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**EXPRESSED ATTITUDE TOWARDS
PHYSICAL FITNESS CONTRASTED WITH
ACTUAL PARTICIPATION IN
PHYSICAL EXERCISE**

**Thesis submitted in partial
completion of the degree
Master of Physical Education (Admin.)**

**By
Gregory Stephen Richards**

February, 1985

**University of Ottawa
Ottawa, Ontario**

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UNIVERSITÉ D'OTTAWA
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Dedication

To Audrey, for Patience.

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Abstract

The purpose of the study was to determine the relationship between expressed attitude toward physical fitness activity and actual exercise participation of the respondents. The sub-problems were to determine the agreement between expressed activity levels and actual fitness scores; and to determine the respondents' accuracy in rating their own level of fitness. Seventy-eight nursing students responded to a Thurstone scale for assessing attitudes towards physical activity, then were tested on the Canadian Home Fitness Test (Step Test only). Results from the two tests were correlated by a Spearman Rank Order coefficient. Results from the study showed no significant relationship between attitudes and fitness scores ($r = -.209$). Chi-square tests of independence between fitness levels and expressed participation in fitness, and between fitness levels and subjective fitness ratings were not significant at the .01 level. It was concluded that attitudes toward physical fitness was not a good indicator of subsequent participation in physical exercise for this group of respondents.

CHAPTER 1

Introduction

Physical fitness has become a major trend in Canadian society. A recent survey by Fitness Canada indicates that 11.5 million Canadians are physically active in their leisure time (CFS 1985:1). Much of the increased participation in physical fitness activity is due to the efforts of Participation and other government agencies whose mandate is to promote physical fitness. In addition, the high incidence of coronary heart disease, arteriosclerosis and other health problems prevalent in modern society has convinced many people to take some action to reduce the risk factors associated with these diseases. This has resulted in lifestyle changes for many individuals including dietary changes, abstinence from cigarette smoking and excessive alcohol consumption, and increased participation in regular physical activity.

With the increased awareness of, and importance placed on physical fitness, various academic groups studying the phenomenon have intensified their efforts. The number of studies dealing with the biological, social and psychological ramifications of physical exercise has increased markedly over the past few years.

In some universities, the field of health sciences comprises medicine, nursing and physical education (also referred to as kinanthropology, or kinesiology). Each group within this field has an interest in the study and promotion of physical exercise. The faculties of nursing and medicine might consider physical exercise important for the prevention of certain diseases. The faculty of physical education might consider this aspect, but it would also be interested in many other aspects such as psychological and sociological ramifications arising from the trend toward physical exercise.

Considering the different approach of each group towards the study of physical fitness, one might wonder what value members of these groups place upon physical fitness. Since each group is concerned with health promotion, one might assume that members in each group would place a high value on physical fitness. However, leaders in the field of nursing have questioned whether their field is truly oriented to health promotion.

Nursing claims to be involved in health promotion, yet the majority are illness oriented and have more knowledge of the unhealthy body...there appears to be a consensus that nursing educators must develop curricula in nursing and health...
(MacNamara, 1980)

Erickson (1983) suggests that health refers to physical, mental and emotional well-being, not merely to the absence of disease. Browning and Lewis (1973) suggest that the role of nursing includes teaching people how to achieve and maintain good health: nursing also includes patient counselling. The nurse, therefore, should be knowledgeable about all aspects of health if she is to counsel effectively.

Given that this concern has been expressed by nursing leaders, one might wonder if physical fitness is valued by this group. To determine the values held by a particular group about a particular issue, one usually studies the attitudes of the group towards the issue in question. This study, therefore, attempted to assess the attitudes of a group in the field of nursing towards physical fitness.

There are a number of methods available to study attitudes. One might simply ask the individual: How do you feel about this particular issue? However, this approach would be time consuming if applied to a large group. In addition, the responses would be difficult to compare to those of another group. One might refine the process and ask the individual to rate the object, positively or negatively, on a

scale from one to ten. Although this procedure does provide a basis of comparison, and can easily be applied to large groups, it does not allow for a complete expression of the individual's attitude. Also, each person might attach a different meaning to the issue in question. For example, to one person physical fitness may mean running laps around a gym, to another, it may mean Sunday afternoon touch football. Responses would vary accordingly.

Attitude scales were developed to avoid some of these problems. These scales contain a number of statements about the issue in question to which the person indicates agreement or disagreement. The use of multiple statements allows for a more complete expression of a person's attitude, and helps to establish the different aspects of the issue to be considered.

The respondents' answers are usually assigned numerical values. The values are then mathematically manipulated to yield a singular score for each person. This procedure allows the investigator to calculate average scores for particular groups, and permits quantitative comparisons between groups. The rationale behind attitude scale development is that precise scales lead to accurate prediction of behaviour. Measuring a person's attitude towards a particular issue should enable the researcher to make predictions regarding that person's actions to the issue in question. For example, if one measures a particular group's attitude toward physical fitness, the results should enable one to predict whether or not the group would be likely to participate in physical fitness activity.

Studies which have attempted to investigate this attitude - behaviour relationship indicate that the two aspects do not always correspond (Lapierre 1934, Corey 1937, Kunter, Wilkins and Yarrow 1952, Triandis 1971, Remmers 1972, Azjen

and Fishbein 1980). Attitude scales depend upon self reports of the respondents. These reports may not always be accurate. Moreover, other factors could cause the manifestation of behaviour inconsistent with the attitude indicated in the self-report. Indeed, it has been suggested that self-report attitude scales are of little use unless the relationship between the scale and subsequent behaviour is established (Nelson, 1939).

Since little has been done to assess the attitudes of the various groups comprised under the rubric of Health Sciences towards physical fitness, this study attempted to investigate the attitudes of one such group. The field of nursing was selected because they represent a large segment of the health science field (45% of all paid hospital workers in 1979/80 according to Statistics Canada HOSPITAL ABSTRACTS 1979-80). As such, nurses are in continual contact with all strata of the Canadian population and have the potential to influence attitudes towards health-related practices. In addition, nursing leaders are becoming aware of the need for a "health promotion" orientation rather than a "disease prevention" orientation to medical care, and are concerned about the apparent "disease prevention" orientation of their profession.

The literature has shown that attitudes towards a given issue may not correspond to subsequent behaviour to that issue (Lapierre 1934, Corey 1937, Kunter, Wilkins and Yarrow 1952, Azjen and Fishbein 1980). Therefore, the main purpose of this study was to investigate the relationship between the expressed attitudes towards physical fitness and actual participation in physical exercise.

Nursing students were chosen as subjects for the following reasons:

- 1) The information would be of importance to those nursing leaders who seek to implement curriculum changes. The results of this study would provide information regarding the value placed upon fitness by the group who would be most affected by curriculum changes.
- 2) For the purposes of establishing the attitude-behaviour relationship, a population that would be easily accessible was required. With working nurses, the vagaries of shift work would likely render the study impossible, or extremely time-consuming.

NEED FOR STUDY

Attitude studies presumably permit the investigator to make fairly accurate predictions regarding subsequent behaviour of the respondents toward the social object (Corey 1937, Nelson 1959, Ostrom 1969). It has already been noted, however, that such is not always the case (Lapierre 1934, Corey 1937, Azjen and Fishbein 1980).

Of the many studies done on attitudes towards physical fitness few have investigated the relationship between expressed attitudes and actual behaviour. This study seeks to investigate this relationship. Knowledge of the attitude-behaviour correspondence is important to physical educators if they are to make accurate predictions of behaviour based upon expressed attitude towards fitness.

Attitude surveys are convenient tools for researchers. They are easy to administer and easy to score. They are, however, not so easy to interpret. Since it would not be feasible to follow up with measures of actual behaviour for each person who responds to an attitude questionnaire, it is necessary to be aware of the degree to which one can predict behaviour from attitude questionnaire scores.

In the field of physical education, it is important to know how people feel, or what they think about physical fitness. But if physical educators are to promote fitness, they must also know what people do about fitness. Behaviour is the salient aspect. No one ever improves his fitness level by thinking about exercise.

This study is important to the field of physical education then, because it represents a step towards establishing the confidence one can place upon the results of self-report attitude scales.

One theory of the psychological foundation of attitude suggests that an attitude is composed of cognitive, affective and behavioural components. These three components are thought to be in congruence. Thus, a person thinks, feels and acts positively towards a particular object, or he thinks, feels and acts negatively towards it. Any discordance among the components leads to dissonance which the individual seeks to reduce by adjusting his thoughts, feelings or actions towards the object (Festinger 1957).

A more recent theory, espoused by Azjen and Fishbein (1970, 1975) suggests that behaviour is dependent on social and personal normative constraints as well as the cognitive and affective aspects of the person's attitude. Accordingly, the validity of the three component view is now being questioned (Azjen and Fishbein 1970, 1975, Ostrom 1969).

This study should shed some light on which theory of attitude is applicable to the study of attitudes toward physical fitness. If the attitude-behaviour correspondence is high, then this would lend some credence to the three-component

view. If, however, the attitude-behaviour relationship is weak, it might suggest that the more recent behavioural theory espoused by Azjen and Fishbein (1975, 1980) is more appropriate. To come to a definite conclusion more research would be required, but the results of this study will indicate the direction further research should follow.

Another aspect of attitude now being questioned is the relationship between the specificity of the attitude measure and the actual behaviour related to the attitude (Wicker and Pomazal 1971, Weigel, Vernon and Tognacci 1974). Since this study utilizes a general measure of attitude and a specific measure of behaviour, a high relationship between the two measures would indicate that specificity is not a factor in the field of physical education. Again, more research would be required, but this study would help to establish the areas that should be considered.

From a practical point of view, the study will demonstrate whether the attitudes of the sample of nursing students are negative or positive towards physical fitness activity. If attitudes are negative, then nursing leaders may have to develop methods of improving attitudes since they have expressed the need for nurses to be health-oriented.

The theoretical contribution of the study then will be an elucidation of what models of attitude theory can be applied to the study of physical fitness. From a practical stand-point, the study will indicate what the attitudes of this group of nursing students are towards physical fitness, and the relationship of these attitudes to actual participation in physical fitness activity. It will also indicate whether the respondents have an idea of their aerobic fitness level with respect to their peer group, and whether their stated participation in physical fitness activity is actually borne out in the test of aerobic fitness.

STATEMENT OF THE PROBLEM

To determine the relationship existing between the expressed attitudes towards physical fitness and fitness behaviour of nursing students.

Hypothesis: There is no significant relationship between expressed attitude towards physical fitness and actual fitness participation.

Subproblem 1:

To determine if the fitness levels of those participants who were physically active on a regular basis were higher than those who were inactive.

Hypothesis:

Categorization in the "high" or "low" fitness level is independent of actual participation in fitness activity as verbally expressed by respondents.

Subproblem 2:

To determine whether or not members of this group were capable of accurately assessing their personal levels of fitness.

Hypothesis:

Categorization in the "more fit", "as fit" or "less fit" group is independent of actual fitness levels.

DELIMITATIONS

The study deals with attitudes towards physical fitness activity and actual fitness behaviour of nursing students in a University setting. It is descriptive in nature, seeking to establish the degree of relationship existing between verbal reports

and actual behaviour of the respondents. The participants selected for the study were full-time students enrolled in the University of Ottawa in the Winter 1983 semester (N=292). All questionnaires (292) were returned. The number of participants taking the fitness test was ninety-eight. After screening out 20 who did not pass the first stage of exercise, the sample was reduced to seventy-eight. These 78 represented a sample who volunteered to participate in the fitness test, all were female full-time nursing students ranging in age from 19 to twenty-five.

LIMITATIONS

- 1) A common problem with attitude studies is that respondents tend to respond in ways which they believe to be appropriate (Hyman 1959). In dealing with nursing students, this situation could arise. Since the respondents are in a health science field, they could feel compelled to respond positively to an attitude questionnaire on fitness.
- 2) Because of restrictions placed on the project by the School of Nursing, students could not be randomly assigned to fitness testing. Those individuals tested therefore, were volunteers who may already have a high degree of interest in fitness activity. The lack of a random sample limits the amount of generalization one may make from the results of the study. However, the study will establish the degree of attitude-behaviour correspondence for this group (N=78), which would help to establish the direction future research on attitudes towards physical fitness should take.
- 3) The term "fitness" may have different meanings to different people. This variety of meanings may lead to imprecise self-ratings of fitness levels.

CHAPTER II

Review of Literature

Introduction

Since the term "attitude" made its appearance in the late 1800's, scores of articles and books have appeared attempting to define the term and to develop valid methods of measuring the attitudes held by various groups towards various social objects. Although there is still some controversy, there now exists a commonly accepted definition of the term (Ostrom 1969, Allport 1935, Lapiere 1934, Kenyon 1968, Fishbein and Azjen 1975). In addition, a number of techniques have been developed to assist researchers in the measurement of attitudes.

Liska (1975:1) states that the concept of attitude actually derives from research in three areas: experimental psychology, psychoanalysis and studies dealing with social interaction among individuals or groups. In the late 1800's, researchers dealing with studies of reaction time noticed that individuals who were prepared to respond to some stimulus did so in much less time than individuals who were unprepared. This "readiness to respond" came to be known by a number of names (e.g. Aufgabe or task attitude; Absicht or conscious purpose; Ziehvorstellung or the idea of the goal. (Allport 1935:61), all alluding to the stimulus was responsible for the difference in reaction time.

This state of readiness was explained by psychoanalytic theory to be unconscious urges which predispose an individual to behave in certain ways. Thus an unconscious state of mind presumably prepared the individual for conscious action. Those who were not prepared could not react as quickly as those who were.

The psychoanalytic explanation seems rather tenuous in relation to reaction time studies. What precisely are these unconscious urges, and how do they predispose the individual to react? The theory was more fully expounded upon by the Freudian psychologists who postulated the interaction of the life forces of id, ego and superego. But, the importance of psychoanalytic theory to attitude research is that it suggested the existence of internal forces which predispose an individual to act. As will be seen later, this concept becomes the cornerstone of many definitions of attitude.

It was the sociologists Thomas and Znaniecki who defined attitudes in terms it is now understood (Allport 1935:62). The authors suggested that sociologists only collect two kinds of data: data on the dependence of the individual upon social organization and culture, and data on the dependence of social organization and culture upon the individual (1958:20). They proposed that such data would have psychological and social aspects and that the data would in fact be attitudes of the person or persons being studied.

The psychological aspect of attitude they defined as the "state of somebody"; the sociological aspect they defined as the reaction to something. They defined attitude as "...a process of individual consciousness which determines real or possible activity of the individual in the social world" (1958:22). Attitude then, was conceived as a state of mind predisposing the individual to act in a specific manner towards some social object.

Since the work of Thomas and Znaniecki, numerous attempts have been made to redefine the concept. Throughout the years, however, all definitions have retained the basic definition set forth by the sociologists. Attitude is now studied in a variety of fields: in commerce, consumer attitudes are studied; in political science, voter

attitudes are studied; in psychology and sociology attitudes of a multitude of individuals are measured regarding every major trend in society. Likewise in physical education, attitudes are of paramount importance. It is only by studying and attempting to influence attitudes towards fitness and exercise that physical educators can hope to motivate people to recognize the value of physical fitness activity.

Since this study deals with the importance of substantiating verbal attitude measures, the first section of the Review of Literature addresses the concept of attitude from a theoretical perspective. Only by understanding the meaning of attitude, its development, and its usefulness to people can one adequately address the problem of attitude measurement. Section 1, therefore, discusses these theoretical aspects.

The second section deals with the question of attitude measurement. It discusses popular methods of measurement and the rationale behind each method.

Section 3 reviews some of the research done regarding attitude-behaviour consistency. The first part of this section discusses studies done in the field of psychology, the second discusses studies done in the field of physical education. Finally, research on nurses' attitudes towards fitness is discussed.

DEFINITION OF ATTITUDES

In 1935 Gordon Allport surveyed the various definitions of attitude previously proposed by various researchers. He arrived at the following definition:

An attitude is a mental and neural state of readiness organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. (p. 810)

His definition, like that of Thomas and Znaniecki, sought to recognize the importance of psychological and sociological aspects of attitude.

It may be seen that Allport's definition includes both these aspects while attempting to illuminate the meaning of "state of readiness". According to Allport, the person's tendency to react is determined through his previous experiences. "Neural readiness" was thought to be manifestations of brain activity" or "static movement systems" within the brain and organs of the body (Allport 1935:62). Presumably, some part of the brain, through repeated exposure to a particular stimulus, becomes sensitized to it. Future responses to the stimulus would tend to follow the same response pattern.

In 1939 Nelson, following Allport's lead, surveyed 183 books and articles in an attempt to summarize various definitions of attitude. His list of possible synonyms of definitions is reproduced below:

- 1) Organic drives
- 2) Purposes
- 3) Motives
- 4) A "core of effect"
- 5) The emotional concomitants of action
- 6) Permanently felt dispositions
- 7) A special case of disposition
- 8) Generalized conduct
- 9) A neural set, or neuromuscular set

- 10) A stabilized set
- 11) A state of readiness
- 12) A disposition modifying arising experience
- 13) Verbal responses for or against a psychological object
- 14) Socially compelled behaviour of an enduring type
- 15) A response which is more obviously a function of disposition than of the immediate stimulus
- 16) The result of organization of experience
- 17) A directive or dynamic influence on the response to which related
- 18) A determiner of the direction of an activity
- 19) A guide for conduct. A point of reference for new experience
- 20) A trial response-substitute behaviour
- 21) A way of conceiving an object. A posture of consciousness
- 22) "A sum total" of inclinations, feelings, notions, ideas, fears, prejudices, threats and convictions about any specific topic
- 23) An integration of the specific responses into a general set.

Nelson (1939) rejected the first three as being too specific. He also rejected number six since it has been shown that attitudes do change over time. Thus according to this author, an adequate definition of attitude can be developed by combining or selecting from the remaining definitions.

Cardno (1955), attempted to include the impact of the person's immediate environment with this definition:

Attitude entails an existing predisposition to respond to social objects which, in interaction with situational and other dispositional variables, guides and directs the overt behaviour of the individual. (55)

Therefore, he suggests that the importance of experience may be mitigated by immediate circumstances.

DeFleur and Westie (1963:21) suggest that all definitions of attitude fall into one of two categories: a) probability conceptions or b) latent process conceptions. Probability conceptions refer to attitude as the likelihood that an individual will exhibit a particular behaviour in a particular situation. Attitude would be the manifestation of behaviour or at least, inferred from behaviour. Cardno's definition may be considered a "probability conception" definition.

Latent process definitions refer to something within the individual that causes or mediates the behaviour. Under this conception, attitude is some hidden factor which motivates the individual to react in some consistent fashion towards a social object. This second conception seems to be more generally accepted than the former. In the definitions of Nelson and Allport, the implied process is always some latent factor that drives the individual to react in one way as opposed to another. According to DeFleur and Westie (1963)

...attitude is a process which occurs inside an individual which determines more or less immediately and directly the way in which he responds to an attitude stimulus. (p. 4)

Shaw and Wright (1967) define attitude as:

a relatively enduring system of affective, evaluative reactions based upon and reflecting the evaluative concepts or beliefs which have been learned about the characteristics of a social object or class of objectives. (p. 10)

Remers (1972:3) defines attitude simply as the preparedness of an individual

to act in a certain way in the future. Fishbein and Azjen (1977:10) define it as a person's general feeling of favourableness or unfavourableness towards a concept. In short, the term is generally thought of as a learned predisposition to react or respond in a consistent evaluative manner towards some social object (Ostrom 1969:12).

A "social object" may be anything in the individual's immediate environment which has some significance to him and to other people around him. For instance, his feelings towards electric pencil sharpeners may be quite distinct, but likely of little importance to others in his reference group. On the contrary, his feelings about abortion may spark some argument and discussion among his peers. Thus, social object usually refers to some object, or idea, or abstraction that is likely to have some importance to society as a whole, although logically, the term could refer to anything in the individual's frame of reference. Allport (1935:62) refers to social object as "social value" and defines it as "...any datum having an empirical content accessible to the members of some social group and a meaning with regard to which it is or may be the object of an activity..."

The term "evaluative manner" refers to feelings of favourableness or unfavourableness (Ostrom 1969:13). Although the individual may possess feelings of ambivalence towards particular objects, when he or she is forced to make some decision, it will invariably be either negative or positive, favourable or unfavourable. This pro-con aspect of evaluation is the most salient distinguishing characteristic of attitude as opposed to other psychological states of readiness such as habit or motive (Azjen and Fishbein 1975:11).

Attitude is further distinguished from habit by its "relational" nature. Whereas habit may also be an acquired predisposition to perform some action, the

action may not be related to some specific "social object" (Nelson 1939, Shaw and Wright 1967). For example, a student acquires the habit of daydreaming in class: this may be indicative of a general attitude towards school but the act of daydreaming in that class is not in itself an attitude. If the student avoided school or daydreamed in all classes, then we might conclude that the individual had a negative attitude towards school. The question of attitude only arises when the action reflects an evaluation of a social object.

Furthermore, attitude is latent; it requires a stimulus outside the individual before it becomes active. Habits may or may not require outside stimuli.

Motive is another state of readiness often confused with attitude. Motives exist in two forms: internal or external. Internal motives are needs, external motives are incentives (Lindzey, and Hall 1975:384). They are distinguished from attitudes by their nonevaluative nature.

A distinction should also be made between trait and attitude. Traits are general personality components. They also do not require specific outside stimuli. For example, an individual may be shy or outgoing; these are traits because they have no specific referent. If he were shy in only certain situations, then this shyness may be indicative of his attitude toward the particular stimulus inherent in that situation. A general disposition, however, such as shyness is not an attitude.

Attitude then, is at this point fairly well defined and distinguished from other psychological states of readiness. The salient distinguishing characteristics are that attitude is evaluative, and it requires a specific social referent.

ATTITUDE DEVELOPMENT

The human infant has two basic attitudes, approaching and avoiding (Allport 1935). As the child matures, these basic attitudes become further refined through a number of processes:

- 1) Adoption of the attitude of significant others in his immediate environment.
- 2) Through acute traumatic experiences with the object in question.
- 3) Through repeated experiences with the object in question; experiences which are either negative or positive.
- 4) Through differentiation where an attitude towards something arises from an attitude towards something else. For example, a child may develop a dislike for teachers because he dislikes school (Remers 1972).
- 5) Through reinforcement received from significant others for specific behaviour.

The child's basic attitudes, approaching and avoiding, develop in depth and scope through interaction of these processes.

Perhaps the most significant influence on attitude development, however, is the reinforcement received by the individual from the various groups with which he becomes affiliated (Kenyon 1968:10). As the child matures, his personality traits motivate him to enter particular groups. Once he becomes a member, the powerful normative constraints exerted by the group assumes a major role in the development and maintenance of subsequent attitudes.

According to Triandis (1971:115), two types of groups have an impact on the individual's attitude. The first, membership groups, are groups to which the person already belongs. He adopts certain attitudes in order to maintain his membership. Reference groups are groups to which the person wants to belong. He adopts certain attitudes to acquire membership. Kenyon (1968:10) suggests that family and peer groups tend to be the most important to the development of attitudes eventually held by an individual.

Expanding upon the impact of the family group on attitude development, McGuire (1968) refers to the importance of "total institutions" — institutions wherein the stimuli received, the responses permitted and rewards and punishments bestowed are strictly controlled. Childhood is the most evident of these institutions. The young child has limited choices regarding his immediate environment. He is rewarded or punished for various behaviours by parents or siblings, and the information he receives about the world is usually filtered through these significant others. Indeed, many adult attitudes can be traced to childhood rearing practices and cultural influences acting upon the individual during his maturing years (McGuire 1968, Kenyon 1968).

A second viewpoint regarding the development of attitudes is espoused by Breer and Locke (1965). These researchers suggest that an object is liked or disliked according to the perceived instrumentality of the object in attaining the person's goals (Breer and Locke 1965:38). Under this conception, attitudes develop according to the individual's needs at a particular time. If, for example, the individual has a strong need to be socially accepted and athletics is perceived as being a means of attaining that goal the individual would likely develop a positive attitude towards athletics.

Shaw and Wright (1972) suggest that beliefs have a strong influence on the attitudes an individual develops. The authors suggest that people tend to think in terms that reinforce opinions already held. Thus, a belief that communists are evil leads to a negative attitude towards communists. (Beliefs differ from attitude in that a belief may or may not be evaluative; attitudes are always evaluative.)

The fact that many different theories of attitude development exist suggest that no one process is exclusive. Perhaps one process is dominant at a particular stage in a person's life, while another process assumes importance at a different stage. Moreover, there may be a great deal of interaction between and among the various processes: the effect of inculcation may be negated by peer pressure, or the effect of reinforcement may be negated by traumatic experiences with the referent object. One important aspect that all researchers seem to agree upon is the influence various groups exert on the individual's developing attitudes.

FUNCTION OF ATTITUDES

Since an attitude differs from other states of readiness, it stands to reason that it has a unique function. As is the case with attitude development, a number of theories of the function of attitude have been formulated.

McGuire (1968) has proposed a number of functions of attitude:

- 1) It serves an adaptive function. It allows the individual to adjust to the demands of a referent group, or to changing social mores.
- 2) It provides a simplified guide for appropriate conduct towards an object. In a complex society such as ours the individual could easily become overwhelmed by the abundance of information available. Attitudes serve

to organize this wealth of information into manageable units. For instance, a bigot establishes a negative attitude towards minority groups. This saves him the trouble of investigating and categorizing each group.

- 3) Attitudes serve an expressive function. By expressing a positive or negative attitude towards something, the individual helps to define his self-concept. He expresses himself as a unique individual.
- 4) Attitudes serve an ego-defensive function. In this context attitudes are defense mechanisms helping the individual to adjust to inner conflicts. For instance, the individual who harbors an intense dislike of going to church, but who feels morally obligated to do so may develop positive attitudes towards church in order to resolve the moral dilemma created. Thus the person's ego, which may associate a number of good qualities with churchgoing is successfully defended even if the person does not attend church) since he now has a positive attitude towards church.

Attitudes, therefore, help the individual to organize, to adapt to new mores or norms, to express himself as a unique being, and to mitigate inner conflicts.

Allport (1935) suggests that, in general terms, attitudes determine what an individual perceives, what he thinks, and what he does. Thus, a person's attitude towards an object determines the value he places on information received about the object. An individual who holds a negative attitude towards physical fitness activity will tend to avoid or denigrate information that contradicts that attitude.

Moreover, Allport proposes that attitudes can motivate the person to certain actions, or simply direct the person to activities preliminary to the behaviour. For example, a positive attitude towards physical fitness activity might lead the person to

participate in a fitness program, or might lead him to actively seek out more information on the subject. Allport admits that the difference is not always discernible, but a distinction nevertheless should be made between the two processes.

Attitudes then, develop through the processes of adoption, inculcation, traumatic experiences, differentiation and reinforcement. Any or all of these processes can operate through group affiliation or family influences. Attitude can serve as general guides to behaviour through the specific processes of adjustment, value expression, ego defense and information gathering. Attitude can either initiate behaviour involving the attitude object, or can lead to mental activity which in turn leads to behaviour involving the attitude object. In other words, it can be a direct antecedent to behaviour, or may act in some intermediary role.

THEORETICAL BASES

Attitude has been conceived as comprising three main aspects: the cognitive (what a person thinks); the affective (how a person feels); and the behavioural (what a person does). This trichotomy has existed for some time, stemming from the three existential stances a person may take: feeling, knowing and acting (McGuire 1968:402). Although this putative componential view of attitude is now being questioned, it did have heuristic value for many of the theories discussed below, and, until recently, was the accepted theoretical basis of attitude.

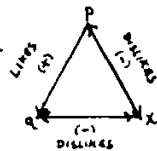
Consistency Theories

The consistency theories are based directly upon the three-component view. Heider's balance theory is perhaps the first of these applied to the explanation of the

congruity presumed to exist between the three components of attitude. Heider suggests that there is an order or coherence to attitude (1958:125). His theory proposes that individual psychological states tend to "fit together" without stress (1958:150). For example, a person does not seek to be with a person he dislikes, nor does he seek to avoid people he likes. Thus, there is a sense that actions "fit" beliefs. Heider suggests that a logical relationship exists between a person, his attitudes and his behaviour. This relationship tends towards a balanced situation where there is no stress towards change. For example, in any triad where:

p = person
x = object
q = other person

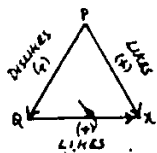
the following relationships may exist:



= a balanced state of affairs



= balanced



= balanced

(The case of three negatives is ambiguous)

The application of Heider's balance theory to the concept of attitude implies that a similar condition of balance should exist among the three components of attitude. An individual who feels positively towards an object, should also recognize its value, and should behave in accordance with these positive feelings.

Another prominent consistency theory is Festinger's theory of cognitive dissonance. Festinger maintains that a person's opinions and attitudes "...tend to exist in clusters that are internally consistent" (1968:1), since inconsistencies lead to psychological discomfort. In Festinger's terms, dissonance (inconsistency) and consonance (consistency) refer to relations among cognitive "elements" or specific "knowledges" (1968:9). Thought, emotion and intention must all coincide or the individual experiences the psychological discomfort of dissonance.

The individual will try to reduce the dissonance by rationalization - that is reducing the importance of pertinent information relating to the attitude object. For example, the habitual smoker realizes the danger of smoking. He continues to smoke, however, because quitting would lead him to overeating, and eventually to obesity. The smoker, therefore, continues to smoke since it is the lesser of two evils.

Failure at rationalization leads to psychological discomfort (Festinger 1968:2). The individual then should seek to change one of the components in order to achieve consonance. In the case of the habitual smoker, he should either quit smoking (change behaviour), or change his belief that smoking is hazardous (change in cognition).

Festinger suggests that the component that changes tends to be the one that is "odd man out". If, for instance, the smoker feels that smoking is bad and he thinks that smoking is dangerous, he will likely change the behavioural component: two negative elements will outweigh one positive element.

One can readily see that the notions involved in these theories are straightforward. An individual feels, thinks and acts positively towards some object,

or he feels, thinks and acts negatively towards some object. Fishbein and Azjen (1975), however, suggest that beliefs are really the basis of these theories; therefore, the relationship among the three components may not be as simple as one might first imagine. The individual believes that his feelings towards the social object is positive or negative, or that his behaviour is positive or negative. To mitigate dissonance, he may simply change his beliefs about a component.

For example, a person thinks and feels that physical fitness activity is beneficial, yet he apparently does not participate in fitness activities. He may proceed to rationalize his inactivity by considering physical fitness activity to be anything he does using his legs as a source of locomotion. He will then consider his five-minute walks to the bus stop to be adequate physical fitness activity. Thus, the cognitive dissonance is reduced, but no changes have been made in any component. He has merely changed his belief regarding physical fitness activity.

Azjen and Fishbein (1975, 1980) have proposed a theory of attitude that avoids the three-component conundrum by explaining behaviour in terms of decision theory and Dulaney's (1968) model of propositional control.

The particular aspect of decision theory applied by Fishbein and Azjen (1975) to attitude theory is that espoused by Edwards (1954). Edwards suggests that decisions are made by individuals based partly upon the Subjective Expected Utility (SEU) associated with the decision. The SEU of any alternative is determined in the following manner:

$$SEU = \sum_{k=1}^i SP_k U_k$$

SP = subjective probability that the choice leads to some outcome

U = subjective value of the outcome

Dulaney's theory of propositional control suggests that people seek rules by which they guide their behaviour (Dulaney 1968). The individual seeks cues in the environment from which he derives propositions. If these propositions are affirmed through repeated experiences with the object or objects in question, they become rules which guide the person's subsequent behaviour. For example, Dulaney's study using 138 college freshmen had each person seated in a room where the temperature was kept at 110° Fahrenheit. The subjects were asked to choose between two statements printed on separate cards, which they were to read aloud. One of the statements contained certain keywords that activated jets of air directed onto the person's face. Dulaney suggested that, in such a situation, people will develop certain rules to guide them in statement selection. If the jets of air were considered pleasant, the person will systematically choose statements containing certain words until the keywords are located. Thereafter, he will repeat only those statements containing the keywords. Dulaney's theory is defined below in algebraic terms.

$$BI = [RH_d (A)]W_0 + [(BH)MC]W_1$$

BI = behavioural intention

RH = hypothesis of distribution of rewards

A = affective value of reinforcer

BH = behavioural hypothesis - what the person believes to be the required behaviour in that particular situation

MC = motivation to comply with the expectation of required behaviour

W_0W_1 = weights which may take any value and will vary across situations.

This model accounts for the influence of societal constraints upon the individual's choice of behaviour, as well as his affective evaluations towards the act in question.

In applying these theories to the field of attitude studies, Azjen and Fishbein (1975, 1980), suggest that behaviour depends upon behavioural intentions, and that behavioural intentions in turn depend upon the individual's affective evaluation of the object or behaviour in question, his personal normative belief, his motivation to comply with that belief, his belief regarding the social norm related to the behaviour, and his motivation to comply with that norm. The model appears in algebraic form below:

$$B \approx BI = [A] W_0 + [NB_p (M_{cp})] W_1 + [NB_s (M_{cs})] W_2$$

where B = behaviour
BI = behavioural intention
A = affective evaluation
NB_p = personal normative belief
M_{cp} = motivation to comply with personal normative belief
NB_s = social normative belief
M_{cs} = motivation to comply with that belief
W₀, W₁, W₂ = weights which may take any value.

This theory, unlike the consistency theories, recognizes the importance of social constraints to behaviour. Moreover, it does not trichotomize the attitude construct; rather, it proposes that attitude is really only based upon beliefs, and affective evaluations of the attitude object. The affective evaluations remain as previously identified with regard to other theorists: feelings of happiness, disgust, anger, avoidance, ... ranging from negative to positive on a continuum.

A second distinguishing feature of this theory is that affective evaluations are directed towards the object in general. For instance, the individual might possess

negative feelings towards exercising, but still recognize the value of physical activity. In this theory, such an occurrence would be perfectly acceptable. The consistency theories would predict that some change must occur in the individual in order to return to consistent order among affective, cognitive and behavioural components of the attitude in question.

ATTITUDE MEASUREMENT

The study of attitude measurement has received considerable attention by various investigators. Many conclude that attitudes can be measured, but that they cannot be measured directly (Rosenberg et al 1960, De Fleur and Westie 1969).

In measuring attitudes, the investigator attempts to evoke the attitude by using words on paper, or pictures. The subject's true attitude should guide him to the marks he makes on paper, or his verbal reactions to pictures (Doob 1947:147). Sometimes, however, a person may feel socially or morally compelled to respond in a certain way despite his true attitude. Thus, attitude scales can only be used in situations where one would expect the respondent to be truthful (Thurstone 1929:79).

If a statement is positive in nature, endorsement of the statement would suggest that the person is likely to behave or think in complimentary terms towards it outside the measurement situation (De Fleur and Westie 1969:79). Endorsement of a negative statement would imply negative thoughts and actions outside the measurement situation.

Thurstone was first to scientifically investigate the measurement of attitude. he suggested that attitudes are expressed as opinions, and these opinions would range

from negative through neutral to positive on a continuum. He further suggested that measuring a person's attitude would entail discovering what opinions a person would endorse. By determining where these opinions fell on the continuum, the investigator could establish if the respondent was negative, positive or neutral towards a particular attitude.

For a given object, the multitude of opinions might be called the population. Statements on a scale represents a sample from this population on which the individual's attitude is assessed (Guttman 1944:97). The task of measuring means identifying where a person lies on this continuum (De Fleur and Westie 1969).

Although attitudes have other features besides what are measured by such a procedure, its measurement is similar to measurement of other, tangible objects. For example, if we measure the length of an object, and its width, we obtain a good idea of its attributes. However, there are other features to most objects besides length and width. So it is with attitudes (Thurstone 1929:77).

Thus, measurement of attitude is always indirect. By using attitude scales, the investigator chooses a sample of statements representing a sample of attributes to the object in question. The sample should range from negative to positive on a continuum. The respondent's true attitude guides his responses to the statements. Endorsement of positive statements imply that behaviour complimentary to the object would follow outside the measurement situation. Endorsement of negative statements imply that behaviour uncomplimentary to the object would follow.

There are different methods of developing scales. Each attempts to make the scale as representative as possible of the person's true attitude. The basic theory

behind each scale, however, remains essentially the same. The major approaches are outlined below.

Thurstone Scales

Thurstone's method of "equally appearing intervals" attempts to establish a scale which corresponds to the underlying attitude continuum. Questions on this scale range from negative to neutral to positive. Respondents indicate agreement with any number of statements from which a score is derived by taking the median score of statements endorsed.

The scale is developed by collecting a large number of statements regarding the attitude object in question. Acknowledged experts in the field are asked to rank the statements into 11 categories which appear to be equally spaced with respect to the degree of agreement between the item and the underlying attitude. A scale value is calculated for each statement by using the median of the position given the item by the group of judges. The interquartile range for each statement is taken as a measure of interjudge variability. All statements for which variability is high are rejected and the final scale comprises the remaining items.

In general, these scales tend to be reliable; validity depends upon the attitude being measured and the skill of the scale developer (Shaw and Wright 1967:22).

Likert's Summated Rating Scales

This technique also begins with a collection of a large number of statements regarding the attitude object. These items are administered to a sample of the target

population. Scoring is accomplished by assigning values of 1, 2, 3, 4, 5 to the available categories of responses (strongly disagree, disagree, undecided, agree, strongly agree) respectively. Scale values are reversed for negatively worded statements. Responses on each item are correlated with the total score on all items, items that correlate highly with the total score are retained for the final scale.

Likert scales tend to be moderately reliable; as with Thurstone scales, validity depends upon the attitude being measured (Shaw and Wright 1967:24). In addition, Likert scores must always be standardized in a sample of the target population.

Semantic Differential Scales

Osgood, Suci and Tannebaum have applied their "measurement of meaning" scale to attitude measurement. By using factor analysis, the researchers identified three general aspects of meaning measured by the semantic differential technique, potency factor, evaluative factor and an activity factor (Osgood, Suci, Tannenbaum 1957). Each factor is addressed by placing certain words on a bipolar scale, e.g.:

good _ _ _ _ _ bad
1 2 3 4 5 6 7

The respondent is asked to indicate how they would rate the attitude object on each bi-polar scale (of which there may be up to fifteen). The score is calculated by summing the responses on all scales.

Reliability of the scale seems acceptable based upon correlations achieved by the authors with Thurstone scales (.74 to .82) (Osgood, Suci and Tannenbaum 1957).

Attitudes are measurable because they have intensity and direction (Osgood, Suci and Tannenbaum 1967:169). Intensity refers to the strength of the affective component (Katz 1960:168); direction refers to the degree of positive or negative emotion associated with the feeling.

The basic assumption underlying attitude scales is that of the Just Noticeable Difference. An individual can distinguish one visual or auditory stimulus from another if the two are dissimilar enough. It has been shown by the psychophysicists that the individual can also discriminate between the psychological intensity of various stimuli (Dawes 1971). The traditional verbal attitude scale, therefore, presents a number of statements of varying psychological intensity and direction with the belief that the respondent can discriminate between each statement.

These scales are referred to as "pseudopointer" instruments (Suppes and Zinnes 1963). They are not related to some known mathematical system, but they "point" to a particular representation in the real world. The justification of such scales is the degree to which they predict real events, "...not necessarily in the homomorphism between an empirical and a numerical system" (Suppes and Zinnes 1963:21). Therefore, the scale numbers arrived at through the use of attitude scales may not correspond to a numerical system, but they do allow the investigator to make comparisons about the relationship of these numbers to the real event (attitudes).

Before a pointer measurement is used, some law or established theory regarding the fundamental measurement system must be established. In the case of attitude measurement, this theory would state simply that the more positive a person is towards an issue, the more positive the statement or statements about the issue he will endorse. If higher numbers are assigned to more positive statements, then a

higher score would be representative of a positive attitude to the issue. Thus, higher scores "point to" positive attitudes, lower scores to less positive or negative attitudes.

The question of distance between such numbers or between statements in an attitude scale has often arisen (Triandis 1971, Dawes 1971). Although higher numbers point to positive attitudes, how does each number differ from another? Is a score of twenty for example, twice as positive as a score of ten? It has been argued that distances between statements cannot be equal, since each person may interpret the statement a little differently. In this case, a person's score cannot be expressed in terms of a ratio to another person's score. Person A cannot be said to be twice as positive as person B; only that he is more positive towards the issue than person B.

According to Adams, Fagot and Robinson (1961), and Anderson (1961), the type of scale used has no bearing on the statistical analysis performed on the data. Scale type will, however, affect the statements one can make about the results of the statistical manipulations. If, for instance, we arrive at a nominal scale by assigning the number 1 to all females in a population, and the number 0 to all males, we could arrive at an arithmetic mean for the population, but it would not relate to the objects measured and thus would have no meaning in the real world.

The safest path among these issues seems to be Thurstone's contention that attitude is in fact best represented by a continuum ranging from negative through neutral to positive. Each attitude statement does not represent a single point on the continuum, but rather a distribution of points. The respondent's score would be the median point among distributions with which he indicates agreement. Thus, a neutral attitude is possible, which simply means the person has no strong negative or positive feelings towards the issue.

ATTITUDE AND BEHAVIOUR

As suggested by the consistency theories, there is a sense that attitudes influence behaviours... attitude being the cause, behaviour being the effect (Rawjecki 1982:3). As Rawjecki (1983:5) states, "knowing a person's attitude gives us confidence that we can predict or anticipate his or her actions in general." By knowing a person's attitude, we should be able to predict subsequent behaviour toward the social object in question. People who are rated positively toward something on an attitude scale should approach, or in the case of physical fitness activity, participate in fitness activity. Those who rate negatively, of course, should avoid physical fitness activity. As Rawjecki (1982:85) states "...attitudes do predict behaviour, in certain circumstances, when they do not it is for a good reason."

A number of studies have cast some doubt on the presumed attitude-behaviour relationship. Nelson (1939:374) has suggested that indeed, the value of verbal attitude scales is tenuous until the relationship between expressed attitudes and overt behaviour is established. One of the first studies seeking to establish this relationship was performed by Lapiere (1934). He mailed questionnaires to 251 motel owners asking if they would accept a Chinese couple as guests. Although 92% of those surveyed said no, when Lapiere actually visited these places with a Chinese couple, only one refused.

In 1937, Stephen Corey performed a similar experiment on the test cheating behaviour of students. He distributed a questionnaire to sixty-seven university students in an attempt to measure their propensity to cheat on class tests. A series of five true-false tests were administered, the tests were collected and marked, but no markings were placed on the test papers. Tests were subsequently returned to the

students who were asked to grade themselves. The difference between the teacher-graded score and student-graded score was their index of cheating which was compared to questionnaire responses. The correlation between the two methods of measurement was 0.13. Corey discovered that test difficulty proved to be a more reliable measure of cheating behaviour.

De Fleur and Westie (1958) studied behaviour versus stated intentions. The researchers distributed a questionnaire to 250 undergraduate students asking them if they would be willing to pose for publicity photographs with members of another race of the opposite sex. The researchers then distributed release forms to the respondents; many of those who responded negatively on the questionnaire signed the release forms. Many of the inconsistent respondents cited the influence of peer groups as a major factor causing them to sign the release forms.

Wicker (1976) studied church-going behaviour and expressed attitudes to church. A questionnaire measuring attitude towards church was distributed to 152 people in a midwestern American state. Actual church attendance was measured by sign-in sheets at the church. Wicker found a correlation coefficient of 0.36 between the two measures. He concluded that a more direct measure of attitude may be required.

Weigel, Vernon and Tognacci (1974) performed a similar study by polling 141 residents in a medium-sized American city about their attitudes to the Sierra Club (an active environmentalist group). The authors were specifically interested in determining if specific scales were better indicators of behaviour than general scales. They chose three scales. The low-specificity scale measured attitude toward ecological issues in general. The medium-specificity scale measured concerns

regarding pollution and conservation. The high-specificity scale measured intention to join the Sierra Club. As hypothesized, the authors found the high specificity scale to be a better predictor of behaviour ($r=.38$). The behavioural component was measured by response to consent forms asking subjects to join the Sierra Club and their subsequent payment of dues.

Weigel and Newman (1976) studied the effect of attitude behaviour correspondence when the scope of the behavioural measure was broadened. They surveyed 44 New England residents to find out their attitudes towards environmental issues. Three months later, they approached the same people and asked them if they would be willing to sign and to distribute petitions against offshore drilling, nuclear plant construction and auto emissions. The researchers found that although individual actions did not correspond well with verbal responses ($r=.29$), combined behavioural scores correlated somewhat better ($r=.42$). They conclude that general behaviour measures may be more appropriate with attitude measures.

Heberlin and Black (1976), tested the effect of scale specificity by asking 266 gas station attendants to observe and record license numbers of cars purchasing lead-free, and those purchasing regular gas. Four different scales of increasing specificity, (Level 1 - beliefs regarding environmentalism; Level 2 - beliefs regarding air pollution; Level 3 - beliefs regarding use of lead-free gas; Level 4 - personal obligation to purchase lead-free gas) were then mailed to the drivers and results correlated to actual behaviour. The authors' findings correspond with those of Weigel et al (1974). The correlation co-efficients for each level were as follows:

Level 1 - .118

Level 2 - .147

Level 3 - .370

Level 4 - .55

Wicker and Pomazal (1971) also studied the difference between scales of varying specificity. Working with college students at the University of Wisconsin-Milwaukee (N=257), the researchers administered four semantic differential scales of increasing specificity to ascertain the respondents' expressed attitudes to scientific research. The investigators discovered that more specific scales were better predictors of behaviour although the attitude-behaviour relationship was low for all scales (-.04 to .19).

Azjen and Fishbein (1970) in a study of 96 undergraduates at the University of Illinois demonstrated that measurement of attitude towards an action does not always lead to accurate prediction of behaviour. They also measured normative behaviour and Subjective Expected Utilities in an effort to bolster the predictive utility of the attitude measurement. It was found that the additional parameters improved prediction of behaviour.

Zanna, Olson and Fazio (1980) working with students at the University of Waterloo (N=103) administered a series of questionnaires to determine attitudes held by these students towards religion. Approximately one month later, the students were asked to report certain religious practices they had participated in during the month. Correlations ranged from .30 to .62 for various activities.

Hyman (1949) states that overt behaviour does not match expressed attitudes because the testing situation is playlike: free, bounded in space and time, unproductive and governed by rules of make-believe. Participants in these studies define the situation as such and play what they believe to be the expected role.

Fishbein and Azjen (1975) suggest that failure to predict behaviour from attitude stems from two main errors in measurement:

- 1) Measurement of attitudes are usually focussed upon a class of objects instead of specific objects.
- 2) The behaviour in question may be partially or completely unrelated to the attitude being studied.

The authors suggest that many attitude scales measure attitude towards a class of objects, or towards the object in general. The behaviour related to the attitude, however, is usually specific. The difference between the general attitude and the specific behaviour is reflected in the poor relationship between attitude measurement and subsequent behaviour.

Their second contention is that certain behaviours may not relate to the attitude in question. In studies of attitudes towards the church, the related behaviour is assumed to be attendance at church. However, an individual may be deeply religious and respectful of church authority, but simply dislikes sitting in church because he finds the pews uncomfortable, or because he dislikes rising early on Sunday mornings. These other variables cause the inconsistency between attitude and behaviour, something which the attitude measure does not account for.

Liska (1974:93) suggests that social norms may act as mediators between attitude and behaviour. Social pressure could lead an individual to respond in certain ways to questionnaires (e.g. if results were to be made public); or to act in certain ways (in situations where his actions could be seen and interpreted by others). In both cases, the individual may be acting contrary to his true feelings.

Tittle and Hill (1967) suggest that attitude measures would be least predictive of behaviour when the situation is unusual or unusual behaviours are being measured. Attitudes would be most predictive of behaviour when the behaviour is within the "common behavioural context" of the individual.

Katz (1960) suggests some attitudes have more of an "action structure" than others. Therefore, measurement on some attitudes would seem that those behaviours with which the person was most familiar would have more of an action structure simply because the person may have become accustomed to the thought of performing the act. An individual who knows more about a particular issue would be more confident about his actions, and thus would be more predisposed to act than someone who knows little about the issue.

RELEVANT RESEARCH IN PHYSICAL FITNESS

Much of the research carried out on attitudes towards physical fitness has focused on background variables determining currently held attitudes (Carr 1945, Driscoll 1975, Zaichowski 1975, Acord 1977, Ballance 1980). These studies are indeed valuable since they help to elucidate some casual factors determining particular attitudes held by various groups. A review of recent studies, however, has shown that the attitude-behaviour relationship is becoming a focal point of study in the field of physical education.

Wessel and Nelson (1964) sought to investigate the relationship between certain parameters of strength: grip, back, lift, push and pull, and attitudes towards physical education. They measured attitudes towards physical education (using Wear's scale) of 200 randomly selected female students at Michigan State University.

Measures of strength were obtained on dynamometers for grip, leg, back, lift, push and pulling strength. The correlation between the total strength and attitude score was .209. The highest single correlation was between back strength and attitude at .608. Overall, the relationship was positive although weak. The authors conclude that although some positive relationship was observed the magnitude was not as high as one might expect.

Sonstrom and Walker (1973) investigated attitudes to physical fitness, focus of control and their relationship to physical fitness. On a sample of 102 university freshmen, they administered Kenyon's Attitude Toward Physical Activity scale (form D); Rotter's Internal External scale, and a 600-yard run as a measure of relative fitness level. They also asked for self-reports of amount of activity each person participated in on a regular basis. The researchers discovered that those who scored high on Kenyon's ATPA, scored higher on 600-yard run and reported participation in more regular physical activity, than those scoring low on Kenyon's ATPA. Again, a positive relationship was established but not of the magnitude expected.

Dowell (1973) investigated the relationship between fitness levels and a number of factors, one of them being attitude toward physical activity. University students at Texas A and M (N = 199) were asked to respond to an attitude questionnaire (adapted form of Wear's inventory); and were tested on Texas A and M Physical Fitness test. The Pearson product moment correlation between the two scores was $r = .12$.

Some studies have attempted to establish the strength of the effects of actual participation upon attitude. Gellert (1979) studied the short and long term effects of required physical education courses on attitude toward the self and physical

fitness. University students at Oral Roberts University (n = 3500), and graduates (n = 932) responded to Richardson's Thurstone scale for measuring attitudes towards physical activity. They then participated in a six-week program of regular physical education classes. Gellert found that attitude was higher after classes than before. He suggests that positive attitudes towards fitness is developed by positive experiences with fitness activity. This positive attitude should lead to more participation (Zaichowski 1975, Acord 1977).

Another point of view suggests that one who feels good about his level of fitness should have positive attitudes towards physical fitness. This viewpoint considers the attitude-behaviour relationship as being centred upon the behaviour. That is, those who participate in fitness activities tend to develop positive attitudes towards fitness.

Petracek (1978) sought to discover the relationship existing between a person's knowledge of his fitness level and his attitude to fitness. He administered Kenyon's ATPA and the CAHPER fitness test to 20 grade seven and 20 grade eight classrooms in a Southern American city. No relationship was found between the two variables.

Sheda (1982) investigated the relationship between self-perception and attraction to physical fitness activity. He found that those individuals who perceived their fitness level to be high were apparently more attracted to fitness activities than those who had perceptions of low fitness levels.

Still another approach sought to examine the relationship between parental attitudes and their offspring's degree of physical fitness. Working on the assumption

that parental attitudes influence children, Aycock (1982) examined the relationship between parental attitudes to physical activity and physical fitness of their primary aged children. The author administered the Glover physical fitness test to 112 children at a North Carolina public school; and Kenyon's ATPA to their parents. He found, comparing the six dimensions of attitude and four items on the fitness test, only five significant correlations (out of a possible 96). Thus, the relationship between parental attitudes and their children's level of fitness was weak.

Gorman (1983) compared the attitudes towards physical fitness of adherers and non-adherers in a Fit for Life program. Of the 266 students at the University of Georgia who participated in the study, 72% continued with the program. Attitudes of adherers (as measured by the Fit for Life student inventory) was significantly more positive than non-adherers. It might have been edifying had the author assessed fitness levels of the adherers since it would be easy for them to report adherence.

Looking at the problem from a different perspective, Lai (1984) measured attitudes of exercising and non-exercising women (n = 216) towards obesity. He found no significant differences in attitude between the two groups leading one to believe that the exercising group has some other reason for participating in physical exercise. One might assume that weight control is a strong motivating factor for fitness activity participation. One might further assume that those who exercised regularly would hold negative attitudes towards obesity. But, with the proliferation of information programs on health hazards posed by obesity, it would not be surprising to find that the non-exercising group also had negative attitudes towards the issue.

RESEARCH ON THE ATTITUDE OF NURSES

TOWARD PHYSICAL FITNESS

A review of the literature has revealed that some concern has been expressed over the attitudes of nursing professionals towards fitness and exercise, but no empirical studies were found.

Blattner (1981) states that nursing involves more than the simple prevention of disease. It includes the physical, emotional and psychological well-being of the individual under care. Nurses, therefore, do much more than administer needles and prop up pillows: they attend to the overall needs of the patient.

Erickson et al (1983) suggest that nursing should have a "complimentary health focus" in addition to and distinct from the prevention from disease orientation. The authors suggest that nursing should enable the individual to achieve a state of "optimal wellness". This state of "wellness" could presumably include health promotion strategies other than medication.

A similar thought is echoed by McNamara (1980) who maintains that nurses have more knowledge about the unhealthy body than the healthy body. The author calls for a change in nursing curricula to implement the development of programs in health. Nursing students, therefore, would learn more about all aspects of health, and would develop more knowledge about the healthy body which could be put to use counselling patients on health promotion.

Tillman and Feinman (1980) suggest that personal physical fitness helps the nurse to deal effectively with stress which will affect the quality of care they can provide. The nurse in good physical condition, would presumably be in a better frame of mind to provide complete care.

Thomas (1979) suggests that, based upon results from various epidemiologic studies, exercise prescriptions "... could be part of the treatment regimen for a great many health problems including arteriosclerosis obliterans, angina pectoris, hypertension, diabetes, obesity, chronic obstructive lung disease and psychiatric problems" (p. 93). The author suggests that national promotional programs are needed to demonstrate the usefulness of physical exercise as a preventative measure against these health problems.

McLeod (1977) states that research on the uses of physical exercise in the medical profession is necessary in order to clearly establish its use in the treatment of diseases. The author also suggests that nurses be apprised of these studies since they must counsel the patient regarding the amount of physical exercise necessary. Although doctors may prescribe exercise, it is invariably the nurse who is asked: "how much and what kinds of exercise should I do?"

SUMMARY

Although there is some controversy over an exact definition of attitude, there now seems to be consensus that an attitude represents a person's predisposition to act in some fashion towards some social object. The salient distinguishing features of an attitude is that it has an evaluative aspect, and a specific referent object.

Attitude as a psychological concept allows an individual to adjust to his environment, provides a method of ego defense, an avenue for expression of the person as a unique individual, and serves an information processing function. Allport (1935) succinctly sums up the importance of attitude by stating that attitude determines what an individual perceives, thinks and does.

From a theoretical perspective, an attitude has been commonly thought of as comprising affective, cognitive and behavioural components. Consistency theories of attitudes maintain that the three components are usually in correspondence.

The more recently formulated behavioural theories suggest that attitude is based upon beliefs, and personal and social normative constraints upon behaviour. Actions may or may not coincide with attitude depending upon the importance placed upon the personal and social normative constraints.

The measurement of attitudes has traditionally been accomplished through the use of verbal questionnaires or self-reports. The literature on attitude-behaviour relationship has shown that the correspondence between verbal scales and behaviour is generally poor. A number of reasons have been suggested for this poor relationship. Among them, the fact that attitude measurement represents a playlike situation (Hyman 1949); and that verbal attitude measures are too general to predict a specific behaviour. Katz (1960) suggests that some attitudes have more of an action structure than others. Therefore, some attitudes would coincide well with behaviour whereas others will not. Nelson (1939) suggests that attitude measures are only useful if the relationship of the measure to subsequent behaviour is known.

The literature in physical education reveals that studies have attempted to determine what relationship exists between expressed attitudes to physical fitness and actual participation in physical fitness activities. Those studies that were carried out revealed very little relationship between expressed attitudes and behaviour. Wessel and Nelson (1964) achieved a correlation coefficient of .209. Dowell (1973) found a correlation coefficient of .12. Gorman (1983) however, found that attitudes of adherers to a Fit for Life program were significantly higher than non-adherers. It is interesting to note that the studies by Wessel and Nelson (1964) and Dowell (1973) used tests of fitness as an indicator of fitness behaviour whereas Gorman (1973) used verbal reports of exercise participation.

The literature in the field of nursing reveals that concern is being expressed by nursing leaders over the issue, but no empirical studies have been found. As physical fitness becomes more important as a medium of preventative health, more concern will be expressed. Empirical studies are needed if the values held by nurses towards physical fitness is to be clearly understood.

Since the literature suggests that attitude studies are only really useful if the relationship of the attitude to subsequent behaviour is known, it was decided to assess this relationship for the group being studied. Although the three-component view of attitude is now being questioned, it was decided to test this theory because it has been suggested that different attitudes may relate differently with behaviour (Katz 1960). In the areas of racial prejudice and religion, the attitude-behaviour relationship has been shown to be weak; it may however, in the case of physical fitness, prove to be strong. If the link between attitude and behaviour toward physical fitness activity is weak, this may lend credence to Azjen and Fishbein's behavioural theory of attitude.

CHAPTER III
METHODOLOGY

This chapter discusses the procedures used in the study, and the basis for these procedures. The methodology consisted of the administration of an attitude scale to measure attitudes toward physical fitness, and the administration of an aerobic test of fitness as an indirect and objective measure of exercise participation. The first section of this chapter discusses the procedures followed to perform the study; section 2 discusses the attitude questionnaire; section 3 discusses the fitness test. The final section discusses statistical treatment of the data.

1. Procedures

Student nurses (N=292) registered in the winter semester, (1984) at the University of Ottawa were verbally contacted by a professor of nursing science, to participate in the study. A letter of explanation of the project was also sent to all classes. After receiving consent from the ethical review committee of the school of nursing and the class professors involved, Richardson's (1960) Thurstone Scale for Assessing the Attitudes of College Students towards Physical Fitness and Exercise was distributed in class to each student. Students were asked to complete, and return the questionnaire immediately upon completion. Consent forms for the fitness testing was attached to each questionnaire explaining the purpose of the fitness test. Respondents were asked to read and sign the forms thereby indicating their agreement to participate in the fitness test.

Once all questionnaires were returned (N=292), fitness testing times were established in a location convenient to the students. The location and times were

communicated in class to students. It was the intention of the investigator to randomly assign a sample of 100 students to participate in the fitness test. This procedure however, was not permitted by the School of Nursing. Therefore all students (N=292) were encouraged to participate. Ninety-eight actually took the test. Twenty were screened out after stage one of the test, therefore seventy-eight students were included in the final sample.

Four second-year students in Physical Education at the University of Ottawa were trained (by a professor of Nursing Science) to administer the test. These students provided instruction, took heart rate counts using a stethoscope, at times designated by the CHFT and monitored the 98 participants during the test (under supervision of the investigator or the nursing professor). A cassette recording of the test instructions was supplied by Fitness Canada to help participants maintain a proper stepping cadence, and to provide another source of information to help participants perform the test according to protocol.

The subjects' heart rate was recorded after each exercise phase. Their heart rate after the second exercise bout was used as the final score since the second exercise phase is considered the important phase of the CHFT: (it is this phase wherein the exerciser works to a level calculated to be seventy per cent of the maximal exercise intensity for her age group (Shepard et al 1976)).

The Sample

Student nurses were selected for a number of reasons:

- 1) The literature suggests that family and peer groups play an important role in the development of an individual's attitude (Kenyon 1968, McGuire 1968).

Many students at this age may have left the family home, and most have left the peer groups to which they belonged in high school. They must now blend the influence of these two powerful groups, with their own experiences to formulate opinions and attitudes of their own. Measuring attitudes of university students may provide some insight regarding the development of the attitude with respect to the family and peer groups.

- 2) Students in a health science faculty may be expected to hold positive attitudes toward physical fitness and exercise. The literature on the function of attitude suggests that a person will hold positive attitudes toward an object if the object is instrumental in achieving that person's goal (Breer and Locke 1965). One might imagine that in the field of health sciences, the goal of students is to be knowledgeable about health promotion and maintenance. The fields of nursing and medicine, however, may be more disease-oriented since the popular conception of doctors or nurses seems to be that they are geared towards curing illnesses, not necessarily towards promoting health. If this is so, then one might expect students in these fields to have poor attitudes to physical fitness since it has a low instrumental value - that is, if all doctors and nurses do is administer medicine, then fitness has no real importance in the accomplishment of this function.

One theory of the function of attitude suggests that it serves a value-expressive function (McGuire 1968). It allows an individual to indicate to others that he possesses some unique characteristic, or that he has a particular set of values. If, therefore, the medical or nursing trainee is oriented towards health from a promotion and maintenance viewpoint rather than from a disease-prevention viewpoint, he should have a positive attitude towards physical fitness. This positive attitude expresses this orientation to the field of health sciences. He may, however, have a disease-prevention

orientation in which case he may hold a negative attitude toward physical fitness.

Assessing the attitudes of students in a health science faculty may provide some understanding of the orientation of this group to the field of health sciences. It would be important to leaders in this field to be aware of the values brought into the various programs by students.

- 3) Leaders in the field of nursing have recently expressed some concern over the orientation of nursing professionals (MacNamara 1983). There is a sense that the nursing fraternity has become more concerned with disease prevention than with health promotion. Assessing the attitudes of student nurses then, would have some practical value to nursing leaders. Such a study would indicate what the orientation of one particular group of nursing students is towards physical fitness and exercise. Since attitude is thought to serve a value-expressive function, attitudes toward physical fitness would likely indicate the type of values held towards health in general. The study could then serve as a basis for further studies on different groups of nurses and nursing students.

Student nurses were selected, then, because they are at the age when attitudes would reflect the influence of peer and family groups; and because it would also reflect the values of the group towards the field of health science. This information would be of importance to nursing leaders who are concerned that nursing has developed a disease-prevention, rather than a health-promotion approach.

2. The Attitude Questionnaire

Richardson's (1960) Thurstone Scale for Assessing the Attitudes of College Students toward Physical Fitness and Exercise, was selected to measure the attitudes of the sample chosen.

There are a number of scales available for measuring the attitudes of various groups towards physical fitness and exercise. One popular instrument is Kenyon's Attitude Toward Physical Activity (ATPA). Kenyon himself used the scale to assess attitudes of school children in four different countries towards physical fitness. The scale is based upon the semantic differential procedure espoused by Osgood, Suci and Tannenbaum (1957). It separates the attitude measurement into six different factors:

- Physical Activity: - as catharsis
- for health and fitness
 - as a social experience
 - as pursuit of vertigo
 - as an ascetic experience
 - as an aesthetic experience
 - as a game of chance.

The scale, then, provides a statement for each category, for example: "Physical Activity as a social experience"; respondents indicate the relative importance of each statement by checking the appropriate boxes for each of the scales below the statement (see figure 3.1).

Figure 3.1

Strong 1 2 3 4 5 6 7 weak

A total score is achieved by adding the values corresponding to respondents' rating on each scale.

It may be seen (see appendix 4) that the wording of the Kenyon scale is such that someone who has never participated in physical exercise may not be able to respond to the statements. Such an individual would not know what physical exercise does for him since he has never experienced it.

Another instrument available for attitude measures in physical education is the Physical Education Attitude Inventory (PEAI) developed by Wear (1951). This scale is in a Likert format wherein respondents indicate the degree to which they agree with various statements: strongly disagree, disagree, neutral, agree or strongly agree. The 40-item scale, however, is intended for use with respect to physical education as an activity course in college, not to physical exercise in general.

The respondents in this study may or may not participate in physical exercise. Thus, a scale was needed that would be applicable to exercising as well as non-exercising respondents. Furthermore, the object in question was physical fitness in general, not any specific activity, or courses in physical fitness. The Richardson scale is based upon a Thurstone scale development procedure. There are nineteen statements, some favourable, some neutral and some unfavourable to the issue of physical fitness. Respondents simply place a check mark next to the statements with which they agree; disagreement is indicated by not placing a check mark next to the statement.

Each statement is assigned a value based upon its positiveness or negativeness towards physical fitness and exercise (as ascertained by a panel of twenty

American physical education professors). A respondent's score is the median value of the scale numbers of all statements he has endorsed. The actual division of statements with regard to the degree of favourableness to physical fitness and exercise is shown in Table 3.1.

If a respondent only endorsed negative statements, his attitude score would be the median of the values 1.1, 1.3, 1.5, 1.7, 1.9; which is 1.5. A respondent who endorsed only neutral statements would have a score of 2.7; a respondent who endorsed only positive statements would have a score of 3.8. Of course, many different combinations would be possible, but the scale clearly allows for discrimination among those respondents who hold negative attitudes, and those who hold positive attitudes to physical fitness and exercise.

The Richardson scale has been shown to be valid by the expert judgement method: a panel of twenty professors from five midwestern American universities. Reliability was established by repetition - (administering the scale to a group at two different times and correlating the results) and parallel forms - (administering two versions of the scale to the same group and correlating the results) with three hundred American university freshmen. The coefficient for the repetition method was .83± .03 (Richardson 1960).

3. The Fitness Test

Since verbal reports of behaviour can be unreliable, (Thurstone 1929, Doob, 1947) it was decided to use a fitness test as an objective measure of behaviour. If the consistency theory of attitude holds true in the area of physical fitness, then one would expect that those who had positive attitudes to fitness would exercise, while

TABLE 3.1
SCALE VALUES OF STATEMENTS RICHARDSON'S ATTITUDE QUESTIONNAIRE

Statement	Degree of Favourableness	Scale Value
1	-	1.1
2	-	1.3
3	-	1.5
4	-	1.7
5	-	1.9
6	0	2.1
7	0	2.3
8	0	2.5
9	0	2.7
10	0	2.9
11	+	3.1
12	+	3.3
13	+	3.5
14	+	3.7
15	+	3.9
16	+	4.1
17	+	4.3
18	+	4.5
19	+	4.7

- = negative; 0 = neutral; + = positive

those who held negative attitudes would not exercise. Those who exercised would be in better condition than those who did not exercise, and thus should perform better on a test of fitness.

Since the recent trend to fitness has concentrated upon aerobic fitness, the researcher felt that most respondents would be familiar with this aspect of fitness. Furthermore, with the proliferation of aerobic fitness studios, jogging clubs and televised aerobic exercise classes it appeared that many opportunities were available for the respondents to participate in aerobic exercise. Thus, it was decided that since aerobic exercise seemed to be popular, and many opportunities were available for those respondents who wished to exercise, those who exercised would likely take part in some form of aerobic exercise. Consequently, an aerobic test of fitness was chosen as an objective measure of respondents' behaviour toward physical fitness.

In order to encourage respondents to take the fitness test it was important that the test have the following characteristics: 1) portability - so that it could be performed at a setting convenient to the students; 2) simplicity - a complicated test might scare off potential subjects; 3) easily scored - since much of the testing would be assisted by student helpers.

The above criteria ruled out the possibility of using bicycle ergometer or treadmill tests. In the bicycle ergometer tests subjects pedal a stationary bike set at a specified workload for a certain length of time. The subject's heart rate is taken after each exercise bout and used to calculate the individual's index of aerobic fitness (Astrand, Rodahl 1977). Treadmill tests operate on the same principle except treadmills are used, and the subject runs instead of bicycles. Both tests would require the moving of bicycles and treadmills to the testing site, and would limit the number

of subjects tested at one time to the number of bicycles or treadmills available. Also, the task of procuring an adequate number of either piece of apparatus would prove to be difficult.

Another option would be to have students present themselves at a laboratory where the equipment was already in place. However, since the laboratories available were some distance away from the school of nursing, the investigator felt that the travelling time required would discourage many students from taking the test.

A viable alternative to laboratory tests is Cooper's twelve-minute run. This popular field test requires participants to run, or walk as far as possible in twelve minutes. A course is marked off so that each person's mileage can be recorded. Participants are scaled according to distance covered, with respect to different age groups. For example, in the 20-29 age group, a distance of two miles in 12 minutes is rated excellent; shorter distances receive lower ratings.

A number of difficulties are inherent in this procedure. First, some respondents may be sedentary: a test of this nature could prove to be dangerous to these individuals. Second, the mere thought of a twelve-minute run could discourage a number of respondents. Third, no suitable indoor space was available; an outdoor run in winter would not be appealing to many of these individuals. Fourth, considerable manpower would be required since observers would be required for each student. The advantage of this test is that it requires very little equipment; however, the disadvantages outlined above outweigh this single desirable feature.

Step tests have long been used in place of laboratory tests because of the convenience of the former. These tests require the person being tested to step up and

down a step for a certain length of time to a specific cadence. The subject's heart rate is then taken and used as an index of the person's aerobic fitness condition. These tests require little equipment: only a step, stopwatch, and metronome (or cassette player with the cadence recorded) are needed. Anywhere from one to twenty participants could be tested at the same time (depending on the length of steps available). Sedentary individuals are not placed at risk since the test supervisor is able to closely monitor each person for signs of distress. In addition, testing could be performed anywhere it would be feasible to place the steps, and requires very little time for each participant.

Although the logistics of test administration was important to the selection of a test, more important was the validity and reliability of the test. Bicycle ergometer and treadmill tests have been shown to be valid measures of aerobic fitness by tests performed by Astrand (Astrand and Rodahl 1977), and replicated many times by various researchers. Cooper's twelve-minute run has also been shown to discriminate between individuals in different levels of aerobic condition. (Johnson and Nelson 1979). The question most often raised about step tests is, do they test aerobic conditioning, or leg strength of the individuals being tested? Leg strength is a factor in these tests; however, it is also a factor in all of the above tests. In any form of exercise, there is always a symbiosis of the muscles actually performing the work, and the central system, (heart and lungs which provide oxygenated blood to support the working muscles) which supports the muscles performing the work. As long as the exercise does not require these muscles to work at their maximal level, the limiting factor will be the ability of the heart and lungs to provide nutrients to support the exercise. Since step tests are designed to be submaximal exercises, the question of leg strength should not invalidate them as aerobic tests of fitness. Brouha (1945:31) suggests:

A satisfactory estimate of a man's fitness can be obtained by exposing him to a standard exercise that no one can perform in 'steady state' for more than a few minutes and taking into account two factors: the length of time he can sustain it, and the deceleration of his heart rate after the exercise.

Heart rate is used as an indicator of aerobic fitness since it is commonly accepted that a person who is in good condition can perform the same exercise as someone in poor aerobic condition, at a lower heart rate. This is due primarily to the fact that those who exercise regularly have more efficient circulatory and respiratory systems than those who do not.

The conditioned individual's heart has a greater stroke volume which enables more blood to be pumped each stroke (sic), thus enabling fewer strokes per minute to do the work (Johnson and Nelson, 1979:142).

Heart rate will increase with exercise as the heart adjusts to the demands placed upon the body. Individuals in good aerobic condition will be able to perform a given amount of exercise at a lower heart rate than an untrained person, since the heart of a trained individual pumps more blood (hence more nutrients) per stroke. Heart rate then, can be used "...as a valid indicator of an individual's condition in the measurement of cardiovascular fitness". (Johnson and Nelson, 1979:143.)

Many step tests have been developed. All are based on the rationale that stair-climbing will produce an increase in a person's heart rate, and that those who are in good aerobic condition will perform the exercise at a lower heart rate than those in poor aerobic condition.

The Harvard Step Test requires the individual being tested to step up and down a 20-inch high platform for five minutes. The person's heart rate is then taken from 1 to 1-1/2 minutes after exercise; or from 1 to 1-1/2, 2 to 2-1/2 and 3 to 3-1/2

minutes after exercise. The heart rate is then used in a mathematical formula to determine his Physical Efficiency Index.

Validity of the instrument was demonstrated by testing 2200 male students at Harvard University. Athletes scored significantly higher than non-athletes. (Brouha, 1943).

The Louisiana State University Step Test uses a platform 18 inches high; subjects step for two minutes; heart rate is taken 5 seconds after the exercise bout. The subject's heart rate is used as his final score. Construct validity has been established through experimental research showing that the test does detect changes in exercise heart rate after a conditioning program (Patterson and Nelson in Johnson and Nelson, 1979:153). Test-retest reliability (the correlation between results from the test given to the same subjects at different times) was calculated to be .85 to .88.

The Ohio State Step Test utilizes three exercise sessions of six innings in duration. Each inning comprises a 30-second exercise bout (during which the subject steps up and down a 17-inch bench); and a 20-second rest period. Heart rate is taken from the fifth to fifteenth second during the rest period. The subject's score is the inning during which his heart rate meets or exceeds 150 beats per minute. If the subject completes all 18 innings, he is given a score of nineteen.

Validity has been established by comparison to the Balk Treadmill test, (r = .84). Reliability has been established by use of test-retest procedure; r = .95 with college males as subjects.

The Canadian Home Fitness test (CHFT) is similar to the Ohio State Step Test in that three phases of exercise are required. This test utilizes two steps each approximately the height of the lowest two steps in a standard household staircase (20 centimeters, or 8 inches). Subjects perform a warm-up exercise of three minutes of stepping at a sex-and-age-specific cadence (calculated to produce an exercise intensity of 60-75% of maximum for an age group ten years older than that being tested). The subject's heart rate is taken immediately after exercise for a ten-second period and recorded.

The second 3-minute phase requires stepping to a cadence calculated to produce an exercise intensity of 60-75% of maximum for the age group being tested. The person's heart rate is taken and used as his score. This second phase is the important part of the test; (the test could be terminated at this point (Shephard et al, 1976)). A third phase is provided for (at a cadence calculated to be 60-75% of maximum for an age group ten years younger than that being tested). Heart rate is taken immediately after exercise and used as the subject's score.*

Validity of the test has been established by comparison with bicycle ergometer predictions of aerobic power (Bailey, Shephard and Mirwald, 1976), $r = .72$. Figures for reliability co-efficients are unavailable, however, the test has been used extensively by Fitness Canada during the Canada Fitness Survey.

The Canada Fitness Survey was undertaken by Fitness Canada in 1981, to determine the lifestyles and fitness levels of a sample of the Canadian population. A

*The heart rate could also be used in a regression equation provided by (Jette et al, 1976), to estimate maximal oxygen consumption - a measure of aerobic fitness most often related with bicycle ergometer or treadmill tests.

questionnaire was designed to assess lifestyles and physical activity patterns of the respondents, the CHFT, as well as tests of flexibility and muscular strength and endurance were used to assess fitness levels of the respondents. In the 13,500 households contacted, 22,000 individuals consented to respond to the questionnaire and participate in the tests of fitness. The CHFT discriminated among various levels of aerobic fitness of the respondents. In addition, it proved to be safe, conveniently administered and easily scored.

The CHFT was selected as the test of aerobic fitness for this study based upon the established validity of the test, and the results of its use in the Canada Fitness Survey. Moreover, the test proved to be safe, portable, and easily administered. The other tests, (Harvard, Ohio State) although established to be valid and reliable, have not been as widely used as the CHFT. In addition, the CHFT allows participants to be screened by establishing norms for heart rates, by age and sex for each level. Those individuals who exceeded the established norm were not permitted to continue to the next level.

Bonen et al (1977), after comparing the results of the CHFT with bicycle ergometer tests, concluded that the CHFT is a poor predictor of aerobic fitness, because of the errors made by subjects in counting their own pulse rates; and by their failure to maintain the proper stepping cadence. To remedy these problems, assistants in this study counted the subjects' heart rate using a stethoscope, and a cassette tape was provided by Fitness Canada which helped the exercisers maintain proper cadence.

Although the aerobic test of fitness should prove to be an accurate indicator of those who exercise regularly, it is possible that some individuals who do not exercise regularly will score well on the CHFT. This might occur, for example, if an

individual walks to school regularly, or climbs a number of stairs daily to and from various classes. It was decided, therefore, to include in the questionnaire, a question asking whether or not the individual participated in planned physical exercise. Responses to this question could then be compared to actual fitness results of the fitness test. It was felt that these two sources of information could validate each other. Thus, if those who claimed not to exercise regularly scored well on the fitness test, either the test does not discriminate well or respondents do not participate in exercises beneficial to their aerobic system. On the contrary, if those who claimed to exercise regularly scored well on the test, this provides some evidence for validity of the test.

Responses to the above question, however, could vary depending upon the perception each person has of the term "physical fitness". It was the belief of this investigator that if the respondents could rate their own levels of fitness, and this rating corresponded with their actual levels of fitness, it would indicate that the respondents had a fairly good idea of what the term physical fitness means. In addition, a close correspondence between actual fitness levels and subjective ratings would indicate if all respondents had a similar perception of physical fitness.

4. Statistical Treatment of the Data

Scores on the attitude questionnaire were ranked - the highest rank representing the most positive score. Scores on the fitness test were also ranked - the highest rank representing the person with the lowest heart rate count after the second exercise bout. (Those individuals who were screened out after the first exercise bout were not considered in the analysis of the data. N = 20.) The results from both tests were correlated using a Spearman Rank order correlation (Roscoe, 1969; Kendall,

1970; Keith and Cooper, 1974). The rank order method was selected since the literature suggests that most attitude scales are on an ordinal level of measurement (Suppes and Zinnes, 1963). That is, intervals between scale values are not equal, thus the use of parametric procedures such as a Pearson correlation would render any conclusions drawn untenable (Anderson, 1961). Furthermore, the Richardson scale itself makes use of the median scores, which is a non-parametric statistic.

The correlation between the two ranks would indicate whether or not those who score high on the attitude scale also scored high on the test of fitness. One would assume that those who exercised regularly would have high fitness scores. The fact that these individuals exercised regularly would suggest that they held positive attitudes to fitness. Thus, one would expect those who had high scores on the attitude test would also have high scores on the fitness test. Accordingly, those respondents who had low scores on the attitude scale should have low scores on the fitness test. Thus, the correlation co-efficient provides an indication of the strength of the relationship between the two variables: attitude towards fitness and participation in physical exercise.

To determine the accuracy of the objective measure of participation in physical exercise, it was necessary to compare the results of the measure with the respondents' verbal expression of whether or not they did indeed participate in regular physical exercise. The procedure then, might be to determine if those individuals who scored in the top ranks on fitness, also said they exercised regularly, and correspondingly if those who scored in the lower ranks said they did not exercise regularly. If the fitness test results were separated into two groups: high and low; and responses to the question on exercise participation was also dichotomized into two groups: yes and no; it would be possible to quantitatively assess whether or not

respondents who ranked high on fitness responded positively to the question on participation. Correspondingly, one would discover if those who were ranked low on fitness responded negatively to the question on participation.

Since the data is dichotomous, and thus can be organized into bi-variate frequency table, the statistical test appropriate to this procedure is the chi square test of independence (Roscoe, 1969:196). In this case, a two by two table may be constructed as indicated in Table 3.2. One would hypothesize that inclusion in the high or low fitness category would depend upon categorization in the "yes" or "no" categories under expressed participation. In other words, the number of respondents in the "high" and "low" fitness categories depends upon the number who have responded "yes" contrasted with the number who have responded "no" to the question on exercise participation. One would expect that those who are in the "yes" category should also be in the "high" category; respondents who answered "no" should be in the "low" category. The chi square tests of independence will indicate to what degree this relationship holds true.

To determine if the respondents have an accurate idea of what physical fitness means, it would be necessary to ascertain if their subjective fitness ratings corresponded with the actual fitness test rankings. Again, the chi square test of independence may be applied. One would hypothesize that categorization in the "more fit", "as fit" or "less fit" categories would depend upon actual fitness levels. In this case, a three by two table may be constructed as indicated in Table 3.2: The chi square test of independence will indicate to what degree categorization in the subjective fitness comparison depends upon actual fitness levels. In other words, how accurate were the respondents in judging their levels of fitness? If the subjective comparisons are shown to be dependent upon actual fitness levels, then one might

TABLE 3.2
CHI SQUARE FREQUENCY TABLE EXAMPLE 1
FITNESS TEST RANK VERSUS EXPRESSED PARTICIPATION

RANK ON FITNESS TEST	EXPRESSED PARTICIPATION	
	YES	NO
HIGH		
LOW		

TABLE 3.3
CHI SQUARE FREQUENCY TABLE EXAMPLE 2

SUBJECTIVE FITNESS COMPARISON	ACTUAL FITNESS LEVEL	
	high	low
MORE FIT		
AS FIT		
LESS FIT		

conclude that the respondents were generally knowledgeable about the meaning of the term physical fitness.

Results on the fitness test were therefore separated into "high" and "low" groups using the median as the mid-point. These categories were used in a chi square test of independence with expressed participation in physical exercise, and with subjective fitness comparison (Lewis and Burke 1971). The level of significance chosen was .01. Although the .05 level is frequently used in the behavioural sciences, it was the researcher's belief that the sample was somewhat small, thus a more conservative test was required.

Summary of Statistical Treatment

1. Frequency Analysis

The SPSS program was used to compile the frequency of responses for the attitude questionnaire and for the fitness test.

2. Spearman Rank Order Correlation Coefficient

The Spearman correlation coefficient was calculated by use of the SPSS program between scores on the attitude questionnaire and scores on the fitness test. This procedure was performed to test the first hypothesis of no correlation between scores. The Spearman correlation was chosen because both sets of scores are on an ordinal level of measurement.

3. Chi-Square Analyses

The chi-square was used to test the two sub-hypotheses regarding independence of fitness test result upon expressed participation in exercise; and

independence of self rating of fitness level upon actual fitness levels as measured by the fitness test. The chi-square procedure was selected because data was dichotomous, and could be analyzed into bi-variate frequency tables. The significance level of .01 was selected because of the use of smaller sample size than was expected. It was felt that, since the chi-square procedure works best with large samples, a level of .05 might prove to be too liberal.

SUMMARY

The methodology consisted of the administration of Richardson's Thurstone Scale for Measuring Attitudes of College Students Toward Physical Fitness and Exercise. Results from this scale were ranked from high to low, the first rank indicating the most positive score. The Canadian Home Fitness Test was administered to the same population, and results were also ranked; the best score ranked as number one, the second best as number two and so on. The ranks on both tests were then correlated by Spearman Rank Order Correlation methods.

To determine if those respondents who said they exercise regularly performed well on the fitness test compared to those who said they did not exercise regularly, respondents were asked to indicate whether or not they participated in regular physical activity. Results were compared to actual fitness test rank by a chi-square test of independence.

To determine if the respondents were able to accurately rate their personal levels of fitness, they were asked to rank themselves as "more fit", "as fit", or "less fit" than their peers. Results were compared to actual ranking on the fitness test by a chi-square test of independence.

CHAPTER IV
PRESENTATION OF RESULTS

This chapter presents results from the Richardson scale and the CHFT. Section one presents results on the attitude questionnaire (Richardson scale); section two presents the fitness test results (CHFT); section three presents the correlation between fitness scores and attitude scores. Section four and five present results from the comparison of actual fitness test results and expressed participation in exercise; and fitness test results with subjective fitness comparison.

1. Results on the Attitude Questionnaire (Richardson Scale)

The characteristics of the Richardson scale are such that the lowest theoretical score attainable is 1.1, the highest is 4.7. A score of 1.1 would indicate an extremely negative attitude toward physical fitness, a score of 4.7 would indicate a highly positive attitude towards physical fitness.

Based on these characteristics of the Richardson scale, the following scores are possible:

1) endorsement of only negative statements	=	1.7
2) endorsement of only positive statements	=	3.8
3) endorsement of negative and neutral statements	=	1.9
4) endorsement of positive and neutral statements	=	3.6
5) endorsement of all statements	=	2.9

As can be seen in Figure 4.1, the most frequent response was 3.8: the average (median) was 3.9 indicating an overall positive response for this group. The scores ranged from 3.5 to 4.2, with sixty-seven percent of scores falling within the 25th percentile, 13 percent were above the seventy-fifth percentile. Based upon these responses one can see that the distribution is positively skewed.

Responses were closely grouped, the range being .7 (distance between the highest and lowest scores). The average distance between the middle fifty percent of scores was .1. These statistics indicate that not only was the group highly positive towards physical fitness and exercise on the average, but that the group was also fairly homogenous: all respondents were closely grouped in the positive end of the distribution.

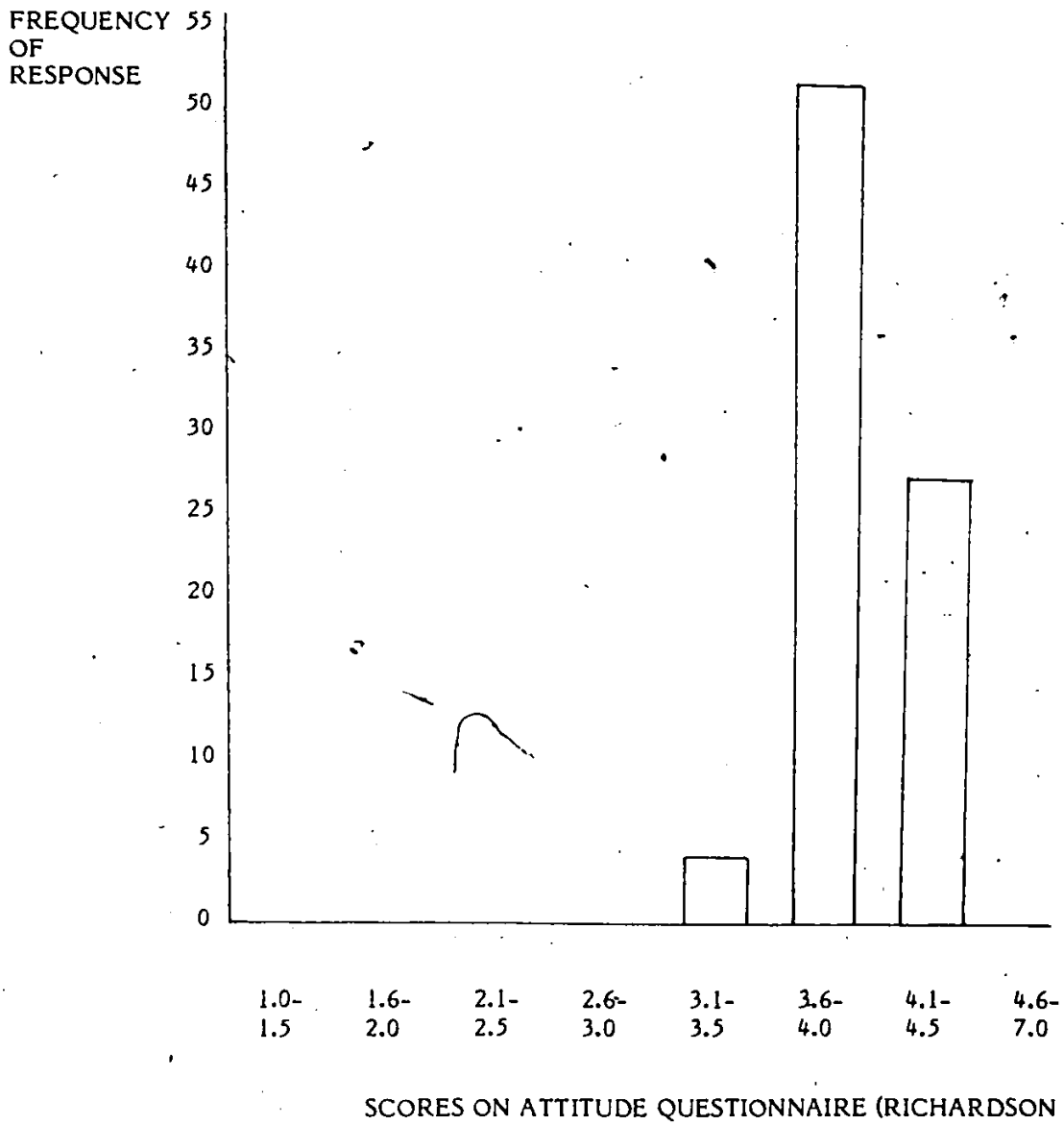
2. Fitness Test Results (CHFT)

The range of post-exercise heart rates was 102 to 186 beats per minute. The median was 156, with three modes at 144, 150 and 156 beats per minute. The distribution of scores resembled a normal curve (see figure 4.2) with the majority of scores concentrated in the middle region of the distribution. Fifty-nine percent of the scores were within the 25th (168) and 75th (144) percentile. Sixteen percent were below the 25th percentile, twenty-five percent were above the 75th percentile.

Responses were not as closely grouped over the entire distribution as were responses on the Richardson scale. Because the Richardson scale is ordinal, the transformation to a standard scale for the purposes of comparison to the fitness test results is not possible (Roscoe 1969). However, by comparing the frequency distributions in figure 1 and figure 2, it is apparent that results on the Richardson scale are closely grouped in comparison to results on the CHFT.

Figure 4.1

DISTRIBUTION OF ATTITUDE QUESTIONNAIRE RESPONSES
(RICHARDSON SCALE)



3. Correlation between Fitness Scores and Attitude Scores

Results from the Spearman correlation procedure indicated that there was very little relationship between expressed attitudes toward physical fitness as measured by the Richardson scale, and actual participation in exercise as measured by the CHFT. The correlation coefficient (r) was $-.209$. This suggests that respondents who had high scores on the Richardson Scale did not necessarily have high scores on the CHFT.

The coefficient of determination (r^2), which indicates the predictive utility of one variable with respect to another was $.0436$. If one were to predict the degree of participation in fitness activity of the group, without knowledge of its attitude towards fitness, a certain amount of error would be present in the prediction. For example, without knowing that the group was highly positive towards physical fitness, one might predict that 50% participated in some form of physical exercise. Knowing that the attitude of the group was highly positive, one might refine this estimate accordingly. The low coefficient of determination ($.0436$) suggests that the reduction in error would be only 4%. In this case, attitude towards physical fitness does not seem to be an accurate predictor of actual participation in physical exercise.

COMPARISON OF FITNESS TEST RESULTS AND
EXPRESSED PARTICIPATION IN EXERCISE

Table 4.1 shows that seventy-four percent of the respondents said they exercised regularly. The range of ranks on actual fitness scores for this group was large (1.5 - 71.5). This suggests that some of those who exercise may not be participating in aerobic exercise, or may not be exercising at a high enough intensity.

Figure 4.2

DISTRIBUTION OF SUBJECTS' SCORES
ON THE CANADIAN HOME FITNESS TEST
AS MEASURED BY HEART RATE
AFTER SECOND EXERCISE BOUT

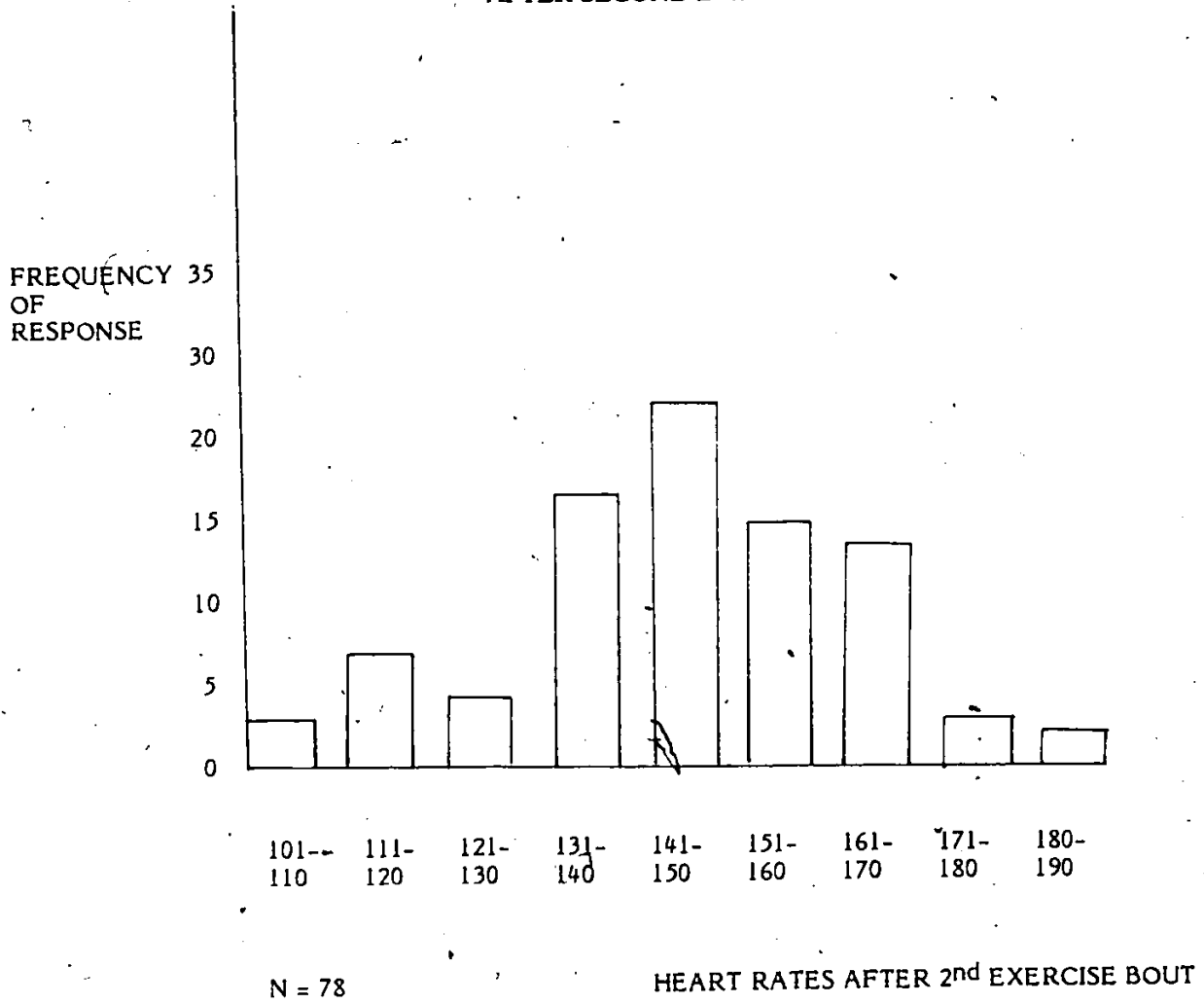


TABLE 4.1

FITNESS LEVEL VERSUS
EXPRESSED ACTIVITY LEVEL

	No. of Resp.	%	Median Rank Fitness Test	Range of Ranks Fitness Test
YES	58	74.4	36.0	1.5 - 71.5
NO	20	25.6	47.5	4.5 - 78.0

The median rank for this group was 36, which is fairly low considering they exercise on a regular basis.

It appears that there is greater variability among those respondents who exercise on a regular basis and consider themselves physically fit. It may be that some respondents are not knowledgeable enough about aerobic fitness to enable them to gauge the benefit of the exercises in which they participate.

The question asked was whether the category achieved by an individual's expressed activity level. One would expect that those individuals who exercised regularly would rate higher on the test of fitness than those who did not exercise regularly. As indicated in Table 4.2, the chi-square statistic was not significant at the .01 level, thus the null hypothesis of independence between the two scores is retained. It would seem then that those people who said they exercise regularly, did not necessarily rank higher on the fitness test than those who said they did not participate in regular exercise.

As can be seen in Table 4.3, 23% of the respondents rated themselves as being more fit than their peers. The range of ranks suggests that some of these respondents are not too sure about their level of aerobic fitness. The average rank, however, was higher than the average ranking for the other two classifications.

The "as fit" classification had a lower average rank than the "less fit" group. This may be explained by the larger number in the "as fit" group. Moreover, most respondents would probably find it easy to say they are as fit as anyone else, especially if they are unsure about their fitness levels. Again, the range of ranks was extreme, suggesting that some respondents are not aware of their relative level of fitness.

TABLE 4.2

**TWO BY TWO CONTINGENCY TABLE:
FITNESS LEVEL VERSUS EXPRESSED ACTIVITY LEVEL**

Expressed Participation in Exercise

	YES	NO	TOTALS
<u>Fit Levels</u>			
High	25 28	9 6	34
Low	33 30	11 14	44
Totals	58	20	78

Test statistic = 6.63 at $\alpha = .01$

Calculated chi-square statistic = 2.478

not significant at $\alpha = .01$
degrees of freedom = 1

TABLE 4.3

SUBJECTIVE FITNESS COMPARISON
VERSUS FITNESS SCORE RANK

Sub. Comp. To Others	No. of Resp.	%	Median Rank Fitness Score	Range of Ranks Fitness Scores
MORE FIT	18	23.1	25	1.5 - 71.5
AS FIT	52	66.7	47	1.5 - 78.0
LESS FIT	8	10.2	27	16.0 - 71.0

Table 4.4 shows the results of the chi-square analysis which attempted to discover how accurate the respondents were in evaluating their own fitness level. The question asked was: Does classification in the "more fit", "as fit" or "less fit" group depend upon actual fitness level?

The chi-square statistic was not significant at the level of .01. Thus, the null hypothesis of independence is retained. It appears then, that respondents were not accurate in their self-ratings of physical fitness.

TABLE 4.4

THREE BY TWO CONTINGENCY TABLE:
SUBJECTIVE FITNESS COMPARISON
VERSUS FITNESS SCORE RANK

Fitness Comparison	Fitness Level		Totals
	High	Low	
MORE FIT	8 13	10 5	18
AS FIT	23 18	29 34	52
LESS FIT	3	5	8
TOTALS	34	44	78

Test statistic = 9.21 at $\alpha = .01$

Calculated chi-square statistic = 7.574

not significant at $\alpha = .01$

degrees of freedom = 2

SUMMARY

The data indicates that the respondents place a high value on physical fitness. For the most part, however, it would appear that this positive attitude does not correspond well with actual participation in physical exercise. The Spearman rank order correlation coefficient between the attitude questionnaire (Richardson Scale), and the fitness test (CHFT) scores was $-.209$.

Although 74% of the respondents said they exercised regularly, the variability of these individuals on actual fitness levels was quite high (ranks ranging from 1.5 - 71.5). It might also be noted that 56% of all respondents fell into "low" category in the test of fitness.

The chi-square test of independence between expressed participation and actual fitness test was not significant at the $.01$ level of significance. This result indicates that, those individuals who said they participated in physical exercise did not necessarily score higher on the test of fitness than those who said they did not exercise regularly.

The chi-square test of independence between the respondents' subjective fitness ratings and the CHFT was also not significant at $\alpha = .01$. This result indicates that those who rated themselves "more fit" than their peers did not necessarily score higher on the Canadian Home Fitness Test than those who rated themselves "as fit" or "less fit" than their peers.

CHAPTER V

DISCUSSION

This chapter discusses the implications arising from the results, and the relationship of these implications to the existing literature on the subject of attitude-behaviour correspondence.

Section one examines the results of the attitude questionnaire with respect to possible reasons for these results. Section two discusses the fitness test results. Section three considers the implications of the observed correlation between attitude questionnaire scores and fitness test scores. The final section discusses some possible implications of the relationship existing between expressed participation in physical exercise, and actual fitness levels of the respondents. The fifth section considers the relationship between subjective fitness comparisons and actual fitness levels of the participants.

1. Results from the Attitude Questionnaire

Results from this instrument indicate that most respondents were highly positive toward physical fitness and exercise. Breer and Locke (1965) suggest that positive attitudes are formed towards an object if the object is instrumental in attaining the individual's goals. It may be that physical fitness has some instrumental value to the respondents in this study. Their immediate goal is the development of knowledge, and skill in health care. Perhaps they consider physical fitness to be an important aspect of health care, or they may feel that personal physical fitness will enable them to become better health promoters. In either case, they would have positive attitudes toward physical fitness since it would be seen as instrumental in the

attainment of their goals.

Other researchers (Kenyon 1968; McGuire 1968) have noted that groups play a very important role in the development of certain attitudes. It may be that the trend toward fitness in recent years has provided certain pressures that obligate people to say they value physical fitness. This, however, does not mean they will actually participate in fitness activities. For example, the wealth of advertising against cigarette smoking has convinced most people that smoking is deleterious to health, yet many people continue to smoke.

Kenyon (1968) and McGuire (1968) suggest that family and peer groups are most important to the development of an individual's attitudes. If the family group was aware that a member planned a career in nursing, that group might reinforce certain values such as participation in physical exercise, and abstinence from cigarette smoking and alcohol abuse. Thus, the prospective nurse would develop positive attitudes towards physical fitness.

Upon entering university, the individual would associate with others who have had similar experiences with their own family group. The attitudes developed therein are therefore reinforced, and eventually become norms for the newly-formed peer groups.

Triandis (1971) suggests that referent groups - groups to which the individual would like to belong - also have an impact on attitude formation. Nursing students hope to eventually become nurses. In doing so, they will enter a very large health care group. It is possible that these individuals would believe that nurses should have positive attitudes toward physical fitness. Thus, they would adopt the attitude to

indicate acceptance of the perceived norms of the referent group.

In addition to these group processes, there are other factors that influence the development of attitude towards physical fitness. Carr (1945) and Driscoll (1975) suggest that positive experiences with physical education and sport leads to the development of positive attitudes toward physical fitness. Some of the respondents in this study may have been on high school teams, or may have experienced success in other areas in physical education which would predispose them to have positive attitudes to physical fitness and exercise.

The attitudes held by the individuals in this study may also be justified from a functional perspective. McGuire (1968) suggests four main functions of attitudes: they serve adaptive, information gathering, value-expressive and ego-defensive functions.

A positive attitude towards physical fitness may serve an expressive function for some of these respondents. It may demonstrate the individual's orientation to nursing by showing that he is concerned about all aspects of health, not only disease prevention.

A positive attitude towards physical fitness might also serve an adaptive function. The university is a new environment for many of the respondents. Developing certain attitudes to health may help the individual feel comfortable in this new environment. Perhaps students entering health care professions develop particular attitudes to all aspects of health based on their perceptions of what the profession demands. For example, medical students, who recognize the hazards of cigarette smoking should have negative attitudes towards cigarette smoking.

Accordingly, health care students who recognize the health benefits of physical exercise should have positive attitudes towards physical exercise.

The information-gathering function may also apply in the sense that a positive attitude towards physical fitness causes the person to seek more information on the health benefits of physical fitness. Moreover, the attitude permits the individual to categorize such information. For example, if information is obtained which denigrates the benefits of physical fitness, the individual may simply classify it as obviously wrong, and therefore unimportant. The attitude in this case operates as a perceptual filter encouraging the person to attend to information that reinforces the opinion he already holds.

The ego-defense function may apply in those situations where an individual must rationalize his behaviour. For example, an individual recognizes that being a health science student he should be in good physical condition, but he simply lacks the willpower to exercise regularly. He may therefore rationalize his inactivity by developing a highly positive attitude towards physical fitness. This attitude helps to expiate the guilt felt over his poor physical condition.

In summary, a number of psychological processes may be responsible for the attitudes observed in this group. Most important of these processes may be the influence of family and peer groups. Also, it seems probable that students wishing to enter the field of health science would develop whatever attitudes they believe would facilitate entry into this group. Considering this aspect from another perspective, perhaps the attitudes developed in earlier years, through the influence of significant groups, predispose the individual to enter a health science field. This question of cause and effect would likely only be settled through longitudinal studies

where the variables involved could be identified. The important point is that one would expect health science students to express positive attitudes towards physical fitness.

Another important aspect is the experience which individuals have had with physical fitness. Success in sport or physical education seems to promote the development of positive attitudes towards physical fitness (Carr 1975).

2. Results from the Fitness Test

The distribution of scores was more or less normal. The majority of respondents fell in the mid-range of the distribution, with relatively few in the lower and higher ends of the distribution.

This result is similar to results obtained by Fitness Canada in the Canada Fitness Survey. Of the 1129 females in the 15 - 19 year age group tested, 62 completed only the first stage, 571 completed the second stage, 360 completed the third stage.

Since the respondents in this study have a special interest in health, one would expect that their fitness test scores would be higher than those from the general population. Such was not the case. Obviously, the highly positive attitudes of all the respondents were not translated into action.

3. Correlation between Attitude Questionnaire Scores and Fitness Test Scores

The correlation arrived at between ranks on the Richardson scale and ranks on the CHFT was $-.209$. This corresponds with results arrived at by most of the

studies previously done on the attitude-behaviour relationship.

Dowell (1973) compared attitude towards physical activity as measured by Wear's scale, and actual levels of fitness as measured by the Texas A & M Physical Fitness Test. With university students as subjects (N = 199), Dowell arrived at a Pearson correlation coefficient of .12.

Sonstrom and Walker's (1973) study compared attitudes (using Kenyon's ATPA) with performance on a 600-yard run of 102 university freshmen. The correlation arrived at was also low.

Wessel and Nelson (1964) investigated the relationship between certain parameters of strength and attitudes towards physical education. The authors used the Wear inventory, as an attitude measure, and various dynamometers to assess strength of 200 female students at Michigan State University. The correlation coefficients arrived at varied from .209 to .608.

The aforementioned studies used a heterogenous group of respondents. Although all were university students, they were not selected from any one faculty which may, in part, account for the low correlations. In this study, since all the students involved were in the field of health sciences, one might have expected a better relationship between attitude and behaviour. The observed correlation of -.209 lends even more cogent evidence to the attitude-behaviour inconsistency existing in attitude measurement in physical education.

Results of this study also agree with studies on attitude-behaviour relationship done with issues other than physical fitness as the attitude object.

Wicker and Pomazal (1971) working with students at the University of Wisconsin (N = 257) measured attitudes to scientific research, compared to willingness to participate. The authors arrived at correlations varying from $-.04$ to $.19$. Heberlin and Black (1976) studies actual gasoline-buying behaviour of automobile drivers compared to their stated preference for one type of gasoline over another. The authors found correlation coefficients of $.118$ to $.55$ for various scales of differing specificity. Weigel and Newman (1976) studied the relationship between stated concern for environmental issues and actual behaviour in doing something about environmental problems of 44 New England residents. The authors found a correlation of $.29$ between the two variables. Wicker (1976) found a correlation of $.36$ between attitudes to the church, and church-going behaviour of American college students.

It may be that these attitudes do not correspond well with behaviour. For example, most people would be concerned about the environment, but how many would actually volunteer to clean litter off local streets? Or, if a person expressed preference for a particular brand of gasoline, might he not nevertheless purchase whatever brand happened to be most economical at a given time?

Many of the psychological studies have also focused on attitudes held by various individuals to certain races. Low attitude-behaviour relationships were also found. De Fleur and Westie (1958) studies the expressed willingness of 250 undergraduate students to pose for publicity photographs with members of a different race. The authors discovered that many who expressed an unwillingness to pose with members of a different race nevertheless signed release forms authorizing the use of th photographs.

Some researchers have suggested that peer pressure often will influence people to act in ways inconsistent with expressed attitudes (De Fleur and Westie 1958). With issues such as racial prejudice one might expect this to occur. Respondents may not wish to be branded as bigots, therefore actions that are seen by others may not coincide with attitudes privately expressed.

In the case of physical fitness, one might not expect such an occurrence. The fact that one exercises should not be a source of embarrassment to the individual, nor should peer pressure to avoid exercise be a factor. On the contrary, the fact that one exercises should be a source of pride to the individual, and group norms especially of groups involved in health care, should be biased towards physical exercise. It is unlikely then, that the inconsistency between attitude and behaviour observed in this study could be explained by the influence of peer pressure.

From a theoretical viewpoint, the consistency theories of attitude would hold that the observed relationship exists because of rationalization on the part of the respondents. It may be that many respondents have defined physical exercise to be certain activities such as walking to the bus stop, or walking to and from classes. These actions may constitute legitimate exercise sessions, but may not provide adequate benefit to the participant. Therefore, physical exercise, as defined to rationalize the individual's inactivity, will not provide enough of a physiological benefit to enable the individual to score well on a fitness test.

Another explanation might be that the respondents are in a transition stage where previously held attitudes must be adapted to new career and lifestyle goals. If behaviour does not soon change to match the affective and cognitive components of attitude, then it is likely that the latter components will undergo change. The

respondents may begin to accept negative information regarding the values of physical exercise, until the three components: affective, cognitive and behavioural are again in agreement.

The behavioural theory espoused by Azjen and Fishbein (1975, 1980) explains behaviour in terms of beliefs, and subjective expected utility of the action involved. The components of this theory are as follows:

$$B \approx BI = [A]_{w_0} + [NB_p (M_{cp})]_{w_1} + [NB_s (M_{cs})]_{w_2}$$

Behaviour (B) depends upon behavioural intention (BI) which is determined by the affective evaluation of the behaviour (A), the individual's personal normative belief (NB_p) - (that is his belief that he should perform the behaviour), the individual's motivation to comply with that belief (M_{cp}), the social normative belief of the individual (NB_s), (the belief that the behaviour would be socially acceptable), and the motivation to comply with that belief. The subscripts w₀, w₁, w₂ are weights which are assigned by the individual varying the relative importance of each component.

The observed attitudes in this study were positive: according to the behavioural model, affective evaluation is high. One might also then assume that personal normative belief would predispose the person to exhibit the behaviour in question (physical exercise). Since the students involved here have an interest in health and are in a health science field, the social normative belief should also be supportive of the act. The motivation to comply, however, to either the personal or social normative belief may be lacking. We might attribute this lack of motivation to a number of actors: lack of time, lack of facilities, or simply the lack of discipline required to adhere to a physical fitness program.

Another factor that may account for the attitude-behaviour inconsistency is

the relative weights assigned to each component by the individual. Although the affective evaluation is highly positive, perhaps the relative weight given to this component is low compared to the other components. If, as noted above, the motivation to comply to either the personal or social normative belief is low, and these components are given high weights, then the behaviour in question will not be manifested.

Another theoretical implication regards the specificity of attitude scales used in measurement. Some studies (Wicker and Pomazal 1971; Weigel, Vernon and Tognacci 1974) dealing with religion and racial prejudice have shown that very specific scales tend to relate better to behaviour. Perhaps general attitude measures in physical education (such as attitude to physical fitness) do not relate well to behaviour. More specific measures, such as attitudes towards performing specific exercises may provide better correspondence with behaviour. Specificity in scale development may account for other variables, such as personal or social constraints which influence the eventual manifestation of behaviour. For example, instead of a general attitude statement such as: "Physical fitness appeals to man's highest nature"; attitude scales might include statements such as "Physical fitness activities require too much time." The second statement, while not directly assessing how the person feels about physical fitness, would allow the person to express their feelings on the relationship of physical activities to the person's real world situation.

In referring to the general nature of attitude scales, Azjen and Fishbein (1980) suggest that some scales may not be at all related to behaviour. If attitude towards an object on an abstract level is to be investigated, then general scales may be useful. If, however, the attitude measure is to relate to subsequent behaviour, more specific scales would be required.

It is this general nature of attitude measurement Hyman (1949) also refers to when he suggests that attitude-behaviour correspondence is usually weak because the attitude measurement situation is playlike. It is free, unproductive, and bounded in space and time. In other words, it does not relate to the real world. The individual, therefore, feels no compulsion to consider any real world constraints when responding to attitude scales. According to Hyman (1949), the respondent simply answers according to what he believes is expected of him.

In view of the observed correlation in this study between the attitude and behaviour measures, it is not unreasonable to presume that some of the above-mentioned processes occurred. The attitude scale was general, the behaviour specific. The students were in a health science field and thus may have responded in ways which they felt proper for health science students. Furthermore, they may have responded to the attitude object as a concept, not as something related to their everyday activities. The lack of relationship with the attitude object to the real world would imply that practical constraints are not considered by respondents in the attitude measurement situation. They are, however, important in the day-to-day activities of the respondents. These variables may account for the observed attitude-behaviour inconsistency.

4. Results of Chi-Square Analysis of Expressed Participation in Exercise Contrasted with Fitness Scores

Since the chi-square test of independence was not significant ($\alpha = .01$), it appears as that those respondents who scored well on the fitness test were not necessarily those who said they exercised regularly. This result implies that either the

CHFT did not distinguish exercisers from non-exercisers or many who said they exercise did not achieve aerobic conditioning from their particular activity.

5. Results of Chi-Square Analysis of Subjective Fitness
Comparison Contrasted with Fitness Scores

The chi-square test of independence was not significant (at $\alpha = .01$). This result indicates that respondents were not accurate in their self-ratings of physical fitness. It may imply that their knowledge of physical fitness is inadequate to enable them to rate themselves accurately.

SUMMARY

Results from this study coincide with earlier research on attitude-behaviour correspondence. A great deal of inconsistency has been found between expressed attitude and behaviour; a lack of consistency between expressed attitude and behaviour was also found in this study.

Various reasons have been postulated for the observed inconsistency between attitude and behaviour. Theorists from the three-component school of attitude would argue that the inconsistency exists because of rationalization on the part of the individual who seeks to maintain consonance between the three components of attitude: cognitive, affective and behavioural. Therefore, although the inconsistency would be apparent to an outside observer, it would not be apparent to the individual.

The behavioural theory of Azjen and Fishbein (1975, 1980) suggests that other variables besides attitude account for the manifestation of behaviour. Even though one may measure attitude, unless these other variables are accounted for, the attitude-behaviour relationship would be weak.

The authors also suggest that attitude scales may not be related to behaviour because of the general nature of most scales. The respondent therefore related to the attitude object on an abstract level.

This particular point is also echoed by Hyman (1949) who suggests that the attitude measurement situation is artificial. Respondents, therefore, respond to attitude statements from an abstract viewpoint. Since individual responses are not related to any "real world" activity they may not correspond well with behaviour (which

is a "real world" activity).

This study has pointed out that attitude studies in physical education should account for other variables besides the traditional three components (cognitive, affective, behavioural) of attitude. The results suggest that the behavioural theory espoused by Azjen and Fishbein (1975, 1980) which accounts for personal and social constraints may provide measures that correspond better with behaviour. Attitude scales based on the Azjen and Fishbein model should be developed for the field of physical education. These scales should also include specific questions that relate to the respondents' everyday activities.

Practical Implications

The highly positive attitudes to physical fitness observed in the study should be welcome news to nursing leaders who have expressed concern over the "disease prevention" rather than "health promotion" orientation of the nursing fraternity. However, the fact that these attitudes are not translated into action might cause some concern. Nursing leaders should seek to discover what factors are responsible for the observed fitness behaviours.

Results from the chi-square analysis of fitness scores compared to expressed participation in physical activity; and the comparison of self ratings of fitness and fitness test scores suggests that the participants need to develop an understanding of the benefits derived from various forms of exercise.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

This study intended to examine the relationship between expressed attitudes of nursing students towards physical fitness and their actual fitness activity participation as objectively measured by an aerobic fitness test. Subproblems identified were as follows:

- 1) To determine the relationship existing between their expressed level of participation and their actual fitness levels.
- 2) To determine the relationship existing between the respondents' subjective fitness comparisons and rankings attained on the test of aerobic fitness.

The results demonstrated that, on the average, the group held highly positive attitudes towards physical fitness activity. The relationship between expressed attitude and fitness levels was, however, not significant ($r = -.209$). This implies that respondents either were not positive enough towards fitness to actually participate, or that there was some other variable influencing participation other than attitude towards fitness activity.

From a theoretical perspective, the correlation result suggests that the three-component view may not be applicable to the field of physical fitness. It would, in Katz's (1960) terms, imply that attitude towards physical fitness does not have an "action structure" such that behaviour is closely linked to attitude. Therefore, the theory of Azjen and Fishbein which accounts for social and personal constraints upon

behaviour might be more applicable. No practical method of applying their theory to attitude measurement has, however, yet been developed.

Another theoretical implication regards the specificity of attitude scales used in measurement. Some studies (Wicker and Pomazal 1971, Weigel, Vernon and Tognacci 1974) dealing with religion and racial prejudice have shown that very specific scales tend to relate better to behaviour. Perhaps attitude measures in physical education should be more specific. For example, instead of general statements about fitness, such scales would include statements concerning specific activities. More specific scales could account for the influence of variables other than attitude, acting upon the person's behaviour.

The chi-square statistic between expressed participation in physical fitness activity and actual level of fitness was calculated to be 2.478. The null hypothesis of independence is retained at $\alpha = .01$ which implies that those people who said they participated in physical exercise did not necessarily score higher on the test of fitness than those who said they did not participate. This suggests that those people who exercised regularly may not be participating in aerobic exercise, or that respondents may not be participating at a level, intensity or frequency beneficial to the aerobic system.

The chi-square statistic between subjective fitness comparisons and actual fitness levels was calculated to be .7574. The null hypothesis of dependence is retained at $\alpha = .01$ which implies that respondents were not aware of their relative levels of aerobic fitness. This result would indicate that those respondents may need specific information regarding personal physical fitness.

From a practical point of view, the data suggests that nursing students have very positive attitudes towards physical fitness activity, but many do not translate this positive feeling into action. The implication is that some other variable, perhaps lack of time, or lack of facilities restricts the respondents from participating in physical fitness activities. Nursing leaders, who are interested in improving the status of preventative health in the field of nursing, and who believe that physical fitness is an important aspect of health, should seek to determine what factors restrict nursing students from participating in exercise.

CONCLUSIONS

1. Results of this study agree with other studies in the field showing a poor correspondence between expressed attitude and actual behaviour.
2. It would seem that the three-component view of attitude does not fully explain the attitude-behaviour relationship. Attitude measures must be developed based on theoretical models of attitude that account for normative constraints on behaviour.
3. The poor attitude-behaviour relationship observed may be due to the general nature of the scale which encourages respondents to think of the attitude object in abstract terms. Attitude scales are needed that are specific to respondents' actual day-to-day experience with the attitude object.
4. From a practical perspective, the sample demonstrated highly positive attitudes towards physical fitness. The correlation to behaviour, however, suggests that there are other factors causing respondents to avoid physical exercise.

RECOMMENDATIONS

1. The behavioural theory of attitude, while capable of explaining the inconsistencies between attitude and behaviour has not been developed to the point where it can be put to practical use in attitude measurement situations. Study is required to develop models for attitude scales based upon this theory.
2. Research is needed to determine variables, other than expressed attitude, that influence the degree to which individuals participate in physical exercise.
3. Attitude scales developed for physical fitness should contain specific statements relating to the respondents' everyday activities. These scales would assess attitudes towards physical fitness as it related to the respondents' day-to-day activities, not as an abstract concept.
4. Future studies should be expanded to include the attitudes of working nurses. Comparisons could then be made to determine if the attitudes held during university carry over into the respondents' work environment.

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APPENDIX I

**Thurstone Scale for Measuring Attitudes
of College Students Toward Physical
Fitness and Exercise**

The following items are not designed to test your knowledge. Instead, they are meant to explore some of your feelings and points of view toward certain health topics. There are no right or wrong answers. Further, your responses will not be made known to other students nor will they be used for grading purposes in this course. Please give a thoughtful and honest response to each item.

Directions: Read each item carefully and circle the number opposite each item with which you agree; your disagreement is indicated by leaving the numbers of the items blank. There is no time limit, but work rapidly.

- (1.1) Physical Fitness Activity is the lowest type of activity indulged by man.
- (1.3) Man has outgrown the need for physical fitness programs.
- (1.5) Physical Fitness Activity programs are necessary only in wartime.
- (1.7) Physical Fitness Activities are the least civilized of man's activities.
- (1.9) Physical Activity should not be stressed so much in our present culture.
- (2.1) Planned Physical Activity programs have limited value.
- (2.3) Physical Fitness Activity is unnecessary.
- (2.5) The values of physical activity are debatable.
- (2.7) Physical Fitness Activity should be left to the individual.
- (2.9) Physical Fitness programs are too soft.
- (3.1) Physical Fitness Activities appeal to man's highest nature.
- (3.3) Physical Fitness is a most important aspect of life.
- (3.5) Physical Fitness Activities have not proved indispensable to society.

- (3.7) Physical Fitness Activities are retained in the world because of their value to mankind.
- (3.9) Physical Fitness programs are not sufficiently appreciated by college students.
- (4.1) Physical Fitness Activities are vital to life.
- (4.3) Physical Activity benefits everybody.
- (4.5) Physical Fitness Activity programs should be stressed.
- (4.7) Physical Fitness Activity is a "must" in today's world.

Question 1: Do you take part in planned regular physical activity?

Question 2: Comparing yourself to others of your age and sex, would you say you are...

more fit less fit as fit

APPENDIX II

The principal component of the standardized Test of Fitness (STF) is the submaximal step test of cardiovascular fitness. The advanced version of the Canadian Home Fitness Test is used in the STF, which means a subject steps to a musical cadence for a maximum of three sessions of three minutes each. Pulse readings are taken after each session, and the test continues or terminates according to pre-established guidelines.

A "minimal" level of fitness indicates that the subject completed two sessions, the second of which provides a workload which is 70% of the theoretical maximum for someone that age. A result classified "undesirable" indicates the subject completed only one session, at a workload 70% of the maximum for someone ten years older. Similarly, a 'recommended' level is obtained by completing three sessions, the last being set at 70% a maximum workload for a person ten years younger. In the case of children aged 7 - 14, the 'recommended' level indicates the subject reached approximately 85% of the maximum for his or her age, while for subjects aged 60 - 69, this refers to a heart rate after two sessions of 138 or lower (abstracted from CFS, 1984).

APPENDIX III

Consent Form for Phase I - Fitness Testing

I, _____, agree to participate in this research study. I will be given the Canadian Aerobic Fitness Test which consists of a series of stepping sequences performed to music. Values for O₂ consumption and heart rate will be obtained by an exercise physiologist during work on a treadmill.

I have had explained what I am being requested to do in this study. I understand that the testing is designed to provide information about the physical fitness levels of student nurses. I understand that the research is designed not to be physically, socially, nor psychologically invasive. I have the option to withdraw at any time.

The data from this study will be pooled so that the information provided by individual testing will not be identifiable in the final results.

Before being tested, I agree to being pre-screened for participation, using PAR-Q and You, and having my heart rate and B.P. checked.

Signature _____

Witness _____

Date _____

Name of Researchers:

Prof. Donna Sabina
Prof. Bernard Booth


University of Ottawa

KENYON'S ATPA

Using the scales below, express what the concept in the box means to you:

1. Physical Activity as Social Experience: Sports, games and other forms of physical recreation whose primary purpose is to provide opportunities for social participation; that is, to meet new people and continue personal friendships.
2. Physical Activity for Health and Fitness: Participating in physical activity primarily to improve one's health and physical fitness.
3. Physical Activity as a Thrill, but Involving some Risk: Physical activities providing, at some risk to the participant, thrills and excitement through speed, acceleration, sudden change in direction, and exposure to dangerous situations.
4. Physical Activity as the Beauty in Human Movement: Physical activities which are thought of as possessing beauty of certain artistic qualities, such as ballet, gymnastics or figure skating.
5. Physical Activity for the Release of Tension: The participation (or watching others participate) in physical activities to get away from the problems of modern living; or to provide a release from "pent-up emotions."
6. Physical Activity as Prolonged and Strenuous Training: Physical activities which require long periods of strenuous and often painful training, which involve stiff competition and demands that the individual give up a number of pleasures for a period of time.
7. Physical Activity as Games of Chance: Games and sports where chance and luck are more important than skill in determining the winner, such as dice and horse-racing.

The Scale Used with Each Statement

1. good	—	—	—	—	—	—	—		bad
2. worthless	—	—	—	—	—	—	—		worthwhile
3. pleasant	—	—	—	—	—	—	—		unpleasant
4. sour	—	—	—	—	—	—	—		sweet
5. nice	—	—	—	—	—	—	—		awful
6. sad	—	—	—	—	—	—	—		happy
7. clean	—	—	—	—	—	—	—		dirty
8. relaxed	—	—	—	—	—	—	—		tense
	1	2	3	4	5	6	7		