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THE SOCIO - PSYCHOLOGICAL EFFECTS OF MODIFIED, COOPERATION - ORIENTED GAME ENVIRONMENTS ON ELEMENTARY SCHOOLCHILDREN

by

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "The Socio-Psychological Effects of Modified, Cooperation-Oriented Game Environments on Elementary Schoolchildren" submitted by Philip Colville Craig in partial fulfilment of the requirements for the degree of Master of Arts.

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ABSTRACT

There were two major purposes of this study. The first was to construct the conceptual and empirical tools necessary for the systematic development, and socio-psychological evaluation, of game environments for children. The second purpose was to utilize the evolved conceptual schema and methodology to compare the socio-psychological outcomes of alternative game structures which have an emphasis on intra-team cooperation with the outcomes of more traditional game structures.

The sampling of subjects was limited to forty-eight male and female children whose ages ranged from eight to ten years. Twenty-four children were in each of the two experimental groups. The Nonequivalent Control Group Design was utilized, and the subjects were interviewed by the experimenter in order to complete both the pretest and posttest questionnaires.

The treatment period consisted of a four week period during which the subjects participated in small-sided, scaled-down games of soccer and volley-basketball. The children participated in three one-hour sessions per week over the treatment period. The one difference between the treatments experienced by the two groups was that the children in the experimental group were forced to cooperate with their teammates. This cooperation was accomplished

by the incorporation of a rule stating that each player in a team had to receive the ball at least once before any player in that team could attempt to score.

The quantitative data collected were subjected to one-way and two way analyses of variance in order to determine significant differences between the groups on the variables measured. Kendall's tau and Spearman's r were utilized to compute the validity and reliability coefficients for the research instruments. Frequency and percentage breakdowns of the subjects with regard to class, age, sex and attitudes toward the treatment period were also computed.

It was found that the research instruments were satisfactorily valid and reliable, with the exception of the index which measured group cohesion which was found to be reliable ($p \leq .001$) but could not be accepted as valid. It was also evident that the cooperation-oriented game environments experienced by the experimental group were considerably more effective than the more traditional game structures in terms of influencing the socio-psychological outcomes which were selected as criterion measures in this experiment.

In particular, the children in the experimental group experienced a significantly greater increase in terms of self-concept of their ability to play games, exhibited significantly greater improvement in interpersonal liking, perceived themselves to have been significantly more involved

in the games they played, experienced a significantly greater improvement in their perception of the number of times they received the ball, perceived significantly more of their peers to have improved their ability to play games, expressed significantly more enjoyment of activity during the treatment period and felt significantly more positive toward future participation in physical activity and games, than the children in the control group. No significant differences were found between the two groups in terms of the degree of cohesion present within the groups or the perception of the children concerning the absolute number of times they received the ball during the treatment period games.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

In recent years there has been increasing criticism of the structure of games and sports regarding their potential adverse effects on children (Ellis, 1973; Glassford, 1973; McNally, 1974; Orlick, 1974; Orlick and Botterill, 1975; Robbins, 1973). Robbins (1973) epitomizes this concern when he states that "the accepted structure of games and sports makes the good better and the poor poorer" (1973: 2).

However, despite this concern, little scholarly attention has been devoted to the provision of alternative game structures designed specifically for children. Additionally, in the few instances where modifications have been attempted there has been no systematic evaluation of the effects of the innovations on the children who participated. The following study was conducted in recognition of the need for research in this area.

The Problem

The central purpose of this study was to construct (partly through modifying and synthesising pre-existing instruments) the conceptual and empirical tools necessary for the systematic development, and socio-psychological evaluation, of alternative game environments for children.

The achievement of this objective involved four distinct

stages:

1. The development of a conceptual framework for examining the effects of game environments on the following criteria:
   A. The social structure of the group
   B. The degree of cohesion present within the group
   C. The self-concept of each individual in the group with respect to their ability at games
   D. The enjoyment level of each individual in the group.
2. Utilizing this schema, the development of guidelines for modifying existing game structures in order to achieve specific educational and participant objectives.
3. The development of appropriate methods and procedures designed to assess game environments empirically.
4. The utilization of the evolved conceptual schema and methodology in an exploratory case study comparing the socio-psychological outcomes of modified, cooperation-oriented game environments with more traditional game structures.

Importance of the Study

During the past twenty years there has been extensive research into the relationship between physical activity and coronary heart disease. The preponderance of evidence (Brunner and Manelis, 1971; Fox and Haskell, 1968; Kannel, Sorlie and McNamara, 1971; Morris and Raffle, 1954) supports the argument that there exists an inverse relationship between the amount of physical activity usually performed

by an individual and his likelihood of experiencing coronary heart disease or other forms of cardio-vascular disease. In addition, a number of other studies have shown positive correlations between a high fitness level and low incidence of various types of mental disease.

Bearing in mind these strong connections between frequency of physical activity and level of general health, it is apparent from an examination of recent literature (Cumming, 1967; Sport PARTICIPaction Canada, 1972) that Canada does not excel in either of these areas. Sport PARTICIPaction Canada - an organization deeply concerned with the area of frequency of physical activity by Canadians, its effect on the general level of health and fitness of the nation, and methods of increasing levels of activity - states that:

1. As few as 1 - 2% of Canadians exercise as frequently as once a week.
2. Canadian children are pretty fit until the age of six, when they enter the school system, then fitness begins to decline.
3. School children are becoming more obese.
4. Canada has one of the highest rates of death from heart attacks in the world.

(n.d.: 2)

Thus it is clearly apparent that there is considerable evidence to vindicate the argument that physical activity can indeed be beneficial to the health of individuals and that, in Canada particularly, some measures are urgently

required to convince the majority of the population that they need to participate in physical activity considerably more frequently than at present.

Pressy and Kuhlen (1957) and Musson, Conger and Kagan (1963, 1970) are proponents of the view that if positive interests are not inculcated in childhood, then they may never be developed in later life. This belief is supported by the results of the Fels Longitudinal Studies from which Moss and Kagan (1964) found that elementary school children who developed certain interests (one of which was athletics) often maintained these interests into childhood. Astrand (1952) has also found that individuals who are physically inactive when young tend to remain so, whereas children who are highly active tend to maintain their interest in physical activity through adolescence into adulthood.

These findings support the thesis of Orlick (1972) that there exists a highly significant relationship between the quality of an individual's initial exposures to physical activity and whether or not that individual will choose to continue to participate in physical activity in adulthood. He feels that if children are exposed to positive, fun-filled physical activity environments when young then they will be more likely to choose to continue their participation in physical activity in later life.

The need for positive physical activity environments is exemplified by the findings of Bandura and Walters (1963),

Birch and Veroff (1966) and Manis and Meltzer (1968) who have stated that whether or not a behaviour occurs is dependent upon the degree to which individuals expect positive or negative consequences for participating in that particular behaviour. When one considers the previously cited figures that as few as one to two per cent of Canadians exercise as frequently as once a week, it appears that physical educators are not producing environments which encourage expectations of positive consequences. This writer is fully cognizant that general behaviour patterns are the product of numerous interacting socializing influences; hence he does not place all the responsibility for low participation rates on school physical education programs. Nevertheless, he feels that these physical activity environments are contributing factors and that it is necessary to replace these environments with alternative ones which will eventually increase this nation's participation rates in physical activity.

The problem at this juncture concerns which types of alternative environments should replace which existing ones. This dilemma emphasizes the need for theory development in the area of game and sports environments in that it is inadequate to merely state nebulously that the environments we create are "positive". It is necessary to state in which ways we feel they are beneficial to participants. Although it is impossible to measure specific outcomes precisely nor

expect that identical or similar experiences will produce the same effects in all children, we can nevertheless measure general trends in terms of the effects that the environments we create are having on those children who participate. However, this is not possible if methodical, empirical research is not conducted on each particular game environment. At present, there is little, if any, published literature concerning the examination of game environments through systematic conceptual analysis and/or empirical research. This exploratory study represents one particular methodological approach in this area.

The teaching of games represents a large segment of a child's initial exposure to physical activity in the school setting and is, for the vast majority, their first formal experience of organization in the physical sphere. In fact, in a recent study conducted by Padfield (1973) almost fifty per cent of those teachers involved felt that "the overall physical education program in their school was heavily game oriented". (1973: 1a)

Since it is apparent that the criticism of Robbins (1973) and others concerning the accepted structure of games and sports making the good better and the poor poorer could indeed be valid, physical educators, instead of implementing accepted game structures en bloc in the elementary school setting, should consider introducing modifications to these structures in an attempt to make physical activity more

enjoyable and meaningful for all young children and not merely the able ones.

Smith (1973) proposes that the generic term "sport" should be divided into four different sports environments on the basis of the objectives of the participants. He then states that:

> These objectives, which must be mutually acceptable to participants and organizers then provide guidelines by which appropriate leadership qualities, conditions of practice and participation or competition may be specified. (1973b: 5)

These four environments range from what Smith terms "recreation environments" in which the major objective of the participants is enjoyment, to "professional sports" in which the main aim of those involved is to procure a source of income by entertaining the public.

Elementary school children should experience physical activity environments which are both "recreational" and "educational" in the sense that they must combine enjoyment with experiences that also contribute to growth and development and to the acquisition of competence in physical, cognitive, affective and moral matters. However, the fact is that in many elementary schools their physical education programs utilize the accepted, adult-oriented structures of games and sports without considering either the objectives of education in general or the needs of children in particular. Hence, we often see the absurd situation of extremely young children playing games and sports under the same rule

structures (and often in the same playing areas) as adult athletes.

This study constitutes a needed attempt to develop a schema designed to examine game environments through systematic conceptual analysis and empirical research in order to determine the effects of alternative game and sports environments on children who participate. Only when these environments have been methodically analyzed can we then decide which environments are superior in terms of their beneficial effects on children.

Definition of Terms

Cohesion: The resultant of all the forces acting on the members to remain in the group. These forces may depend on the attractiveness or unattractiveness of either the prestige of the group, members in the group or the activities in which the group engages. (Festinger, 1953: 290)

Competition: Any situation in which two or more individuals struggle for the complete or larger share of a particular goal, and in which the success of their performances is relative to each other. (Alderman, 1974: 74)

Cooperation: Any situation in which two or more individuals work together toward a common goal.

Forced Intra-Team Cooperation: The process by which individuals in the same team are induced to work together toward a common goal.

Game: An exercise of voluntary control systems, in which there ~~is an~~ opposition between forces, confined by a procedure and rules in order to produce a disequilibrial outcome. (Avedon and Sutton-Smith, 1971: 7)

Game Environment: The predetermined set of circumstances under which a game is played.

Inter-Group Competition: Any situation in which two or more groups compete against each other.

Self-Concept: The person's total appraisal of his appearance, background and origins, abilities and resources, attitudes and feelings which culminate as a directing force in behaviour. (LaBenne and Greene, 1969: 10)

Socialization: The process by which persons acquire the knowledge, skills and dispositions that make them more or less able members of their society. (Brim and Wheeler, 1966: 3)

Significant Others: The people who most intimately administer the "rewards" and "punishments" in a person's life. (LaBenne and Greene, 1969: 14)

Sociometric Status: The degree to which an individual is accepted in a group. (Northway, 1967: 3)

Sociometric Test: A means for determining the degree to which individuals are accepted in a group, for discovering the relationships which exist among these individuals, and for disclosing the structure of the group itself. (Northway, 1967: 3)

Sociometry: The study of the patterns of interrelations between people and the process of their measurement. (Jennings, 1959: 11)

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The review of the literature has been broadly divided into four main areas: the first section dealing with self-concept and its effect on behaviour, perception and performance, the second section with cohesion and its effect on group behaviour and member satisfaction, the third with utilization of the sociometric technique to measure the relationship between physical ability and social status for children, and the fourth with the modification of game environments for children.

The Effects of Self-Concept on Behaviour, Perception and Performance

One of the major developments in the life of any child is the formulation of his self-concept. Cooley (1922), Mead (1934), and Sullivan (1947) all propound the theory that an individual learns about himself from the mirror of other people. This dynamic process is termed "reflected appraisal". In other words, the child interprets from the behaviour of others toward himself (particularly "significant others" such as parents, peers and teachers) whether they accept or reject such aspects of his being as his appearance, abilities, ideas, attitudes and feelings. The perceived evaluations of these significant others form the basis of an individual's self-concept (which develops in the early years) and

determines whether an individual's view of self is essentially negative or positive.

The literature pertaining to self-concept is replete with the far-reaching effects of the construct on behaviour, perception and performance - particularly in an educational setting (Lecky, 1945; Buckley and Scanlan, 1956; Brookover, Thomas and Paterson, 1964; Steines, 1957; Sheener, 1949; Stock, 1949). Additionally, LaBenne and Greene (1969) have found that there are numerous studies stating that one of the prevalent characteristics of unstable individuals (for example, delinquents, neurotics and psychotics) is that they possess negative self-concepts. They perceive that society in general views them as of no value and consequently they come to see themselves in a similar manner. Conversely, stable individuals are reputed to possess positive self-concepts together with reasonably realistic evaluations of their attributes and deficiencies.

When a child enters the school system, his self-concept is assumed to be in a highly malleable state. The basic component of self-concept at this stage is, in fact, flexibility and the experiences the child encounters will mould his concept of self. The teacher, because of the authority he is assigned and because of his greater experience and maturity, exerts extensive control and influence over the learning environments created and maintained in schools. Therefore, it is evident that the school or, more specifically, the

teacher, has an enormous effect on the developing self-concepts under his tutelage.

Combs (1952) exemplifies the devastating effects of a negative self-concept on the ability to learn to read:

> Such a child is likely to avoid reading, and thus the very experience which might change his concept of self is bypassed. Worse still, the child who believes himself unable to read, confronted with the necessity for reading, is more likely than not to do badly. The external evaluation of his teachers and fellow pupils, as well as his own observations of his performance, all provide proof to the child of how right he was in the first place! The possession of a particular concept of self tends to produce behaviour that corroborates the self-concept with which the behaviour originated. (1952: 669-70)

Thus it appears that a circular effect operates in that self-perceptions of a particular inability appear to become self-fulfilling prophecies. The situation which Combs describes is directly analogous to what appears to happen to many children in physical activity situations. Orlick (1972) found children are already formulating negative self-concepts in terms of their abilities in physical activity at six years of age. The result of this negative concept of self is that children are refraining from participating in physical activity and sport when confronted with a choice. In school they are obligated to participate but when it comes to participating in physical activity and sports outside of school it appears that many children are no longer interested.

Smith (1975) feels that:

> While it is reasonably easy to see how sport might have a positive effect on self-image it will be

> useful to ask how sport or physical activity might contribute to a negative self-image? We could begin by examining carefully the effects of excessive use of competition which is characterized by external comparisons. It is great to be a winner but unfortunately there can only be one and the rest are, by definition, losers. (1975: 3)

Perhaps, the problem lies in the narrow interpretations of the terms "winning" and "losing" which society uses. Orlick and Botterill (1975) have a profound viewpoint concerning this problem:

> Those who perceive winning as being only score-board victories or achievement at the expense of defeating others are losing out on a great deal themselves.
> Besides racking up points, people, youngsters in particular, can win or achieve many immeasurables such as friends, respect, trust, satisfaction, confidence, knowledge, skills, health, fitness, personal well-being, and above all else, happiness.
> (1975: 28)

Unfortunately, this outlook concerning competition is not a commonly accepted one and the "excessive use of competition which is characterized by external comparisons" to which Smith refers is prevalent in almost all games traditionally associated with the majority of elementary physical activity programs. Smith (1975) also feels that:

> ....if we employ methods of teaching than run the risk of branding the majority of participants as losers or failures ... we are creating conditions that both turn people off activity and contributing to the development of a negative self-image.
> (1975: 4)

Therefore, it is the author's contention that physical education programs, particularly in the elementary school,

should be designed bearing the basic principle of education in mind - that is, every child must be educated to the fullest of their capacities, not just those who are the most able.

The foregoing discussion is not intended to advocate that physical education programs cease to include competitive games in their schedules. Rather, the author concurs with the views of Bula (1971) on this subject:

> The primary concern the physical education profession must have is to ensure that the child receive a positive experience while competing. Let's not kid ourselves, he is going to compete!
>
> (1971: 40)

Consequently, it appears that attempts to maximize the beneficial effects of both competition and cooperation are needed in the development of elementary school curricula concerning physical activity. This can be achieved by lessening the great emphasis currently placed on inter-team competition whilst at the same time placing greater emphasis on intra-team cooperation.

This was the objective of this experiment in that an emphasis on cooperation was achieved by the incorporation of an additional rule for the experimental group games stating that every player in a team had to receive the ball at least once before any player in that team could attempt to score. This degree of "forced intra-team cooperation" was designed to ensure that the lesser-skilled children become involved

in each game, in an attempt to affect positively their self-concept as a result of their participation and self-improvement.

An analogous study by Aronson (1975) in a classroom setting showed that this attempt can indeed hope to be successful. In this experiment, each child was placed in a group of six and was presented with a particular piece of information on a given subject. It took all six pieces of information to produce the entire answer to the problem. Aronson termed this procedure the "jigsaw puzzle" method of teaching. Each child had to master their particular piece of information and then teach it to their fellow group members. The children were told that they would be tested on the entire topic at a later time. The children had to realize that none of them could excel on the test without the help of every other child in their group. Aronson recounted that, although at first some of the children ridiculed one particular child, Carlos, who encountered great difficulty communicating his paragraph, they quickly began to realize that the only chance they had to obtain the entire answer was to listen to what that individual had to say:

> Instead of teasing Carlos or ignoring him, they learned to draw him out, to ask questions that made it easier for him to explain out loud what was in his head. Carlos, in turn, relaxed more, and this improved his ability to communicate. After a couple of weeks, the children concluded that Carlos wasn't nearly as dumb as they thought he was. They saw things in him they hadn't seen before. They began to like him and Carlos began to like school more and think of his Anglo classmates not as tormentors but as friends. (1975: 48)

Aronson concluded that the children in the jigsaw puzzle groups had stronger, more positive self-concepts than the children in the traditional classroom groups by the end of the experiment.

The Effects of Cohesion on Group Behaviour and Member Satisfaction

Despite the fact that the concept of group cohesion has long been recognized as one of the most important aspects of small group dynamics, the fact remains that the proliferation of studies which have been devoted to this construct (Bonner, 1959; Cartwright and Zander, 1960; Festinger et al, 1963; Golembiewski, 1962; Gross and Martin, 1952; Stogdill, 1959) have failed to produce a precise, common definition for group cohesion. In fact, similar to a number of other constructs in socio-psychological literature, it appears that there are as many varying definitions as there are theorists studying the term (and various synonyms such as "viscidity", "morale" and "group solidarity"). The interested reader is referred to Smith (1968) for a comprehensive account of this problem.

Albert (1953), Eisman (1959) and Gross and Martin (1952) all expressed the need for a more precise, all-encompassing definition of group cohesion in the near future. Despite the work of Michalachki (1969), after a period of over twenty years this need has not yet been satisfied. Perhaps the reason for this void is correctly postulated by Bany

and Johnson (1964) when they state:

> Although cohesiveness may be observed, described and appraised, it does not lend itself to a single, specific definition. Objective or operational terms fail to cover a number of the abstract qualities that characterize cohesiveness. Definitions have been given, but any short, concise statement fails to be inclusive and to make the meaning of the term clear. Usually brief descriptions are unable to encompass the multiple meanings inherent in the concept, and they sometimes employ illusive and subjective terms. But an adequate conception of cohesiveness can be formulated by describing a number of conditions that exist when a group possesses this characteristic.
>
> (1964: 53)

What, then, are the characteristics of a cohesive group? Bany and Johnson (1964) feel that the following behaviours indicate whether or not a group is cohesive: first, the degree to which members are friendly and helpful to one another, second, the degree to which members band together when their group, or an individual member of their group, is threatened by external forces, third, the degree to which a group is able to plan together and solve problems pertaining to the group, and fourth, the degree to which members of a group can agree and adhere to certain standards of behaviour.

The preceding discussion is intended to demonstrate the complex nature of the term and the state of flux of the research in the area. Bearing in mind Bany and Johnson's aforementioned pessimism concerning the ability to define group cohesion adequately in a single, concise definition, the most frequently cited definition is that of Festinger et al (1963). This definition is included in the Definition of

Terms section of this thesis. Smith (1968) feels that this definition is synonymous to "the attraction of a group for its members" (1968: 24).

The question at this juncture concerns which characteristics of a group are attractive to its members. Bany and Johnson (1964) feel that:

> For a class to be attractive to a child, it must satisfy some personal needs such as his needs for affiliation, acceptance, recognition and security. (1964: 65)

This statement is supported by the literature on this subject. Dittes (1959) found a group member who was made to feel well accepted within the group was consequently more attracted to the group than a member who was made to feel he was not accepted by his fellow members. The activities in which the class group participates may also affect its attractiveness, although it should be noted it is imperative that the activities be designed so as to ensure that every child is an integral part of the group whose contributions are necessary and valued.

The results of an experiment conducted by Deutsch (1960) clearly showed that a situation in which the group members cooperated was more attractive than one in which they competed. A follow-up study by Hammond and Goldman (1961) designed to find out whether lack of competition would reduce anxiety and lessen tension in a problem-solving situation, whilst at the same time increasing productivity, found that the

noncompetitive environment was easily superior to the competitive one.

Another experiment examining the effects of cooperation and competition on group cohesion was conducted by Phillips and D'Amico (1960). They found that individuals working together under cooperative conditions increased the degree of cohesion within the group. However, it should be noted that in this study competitive conditions did not appear to decrease the degree of cohesion present within the group.

A study which has become a "classic" in this area is that of Sherif (1956). He demonstrated that group cohesiveness is increased when individuals cooperate rather than compete. The experiment was conducted during a summer camp. During the first half of the camp, the eleven and twelve-year old boys were divided into two groups which competed against each other in a variety of activities. As a result of this competition there developed open hostility between the two groups. During the second half, competition was abolished and a program was introduced in which all the boys had to work together toward a common goal. Sherif found that this cooperation improved interrelations and reduced conflict.

King (1960), in an experiment examining elementary school children, found that cohesiveness was developed by emphasizing to the children that great benefits could be derived from belonging to the class group, by stressing the ability of the group to provide prestige, by making the

children realize that a personal need could be satisfied by functioning within the group and by using cooperation. All of these emphases were included for the experimental group in this study.

The Utilization of the Sociometric Technique to Measure the Relationship between Physical Activity and Social Status for Children

In recent years there has been a dramatic increase in the amount of literature produced on the utilization of sociometric techniques in the areas of education, sociology and social psychology.

Using these sociometric techniques, a number of researchers have found that, when dealing with children, there exists a positive relationship between proficiency in gross motor activity and social status. McGraw and Talbert (1953) found that boys achieve their popularity through proficiency in athletics more than any other factor. That there is an apparent relationship between social status or acceptance and athletic ability was found by Bretsch (1952), Coleman (1961) and Flowtow (1946). The direct relationships between popularity and athletic ability was also found by Tuddenham (1951). It should be noted, however, that Austin and Thompson (1948) discovered conflicting evidence which showed that, in terms of children in the sixth grade, ability at games was sixteenth on a scale of criteria important in choosing friends.

Additionally, there have been experiments which have found that there is a link between athletic ability and social adjustment (Biddulph, 1954), between superiority in the acquisition of physical skills and social adjustment (Bowen, 1941; Coleman et al, 1963; Smart and Smart, 1963), and between the ability to choose friends and athletic prowess (Stogdill, 1948; Zeleny, 1950).

Therefore, it is apparent that there are decided socio-psychological advantages to be derived from a proficiency in physical activity, especially when young. However, by the same token, it is also evident that there are severe socio-psychological disadvantages in being inefficient in terms of motor activity and that what those at the upper polarity of the ability continuum gain with regard to status and prestige, the children at the lower limit must lose in comparison.

Aronson (1975) found that when the better-able children were required to cooperate with their lesser-able peers in a classroom setting, the following results occurred:

> Children in the jigsaw groups liked their peers more at the end of the six weeks than kids in traditional classrooms. Kids in the jigsaw groups saw each other as learning resources; kids in the traditional classrooms did not. (1975: 49)

Phillips and D'Amico (1960) also found that people working together and cooperating came to like each other better as a result.

The Modification of Game Environments for Children

Basically, the literature devoted to the need to modify game environments in order to satisfy the particular requirements of children can be subdivided into three major sections, the first section dealing with the scaling down of facilities and equipment, the second section with the utilization of small-sided games, and the third with rule modifications.

Literature Pertaining to the Scaling Down of Facilities and Equipment for Children

Glassford (1973) emphasized the need to scale down facilities and equipment when he graphically illustrated the plight of children in many sports:

> Imagine for a moment if you will, playing a game of ice-hockey on a sheet of ice something close to 370 feet in length and perhaps 130-140 feet in width with a goal area not four feet by six feet but eight feet by twelve feet. If you can view yourself in that situation then perhaps you have a better idea of how a youngster, six, seven, or eight years of age feels when he becomes involved with an organized sport such as hockey or basketball played on surfaces, using goal regions and equipment more like the dimensions which have been described above.
>
> (1973: 6)

Although Orlick (1973) and Glassford and Clumpner (1973) have reported that for the past ten years China has been utilizing scaled down implements and playing areas for children in games such as basketball, soccer, volleyball, pingpong and badminton, Morrell (1973) found that Canada is trailing far behind in terms of altering games to meet the needs of children.

Glassford (1973) feels that the only sport in Canada which has shown that it is fully cognizant of the problems which children have to encounter and overcome because of oversize equipment and facilities is Little League Baseball. Singer (1972) has reported that Little League Baseball in the U.S.A. scaled down facilities and equipment in order to negate the size and ability limitations of children between the ages of eight and twelve. Glassford (1973) accepts that scaled down (or "biddy") basketball has begun to be prevalent in Canada but he feels that its scaling down procedures could be improved upon and extended.

The situation is not that innovative ideas are not forthcoming, it is that those in authority are not prepared to implement them. In soccer, for instance, Usher (1972), after examining studies of maturational patterns, computed four different sized soccer balls, one for each of four age groups (8-10 years, 10-12 years, 12-14 years and 14-16 years). At present, in Canada, there is only one size of ball used for all age groups up to fourteen years of age. Following identical procedures, Usher and Robbins (1975) calculated playing areas and goals for each of those four age groups. The Canadian Soccer Association has stated that it would like to see smaller facilities utilised for children, but that availability of facilities is already a problem.

McKay (1974) empirically found that eight and nine-year old boys touched the ball more often and retained possession

of the ball for longer periods of time when playing soccer on a scaled down field than those who played on an adult-sized playing area.

Williams (1973) succinctly sums up the feelings of those who advocate the scaling down of game environments for children when he describes the consequences of allowing small boys to play rugby on an adult-sized playing area:

> The result is nearly always depressing to watch - thirty players chasing the ball: little involvement - so few players touch the ball and consequently there are few opportunities for players to acquire and develop the fundamentals of the game. (1973: 74)

He additionally states that he feels it is ludicrous to watch small boys attempting to play on a playing area which was originally designed for adults.

Literature Pertaining to the Utilization of Small-Sided Games

[redacted] to the trend towards scaling down equipment and p[redacted]for games for children, there is also a trend [redacted]cing the number of players in each team from th[redacted] which is traditionally associated with the adult v[redacted]of the sport. McKay and Robbins (1975) argue that the[redacted] no reason to adhere religiously to eleven players [redacted]eam in soccer. Ellis (1973) also feels that, especial[redacted]hen dealing with elementary school children, games ne[redacted]hanges with regard to the number of players in each team.

Williams (1973) incorporates the reduction of the number of players in each team from the traditional fifteen to only nine in his introductory program for rugby beginners. This program has been adopted by the Welsh Rugby Union. Wesson (1973) feels that:

> The child is probably not physically or psychologically mature enough to play the full game of hockey or baseball until the age of 10 or 11 years. In the years preceding this the children should be able to play 2 vs. 2 or 3 vs. 3. (1973: 39)

For a number of years, knowledgeable individuals in the area of elementary school games curricula have ardently advocated the utilization of small-sided games as preparatory, lead-up games to the major sports. (Anderson, 1971; Lenel, 1969; Mauldon and Redfern, 1969; Wise, 1969)

Literature Pertaining to the Modification of Rules for Children

The American Association for Health, Physical Education and Recreation (A.A.P.H.E.R.) Report (1968) on "Desirable Athletic Competition for Children of Elementary School Age" had many recommendations concerning revisions that were needed in children's sports. One of these recommendations was that the rules of games be modified to better accommodate the needs of children.

Smith (1971) is considerably more adamant concerning the need for rule changes when he states:

> It is ludicrous to put preschool or even early elementary school children on a full sheet of ice and expect them to play under adult rules.

> Such youngsters should spend their time skating, handling the puck and shooting in what can best be described as hockey-type activities. Gradually, the complexities of the game are introduced until after from two to four years of involvement the kids have developed sufficient personal skill, strength and endurance, understanding, and social awareness to be playing the adult version of the game. (1971: 5)

Orlick and Botterill (1975) offer another reason why game rules should be modified for children. They feel that each individual teacher or coach should outline the kinds of behaviours that they feel are desirable and undesirable, and then design the structure and rules of their environment in such a way as to promote the occurrence of those desirable behaviours, whilst at the same time disencouraging undesirable behaviours. This process of differential reinforcement utilizes the principles of Skinnerian operant conditioning (Skinner, 1963, 1968).

Ellis (1973) has found that teachers in both elementary and secondary schools:

> ... have for several years stressed the need to adapt their movement program, not just the equipment and facilities but the total learning environment, to meet the needs of the individuals in their care. Games need changes in numbers, rules and structures according to the needs of the individuals involved, even to the extent of different groups in the same class playing different versions of the game on a given day. (1973: 17)

Despite the fact that literature has been referring to the need to modify game environments for children for a number of years, there has been a paucity of empirical study completed

in the area. One notable exception to this rule is the work of McNally (1974). McNally provided an alternative game structure which reduced and controlled "the amount and form of competition usually associated with organized sports" (1974: 1). She accomplished this by the introduction of the following three rules:

> - The first new rule as explained to the children was:
> "each goal your team scores is a gift to the other team. If you get the goal, they get the point."
>
> - The second rule is that the person who scores the goal gets to be on the team with the most points. If you score and your team has the most points you stay on the same team but if the other team has the most points then you change teams
>
> - The third rule is that there is no goalie.
>
> (1974: 5)

The experiment was conducted primarily on Slavey Indians and McNally concluded that the game and its modifications were "quite well accepted" by the subjects. Although no socio-psychological effects of the treatment were analyzed, the subjects did complete a questionnaire concerning their attitudes toward the game and its rules.

Relationship of Modifications of Game Environments to This Experiment

This experiment incorporated all three major methods of modifying games for children. Equipment and facilities were scaled down, small-sided games were played and rules were

modified. However, in order to avoid any confusion concerning the relative effects of each of these three modifications on the variables to be studied, it was decided to examine the effects of the rule concerning "forced intra-team cooperation" only. For this reason, the variables "size of team" and "facility and equipment size" were controlled.

CHAPTER III

METHODS AND PROCEDURES

Introduction

The chapter begins with a description of the methods used in the development of the research instruments utilized in this experiment. Operational definitions of theoretical concepts are then presented. The research setting and subjects, experimental design and conditions follow. The procedures utilized and experimental conditions incorporated are then described, followed by the statement of the research hypotheses which will be tested in this experiment. A description of the statistics used to analyze the data collected is then included, after which instrument validity and reliability is discussed. The chapter concludes with the delimitations and limitations of the study.

Instrumentation

Development

A review of the literature concerning available research tools revealed that no standardized instruments existed which could be directly utilized in this experiment. However, it was evident that certain instruments could be readily modified to deal specifically with this problem. Modifications included the omission of certain questions which were not construed by the researcher to be directly relevant, the alteration of the phraseology of certain questions and the inclusion of additional questions which were deemed necessary

to gain further information concerning this problem.

The index which measured the social structure of the groups (S.I.) in this experiment was derived from Northway's sociometric test (1967: 6). The use of "negative" choices was included as it was considered necessary to distinguish between those children who were simply neglected by their peers and those who were actually rejected.

The instrument which measured self-concept (S.C.I.) was a ten point self rating scale. Self rating scales of this type have been successfully implemented by Haas and Maehr (1965), Sherwood (1962) and Scott (1973), although it should be noted that these experiments were conducted on older subjects than were used in this study.

The index which measured cohesion (C.I.) in this study was developed from sections of the scales of Festinger (1950) and Seashore (1954), together with questions which were derived from a detailed analysis of the definition of cohesion by Festinger (1953).

The additional questions incorporated in the questionnaires (except question 19 in the pretest questionnaire and question 28 in the posttest questionnaire which is Webb's Professionalization of Attitude Toward Play Scale (1968)) were designed by the experimenter and were scrutinized and amended by three experts in the area of Physical Education.

Operational Definitions

Theoretical concepts were defined operationally as follows:

Cohesion: In this study, cohesion is operationally defined as that score which an individual receives on the cohesion index (C.I.). The higher the score, the more attractive the group is for the individual.

Enjoyment: Enjoyment is operationally defined in this study as that score which an individual receives on the enjoyment index (E.I.). The higher the score, the more enjoyment the individual experienced.

Self-Concept: In this study, self-concept is operationally defined as that rank value which an individual assigns himself on the self-concept index (S.C.I.). The higher the value, the more positive the self-concept of the individual.

Social Status: Social status in this study is operationally defined as that score which an individual receives on the sociometric index (S.I.). The higher the score, the higher the individual's social status in the group.

Subjects and Setting

The subjects in this experiment were forty-nine male and female grade three children from St. Martin Elementary School of the Separate School Board in Edmonton, Alberta. Owing to absence from school during the final week of the school term, one child did not complete the posttest interview and, as a result, could not be included in the final analysis. The children ranged from eight to ten years of age with a mean age of 8.6 years.

Experimental Design

The Nonequivalent Control Group Design (Campbell and Stanley, 1966: 47) was utilized in this study. This quasi-experimental design was used instead of the Pretest-Posttest Control Group Design (Campbell and Stanley, 1966: 13), which is a true experimental design, because it was imperative that the experimental subjects were not randomly assigned to either the experimental or the control group. In this study, it was essential that each subject be thoroughly conversant with every other member of their class group. It was for this reason that this experiment was conducted toward the culmination of the school year and that each class was left intact to represent either the control or the experimental groups. The assignment of the experimental condition to one of the two class groups was random and under the control of the experimenter.

Procedure

During the first week of the testing period every subject was interviewed individually by the experimenter in order to complete the pretest questionnaire (Appendix A). Although the pretest questionnaire consisted of only closed-ended questions, it should be noted that when the child was asked to assign himself a score on the self-concept index he was required to look at his reflection in a mirror which was placed in front of him by the experimenter. This technique was acquired from a study by Thomas (1971) who asked children

to look at a polaroid photograph of themselves whilst giving self-concept scores. The utilization of this mechanism was an attempt to assist the child in gaining "objectivity" about himself.

Over the next four weeks both groups played modified versions of basketball and soccer. Each group participated in three sixty-minute sessions per week. The exact nature of these games will be explained in a later section of this chapter. During the final week each subject was again interviewed by the experimenter in order to complete the posttest questionnaire (Appendix B). The posttest questionnaire consisted of both open- and closed-ended questions in order to ensure that qualitative and quantitative feedback on the treatment period was obtained.

Experimental Conditions

The subjects in both the experimental and the control groups experienced identical conditions but for one factor. This factor was termed "forced intra-team cooperation" and it was achieved by implementing an additional rule in the games played by the experimental group. This additional rule was that every player in a team had to receive the ball at least once in a play before any player in that team could attempt to score. The children in the control group were given no instructions pertaining to cooperation. All games were played using a volleyball, (a pilot study found that a volleyball was a better size and weight than either a basket-

ball or a soccer ball for children of this age), on an area of twenty-five yards by twenty yards and by teams of four players per side.

The Games

The two games played in this study were what the experimenter termed "volley-basketball" and soccer.

A. Volley-basketball

Equipment: One volleyball; two chairs, one situated at the centre of each end of the playing area (see Appendix C).

Area of Play: A rectangle twenty-five yards long and twenty yards wide.

Number of Players per team: Four.

Method of Scoring: One designated player in each team stands elevated on a chair. His teammates play toward him and a point is scored if he catches, and controls, the ball whilst standing on the chair.

Rules:

1. No body contact
2. No running with the ball
3. No dribbling with the ball
4. The player standing on the chair must have both feet on the chair when catching the ball and be judged to have control of it by the referee in order for a point to be scored.

5. No member of the opposing team can stand within three feet of the player who has the ball.
6. No player can stand within three feet of the child standing on the chair. Any infraction of this rule results in a point being awarded to the offensive team if the defensive team commits the infraction, or the negation of any point scored if the offensive team commits the infraction.
7. When either a point has been scored or the ball has crossed over the endline without a goal being scored, the offensive team loses possession of the ball, irrespective of who last touched the ball. The game is restarted with a throw into the area of play by a member of the opposing team from an area beside the chair.
8. Every player has to take an equal turn on the chair.

Method of Starting Play: The referee throws the ball into an open space in the playing area, which is approximately equidistant from members of both teams.

Additional Rule: (Experimental Group Only)

Every child in a team has to receive the ball at least once in a play before any player in that team can attempt to score. An infraction of this rule results in the negation of any point scored.

B. Soccer

Equipment: One volleyball; two benches, one situated at the centre of each end of the playing area (see Appendix D).

Area of Play: A rectangle twenty-five yards long and twenty yards wide.

Number of Players per Team: Four.

Method of Scoring: A goal is scored by a player projecting the ball onto the face of the bench with any part of his body other than his hand. (Note: the benches are placed on their sides with the flat surface facing out toward the playing area).

Rules:
1. No goalkeepers.
2. No intentional use of hands to stop or project the ball.
3. Same as rule A (7).

Method of Starting Play: Same as in A.

Additional Rule: Same as in A.

Research Hypotheses:

The following a priori research hypotheses will be tested. Assuming that there are no significant differences

between the groups on the pretest measures of the variables examined:

Hypothesis 1 At the end of the treatment period the experimental group will have experienced a greater increase in group cohesion than the control group.

Hypothesis 2 At the end of the treatment period, the children in the experimental group will have experienced greater improvement in their self-concept of their ability to play games than the children in the control group.

Hypothesis 3 At the end of the treatment period, there will have been a greater improvement in terms of interpersonal liking in the experimental group than in the control group.

Hypothesis 4 The experimental group will express more enjoyment of their activity during the treatment period than the control group.

Hypothesis 5 At the end of the treatment period, children in the experimental group will perceive themselves to have been more involved in the games they played than will children in the control group.

Hypothesis 6 At the end of the treatment period, children in the experimental group will perceive themselves to have received the ball more often during the games than will children in the control group.

Hypothesis 7 At the end of the treatment period, children in the experimental group will feel more positively toward future participation in physical activity than will children in the control group.

Hypothesis 8 At the end of the treatment period, children in the experimental group will perceive more of their peers to have improved in their ability to play games than will children in [redacted]rol group.

Collection [redacted]

Only t[redacted] method of gathering data was utili[redacted]. The decision to interview each subjec[redacted] rather than have the subjects complete their o[redacted]nnaire was arrived at primarily through the consider[redacted] the following factors: first, the age of the subj[redacted]cond, both teachers involved in this study reported h[redacted] disparate reading and comprehension abilities within the[redacted]ss and third, the fact that the preponderance of literatu[redacted]ncerned with data collection states that there are a [redacted]r of decided advantages in having a questionnaire [redacted]inistered by an interviewer than by the respondent hi[redacted] (Babbie, 1973; Moser and Kalton, 1971; Oppenheim, 19[redacted]ese advantages include the ability of the intervie[redacted]o clarify items which may confuse a particular respondent, the fact that oral responses provide for a higher degree of qualitative information and the fact that there exists an opportunity for the interviewer to ask the respondent supplementary questions when the need arises.

Data Analysis

The data collected in this study were subjected to one- and two-way analyses of variance in order to determine significant differences between the control and experimental

groups on the variables measured. Kendall's tau and Spearman's r were used to compute validity and reliability coefficients for the research instruments. Frequency and percentage breakdowns of the subjects with respect to class, age, sex and attitudes toward the treatment period were also computed.

Instrument Validity and Reliability

The validity of an instrument is the degree to which it measures what it is intended to measure. There are four basic types of validity, two of which are examined here. The first type examined was that of content validity. It is determined by the relevance of a test to various types of criteria, one of which is the pooled judgment of "experts". In this study, both questionnaires were examined by three experts in the field of Physical Education and its relationship to the socio-psychological aspects of society and were construed to possess content validity.

The second type of validity investigated was that of "concurrent validity". It is calculated by correlating the results gained by the instrument with an independent criterion. In education especially, this "independent criterion" is often the class teachers' estimates of the students' abilities in the field which the instrument is reputed to measure. Although both the sociometric index (S.I.) and the self-concept index were both tested for concurrent validity in this manner, the teachers were not asked to assess their

pupils on either the cohesion or the enjoyment indices as it was felt that they could not possibly accurately assess individuals on these indices due to the complexities of these variables. One example of this would be the child who is not particularly popular in the class group but who, due to an exigency for the feeling of affiliation, feels a strong attraction to his class. Owing to the fact that he is not popular, it could be construed that he does not feel a strong attraction to the class group when, in fact, the converse is true. However, the scales from which the cohesion index was derived (Festinger, 1950; Seashore, 1954) have both reported high validity scores.

Delimitations and Limitations

Delimitations

1. The sampling of subjects was delimited to forty-eight grade three male and female children in the Edmonton Separate School System. The subjects ranged from eight to ten years of age.
2. The types of modified games included in this experiment were delimited to volley-basketball and soccer.

Limitations

1. This study examined the effects of forced intra-team cooperation on self-concept, social status, cohesion and enjoyment. However, it is possible that the treatment period could have had profound

effects on variables which were not specifically examined here.

2. Owing to the fact that this study was limited to the examination of grade three children in Edmonton, any generalizations arising from this study will not be applicable to other areas or age groups.
3. In a "quasi" experimental study of this nature it is not possible to control all variables which could affect the results. However, in this study every effort was made to control variables which the experimenter construed to be crucial such as the attitude of the experimenter toward each of the class groups, the frequency and duration of the activity sessions and the fact that both groups were informed that they were involved in testing the effectiveness of a new program of games.
4. A total treatment period of one month is not of sufficient duration to take full impact. This is due to the fact that it has taken a full academic year for the children to develop their attitudes concerning their peers. One month of physical activity is not a long enough period to negate these attitudes completely. However, it was hoped that certain trends may be evident.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

This chapter consists of a presentation, and discussion, of the findings. The chapter begins with the reliability and validity scores of the research instruments. Frequency breakdowns of the subjects by class, sex and age are then included. Results pertaining to the hypotheses tested are presented. An analysis of the attitudes of the subjects toward the games they played follows, together with selected excerpts from the interviews conducted with subjects from both groups. The chapter concludes with a discussion of the major findings.

RESULTS

INSTRUMENT VALIDITY AND RELIABILITY

The convergent validity scores (measured by Spearman's r) of the sociometric and self-concept indices with the teachers' rankings were 0.90 and 0.62 respectively. Both correlations were statistically significant at the .001 level. Thus, both indices were found to be satisfactorily valid instruments.

The test-retest reliability coefficients for the control group over the four week period between the two tests are presented below in Table I.

Table I

RELIABILITY COEFFICIENTS FOR COHESION, SELF-CONCEPT AND SOCIOMETRIC INDICES FOR CONTROL GROUP

Measure	Spearman's r Coefficient
Cohesion Index	.67 ***
Self-Concept Index	.74 ***
Sociometric Index	.87 ***

*** $p \leq .001$

Thus, it can also be clearly seen that the above research instruments were found to be satisfactorily reliable.

FREQUENCY BREAKDOWN OF SUBJECTS BY CLASS, AGE AND SEX

A total of forty-eight children participated in this experiment, twenty-four being in each of the two class groups. The distribution of the subjects in terms of age and class group is presented in Table II.

Table II

DISTRIBUTION OF SUBJECTS BY AGE AND CLASS

CLASS GROUP	AGE			TOTAL
	Eight	Nine	Ten	
Control	19	4	1	24
Experimental	17	6	1	24
TOTAL	36	10	2	48

Mean Age = 8.6 years

Table III shows the frequency breakdown of subjects by sex and class group.

Table III

DISTRIBUTION OF SUBJECTS BY SEX AND CLASS

CLASS GROUP	SEX		TOTAL
	Male	Female	
Control	11	13	24
Experimental	10	14	24
TOTAL	21	27	48

RESULTS PERTAINING TO THE HYPOTHESES TESTED

Hypothesis 1 At the end of the treatment period, the experimental class group will have experienced a greater increase in group cohesion than the control group.

This hypothesis was clearly not supported. As can be seen by examining Table IV there were no significant differences between the scores of the two groups on either the pretest or the posttest measures.

Table IV

SUMMARY OF THE TWO-WAY ANALYSIS OF VARIANCE OF THE PRETEST AND POSTTEST SCORES ON THE COHESION INDEX BETWEEN THE TWO GROUPS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Groups (G)	16.67	1	16.67	2.34
Time (T)	1.04	1	1.04	0.37
G x T	0.17	1	0.17	0.06
Error	456.08	92	9.92	

(one-tailed test, n = 48)

Both groups scored highly on the cohesion index on the pretest measure and although there was a minimal rise in scores by both groups after the treatment period, this increase did not approach significance.

Hypothesis 2 At the end of the treatment period, children in the experimental group will have experienced greater improvement in their self-concept of their ability to play games than the children in the control group.

This hypothesis was strongly supported by the results. The difference between the groups in terms of improvement in self-concept of ability to play games was significant beyond the .001 level.

Table V

ONE-WAY ANALYSIS OF VARIANCE OF IMPROVEMENT SCORES ON THE SELF-CONCEPT INDEX BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between Groups	1	256.69	256.69	20.87 ***
Within Groups	46	565.80	12.30	
Total		822.49		

*** $p \leq .001$ (one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 0.239, p = 0.625

It should be noted, however, that this highly significant difference was in terms of improvement and not in terms of absolute scores. In fact, on the pretest measure the control group had significantly higher self-concept scores than the

experimental group.

Table VI

ONE-WAY ANALYSIS OF VARIANCE OF THE PRETEST SCORES ON THE SELF-CONCEPT INDEX BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between Groups	1	150.52	150.52	5.72 *
Within Groups	46	1211.46	26.33	
Total	47	1361.98		

* $p \leq .05$ (one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 0.006, p = 0.937

However, after the treatment period, this significant difference ceased to exist. Table VII shows that the major reasons for this change were the duration between the two tests and the interaction effect between the groups and the duration between the two tests.

Table VII

SUMMARY OF THE TWO-WAY ANALYSIS OF VARIANCE OF THE PRETEST AND POSTTEST SCORES ON THE SELF-CONCEPT INDEX BETWEEN THE TWO GROUPS

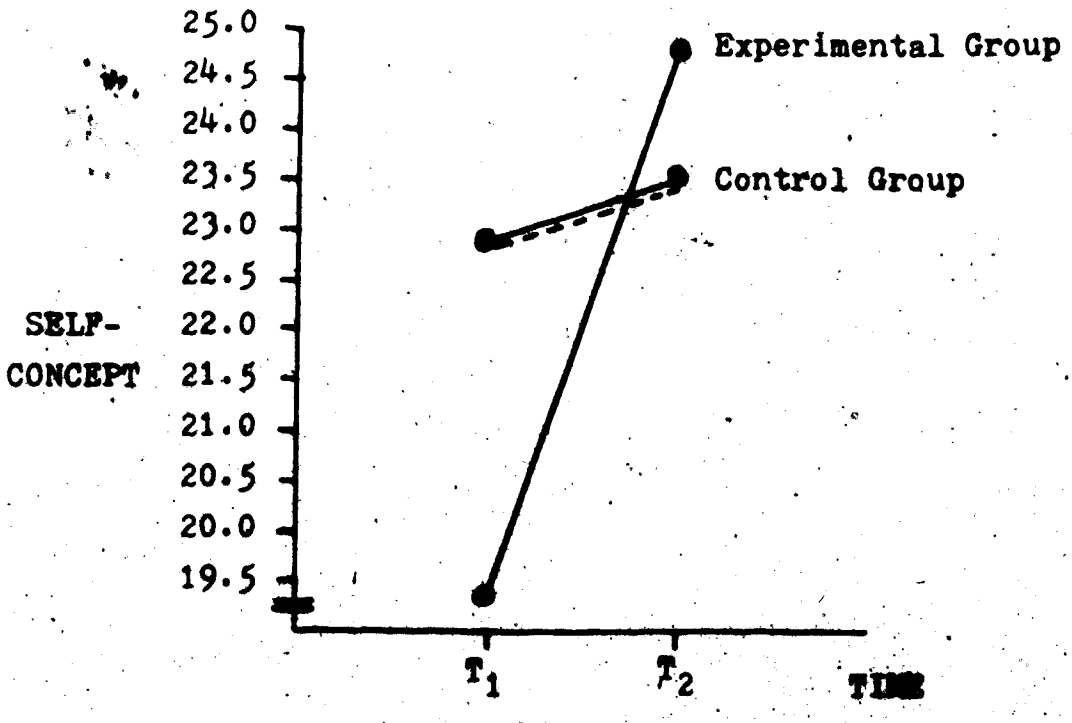
Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Groups (G)	1	36.26	36.26	0.99
Time (T)	1	201.26	201.26	32.73 ***
TxG	1	128.34	128.34	20.87 ***
Error	92	1951.30	42.41	

*** $p \leq .001$ (one-tailed test, n = 48)

A graphical representation of the interaction effect which took place between the variables "time and groups" is shown in Figure 1.

Figure 1

INTERACTION EFFECT BETWEEN TIME AND GROUPS ON SELF-CONCEPT



Hypothesis 3 At the end of the treatment period, there will have been a greater improvement in terms of interpersonal liking in the experimental group than in the control group.

This hypothesis was supported by the results at the .05 level of significance. Table VIII shows that there were no significant differences in terms of sociometric scores on the pretest measure between the two groups. There was, however, a significant difference between the two groups on the posttest measure concerning improved interpersonal liking. Table IX exhibits this difference.

Table VIII

ONE-WAY ANALYSIS OF VARIANCE OF THE PRETEST SCORES ON THE SOCIOMETRIC INDEX BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	5985.25	5985.25	3.84
Within groups	46	71643.75	1557.47	
Total	47	77629.00		

(one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 1.375, p = 0.24

Table IX

ONE-WAY ANALYSIS OF VARIANCE OF IMPROVED INTERPERSONAL LIKING SCORES BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	133.33	133.33	4.81 *
Within groups	46	1274.58	27.71	
Total	47	1407.91		

* $p \leq .05$ (one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 38.6, $p \leq .001$

Hypothesis 4 The experimental group will express more enjoyment of their activity during the treatment period than the control group.

This hypothesis was strongly supported by the results. The experimental group clearly experienced more enjoyment from participating in their games program than did their counterparts in the control group. Table X presents the results.

Table X

ONE-WAY ANALYSIS OF VARIANCE OF THE SCORES ON THE ENJOYMENT INDEX BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	28.51	28.51	14.11 ***
Within groups	46	92.96	2.02	
Total	47	121.48		

*** $p \leq .001$ (one-tailed test, $n = 48$)

Test for Homogeneity of Variances

Bartlett - Box F = 10.98, $p \leq .001$

Hypothesis 5 At the end of the treatment period, children in the experimental group will perceive themselves to have been more involved in the games they played than will children in the control group.

This hypothesis was supported by the results at the .05 level of significance. On the pretest measure there had been no significant difference between the groups in terms of their perception of involvement. Table XI shows this homogeneity. However, on the posttest measure the experimental group had a significantly higher perception of

involvement in the games they played than the control group. This increase is presented in Table XII.

Table XI

ONE-WAY ANALYSIS OF VARIANCE OF THE PRETEST SCORES ON PERCEPTION OF INVOLVEMENT BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	0.33	0.33	0.25
Within groups	46	60.92	1.32	
Total	47	61.25		

(one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 0.75, p = 0.38

Table XII

ONE-WAY ANALYSIS OF VARIANCE OF THE POSTTEST SCORES ON, PERCEPTION OF INVOLVEMENT BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	4.69	4.69	7.118 *
Within groups	46	30.29	0.66	
Total	47	34.98		

* $p \leq .05$ (one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 1.79, p = 0.18

Hypothesis 6 At the end of the treatment period, children in the experimental group will perceive themselves to have

received the ball more often during the games than will children in the control group.

This hypothesis was not confirmed by the results of this experiment. The results did approach significance ($p \leq .08$) on the posttest measure, but did not achieve the required level of significance for acceptance in this experiment ($p \leq .05$). Tables XIII and XIV show that there were no significant differences between the two groups on either of the measures.

Table XIII

ONE-WAY ANALYSIS OF VARIANCE OF THE PRETEST SCORES ON PERCEPTION OF FREQUENCY OF RECEIVING THE BALL BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	3.00	3.00	1.69
Within groups	46	81.67	1.78	
Total	47	84.67		

(one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 0.01, p = 0.91

Table XIV

ONE-WAY ANALYSIS OF VARIANCE OF THE POSTTEST SCORES ON PERCEPTION OF FREQUENCY OF RECEIVING THE BALL BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	1.69	1.69	3.20
Within groups	46	24.29	0.53	
Total	47	25.98		

(one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 1.61, p = .20

Despite the fact that there were no significant differences between the two groups regarding perception of frequency of receiving the ball, there was a significant improvement in perception scores for the experimental group over the period between the pretest and the posttest measures. This improvement was compared to the degree of control group improvement over the same period. Table XV shows that the improvement perceived by the experimental group was significantly greater than the control group.

Table XV

ONE-WAY ANALYSIS OF VARIANCE OF THE IMPROVEMENT IN PERCEPTION OF RECEIVING THE BALL BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	9.19	9.19	6.91 *
Within groups	46	61.13	1.33	
Total	47	70.32		

* p = .05 (one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 0.40, p = 0.05

Hypothesis 7 At the end of the treatment period, children in the experimental group will feel more positively toward future participation in physical activity than will children in the control group.

This hypothesis was moderately supported by the results of this experiment. Children in the experimental group did feel more positively than their counterparts in the control group toward future participation in physical activity and games on the posttest measure, despite the fact that there was no significant difference between the two groups on the pretest scores. Table XVI shows that there was no difference between the groups on the pretest measure, Table XVII shows that a difference existed on the posttest measure.

Table XVI

ONE-WAY ANALYSIS OF VARIANCE OF PRETEST SCORES REGARDING ATTITUDE TOWARD FUTURE PARTICIPATION IN PHYSICAL ACTIVITY AND GAMES BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	0.08	0.08	0.12
Within groups	46	31.83	0.69	
Total	47	31.91		

(one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 0.33, p = 0.57

Table XVII

ONE-WAY ANALYSIS OF VARIANCE OF POSTTEST SCORES REGARDING ATTITUDE TOWARD FUTURE PARTICIPATION IN PHYSICAL ACTIVITY AND GAMES BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between groups	1	2.52	2.52	4.74 *
Within groups	46	24.46	0.53	
Total	47	26.98		

* $p \leq .05$ (one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 11.02, $p \leq 0.001$

Hypothesis 8 At the end of the treatment period, children in the experimental group will perceive more of their peers to have improved in terms of their ability to play games than will children in the control group.

This hypothesis was strongly supported by the results of this experiment. As can be clearly seen by examining Table XVIII, children in the experimental group perceived significantly more of their peers to have improved their ability to play games.

Table XVIII

ONE-WAY ANALYSIS OF VARIANCE OF THE NUMBER OF PEERS PERCEIVED TO HAVE IMPROVED THEIR ABILITY TO PLAY GAMES BETWEEN THE TWO GROUPS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Between Groups	1	391.02	391.02	8.71 **
Within Groups	46	2065.46	44.90	
Total	47	2456.48		

** $p < .01$ (one-tailed test, n = 48)

Test for Homogeneity of Variances

Bartlett - Box F = 19.45, $p < .001$

ATTITUDES OF THE SUBJECTS TOWARD THE GAMES

The attitudes of the subjects toward the games are presented in Tables XIX - XXVIII. Each table represents the total number of responses to a particular question in the posttest questionnaire which concerned the subjects' feelings and attitudes toward the games they played. Each table contains frequency and percentage breakdowns of the number of occasions a particular response occurred.

INTERVIEW EXCERPTS

The following excerpts are quotations from interviews with children from each of the following categories: Experimental group - low-ability child, high-ability child; Control group - low-ability child, high-ability child. The information collected from these interviews represents some of the most interesting and pertinent information gathered in this experiment. Additional excerpts can be found in Appendix E.

Table XIX

Question 32. Experimental Group.

What things did you like most about the games?

# SUBJECTS	% SUBJECTS	RESPONSES
20	83.3	The passing
12	50.0	Small teams
10	41.7	It was fun
5	20.8	Players could not run with the ball in basketball
4	16.7	Games were easy to play
4	16.7	Everyone had a chance to receive the ball
3	12.5	Scoring
3	12.5	Kicking
2	8.3	Catching
2	8.3	Small playing area
1	4.2	Trying to beat the other team
1	4.2	Players could run with the ball in soccer
1	4.2	Being in goal
1	4.2	Teams were even

Table XX

Question 32. Control Group.

What things did you like most about the games?

# SUBJECTS	% SUBJECTS	RESPONSES
8	33.3	Kicking
6	25.0	Scoring
5	20.8	Passing
3	12.5	Throwing
3	12.5	Catching
2	8.3	Being in goal
2	8.3	No goalies
2	8.3	Low goals
1	4.2	The games made the players run around
1	4.2	Winning
1	4.2	No tackling in basketball
1	4.2	Games were exciting
1	4.2	Everything

Table XXI

Question 33. Experimental Group.

What were the worst things about the games?

# SUBJECTS	% SUBJECTS	RESPONSES
12	50.0	Nothing
6	25.0	Kids arguing with each other
3	12.5	Some kids were too rough
2	8.3	When the other team scored
1	4.2	No goalie in soccer
1	4.2	Too many rules in basketball
1	4.2	Losing
1	4.2	Not with friends on the same team very often
1	4.2	Kids guarding too closely
1	4.2	Kids trying to knock the ball out of the player's hands

Table XXII

Question 33. Control Group.

What were the worst things about the games?

# SUBJECTS	% SUBJECTS	RESPONSES
6	25.0	Nothing
6	25.0	Some players did not pass
4	16.7	Children arguing amongst themselves
3	12.5	Children not playing to the rules
2	8.3	Children not moving into empty spaces
2	8.3	Rules in basketball (that is, not being able to run with ball)
2	8.3	Losing
2	8.3	Kids guarding too closely
1	4.2	Not playing all the time when in the gym
1	4.2	Not receiving a pass

Table XXIII

Question 34. Experimental Group.

What changes could we make in the games to make them more fun?

# SUBJECTS	% SUBJECTS	RESPONSES
14	58.3	Nothing
3	12.5	Have less rules in volley-basketball
2	8.3	Have smaller teams (3 per team) so that players can have more of the ball
2	8.3	Have goalies in soccer
1	4.2	Make the playing area bigger
1	4.2	Have no boundary lines
1	4.2	Have more passing, players would receive the ball twice before any player can shoot at goal
1	4.2	Everyone should get the same amount of time with the ball
1	4.2	Class should be split into two teams

Table XXIV

Question 34. Control Group

What changes could we make in the games to make them more fun?

# SUBJECTS	% SUBJECTS	RESPONSES
12	50.0	Nothing
4	16.7	Allow moving with the ball in volley-basketball
3	12.5	Allow dribbling with the ball in volley-basketball
2	8.3	Have penalties for rough play
1	4.2	Have smaller goals in soccer
1	4.2	Divide the class into two teams and play
1	4.2	Have hoops (as in "real" basketball)
1	4.2	Make the players pass more often
1	4.2	Have fewer rules in volley-basketball

Table XXV

Question 35. Experimental Group.

If you had to choose one thing that you felt was the best thing about the games, what would you choose?

# SUBJECTS	% SUBJECTS	RESPONSES
16	66.7	Having to pass to teammates
2	8.3	It was fun
2	8.3	Winning
1	4.2	No body contact
1	4.2	Penalties for rough play
1	4.2	Nobody's feelings were hurt
1	4.2	Players were fair

Table XXVI

Question 35. Control Group.

If you had to choose one thing that you felt was the best thing about the games, what would you choose?

# SUBJECTS	% SUBJECTS	RESPONSES
5	20.8	They were enjoyable
5	20.8	There was plenty of scoring
3	12.5	Catching
2	8.3	Passing
2	8.3	Kicking
2	8.3	Winning
2	8.3	Having small teams
1	4.2	Throwing
1	4.2	Being a goalie in volley-basketball
1	4.2	Having no goalie in soccer

Table XXVII

Question 36. Experimental Group.

If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

# SUBJECTS	% SUBJECTS	RESPONSES
13	54.1	Nothing
4	16.7	Too much arguing between the players
1	4.2	Blocking
1	4.2	No goalkeepers in soccer
1	4.2	Too many rules in volley-basketball
1	4.2	Losing
1	4.2	Players trying to score by themselves
1	4.2	Players taking the ball from another player unfairly
1	4.2	Not scoring

Table XXVIII

Question 36. Control Group.

If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

#SUBJECTS	% SUBJECTS	RESPONSES
5	20.8	Some players did not pass
4	16.7	Players arguing between themselves
3	12.5	Players guarding too closely
2	8.3	Tackling in soccer
2	8.3	Losing
2	8.3	Players not playing to the rules
2	8.3	Not being able to run with the ball in volley-basketball
1	4.2	Not catching the ball
1	4.2	Not scoring
1	4.2	The other team scoring
1	4.2	Goalies in volley-basketball - not as exciting as a hoop.

One low-ability and one high-ability child have been included from each of the groups.

1. Experimental Group - low-ability child

Q. What things did you like most about the games?

A. I had a chance to score.

Q. Don't you usually have a chance to score during games classes?

A. No, I never score. Dean and Richard always score.

Q. Did you score during these games?

A. Yes, twice.

Q. What were the worst things about the games?

A. Basketball, there were too many rules in basketball to have to remember.

Q. What changes could we make in the games to make them more fun?

A. Have less rules in basketball.

Q. Anything else?

A. Have more passing.

Q. What do you mean?

A. Make the ball go around two times.

Q. If you had to choose one thing that you felt was the best thing about the games, what would you choose?

A. Everybody got to touch the ball.

Q. Don't you always get to touch the ball during games classes?

A. No, sometimes I never touch the ball.

Q. If you had to choose one thing that you felt was <u>the</u> worst thing about the games, what would you choose?

A. Too many rules in basketball.

2. <u>Experimental Group - high-ability child</u>

Q. What things did you like most about the games?

A. Passing to everyone.

Q. Don't you usually pass to everyone?

A. Yes, I do ; but some of the other kids don't.

Q. Was there anything else you liked?

A. Yes, there was no rough play.

Q. What were the worst things about the games?

A. Nothing.

Q. There was nothing that you didn't like about the games?

A. No.

Q. What changes could we make in the games to make them more fun?

A. Nothing.

Q. Nothing at all?

A. No, they're fun enough.

Q. If you had to choose one thing that you felt was <u>the</u> best thing about the games, what would you choose?

A. Nobody's feelings were hurt.

Q. What do you mean?

A. Well, everyone touched the ball, nobody was left out.

Q. Are some children usually left out?

A. Yes, the shy ones.

Q. If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

A. Nothing.

3. Control Group - low-ability child

Q. What things did you like most about the games?

A. They made you run around.

Q. Anything else?

A. Yes, there was lots of scoring.

Q. What were the worst things about the games?

A. Hardly anyone passed to me.

Q. Do people usually pass to you?

A. No, they usually hog the ball.

Q. What changes could we make in the games to make them more fun?

A. Have penalties for rough play.

Q. Any other changes?

A. No.

Q. If you had to choose one thing that you felt was the best thing about the games, what would you choose?

A. There were lots of goals.

Q. If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

A. Some kids hogged the ball, only passed to their friends.

4. Control Group - high-ability child

Q. What things did you like most about the games?

A. Low goals in soccer.

Q. Anything else?

A. Yes, no goalies in soccer.

Q. What were the worst things about the games?

A. Basketball, I hated basketball.

Q. Why did you hate basketball?

A. Because I couldn't run when I had the ball.

Q. What changes could we make in the games to make them more fun?

A. Let the kids run with the ball in basketball.

Q. Why do you want to run with the ball?

A. 'Cause I hate standing still.

Q. If you had to choose one thing that you felt was the best thing about the games, what would you choose?

A. Small teams.

Q. Why did you like the small teams?

A. 'Cause everyone gets more time with the ball.

Q. Everyone?

A. Well, almost everyone.

Q. If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

A. Not being able to run with the ball in basketball.

DISCUSSION

There were basically two main aims of this study. The first aim was to develop the means by which game environments for children can be evaluated. The second was to use the evolved instruments and methods to compare the effects on children of traditional game structures with the effects of an alternative game structure, which has an emphasis on forced cooperation within each team unit. The results of this experiment will be discussed in relation to these two major objectives.

Instrumentation: Reliability and Validity

The degree to which the first objective was achieved was dependent upon the reliability and validity of the instruments utilized in this experiment.

The results of the test-retest reliability study on the control group provided strong confirmation of the reliability of the indices used to measure the social climate of the group, the degree of cohesion present within the group and the self-concept of each child with respect to their ability at games. Unfortunately, no reliability check was performed on the index used to measure the degree of enjoyment experienced by the children. This index was only included in the posttest questionnaire.

External validity studies were performed on the sociometric and self-concept indices and both instruments were found to be highly valid. However, no explicit,

external studies were conducted on either the cohesion index or the enjoyment index. Despite this fact, it should be noted that Sherwood (1962) has stated that an indication of the validity of any instrument "is the degree to which empirical predictions, based on the theory from which the instrument was derived, are supported" (1962: 120). Using this criterion, it appears that whilst the enjoyment index can be construed as a valid instrument, the cohesion scale cannot be accepted as valid. Throughout the two testing periods, it was apparent that the cohesion index was not a sensitive instrument. An examination of Table IV reveals that there was virtually no variation between the scores of the two groups on either of the two measures. There are a number of possible explanations for this occurrence; first, both groups could have been highly cohesive units at the onset of the experiment and the treatment period had virtually no effect on the degree of cohesion present within the groups, second, both groups experienced treatment periods during which the children played with and against their peers and this process whereby their peers were also opponents could cancel out any beneficial effects on class cohesion, and third, the cohesion index could be an invalid and/or insensitive instrument. Irrespective of whichever explanation is correct in this instance, the combination of the facts that no validity check was conducted on the cohesion index and that the hypothesis concerning cohesion

was not supported means that, although the index could still be valid, it cannot be accepted as such in this experiment.

However, the questionnaires utilized in this experiment must be considered valid and reliable instruments, with the exception of the cohesion index. Therefore, it can be stated that the first major objective of this study was, to a great extent, achieved.

Comparison of the Socio-Psychological Outcomes of the Modified, Cooperation-Oriented Game Environments with More Traditional Game Structures

This section contains the discussion of the results pertaining to the second of the two major aims of this study. Herein will be discussed the results relevant to the hypotheses tested, the analysis of the attitudes of the subjects toward the game environments they experienced and selected excerpts from the interviews conducted with the subjects.

The results of the hypotheses tested revealed that:

1. The experimental group did not experience a greater increase in group cohesion than the control group.
2. The children in the experimental group experienced a significantly greater increase in terms of self-concept of their ability to play games than the control group. ($p \leq .001$)
3. The children in the experimental group exhibited

significantly greater improvement with regard to interpersonal liking than the control group. ($p \leq .01$)

4. The children in the experimental group perceived themselves to have been significantly more involved in the games they played than the control group. ($p \leq .05$)

5. The children in the experimental group did not perceive themselves to have received the ball significantly more often during the games they played than the control group. They did, however, experience a significantly greater improvement in terms of this variable over the duration of the treatment period than did the control group. ($p \leq .05$)

6. The children in the experimental group perceived significantly more of their peers to have improved their ability to play games than the control group. ($p \leq .01$)

7. The children in the experimental group expressed significantly more enjoyment of activity during the treatment period than the control group. ($p \leq .001$)

8. The children in the experimental group felt significantly more positive toward future participation in physical activity and games than the control group. ($p \leq .05$)

These results show that, with the exception of cohesion, the game environments experienced by the

experimental group were considerably more effective in influencing the socio-psychological outcomes which were selected as criterion measures in this experiment.

An examination of the responses of the subjects in the experimental group toward the games they played revealed a number of interesting facts. Over eighty-three per cent of the children stated that having to pass was one of the best aspects of the games they played, whilst over sixty-six per cent felt that having to pass was the best thing about the games. No child made any negative remark concerning the rule requiring them to pass to their team-mates before an attempt to score could be made. When asked to choose the aspect of the game they considered was the worst, over fifty-four per cent of the children responded that there was nothing they thought was bad about the games.

Conversely, the children in the control group expressed significantly more negative comments about the games they played than the experimental group. Twenty-five per cent of the children stated that one of the worst aspects of the games was the fact that some players did not pass to their teammates. Only twenty-five per cent, as compared to fifty per cent in the experimental group, stated that there were no bad aspects to the games. The greatest number of responses to the question asking the children to choose one thing that they felt was the worst thing about the games was that some players did not pass. Over twenty per cent of the

subjects responded in that manner. The children in the control group were also in considerably less agreement concerning the aspect of the games they liked most. Kicking the ball in soccer was the choice of over thirty-three per cent of the subjects, scoring was the choice of twenty-five per cent, whilst passing received only twenty per cent of the subjects' votes.

An interesting, and gratifying, fact to be discovered from the interviews conducted by the experimenter was that, in addition to the lesser-able children enjoying the games played by the experimental group, the better-skilled players also experienced a high of enjoyment from their participation. The experimental treatment of forced intra-team cooperation was primarily designed to attempt to aid the lesser-skilled children become more involved in the games they played during physical education classes in particular and physical activity in general. One criticism which could be aimed at this objective is that the better-able could become bored and/or frustrated with the games and their peers. This was not the case in this experiment as it was apparent that the better-skilled players could still dominate the flow of play, whilst at the same time cooperating with their lesser-able peers.

Having presented the statistical results and reviewed the attitudes of the participant children, it may be fitting to include a statement by the classroom teacher of the

experimental group concerning her impression of the effects of the forced intra-team cooperation on the children:

> "Mr. Craig consistently applied to each game the rule that each player must touch the ball before a score could be made. This did much to involve all players including the former 'non-players'. There was true enjoyment among the children in his gym sessions even though they really 'worked out' and were very tired when the gym periods were over. This enjoyment came to several players who, prior to the 'Craig era', had been content to let the other more aggressive players carry the ball. They, perhaps for the first time, had a real feeling of accomplishment in a phys. ed. game just because of their participation."
>
> (Scott, 1975: 1 - 2)

A number of the findings of this study confirm the results of previous research. The fact that cooperation increased the degree of interpersonal liking within the group supports the findings of Aronson (1975), Phillips and D'Amico (1960) and Sherif (1956). The result of the study conducted by Aronson (1975) concerning the positive influence of cooperation on self-concept was also supported. The belief of Orlick (1972) that there exists a direct relationship between the quality of an individual's initial exposures to physical activity and whether or not that individual will choose to continue to participate in physical activity in adulthood was confirmed by the findings of this study. The environments which were experienced by the experimental group were what Orlick would consider to be "positive" and these positive exposures resulted in the experimental group developing significantly more positive

attitudes toward future participation in physical activity and games than the control group.

One of the major criticisms of physical education games programs in general is that they tend to be oriented toward the better-skilled performers (Hall, 1974; Robbins, 1973). This criticism has been formulated because of the competitive nature of many of the activities which are incorporated in these programs, together with the fact that no restrictions are usually placed on the better-skilled players to prevent them from monopolizing the flow of play during the games. This is particularly true in games such as ice hockey, basketball, soccer and field hockey where the better-able players can move around the entire playing surface "helping" their less-able peers. The result is that those individuals who need the practice most actually acquire the least, whereas those who need the practice least acquire the most. What occurs is that the gap between the better-skilled and lesser-skilled children widens and, as Robbins (1973) states, "the good get better and the poor get poorer".

The findings of this experiment show that this criticism of physical education games programs can be negated by incorporating forced intra-team cooperation into the rule structures of the games played. This degree of required sharing ensures that every child is involved in the games they play and that they benefit from their participation. This game modification, then, represents one

physical education can ensure that all children derive enjoyment from their participation and improve their skills in addition.

If elementary schools do incorporate this form of cooperation into their physical education games programs on a widespread scale then it is possible to postulate that this didactic mechanism could contribute to increased frequency of Canadian participation in physical activity in the future. This would greatly benefit society in general as it has already been shown in this thesis that previous research has found that there is a positive relationship between frequency of physical activity and health.

The results of this experiment have also shown that it is possible to derive benefits from the elements of both competition and cooperation inherent in games. The problems arise when there is an over-emphasis of either of these components at the expense of the other. It must be realized that children in this culture live in a society in which competition plays an important role and, as a result, they enjoy competing. However, it is important that every child experiences some degree of success whilst competing. Additionally, it has been shown in this thesis that there are great socio-psychological benefits to be derived from cooperation. Therefore, physical education games programs should attempt to maximise the benefits of both competition

and cooperation, particularly until children are sufficiently psychologically mature to be able to cope with competition and develop realistic self-concepts of their physical ability.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

There were basically two major objectives in this experiment. The first was to develop the conceptual and empirical tools necessary for the systematic development, and socio-psychological evaluation, of different game environments for children. The second objective was to utilize the evolved conceptual schema and methodology to compare the socio-psychological outcomes of modified, cooperation-oriented game environments with the outcomes of more traditional game structures.

The study sample was limited to forty-eight male and female children, twenty-four being in each of the two groups. The experimental design utilized was the Nonequivalent Control Group Design. The subjects were not randomly assigned to either the experimental or the control group as it was imperative, due to the nature of the experiment, that each child be thoroughly conversant with the abilities and personalities of all other children in their group. For this reason, both class units were left intact and represented the control and the experimental groups.

The subjects were interviewed by the experimenter before and after the treatment period in order to complete the pretest and posttest questionnaires respectively.

These questionnaires were designed to examine the effects of the treatment period on the social climate of the group, the degree of cohesion present within the group, the self-concept of each individual in the group in terms of their ability to play games and the degree of enjoyment experienced by each individual in the group resulting from their participation in the treatment period.

The treatment period consisted of a four week period during which the children from both groups participated in small-sided, scaled-down games of soccer and volley-basketball. The children participated in three one-hour sessions per week for the period of four weeks. The one difference between the treatments experienced by the two groups was that the children in the experimental group were forced to cooperate with their teammates. This "forced intra-team cooperation" was achieved by the incorporation of a rule stating that each player in a team had to receive the ball at least once before any player in that team could attempt to score. The quantitative data collected were subjected to one-way and two-way analyses of variance in order to determine significant differences between the control and experimental groups on the variables measured. Kendall's tau and Spearman's r were used to compute validity and reliability coefficients for the instruments used to measure the effects of the treatment period on the children who participated. Frequency and percentage breakdowns of the

subjects with respect to class, age, sex and attitudes toward the treatment period were also computed.

The results indicate that the questionnaires utilized in this study are valid and reliable instruments, with the one exception of the cohesion index which was found to be reliable ($p \leq .001$) but could not be accepted as valid. It was also found that the treatment period experienced by the experimental group resulted in the children:

1. Acquiring significantly higher self-concepts of their ability to play games than the control group ($p \leq .001$).
2. Experiencing significantly greater improvement in terms of interpersonal liking within the group than the control group ($p \leq .05$).
3. Perceiving themselves to have been significantly more involved in the games they played than the control group ($p \leq .05$).
4. Experiencing significantly greater improvement in terms of perception of frequency of receiving the ball than the control group ($p \leq .05$).
5. Feeling significantly more positive toward future participation in physical activity and games than the control group ($p \leq .05$).
6. Perceiving significantly more of their peers to have improved in terms of their ability to play games than the control group ($p \leq .01$).
7. Expressing significantly greater enjoy[illegible] their

activity during the treatment period than the control group ($p < .001$).

However, it should also be noted that there were no significant differences between the groups in terms of the degree of cohesion present within the groups or the perception of the children concerning the absolute frequency of their receiving the ball during the treatment period games.

Conclusions

The main conclusions to be drawn from this research are directly related to the two major aims of this experiment. The first aim was to develop the means by which to evaluate game environments for children. The second was to use the evolved methodology and instrumentation to compare the socio-psychological effects of cooperation-oriented game environments with the effects of more traditional game structures.

The first conclusion is that the indices utilized in this experiment are, with the exception of the cohesion index, valid and reliable instruments. They, together with the evolved methodology, constitute a foundation upon which to develop additional conceptual and empirical tools designed to systematically develop alternative game environments for children and evaluate these environments in terms of their socio-psychological effects on the children who participate. Although we cannot discover the precise effects that the

game environments we create are having on the children, we can, however, discover general trends in terms of outcomes. At this juncture, it should be noted that this experiment was concerned with the socio-psychological effects of one particular rule modification. There are many other meaningful modifications which could be made to the accepted structure of games, and numerous additional socio-psychological outcomes which could be examined.

The second conclusion to be drawn from the results of this experiment is that, after utilizing the evolved conceptual schema and methodology to compare the socio-psychological outcomes of the modified, cooperation-oriented game environments with the outcomes of the more traditional game structures, it was evident that the former environments were decidedly superior to the latter game structures in terms of the beneficial socio-psychological outcomes examined in this experiment.

This second conclusion is extremely pertinent to the teaching of games in educational settings. It has already been mentioned in this study that the physical education games programs in many elementary schools feature the implementation of accepted, adult-oriented structures of games and sports without the consideration of either the objectives of education in general or children in particular. It is the author's contention that the experiences which children encounter during physical education classes,

particularly in the elementary school, must aim to contribute to the growth and development of the children, in addition to developing competence in physical, cognitive, affective and moral areas. The results of this experiment reveal that the cooperation-oriented game environments accomplished the aforementioned objectives of physical education to a greater degree than the more traditional game structures.

Therefore, this study supports the belief of many physical educators who maintain that, instead of utilizing accepted game structures en bloc in the elementary school setting, modifications should be introduced to these structures in an attempt to make physical activity and games more enjoyable and meaningful for the young children and not merely the better-skilled ones.

An additional conclusion of this experiment is that the belief of Orlick (1972) that there exists a relationship between the quality of an individual's initial exposures to physical activity and his decision to continue to participate in physical activity in adulthood is, in fact, correct. This study found that the children in the experimental group experienced more beneficial exposures to physical activity than the control group and this resulted in their feeling more positive toward future participation in physical activity and games than their counterparts in the control group.

Suggestions for Further Research

The following are possibilities for future research which have been suggested as a result of the present study:

1. A longitudinal study of the effects of forced intra-team cooperation on a class of children over the period of a school year.
2. The construction of a valid and sensitive instrument designed to measure the effects of a treatment period on the degree of cohesion present within a class group.
3. The examination of additional game modifications with respect to their socio-psychological effects on children of varying ages.
4. An analysis of the effects of team size on participating children.

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APPENDIX A

PRETEST QUESTIONNAIRE

Name _____ Sex _____ Age _____

Teacher's Name _____ Test _____

SECTION A

SOCIOMETRIC INDEX

1. When you are playing games during physical education classes which children would you like best to be in your team?

First Choice _____

Second Choice _____

Third Choice _____

2. When you are playing at recess which children from your class would you like best to play with?

First Choice _____

Second Choice _____

Third Choice _____

3. If you are having a party, which children from your class would you invite to it?

First Choice _____

Second Choice _____

Third Choice _____

4. Which kids in your class are best at games during physical education classes?

First Choice _____

Second Choice _____

Third Choice _____

5. When you are playing games during physical education classes which kids would you least like to be in your team?

First Choice _____

Second Choice _____

Third Choice _____

6. When you are playing at recess which children from your class would you least like to play?

First Choice _____

Second Choice _____

Third Choice _____

7. If you are having a party, which children from your class would you not invite to it?

First Choice _____

Second Choice _____

Third Choice _____

8. Which children in your class are worst at games during physical education classes?

First Choice _____

Second Choice _____

Third Choice _____

SECTION B

COHESION INDEX

9. If you had a chance to take physical education with the other class in your grade, how would you feel about moving?

___ would want very much to move

___ would rather move than stay where I am

___ would make no difference to me

___ would rather stay where I am than move

___ would want very much to stay where I am

10. If you had a chance to transfer into the other class in your grade for good (that is, permanently), how would you feel about moving?

___ would want very much to move

___ would rather move than stay where I am

___ would make no difference to me

___ would rather stay where I am than move

___ would want very much to stay where I am

11. How many children in your class do you like?

___ all of them

___ almost all of them

___ about half of them

___ less than half

___ only a few

___ none

12. How many children in your class like you?

___ all of them

___ almost all of them

___ about half of them

___ less than half

___ only a few

___ none

13. How enjoyable is physical education to you?

___ very enjoyable

___ enjoyable

___ O.K.

___ not very enjoyable

___ not enjoyable at all

14. Is your class better than the other class in your grade at physical education?

___ better

___ about the same

___ not as good

15. Which three children in your school do you spend most of your spare time with, both during and after school?

1 _____ Class _____

2 _____ Class _____

3 _____ Class _____

SECTION C

SELF-CONCEPT INDEX

16. If (child's name) had to give himself/herself a mark out of ten for each of the following things, what mark would he/she give himself/herself?

A Overall mark for playing games

1 2 3 4 5 6 7 8 9 10

B Mark for running

1 2 3 4 5 6 7 8 9 10

C Mark for throwing

1 2 3 4 5 6 7 8 9 10

D Mark for kicking

1 2 3 4 5 6 7 8 9 10

E Mark for catching

1 2 3 4 5 6 7 8 9 10

17. If (teacher's name) had to give (child's name) a mark out of ten for each of the following thihgs, what mark would she give him/her?

A Overall mark for playing games

1 2 3 4 5 6 7 8 9 10

B Mark for running

1 2 3 4 5 6 7 8 9 10

C Mark for throwing

1 2 3 4 5 6 7 8 9 10

D Mark for kicking

1 2 3 4 5 6 7 8 9 10

E Mark for catching

1 2 3 4 5 6 7 8 9 10

18. If all the other kids in (child's name)'s class had to get together and give (child's name) a mark out of ten for each of the following things, what mark would they give him/her?

A Overall mark for playing games

1 2 3 4 5 6 7 8 9 10

B Mark for running

1 2 3 4 5 6 7 8 9 10

C Mark for throwing

1 2 3 4 5 6 7 8 9 10

D Mark for kicking

1 2 3 4 5 6 7 8 9 10

E Mark for catching

1 2 3 4 5 6 7 8 9 10

SECTION D

19. What do you think is most important in playing a game? Place a "1" next to the one most important. Place a "3" next to the one least important.

___ to play as well as you can

___ to beat the other player or team

___ to play the game fairly

20. Are you looking forward to playing these games?

___ yes

___ no

___ do not really care

21. When you grow up (say about my age), do you think that you will still play games that involve "running about"?

___ yes

___ no

___ maybe

22. When you play games during your physical education classes, how involved do you get in the game?

___ really involved

___ involved

___ involved about half the time

___ not very involved

___ not involved at all

23. When you play games during your physical education classes, how often do you receive the ball?

___ very often

___ often

___ sometimes

___ not very often

___ almost never

___ never

APPENDIX B

POSTTEST QUESTIONNAIRE

Name _____ Sex _____ Age _____

Teacher's Name _____ Test _____

SECTION A

SOCIOMETRIC INDEX

1. When you are playing games during physical education classes which children would you like best to be in your team?

First Choice _____

Second Choice _____

Third Choice _____

2. When you are playing at recess which children from your class would you like best to play with?

First Choice _____

Second Choice _____

Third Choice _____

3. If you are having a party, which children from your class would you invite to it?

First Choice _____

Second Choice _____

Third Choice _____

4. Which kids in your class are best at games during physical education classes?

First Choice _____

Second Choice _____

Third Choice _____

5. When you are playing games during physical education classes which kids would you least like to be in your team?

First Choice _____

Second Choice _____

Third Choice _____

6. When you are playing at recess which children from your class would you least like to play?

First Choice _____

Second Choice _____

Third Choice _____

7. If you are having a party, which children from your class would you not invite to it?

First Choice _____

Second Choice _____

Third Choice _____

8. Which children in your class are worst at games during physical education classes?

First Choice _____

Second Choice _____

Third Choice _____

SECTION B

COHESION INDEX

9. If you had a chance to take physical education with the other class in your grade, how would you feel about moving?

___ would want very much to move

___ would rather move than stay where I am

___ would make no difference to me

___ would rather stay where I am than move

___ would want very much to stay where I am

10. If you had a chance to transfer into the other class in your grade for good (that is, permanently), how would you feel about moving?

___ would want very much to move

___ would rather move than stay where I am

___ would make no difference to me

___ would rather stay where I am than move

___ would want very much to stay where I am

11. How many children in your class do you like?

___ all of them

___ almost all of them

___ about half of them

___ less than half

___ only a few

___ none

12. How many children in your class like you?

___ all of them

___ almost all of them

___ about half of them

___ less than half

___ only a few

___ none

13. How enjoyable is physical education to you?

___ very enjoyable

___ enjoyable

___ O.K.

___ not very enjoyable

___ not enjoyable at all

14. Is your class better than the other class in your grade at physical education?

___ better

___ about the same

___ not as good

15. Which three children in your school do you spend most of your spare time with, both during and after school?

1 _____ Class _____

2 _____ Class _____

3 _____ Class _____

SECTION C

SELF-CONCEPT INDEX

16. If (child's name) had to give himself/herself a mark out of ten for each of the following things, what mark would he/she give himself/herself?

A Overall mark for playing games

1 2 3 4 5 6 7 8 9 10

B Mark for running

1 2 3 4 5 6 7 8 9 10

C Mark for throwing

1 2 3 4 5 6 7 8 9 10

D Mark for kicking

1 2 3 4 5 6 7 8 9 10

E Mark for catching

1 2 3 4 5 6 7 8 9 10

17. If (teacher's name) had to give (child's name) a mark out of ten for each of the following things, what mark would she give him/her?

A Overall mark for playing games

1 2 3 4 5 6 7 8 9 10

B Mark for running

1 2 3 4 5 6 7 8 9 10

C Mark for throwing

1 2 3 4 5 6 7 8 9 10

D Mark for kicking

1 2 3 4 5 6 7 8 9 10

E Mark for catching

1 2 3 4 5 6 7 8 9 10

18. If all the other kids in (child's name)'s class had to get together and give (child's name) a mark out of ten for each of the following things, what mark would they give him/her?

A Overall mark for playing games

1 2 3 4 5 6 7 8 9 10

B Mark for running

1 2 3 4 5 6 7 8 9 10

C Mark for throwing

1 2 3 4 5 6 7 8 9 10

D Mark for kicking

1 2 3 4 5 6 7 8 9 10

E Mark for catching

1 2 3 4 5 6 7 8 9 10

SECTION D

19. What do you think is most important in playing a game? Place a "1" next to the one most important. Place a "3" next to the one least important.

___ to play as well as you can

___ to beat the other player or team

___ to play the game fairly

20. Are you looking forward to playing these games?

___ yes

___ no

___ do not really care

21. When you grow up (say about my age), do you think that you will still play games that involve "running about"?

___ yes

___ no

___ maybe

22. When you play games during your physical education classes, how involved do you get in the game?

___ really involved

___ involved

___ involved about half the time

___ not very involved

___ not involved at all

23. When you play games during your physical education classes, how often do you receive the ball?

___ very often

___ often

___ sometimes

___ not very often

___ almost never

___ never

SECTION E

24. Do you think that any children in the class have really improved at playing games because of the games we have played in the past month? If so, which ones?

25. Do you think that any children in the class have got worse at playing games because of the games we have played in the past month? If so, which ones?

26. Do you think that you have begun to like any children better because of the games we have played in the past month? If so, which ones?

27. Do you think that you have begun to like any kids less because of the games we have played in the past month? If so, which ones?

SECTION F

ENJOYMENT INDEX

28. How enjoyable were the games that you played?

___ very enjoyable

___ enjoyable

___ as enjoyable as any other games

___ not very enjoyable

___ not enjoyable at all

29. Compared to your usual physical education classes, how much did you enjoy your physical education classes playing these games?

___ more

___ about the same

___ less

30. Would you like to continue playing games like these during your physical education classes?

___ yes

___ maybe

___ no

31. Compared to how you were a month ago, how good do you think you are now at playing games?

___ much better

___ better

___ about the same

___ not as good

___ not nearly as good

SECTION G

ATTITUDES TO GAMES

32. What things did you like most about the games?

33. What were the worst things about the games?

34. What changes do you think we could make in the games to make them more fun?

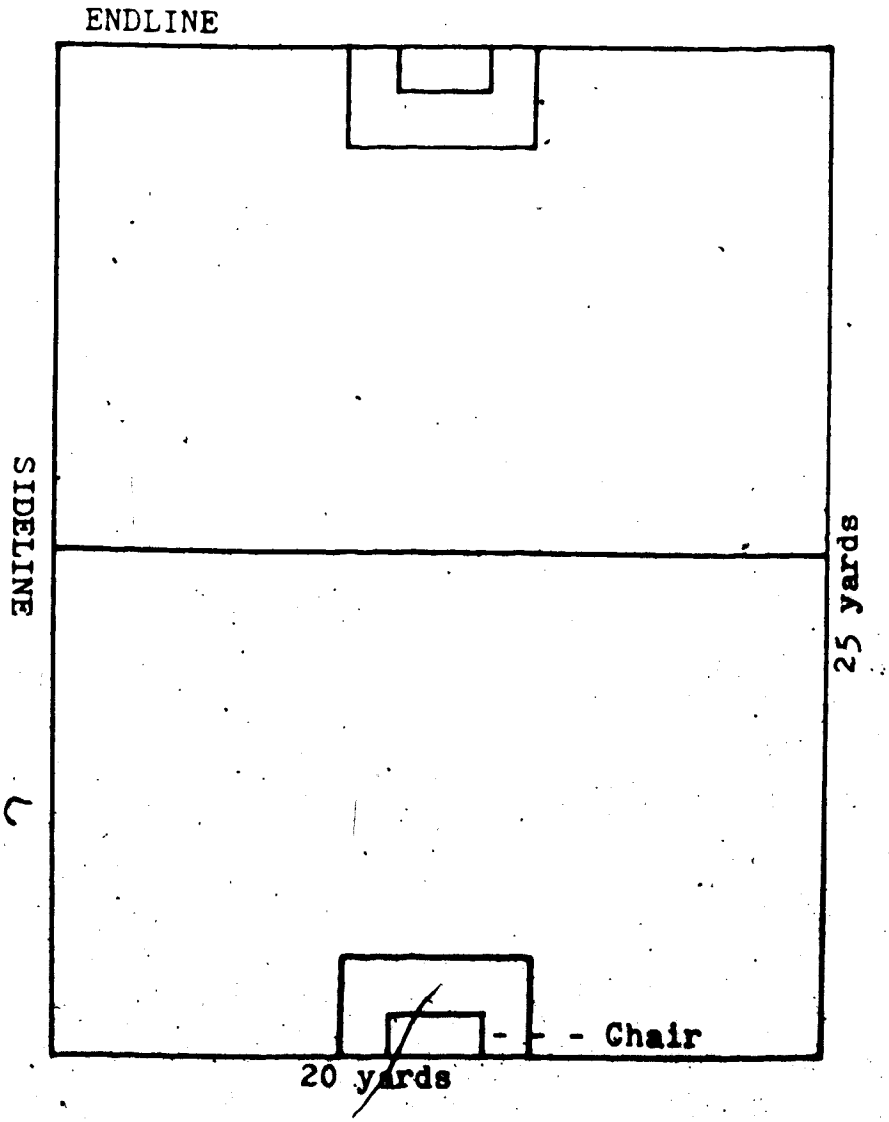
35. If you had to choose one thing that you felt was the best thing about the games, what would you choose?

36. If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

APPENDIX C

PLAYING AREA FOR VOLLEY-BASKETBALL

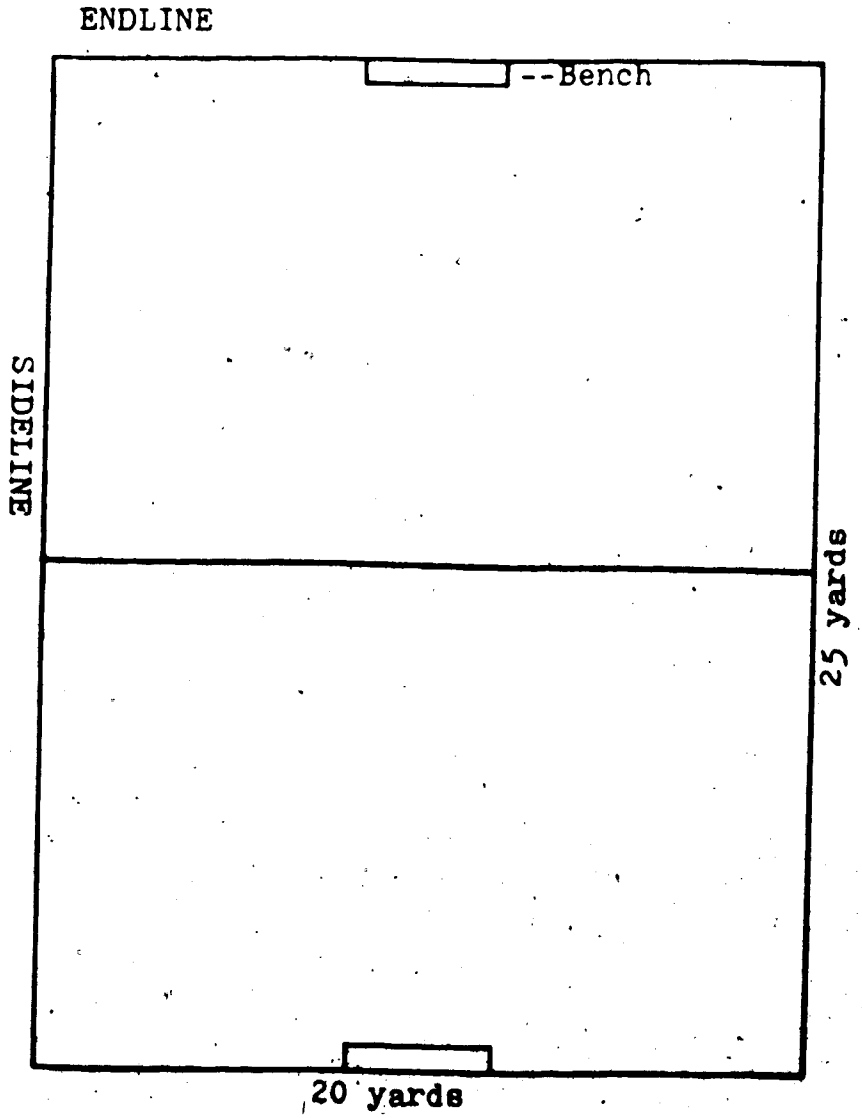
Area of Play for Volley-basketball



APPENDIX D

PLAYING AREA FOR SOCCER

Area of Play for Soccer



APPENDIX E

INTERVIEW EXCERPTS

1. Experimental Group - Low Ability

Q. What things did you like most about the games?

A. It was fun.

Q. Why was it fun?

A. Everybody was passing to each other - everybody got a turn.

Q. Don't the players usually pass?

A. Some kids never pass.

Q. What were the worst things about the games?

A. Some kids blocked in basketball.

Q. Anything else?

A. No.

Q. What changes could we make in the games to make them more fun?

A. I can't think of anything.

Q. If you had to choose one thing that you felt was the best thing about the games, what would you choose?

A. The passing.

Q. If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

A. Nothing.

2. Control Group - Low Ability

Q. What things did you like most about the games?

A. Everybody gets a pass in basketball.

Q. Everybody?

A. Nearly everybody.

Q. What were the worst things about the games?

A. Some kids were greedy and hogged the ball.

Q. What changes could we make in the games to make them more fun?

A. Have smaller teams. Have three in each team.

Q. Anything else?

A. No.

Q. If you had to choose one thing that you felt was <u>the</u> best thing about the games, what would you choose?

A. Being passed to in basketball.

Q. Weren't you passed to in soccer?

A. No, not very much.

Q. If you had to choose one thing that you felt was <u>the</u> worst thing about the games, what would you choose?

A. Some kids didn't cooperate.

3. <u>Experimental Group - High Ability</u>

Q. [redacted]s did you like most about the game?

A. [redacted] pass to everyone.

Q. [redacted] else?

A. [redacted]liked small teams.

Q. [redacted]ere the worst things about the games?

A. N[redacted]ving a goalie in soccer.

Q. [redacted] changes could we make in the games to make them [redacted] fun?

A. Have a goalie in soccer.

Q. Anything else?

A. No.

Q. If you had to choose one thing that you felt was the best thing about the games, what would you choose?

A. ~~Kicking~~ and throwing to each other.

Q. If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

A. No goalie.

4. Control Group - High Ability

Q. What things did you like most about the games?

A. There were a lot of scores.

Q. Anything else?

A. They were fun.

Q. What were the worst things about the games?

A. Some kids didn't pass much.

Q. What changes could we make in the games to make them more fun?

A. Have hoops, like in real basketball.

Q. If you had to choose one thing that you felt was the best thing about the games, what would you choose?

A. It was fun.

Q. If you had to choose one thing that you felt was the worst thing about the games, what would you choose?

A. Some kids kept the ball when they should have passed.

APPENDIX F

EVALUATION OF THE EFFECTS OF FORCED INTRA-TEAM COOPERATION ON THE CHILDREN IN THE EXPERIMENTAL GROUP BY THEIR CLASS TEACHER

Summary of Mr. Craig's twenty four gym sessions with my Grade Three class.

Objectives
1. To give the children a feeling of "space" and thereby teach them teamwork.
2. To involve each child in a game - for the sake of the game rather than for the sake of the score.
3. To try to prevent the "good players" getting better and the poor players getting poorer.

Observations

Mr. Craig consistently applied to each game the rule that each player must touch the ball before a score could be made. This did much to involve all players including the former "non-players". There was true enjoyment among the children in his gym sessions even though they really "worked out" and were very tired when the gym periods were over. This enjoyment came to several children who, prior to the "Craig era" had been content to let the other more aggressive players "carry the ball". They, perhaps for the first time, had a real feeling of accomplishment in a physical education game just because of their participation.

Too often, a teacher hears after a game "I never even touched the ball" spoken by some little children. This has concerned and troubled me and I couldn't seem to find any workable remedy. Mr. Craig's techniques have taught me how

to go about preventing this in my future classes.

Conclusion

I feel that Mr. Craig's experiment with my class was a great success; in what my children learned from him and in what I learned from him. I am eager to apply the techniques I learned from Mr. Craig to my class next term (previously I've felt rather negatively about each new class of phys. ed.)

I feel too that we were privileged to have had Mr. Craig try his ideas and new techniques with us, in that we gained much new experience from him.

signed,

Mrs. M. Scott

Grade 3, St. Martins