey activity, the more frequently ice hockey players report getting involved in Machiavellian behaviour.

6. The more importance attached to victory, the more ice hockey players are aggressive, cheat and use gamesmanship ploys.

7. Machiavellian behaviour in ice hockey decreases with age in adults, players in their fourthies being significantly less Machiavellian than those in their early twenties.

8. With regard to the Ideal-Type Play/Game Paradigm and the results obtained on the various parts of this study, a modified model of participant motives and behaviour based on increased structure and organisation was proposed. Major changes include the following:
The labels identifying different forms of physical activities were replaced by a continuous scale indicating the amount of structure and organisation for play.

Common play motives (fun, fitness, energy release) were included.

The list of play elements was replaced by a list of varying play motives.

Since Machiavellian tendencies have been associated with a "win at all costs" behaviour in sports, it was included as a varying play behaviour.

6.4. Implications for People Involved with Ice Hockey

This study has provided information on specific reasons for participation in various forms of adult ice hockey as well as players' behaviour during play.

People involved with ice hockey in one form or another may gain from the information on participant motives and behaviour obtained in this study. Since the importance of motives for participating are not always common across hockey forms, structure and organisation of certain leagues may be adjusted to accommodate the specific motives for play of its participants. In this regard, practices and policies related to equal playing time for all team members could be introduced in certain leagues since playing for fun and to stay fit appeared very important for most hockey players.

Since it was found that having fun was important regardless of the amount of structure and organisation for play, external factors might be altered to encourage the fun aspect and decrease the emphasis put on winning. Ranking of teams in certain intramural leagues, for example, could be

based on a variety of elements such as number of penalties received by a team, number of scoring opportunities, among others. By doing so, pressure to win would be decreased.

Results obtained through the Machiavellian questionnaire could be made known to parents, educational institutions, sport organisations, and anyone else who is concerned about what is frequently labelled as morally unacceptable behaviour in sport. Since there appears to be a fair amount of endorsement of Machiavellian behaviour in several forms of hockey studied, institutions involved in the training of physical educators and coaches might consider discussing means of discouraging or otherwise reducing such undesirable behaviour.

6.5. Recommendations for Further Research

The Following recommendations for future research are related to problems encountered when collecting data in varied forms of ice hockey, as well as the results obtained in this investigation.

This study has uncovered some problems related to data collection in various forms of ice hockey. It has shown that, even within the same form of play, tremendous variations in amount of structure and organisation are common. This may have influenced some results obtained. Also the timing of data collection may have influenced certain results obtained. Further studies could therefore focus on building in controls such as timing of data collection relative to stage of

completion of playing season, players' age and hockey experience, gender, to name a few.

The validity of the proposed Paradigm of Participant Motives and Behaviour Across Structure and Organisation for Play could be tested in further studies.

It is also proposed that similar studies be carried out in other parts of the country. This would make comparisons between different linguistic and cultural groups possible. In addition, studies could focus on cross-cultural differences by studying motives and behaviour in American, European and Canadian ice hockey play.

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APPENDICES

APPENDIX A

REQUEST OF HOCKEY EXPERTS ON HOCKEY STRUCTURE & ORGANISATION HIERARCHY

Dear Mr. ,

As a student of sport psychology, I am doing a study on the nature and role of the various forms of ice hockey play in Canadian society. I will examine the motivations and behaviour of participants of the different forms of ice hockey play in the expectation of seeing changes with increasing structure and organisation.

Since you are involved in the organisation of ice hockey activities and/or have played it in various forms and thus have a good knowledge of it, I would be grateful if you would answer the following questions related to the classification of various ice hockey activities.

A . Listed below are several criteria that can be used to identify structure and organisation of ice hockey play:

-With respect to the rules of:

1. eligibility of players/number of players on a team.
2. division of the team (spontaneous or not).
3. equipment and enforcement of the use of all necessary equipment.
4. penalties and penalty time.
5. type of shots allowed.
6. rules related to player conduct.
7. line rules.

-With respect to organisation:

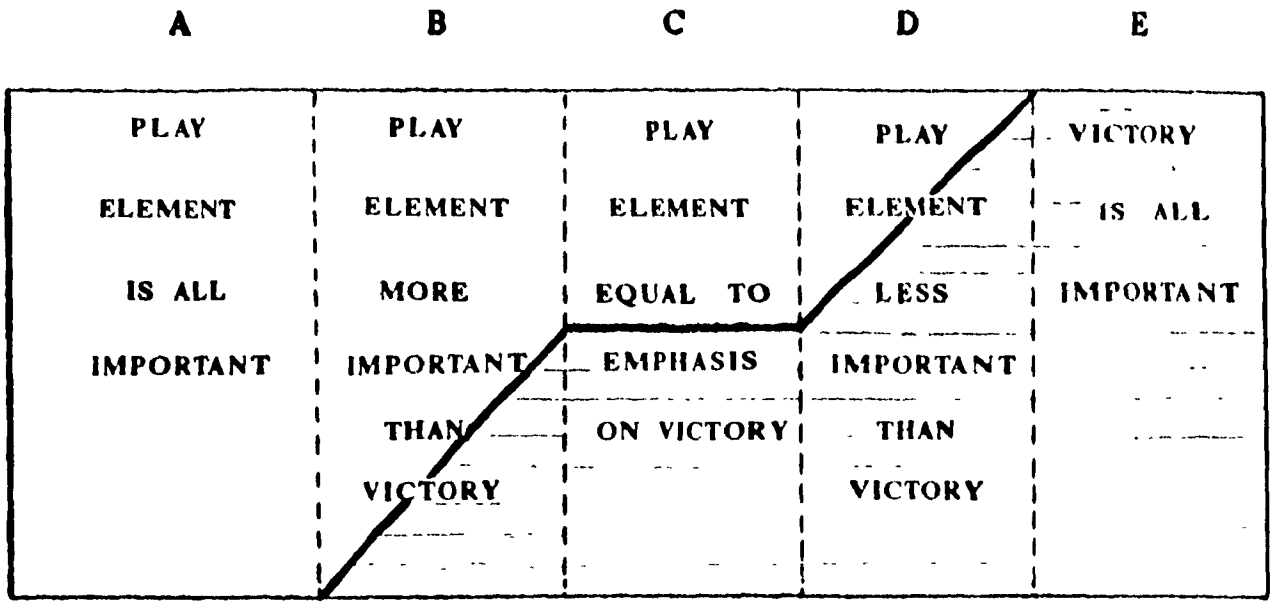
1. presence or absence of organisers.
2. scheduling of games.
3. competition schedule.
4. awards given to the team and/or players.
5. presence or absence of qualified game officials.
6. player and/or team statistics
7. place and importance of game scores.
8. formal practices held?
9. number of people involved with the team.
10. travel of teams.
11. amount of coaching or instruction involved.

B. Using the information presented above and your knowledge of the various forms of hockey, please rank the following forms of ice hockey based on increased structure and organisation of play. The most structured and organised form(s) of play should get the highest ranking (ranked one). The least structured and organised form(s) of play get the lowest ranking. Equal rankings are possible.

FORM OF ICE HOCKEY	RANKING
-Women's Inter-college	--
-Men's University Intramural	--
-Fun & Fitness (old T.& other) (League standings not kept)	--
-Pick Up (Shinny)	--
-Women's University Intramural	--
-Men's Inter-college	--
-Women's Inter-University	--
-Old Timer League	--
-Men's Inter-University	--
-Men's College Intramural	--
-Old Timer Tournament	--

Further comments of classification that would help to distinguish these various forms of hockey play:

C. The following is a classification of play forms based on their relative emphasis on winning versus play elements.



PLAY ELEMENTS:
- voluntary involvement
- meta-message "this is play"
- absence of extrinsic rewards
- fun

Please now classify each of the following forms of hockey play in terms of this classification. That is, place the letter representing the relative emphasis on winning versus play you think most appropriate beside each of the hockey play forms listed below:

FORM OF ICE HOCKEY	CLASSIFICATION LETTER
-Women's Inter-college	--
-Men's University Intramural	--
-Fun & Fitness (old t.& other) (league standings not kept)	--
-Pick Up (Shinny)	--
-Women's University Intramural	--
-Men's Inter-college	--
-Women's Inter-University	--
-Old Timer League	--
-Men's Inter-University	--
-Men's College Intramural	--
-Old Timer Tournament	--

APPENDIX B

HOCKEY PARTICIPATION QUESTIONNAIRE

Dear hockey player,

I am a graduate student doing a study on why people play various forms of ice hockey and their behavior while playing. I would be grateful if you could take a few moments to complete the following brief questionnaire. I am particularly interested in your reasons for playing and your feelings and perceptions of your actions in the form of ice hockey you play. Please remember that there are no right or wrong answers; simply answer as you honestly feel.

Thank you for your cooperation

1) Date of birth _____ 2) Gender _____

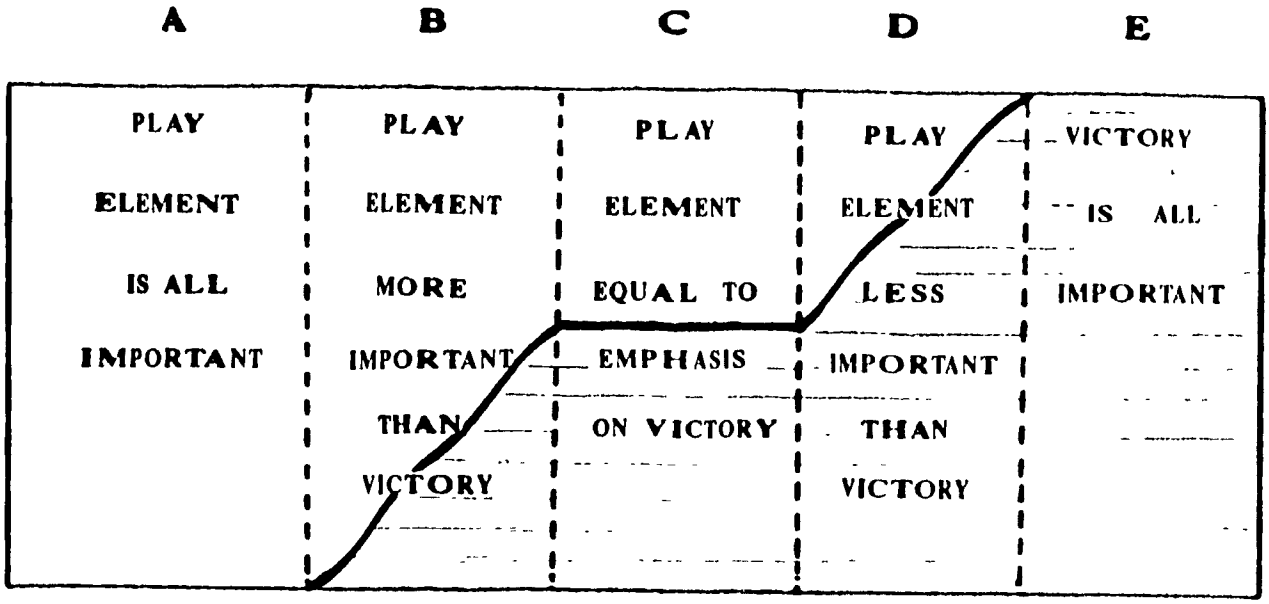
3) What form of ice hockey have you just been playing:

- Women's Inter-college ..
- Men's University Intramural ..
- Fun & Fitness (Old T. & Other) (league standings not kept) ..
- Pick Up (Shinny) ..
- Women's University Intramural ..
- Men's Inter-college ..
- Women's Inter-University ..
- Old Timer League ..
- Men's Inter-University ..
- Men's College Intramural ..
- Old Timer Tournament ..

4) What is the highest level of ice hockey that you have played ? _____

5) How many years have you played organised hockey ?_____

6) Please situate (by circling the corresponding letter) where <u>you feel your personal involvement</u> fits on the following scale regarding emphasis on elements of play versus winning when participating in the <u>form of hockey you have just been playing</u>.



PLAY ELEMENTS:
- voluntary involvement
- meta-message "this is play"
- absence of extrinsic rewards
- fun

REASONS FOR PLAYING ICE HOCKEY

Why do you participate in the form of ice hockey you have just been playing ?

Please indicate how important each reason is by circling the appropriate number beside it.

	NOT AT ALL IMPORTANT	MINIMALLY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
	1	2	3	4	5
1. To possibly win covated awards(ER)	1	2	3	4	5
2. For possible public recognition through my accomplishments(ER)	1	2	3	4	5
3. Doing something I am good at(A)	1	2	3	4	5
4. For the social contact(S)	1	2	3	4	5
5. To make friends(S)	1	2	3	4	5
6. To identify with a team(TA)	1	2	3	4	5
7. To get to go to different places(ER)	1	2	3	4	5
8. For enjoyment(Fun)	1	2	3	4	5
9. I like the teamwork(TA)	1	2	3	4	5
10. I like the action(E)	1	2	3	4	5
11. For the exhilaration of it (Fun)	1	2	3	4	5
12. For the challenge of it (E)	1	2	3	4	5
13. To feel important(A)	1	2	3	4	5
14. To forget problems(ER)	1	2	3	4	5
15. I like the team spirit(TA)	1	2	3	4	5
16. For the fun of it(Fun)	1	2	3	4	5
17. To receive extrinsic rewards(ER)	1	2	3	4	5
18. To feel good(F)	1	2	3	4	5
19. To develop personal skills(SD)	1	2	3	4	5
20. As an outlet for energy(ER)	1	2	3	4	5

	NOT AT ALL IMPORTANT	MINIMALLY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
	1	2	3	4	5
21. To improve my level of skill(SD)	1	2	3	4	5
22. To release tension(ER)	1	2	3	4	5
23. To meet new people(S)	1	2	3	4	5
24. To stay in shape(F)	1	2	3	4	5
25. To be part of a team(TA)	1	2	3	4	5
26. To be with people I like(S)	1	2	3	4	5
27. To relax(ER)	1	2	3	4	5
28. To eventually play at a higher level(SD)	1	2	3	4	5
29. To try out different techniques(SD)	1	2	3	4	5
30. I like to compete(E)	1	2	3	4	5
31. For the pleasure of it(fun)	1	2	3	4	5
32. For my health(F)	1	2	3	4	5
33. I like the excitement(E)	1	2	3	4	5
34. To get physically fit(F)	1	2	3	4	5
35. To gain status(A)	1	2	3	4	5
36. To be popular(A)	1	2	3	4	5
37. Other reason (specify):	1	2	3	4	5

_____

The letters in brackets beside motive items indicate the original motive categories in which they were found:

(A) achievement/status
(F) fitness
(S) social affiliation
(E) excitement/challenge
(ER) energy release
(Fun) fun
(SD) skill development
(TA) team affiliation
(ER) extrinsic rewards

SELF PERCEPTION OF ICE HOCKEY BEHAVIOR

Please circle the appropriate number indicating the response best reflecting your use of this behaviour in the ice hockey activity you have just been playing or have been asked to focus upon.

	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
	1	2	3	4	5
1. Do you make derogatory comments to opponents about their spouses or family members in an effort to irritate and distract them ?	1	2	3	4	5
2. Do you do a little elbowing and cross checking in the corners because it is seen as an accepted part of ice hockey play ?	1	2	3	4	5
3. Would you intentionally commit a foul ("good penalty") to prevent a player from making a goal in a good scoring situation ?	1	2	3	4	5
4. If you were a goalkeeper, would you move the puck back from behind the goal line hoping it might not be noticed ?	1	2	3	4	5
5. Do you try to physically intimidate opponents by extra hard hitting or in other ways showing your physical superiority ?	1	2	3	4	5
6. If you see that the opponent is very close to scoring a goal, would you intentionally fall into or push the net to dislodge it and stop the game ?	1	2	3	4	5
7. Would you hold your stick solidly at your opponent's feet or even give a little pull so that he or she may fall over it and allow you an advantage ?	1	2	3	4	5
8. Do you hold opponents' sticks or sweaters in an effort to upset them or disrupt their play ?	1	2	3	4	5
9. Do you verbally or physically goad players to try to get them to react and possibly be penalized ?	1	2	3	4	5
10. Do you needle a short tempered opponent to irritate him or her to the point of losing concentration and possibly be penalized ?	1	2	3	4	5

	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
	1	2	3	4	5
11. Do you play extra hard against a known somewhat injured opponent in order to gain advantage ?	1	2	3	4	5
12. Do you go after a top opponent with every means at your disposal to irritate him or her so that he or she may become distracted and possibly ejected from the game ?	1	2	3	4	5
13. Do you hook the opponents' arm or bodies with your stick to slow them down and bother them knowing you will probably get away with it ?	1	2	3	4	5
14. Would you use your skate to kick or deflect the puck in the net hoping it might not be noticed ?	1	2	3	4	5
15. Would you exaggerate or fake injury to stop play or break the opponents' momentum ?	1	2	3	4	5

APPENDIX C

MEAN SCORES (SD) ON EACH ITEM OF THE MOTIVATION QUESTIONNAIRE FOR EIGHT FORMS OF HOCKEY

ITEM #[1]	HOCKEY FORM[2]							
	1	2	3	4	5	6	7	8
1	1.09	1.32	1.71	1.73	1.96	1.62	2.47	2.57
	(.29)	(.57)	(.99)	(.87)	(1.16)	(.90)	(1.23)	(.84)
2	1.13	1.14	1.40	1.40	1.67	1.85	2.65	2.86
	(.46)	(.35)	(.60)	(.72)	(.96)	(.93)	(1.37)	(.89)
3	2.04	2.50	3.03	2.93	3.26	3.35	4.00	4.04
	(.98)	(1.19)	(1.12)	(.94)	(.98)	(1.02)	(1.12)	(.74)
4	3.52	3.05	4.09	3.60	3.59	3.92	3.77	3.89
	(1.34)	(1.33)	(.78)	(1.04)	(1.01)	(1.06)	(.97)	(.83)
5	3.35	2.96	3.63	3.50	3.11	3.73	2.88	3.79
	(1.07)	(1.29)	(1.00)	(1.23)	(1.09)	(1.00)	(1.05)	(.88)
6	2.00	2.23	2.97	2.73	3.41	3.31	2.82	3.75
	(1.17)	(.92)	(.34)	(1.14)	(1.28)	(1.09)	(1.02)	(.79)
7	1.17	1.27	1.83	2.43	2.11	2.96	2.94	3.29
	(.39)	(.63)	(.95)	(1.33)	(1.12)	(1.08)	(1.14)	(.94)
8	4.83	4.18	4.71	4.73	4.48	4.65	4.29	4.54
	(.39)	(.91)	(.57)	(.52)	(.70)	(.69)	(1.05)	(.58)
9	4.00	3.73	4.20	4.23	3.89	4.39	4.24	4.11
	(1.04)	(.88)	(.72)	(.90)	(1.01)	(.75)	(.75)	(.83)
10	4.04	4.14	4.06	4.27	4.41	4.73	4.82	4.25
	(1.02)	(.77)	(.84)	(.87)	(.75)	(.67)	(.39)	(.89)
11	3.87	3.68	3.80	3.93	4.04	4.42	4.00	4.04
	(.97)	(.89)	(.87)	(1.01)	(1.06)	(.81)	(1.12)	(.84)
12	3.61	3.73	3.89	3.93	4.22	4.77	4.82	4.29
	(1.27)	(.77)	(1.76)	(.83)	(.93)	(.51)	(.39)	(.81)
13	1.44	1.32	1.94	1.83	2.15	2.27	2.88	3.29
	(.90)	(.48)	(1.00)	(.95)	(1.20)	(1.22)	(1.41)	(.90)
14	2.74	2.32	3.42	2.67	2.96	3.00	2.29	3.11
	(1.36)	(1.21)	(1.22)	(1.21)	(1.40)	(1.52)	(1.05)	(1.20)
15	3.57	3.27	3.89	4.07	3.85	4.27	3.94	4.14
	(.90)	(1.12)	(.83)	(.87)	(1.13)	(1.00)	(.90)	(.76)

ITEM #[1]	HOCKEY FORM[2]							
	1	2	3	4	5	6	7	8
16	4.65	4.05	4.43	4.60	4.30	4.46	3.82	4.43
	(.83)	(.95)	(.50)	(.68)	(.78)	(.76)	(1.29)	(.23)
17	1.22	1.23	1.66	1.60	2.04	1.62	2.53	2.75
	(.52)	(.53)	(.94)	(.89)	(1.16)	(1.02)	(1.07)	(.70)
18	4.44	3.82	4.17	4.10	3.93	4.31	4.12	4.00
	(.66)	(.85)	(.79)	(.96)	(.78)	(1.01)	(.78)	(.82)
19	2.91	2.68	2.80	2.87	3.37	4.12	4.12	3.96
	(1.04)	(1.21)	(1.11)	(.97)	(1.01)	(.95)	(1.05)	(1.00)
20	3.91	3.91	3.91	3.83	3.85	4.31	3.47	3.96
	(1.00)	(.92)	(.92)	(.91)	(.95)	(.93)	(1.07)	(1.00)
21	3.09	2.59	2.63	2.80	3.33	4.31	4.18	3.93
	(.90)	(.85)	(.94)	(.93)	(1.11)	(.79)	(.95)	(1.12)
22	3.39	3.18	3.66	3.23	3.56	3.73	2.88	3.75
	(.99)	(1.26)	(.97)	(1.10)	(1.01)	(1.51)	(1.05)	(.93)
23	2.52	2.73	3.49	3.10	3.11	3.62	2.65	3.89
	(1.04)	(1.12)	(.98)	(1.24)	(.97)	(1.02)	(1.06)	(.79)
24	4.52	4.18	3.94	4.10	3.93	4.39	4.12	4.14
	(.59)	(.73)	(.84)	(.66)	(.87)	(.80)	(1.17)	(.71)
25	3.00	3.05	3.60	3.43	3.41	3.89	4.00	4.14
	(1.04)	(1.09)	(1.01)	(.94)	(1.19)	(1.07)	(1.12)	(.80)
26	3.61	3.32	3.69	3.60	3.59	3.92	3.71	3.75
	(1.16)	(1.04)	(.90)	(.97)	(.69)	(.89)	(1.05)	(.80)
27	4.00	3.27	3.89	3.57	3.41	3.27	2.82	3.25
	(.74)	(1.08)	(.87)	(1.01)	(1.15)	(1.08)	(.95)	(.93)
28	1.65	1.41	1.40	1.57	2.04	3.12	4.24	3.11
	(.98)	(.73)	(.74)	(.68)	(1.06)	(1.37)	(1.15)	(1.26)
29	2.35	2.00	1.94	2.00	2.48	3.35	3.59	3.14
	(.94)	(.76)	(.87)	(1.05)	(1.09)	(1.06)	(1.33)	(1.11)
30	2.65	3.55	3.80	3.50	3.85	4.08	4.82	4.50
	(.98)	(.80)	(.87)	(.97)	(1.06)	(1.13)	(.53)	(.75)
31	4.35	3.91	4.31	4.27	4.19	4.39	4.06	4.36
	(.89)	(.92)	(.68)	(.85)	(.74)	(.94)	(1.09)	(.62)
32	4.52	4.09	4.11	4.27	3.96	4.08	3.94	4.07
	(.59)	(.81)	(.76)	(.74)	(.94)	(1.09)	(1.14)	(.79)

ITEM #[1]	HOCKEY FORM[2]							
	1	2	3	4	5	6	7	8
33	4.22	3.64	3.77	4.00	4.11	4.50	4.47	4.43
	(.80)	(.73)	(.88)	(.98)	(.80)	(.65)	(1.01)	(.88)
34	4.70	4.27	3.71	3.93	3.93	4.19	4.12	4.11
	(.47)	(.69)	(.86)	(.91)	(.96)	(.75)	(1.22)	(.83)
35	1.26	1.50	1.57	1.43	1.67	1.65	3.12	2.89
	(.54)	(.67)	(.74)	(.77)	(.73)	(.94)	(1.27)	(1.07)
36	1.13	1.27	1.57	1.40	1.16	1.50	2.35	2.54
	(.46)	(.55)	(.54)	(.77)	(.70)	(.71)	(1.06)	(.92)

[1] see appendix B for explanations of each item.

[2] 1:pick-up; 2:fun and fitness; 3:old timer league; 4:old timer tournament; 5:men's university intramural; 6:women's inter-university; 7: men's inter-college; 8:men's inter-university.

APPENDIX D

MEAN SCORES (SD) ON EACH ITEM OF THE HOCKEY BEHAVIOUR QUESTIONNAIRE FOR EIGHT FORMS OF PLAY

ITEM #[1]	HOCKEY FORM[2]							
	1	2	3	4	5	6	7	8
1	1.35	1.30	1.33	1.10	1.79	1.42	2.41	2.36
	(.57)	(.56)	(.63)	(.31)	(1.17)	(.70)	(1.37)	(1.22)
2	1.96	1.65	2.19	1.90	2.79	2.73	3.18	3.64
	(.77)	(.78)	(.82)	(.85)	(1.07)	(.96)	(1.19)	(1.06)
3	2.13	2.35	3.42	3.17	4.07	3.85	4.65	4.32
	(1.10)	(1.30)	(1.06)	(1.29)	(.86)	(1.22)	(.70)	(.86)
4	2.13	1.70	3.69	3.00	3.82	3.85	4.29	4.43
	(1.42)	(1.02)	(1.41)	(1.51)	(1.36)	(1.49)	(1.40)	(1.00)
5	1.48	1.61	2.00	1.80	2.75	2.35	4.24	4.11
	(.85)	(.78)	(.86)	(1.06)	(.93)	(1.29)	(.90)	(1.03)
6	1.30	1.35	2.11	2.07	2.79	2.62	3.94	4.25
	(.47)	(.65)	(.98)	(1.20)	(1.23)	(1.63)	(1.20)	(.93)
7	1.87	1.78	2.78	2.37	3.29	3.42	3.77	4.29
	(.76)	(.67)	(1.10)	(1.10)	(1.05)	(1.24)	(1.03)	(1.01)
8	1.74	1.74	2.75	2.30	3.00	3.65	3.88	4.43
	(1.03)	(.62)	(1.13)	(.95)	(1.19)	(.89)	(1.27)	(.84)
9	1.44	1.26	2.11	1.60	2.75	2.58	3.41	3.75
	(.73)	(.62)	(.95)	(.77)	(.97)	(1.36)	(1.23)	(1.04)
10	1.56	1.44	2.31	1.87	2.96	2.46	3.47	3.75
	(.79)	(.79)	(1.19)	(1.14)	(1.07)	(1.21)	(1.23)	(1.14)
11	1.39	1.30	1.64	1.57	1.96	1.35	3.12	3.29
	(.66)	(.64)	(.76)	(.86)	(.96)	(.63)	(1.41)	(1.18)
12	1.52	1.39	1.97	1.57	2.50	2.62	3.24	3.57
	(.85)	(.66)	(.88)	(.90)	(1.00)	(1.39)	(1.30)	(1.23)

ITEM #[1]	HOCKEY FORM[2]							
	1	2	3	4	5	6	7	8
13	2.17	1.96	2.66	2.47	3.54	3.89	4.24	4.36
	(.88)	(.93)	(.76)	(1.25)	(.96)	(1.18)	(1.03)	(.87)
14	1.87	1.61	2.81	2.27	2.79	3.04	3.94	4.14
	(1.10)	(.84)	(1.28)	(1.23)	(1.07)	(1.46)	(1.14)	(1.15)
15	1.44	1.09	1.58	1.43	2.46	1.96	2.71	3.03
	(.73)	(.29)	(.77)	(.73)	(1.04)	(1.08)	(1.31)	(1.45)

[1] see appendix B for explanations of each item.

[2] 1:pick-up; 2:fun and fitness; 3:old timer league; 4:old timer tournament; 5:men's university intramural; 6:women's inter-university; 7: men's inter-college; 8:men's inter-university.