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ABSTRACT

THE ASSESSMENT OF FRESHMEN FEMALE ATTITUDES TOWARD PHYSICAL EDUCATION AS THE RESULT OF 105 FOUNDATIONS COURSE AT MICHIGAN STATE UNIVERSITY

by Judith A. Phillips

Summary

The primary purpose of this study was to determine if the 105 Foundations course at Michigan State University, required for all freshmen, did in fact meet its general attitudinal objectives. Additional secondary goals were included in the study: the development of a reliable, valid instrument for assessing such attitudes and the determination of freshmen women's attitudes toward physical education and activity upon entrance into the Foundations course.

A long and short form questionnaire was constructed to elicit response tendencies toward the four general objectives of the Foundations course and was administered to 49 freshmen women students enrolled in that course spring term. The two forms of the questionnaire were administered to the sample upon entrance to the Foundations course on the last formal class day by an unknown male investigator.

The means and standard deviations were used to determine agreement among the judges. The reliability of the long form of the questionnaire was determined by the simple

correlation technique. Concurrent validity of both long and short forms of the questionnaire was established by two methods:

1. A Pearson Product Moment correlation of the 10% highest total scores of the two samples with the 10% lowest total scores was computed.
2. Simple correlations of the pre-experimental responses with the total score for the entire questionnaire were figured.

A "t"-test for the differences between the means of the long form and the long form rescored with only the 25 short form items were computed to determine if there was any difference between the two forms of the questionnaire. The similarity of the two sample groups was determined by the "t"-test for the difference between means of the original short form and the rescored short form. The initial attitude of the freshmen was established by computing the differences between the means of the pre-experimental responses and a neutral opinion of three. The Chi Square comparison was the statistical tool used to establish an attitude shift with the change in means as the indicator of the direction of the change.

Results

Development of An Instrument for Assessment

1. The reliability of the Attitudes of Freshmen toward Physical Education, long form questionnaire, was found to have an "r" value of .768

2. The Attitudes of Freshmen toward Physical Education questionnaire for 20 of the 25 short form questionnaire items and 60 of the 83 long form questionnaire items met the requirements for concurrent validity ($r = .5$ or above).
3. The results of a "t"-test indicated no significant difference between the long and short forms of the questionnaire at the 1% level of confidence. Therefore, no significant difference between the two forms was assumed.
4. The sample groups were not found to be different from each other by a "t"-test analysis at the 5% confidence level. Therefore, the long and short form sample groups were considered the same.

Assessment of Attitudes

1. The results of the "t"-test indicated that the initial attitudes of the freshmen women toward physical activity were significantly different from a neutral opinion of three at the 1% level of confidence for 18 short form items, one being negative and the remaining positive, and 62 of the long form items, one being negative with the remaining positive. Therefore, freshmen women have a strongly favorable initial attitude toward physical activity upon entrance to Michigan State University.

2. The χ^2 comparison of responses demonstrated a change in attitude for five of the short form and 22 of the long form items at the 10% level of confidence. Twenty of the combined statements moved in a favorable direction while seven reversed toward the negative. On the whole the Bio-Physiological objective demonstrated a greater variety of fluctuation. There were, however, a larger number of items comprising this general attitudinal objective. Only in this area were there any initial unfavorable attitudes, but upon post-experimental analysis they did move toward the positive.

The trend in the other three general attitudinal areas, showing significant χ^2 changes, was in a positive direction. The only exception was item 29 in the Psychological area. The item states: "Physical activity can help me to relax and enjoy life." It is the author's contention that the Physical Fitness exercises used in a training program were not perceived by the student as a medium of relaxation and enjoyment.

Recommendations for Further Study

1. The four general attitudinal objectives of the Foundations course should be further defined and clarified for a more thorough evaluation of outcomes.

2. More value statements should be developed to represent the student's understanding of the objectives to insure adequate coverage of the delineated objectives. Specifically needed are additional negative statements in the composition of the scale. A starting point for the value statements may be found in the recommended final scale (see Appendix B) and those items retained from the judges' ratings of statements (see Table 1).
3. Attitude investigation with the following experimental design may prove fruitful.

	Pre-Experimental Administration Of Questionnaire	Experimental Variable	Post-Experimental Administration Of Questionnaire
A	X	0	0
B	0	0	X
C	0	X	X
D	X	X	X
E	X	0	X

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TOWARD PHYSICAL EDUCATION AS THE RESULT
OF 105 FOUNDATIONS COURSE AT
MICHIGAN STATE UNIVERSITY

By

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Dedication

To

My Parents

Mr. and Mrs. R. W. Phillips

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It is with pleasure and humility that I recognize those persons who have been instrumental in the development and completion of this paper.

First I would like to thank Dr. Janet Wessel, my major advisor, for her challenging thoughts, encouragement, and guidance, as well as serving as a judge.

My many thanks and appreciation to the hard working judges for their patience and kind cooperation: Dr. William Heusner, Dr. Gale Mikles, Miss Jean McIntyre, and Mr. Herb Olsen.

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I would further like to extend my gratitude to two able programmers, Mr. Donald Clements and Mr. Santo Pasqualucci, whose assistance with the formatting and

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Finally, my co-investigator, Edward Bell, who conducted the companion male study, deserves thanks for his sharing of thoughts, long hours of shared developmental work and encouragement.

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CHAPTER I

INTRODUCTION

"Modern educators recognize their responsibility not only to present the student with essential information, but also to develop attitudes and practices adjudged desirable by the best thinking within the society." (18, 355) Just as all of education is concerned about building attitudes upon which the learner will act; physical educators cannot help but be vitally interested and concerned about the attitudes formulated within the class situation which they provide. We are, therefore, concerned whether meaningful learning has taken place.

Dr. Wessel (31, 562) suggests the direction for our profession by stating:

The importance of attitudes, how one feels about physical activities and how attitudes can be changed, cannot be overlooked by those interested in encouraging active physical participation of girls and women in school physical education programs and further physical activity throughout life.

If the response of being physically active throughout life is to be habituated for the learner, then favorable attitudes built on a sound knowledge framework must already exist for the learner, or must be promoted for him.

As Edwards points out, "Man constantly searches and selects or differentiates between all of his experiences for meanings which better enable him to satisfy his basic needs." (18, 355)

Statement of the Problem

The primary purpose of this study is to determine if the 105 Foundations course, required for all freshmen women does, in fact, meet its general attitudinal objectives. As an outgrowth of this problem four additional tasks become apparent:

1. The formulation of the general attitudinal objectives, which will serve as the basis for the construction of a testing instrument.
2. The development of a valid and reliable instrument for assessing the attitudes of the students.
3. Determination of what the attitudes are of freshmen women entering the 105 Foundations course preceding course exposure.
4. Evaluation of the asserted attitudes upon completion of the 105 Foundations course.

Need for the Study

If our commitment is to the development of sound attitudes and as Krech and Crutchfield suggest: "The individual's beliefs and attitudes may help him to achieve various goals." (7, 154) There is, then, a need to

discover what the attitudes of the female freshmen population at Michigan State University are.

Further, "By using the attitude inventory, administrators and teachers may become aware of students' existing attitudes, and the desirability of attempting to modify these attitudes when they are not indicative of readiness to learn." (20, 432)

We need to know whether this course, 105 Foundations, is instrumental in affecting and/or developing attitudes. It is also our responsibility to determine what initial attitudes toward physical education are prevalent among freshmen women in order to better provide a curriculum suited to their needs. To assess these attitudes effectively, therefore, an instrument must be conceived specific to the 105 Foundations course.

Definition of Terms

105 Foundations: "An introductory physical education course required of all freshmen women students at Michigan State University. Both the structure and material in the course emphasize the development of the student's self-awareness and self-evaluation." (26, 2)

An Attitude: "An attitude is a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner." (28, 2)

Belief: "A belief is a pattern of meanings of a thing; it is the totality of the individual's cognition about the thing." (7, 151)

Opinion: ". . . a verbal expression of some belief, attitude or value, which the opinion reflects is a matter of inference." (28, 9) "An opinion symbolizes an attitude." (11, 7)

An Attitude Scale: "Scales differ markedly in type and in method of construction, but in every case their objective is identical--to assign an individual a numerical position along a scale that extends from one extreme of approval or acceptance to the other extreme of disapproval or rejection. The relative scale positions occupied by various individuals may be taken, therefore, as indicative of the relative favorableness or unfavorableness of their opinions and attitudes." (7, 210-11) "The item must serve some discriminative function, so that people of different belief and attitude complexion will respond to the item in systematically different ways." (7, 211)

Ranking: "In making comparisons of the relative negativity or positivity of an attitude or opinion toward a set of similar objects, . . ., it is possible to employ a method of ranking, in which the individual ranks the objects from most favored to approved or accepted to least favored or approved or accepted." (7, 224) "This method is particularly useful when it is desired to obtain relative

attitudes or opinions among a whole set of objects" (7, 224)

Thurstone Instrument: The Thurstone method of attitude scaling places subjects on a continuum for a specific attitude. Statements received from a random population are assigned a scale value by judges on a 1-11 scale of order of merit. A Thurstone scale is thusly developed: "(1) Amassing of a very large number of simple statements or propositions about the object or issue in question. (2) The judging of each of these items by a sizable group of experts as to its proper diagnostic position on an attitude continuum between one extreme and the other and the rejection of those items for which there is insufficient agreement among the judges as to proper scale position. (3) The assignment of a scale score to each remaining item, computed as the median scale position for that item given by the group of judges. (4) A final selection among the remaining items so that they will spread more or less evenly along the scale from one extreme to the other." (7, 215)

Likert Technique: Subjects indicate ranking degree of agreement or disagreement. "The results are then tabulated, scored say from 1 to 5 depending upon the degree of sentiment expressed, and totaled for each individual. Each statement is then correlated with the total score in order to determine those statements which best discriminate between high and low scoring individuals. Non-discriminating

items are then eliminated, and the remaining statements form a scale for measuring the attitude in question."

(12, 454)

Likert Technique For Scale Development: "(1) The collection of a large number of statements or proportions either referring directly to or considered by the experimenter as likely to relate to the object in question. (2) The applying of these statements to a group of subjects who indicate for each statement their reaction of strongly agree, agree, undecided, disagree, or strongly disagree. (3) The summation for each individual of responses to all the items, by scoring the above five categories 5, 4, 3, 2, or 1 respectively. (4) The examination of the amount of correlation between each item and the total score. (5) The elimination of items that fail to correlate to a substantial degree with the total score," (7, 218)

The general attitudinal objectives for the 105 Foundations course were categorized into these four areas for consideration;

1. Movement: includes those aspects of man which are concerned with his effective, efficient utilization of his body, its motion.
2. Bio-Physiological: those aspects of man which are concerned with his continued health of bodily functions.

3. Sociological: those aspects of man which are concerned with his ability to integrate effectively with others through work and leisure time activities.
4. Psychological: those factors dealing with personality integration, self-image, self-motivation, neuro-physiological (tension), and enhancement of self.

Limitations of the Study

The Nature of Attitudes

Inherent in the study of attitudes are pertinent limitations which need to be considered. As Thurstone points out, "Attitudes are essentially subjective experiences which may or may not conform with overt action." (10, 187)

Sherif comments on the effectiveness of the material being presented: "The effect of a communication will depend to a major extent on its relationship to the position of the recipient and his latitudes of acceptance and rejection."

(9, 147) Krech extends this point when he suggests that

There is another important consideration, however. If the belief or attitude being measured is one involving repression by the individual or a desire to conceal his true feelings or a wish to conform to socially accepted stereotypes concerning the object, it may be poor procedure to name the scale. (7, 234)

One further point Krech makes is vitally important to our study.

The validity of measurement of beliefs and attitudes can be determined only indirectly, in terms of predictions of behavior based on such measurements. There is, therefore, no direct mode of validation of measurements. (7, 209)

Techniques Used

With the Thurstone method, judges determine the distance between the attitudes in question, but there is an extended time factor involved plus the interference of the judge's personal bias. As Sherif explains,

If a large number of items are presented with the order of merit procedure, the subject cannot make successive discriminations from one item to the next item with the result that variability, and thus the margin for error, is greater. (9, 27)

Krech comments on the judges' bias; "A scale may be asserted to have a higher degree of absoluteness to the extent that there is agreement among the judges regardless of their own attitudinal bias as to the place on the scale that each item belongs." (7, 225)

The Likert technique sums the respondent's individual scores and then averages these. The limitation prevalent in this type of method is that the subject may receive a neutral score even though she was high in one area and low on another.

As to meaningfulness of scores, there would appear to be a real difference (between Thurston and Likert methods). The scores yielded by the Likert method have little absolute significance. Scale scores can be interpreted only in terms of where the individual falls in relation to the total distribution of such scores. Extent of pro-ness or con-ness is purely relative to the population of people that have been measured. (7, 219)

Sample Used

Initially the sample size is small. Since the course, 105 Foundations, is required of all freshmen a control group within the university is impossible to attain.

Campbell notes in attempts to control for internal validity that "It is often true that persons taking the test for the second time make scores different from those taking the test the first time." (16, 304) The procedure necessary to control for this variable requires that the sample be organized so that two groups will be involved in the testing only during the second administration of the questionnaire. One half of the students would take the 105 Foundations course and the other half of this group would not have participated in the class. Due to the sample limitation, this factor was not able to be controlled for.

CHAPTER II

REVIEW OF RELATED LITERATURE

Attitudes

Attitudes are learned; they are acquired quite unintentionally from life experiences. Most attitudes are handed down to the child through the process of adoption, imitation and association. These attitudes as Krech explains ". . . lie behind many of the significant and dramatic instance of man's social behavior." (7, 151) "The object of an attitude, under certain conditions, is frequently perceived as having a goal character, as demanding action." (7, 152) "It is first essential to distinguish clearly between the immediate dynamic problem--how the needs and goals of a given individual at a given time in a given situation determines his behavior" (7, 70)

Sherif contends that, "The individual forms an attitude as a consequence of repeated encounters with objects, persons, or communications." (9, 9)

The study of attitudes, their presence and formation, is comparatively new. The initial breakthrough into this area of research was by L. L. Thurstone whose comments among others will shed light on the study of attitudes.

"It will be conceded at the onset that an attitude is a complex affair which cannot be wholly described by any single numerical index." (11, 6) Himmelstrand concurs with Thurstone by stating, "We must admit that the term 'attitude' implies much more than is measured by an ordinary verbal attitude scale." (4, 38)

In terms of usefulness for predicting behavior, Thurstone makes a valid argument. "It must be remembered that there is a discrepancy, some error of measurement as it were, between the opinion or overt action that we use as an index and the attitude that we infer from such an index." (11, 8) "Truth is inferred only from the relative consistency of several indexes, since it is never directly known." (29, 217) "It is a serious error to assume that a man's attitudes are clearly indicated by what he says, merely because that agrees with what he does. Both might be wrong." (10, 322)

Most important to the study of attitudes is Thurstone's statement as follows:

It goes without saying that the frequent assumption of a normal distribution in educational scale construction has absolutely no application here, because there is no reason whatever to assume that any group of people will be normally distributed in their opinions about anything. (29, 222)

But as Young points out, there is a fundamental assumption necessary for the study of attitudes; "An attitude study is based upon the notion of regularity in human reactions." (12, 452) A consistent attitude is inferred

from the statements and actions of the individual which suggest a reaction tendency depending upon the situation in which the individual is involved and also thereby, limits the extent of the attitude.

In regard to scale construction Thurstone remarks that,

When the notion of measurement is applied to so complex a phenomenon as opinions and attitudes, we must here also restrict ourselves to some specific or implied continuum along which the measurement is to take place. (11, 12)

While the study of attitudes can be very elusive, Krech points out that,

These scales do provide, at the very least, a reliable way of differentiating people in rank order along an attitude or opinion continuum. There is some justification, moreover, for the averaging of the scale scores of groups of people, so that one group can be compared with another group. (7, 226)

Attitude Change

Despite the significant influences of cultural factors on the development of beliefs and attitudes, despite the deep-rooted functional nature of many beliefs and attitudes, and despite the inherent tendency of beliefs and attitudes to preserve themselves, beliefs and attitudes can be changed. (7, 194)

Moreover, as Thurstone remarks, "We take for granted that people's attitudes are subject to change" (11, 8) especially as educators. And further, "We know that beliefs and attitudes show constant change in many of their characteristics." (7, 190)

An attitude is deemed desirable if it is rewarded, if it is repeated often enough, if the individual is

emotionally involved with it and if the attitude is shared by friends. "A person's attitudes are developed only insofar as they help him to satisfy his needs and provide meaning to his environment." (18, 356) "Most 'real' worlds in which the individual finds himself and in response to which he must develop beliefs and attitudes are characteristic of a particular cultural pattern, and are filled with people, objects and events of a particular kind." (7, 178)

There are different amounts of change possible for every individual. Sherif comments on the emotional involvement of the subject: "It is this ego-involvement with one's stand on an issue which limits the range of assimilation for other positions." (9, 168) The person's social situation can also be a limiting factor as Edwards explains: "Since attitudes are developed in a social context, it is much easier to change the attitude of individuals formed into groups of their own choosings, than it is to change the attitudes of people without group affiliation." (18, 359) With regard to assessing change Krech concurs when he states, ". . . it is possible to evaluate changes in the scores of individuals or groups, as a result of experimentally induced effects or of other influences tending to modify opinions and attitudes." (7, 226)

Yet although we are concerned with the modification of attitudes it is important to remember that the stability of these predispositions to action are important also. As Krech concludes, "The continuity from one psychological

situation to the next is given primarily by the enduring pattern of his beliefs and attitudes [among which are the very important beliefs and attitudes that he holds about himself]." (7, 153)

Educational Research with the
College Student on Attitudes

Do college students modify their attitudes or are they too well formulated to be changed? Lewing presents the problem; "The re-educative process has to fulfill a task which is essentially equivalent to a change in culture." (7, 199) Although Mayhew contends that, "Much of the lasting value of education is obtainable only insofar as students' attitudes, beliefs, life goals and values are affected," (24, 375) he suggests in another article that there is little relation between attitude change and growth of knowledge in a college course.

Lehmann's work supports the argument for change of attitudes among college students:

There are significant social-cultural-educational differences in attitudes and values. It has also been shown that changes in attitudes and values will occur from freshman to senior year, but that the degree and extent to which attitudes and values are modifiable depends upon the nature of the experience, the type of contact, the personality make-up of the individual and the subjects' perception of the outcome. (21, 403)

Lehmann's work with faculty suggests, "The strong consensus of faculty members that students do change as a result of classroom experience and the fragmentary research evidence that changes are small encourage research in this area." (21, 403)

Jacobs' work concurs with Lehmann's when he states, "Sometimes individual students subjectively attribute important influences to their courses." (5, 59) While the recognized change at the college level may be intellectual or purely maturational, Lehmann believes that the ". . . full impact of the student's formal academic experiences is not fully realized when he is in college." (21, 407) But Jacob disagrees in the following statement.

Even fundamental revisions of the formal content of the curriculum designed to confront the students more forcefully with problems of personal and social conduct and to involve them in a searching examination of value-issues rarely appear to have brought about a marked difference in students' beliefs and judgments, let alone their actual patterns of conduct, nor is there solid evidence of a delayed reaction or "sleeper effect". (5, 7)

In studies conducted with women Lehmann summarizes that, "For females, there is a significant relationship between changes in value and impact of (a) a course or courses, and (b) cultural activities." (21, 406) "In the main students' values are more influenced by family, friends and fraternities than by the courses they take. Nevertheless, the argument runs strong that values are both caught and taught." (5, 1)

In summary Jacob holds that,

Student values do change to some extent in college. With some students, the change is substantial But the impetus to change does not come primarily from the formal educational process. Potency to affect student values is found in the distinctive climate of a few institutions, the individual and personal magnetism of a sensitive teacher with strong value-commitments of his own, or value-laden personal experiences of students imaginatively integrated with their intellectual development. (5, 12-13)

Research Work with Physical Education
and Attitudes

"Health is a favorable area for the emergence of magic and superstition, as witnessed by the rise and persistence of the health cults." (12, 200)

Attitude research conducted in physical education is limited. There are presently growing attempts to develop instruments for assessing students' attitudes. The realization of the importance of attitudes in physical education is evident in the trend for more consideration of the student's total self, mind and body oriented instead of primarily being biologically and skill oriented.

Wear's work (30) in scale construction appears to be the pioneering effort. The instrument satisfactorily shows reliability with the Likert method. The study combined a single session attitude inventory with a self-rating index to assess validity and determine how subject's background affected the college male freshman's attitudes toward physical activity courses. Statements related to the chosen outcomes of physical activity were selected for the study after the Wang criteria for statements. From the long inventory a short form was derived and retested for reliability and validity. Wear concludes that with the short form reliable, valid information pertaining to physical education attitudes can still be determined and the form is appropriate for both male and female. The resultant short form has since been

used as the basis for analysis of attitudes by Broer, Koehing, and Wessel, with Edgington's being the most recent.

An attitude scale constructed for high school freshmen boys toward physical education was presented in a paper by the author, C. Edgington (17). While the construction method was based on Wear's work, his results show a very high favorable attitude to physical education and activity for ninth grade boys as opposed to Kappes' efforts with college women when she concludes, "The lack of relationship between enjoyment of specific activities and general attitude toward physical education suggests that educators may encourage the development of desirable attitudes toward physical education in general" (20, 433)

If there is a lack of correlation between enjoying activities and attitudes as shown in Kappes' work and yet a very high positive attitude toward activity seen in Edgington's study there then appears to be some unknown variables affecting these works.

In a study of a course which appears from the description to be similar to 105 Foundations in terms of understanding movement and having the skill to evaluate self, Broer concludes her work with this statement:

Apparently the more individualized instruction that is possible in the basic classes, the emphasis on understanding and the detailed evaluation procedures throughout the course give the students a better feeling about participation in activity. (14, 26)

Her results were not significant. She was suggesting a response tendency.

Summary of the Literature

That entity called attitude consists of a fairly stable, mental predisposition for action on the part of the individual. Attitudes, therefore, control what is done, or not done by the person. In other words actions are controlled by how one feels about a thing.

The verbalization of a belief or attitude in no way insures corresponding, appropriate behavior. Especially important in determining behavior is the situation within which the individual is called upon to respond. The environment surrounding the individual is of paramount importance and of necessity must be considered in the interpretation of attitude assessment as well as in unstructured every day life experiences.

The study of attitudes is in a state of flux and change. How an attitude is formed remains an educated guess. The determination of where an individual or group may be located on an attitude continuum is, however, possible. Further, change at the college level is evident although the specific causes for this change have not been defined. Although attitudes need further clarification and more insight into their formation, developmental and exploratory work centered about this area is intriguing and worthwhile.

CHAPTER III

METHODOLOGY

Experimental Design

The following activities and procedures were used to assess the attitudes of freshmen toward the 105 Foundation's objectives.

- I. Determination of General Attitudinal Objectives for Consideration
 - A. Survey of course content and consultation with the head of the women's 105 Foundations program.
- II. Development of an Instrument for Assessment
 - A. Selection of Statements for the Questionnaire
 1. Obtain value statements from freshmen students enrolled in 105 Foundations the term preceding the study.
 2. Edition of statements by author and co-investigator.
 - B. Rating of Statements
 1. Judges' rating of value statements on a 1 to 11 continuum of least to most understanding of the objectives of the 105 Foundations course, respectively.

2. Compiling of a preliminary scale with the surviving statements presented in the Likert technique.

C. Assessment of Clarity and Discriminatory Ability of Items

1. Administration of preliminary scale in the Likert technique to a pilot group.
2. Author and co-investigator's subjective evaluation of item's clarity discriminatory ability.
3. Development of a long and short form questionnaire.

D. Determination of Concurrent Validity

1. Pre-experimental administration of the long and short forms of the questionnaire to students enrolled in 105 Foundations.
2. Analysis of results of the questionnaire to determine internal consistency:
 - a. Total scores of the highest 10% of the students correlated with the lowest 10% in the Pearson Product Moment technique.
 - b. Computation of simple correlation with each item's total scores against the total score for the entire questionnaire.

- E. Determination of Reliability--Coefficient of Stability--of the Long Form Questionnaire
 - 1. Test-retest administration of the long form with a four-week intervening period.
 - a. An independent sample drawn from freshmen women enrolled in a service skills course at Michigan State University.
 - 2. Simple correlations computed item by item, both pre against post, and total score-pre against total score-post.
 - F. Comparison of Long and Short Forms
 - 1. Long form questionnaire rescored with only the short form items.
 - a. Calculation of the "t"-test for the difference between means of the long form mean per subject per item with the short form mean per subject per item, to determine if the short form is more discriminative.
 - 2. Analysis of difference between means of the original short form and the rescored short form's total questionnaire results to estimate similarity of groups.
- III. Assessment of Attitudes
- A. Determination of Initial Freshmen Attitudes upon Entrance to the 105 Foundations course.

1. Analysis of pre-questionnaire responses, both long and short forms, against a neutral opinion (3) by a "t"-test for differences between means.
- B. Determination of Change in Attitudes at the Completion of the 105 Foundations Course.
 1. Post experimental administration of both long and short questionnaires to the same 105 sample during the last class meeting.
 2. χ^2 evaluation of significant differences was conducted.

IV. Final Scale Construction

- A. Selection of items exhibiting acceptable levels of validity and reliability compose the final questionnaire.
- B. The final questionnaire was not included as part of this study, but is included in Appendix B.

Determination of General Attitudinal Objectives for Consideration

In order to develop an adequate scale for assessing the attitudes of students toward a course, the objectives or goals of that course must first be set down. This formalization was developed by the author and the head of the women's 105 Foundations program.

- A. The content of the 105 Foundations course was surveyed. After reviewing the text book and

lecture outlines, the author decided upon major groupings of objectives to be considered in the study. These objectives were evaluated with the head of the women's 105 Foundations program. The resulting four main areas for consideration were chosen: Movement, Bio-Physiological, Sociological, and Psychological. (See Chapter I for definitions.)

Development of an Instrument for Assessment

A. Selection of Statements for the Questionnaire

1. Following the compiling of the objectives, value statements concerning physical education and physical activity were elicited from students enrolled in 105 Foundations during the term preceding the study. Under the direction of their individual instructors, the students were asked to respond to the following questions:
 - (a) What are desirable outcomes of physical education?
 - (b) What should be the long range outcomes of the 105 Course?
 - (c) What is accomplished through the 105 Course?
 - (d) How should physical education modify one's outlook on life?

These questions were chosen to elicit the beliefs and opinions of the students, not factual information.

2. Edition of statements by author and co-investigator followed. The author and co-investigator read through the 600 statements obtained and selected out 166 statements which represented the 105 Foundations objectives. Four judges evaluated the 166 statements.

B. Rating of Statements

1. The four judges consisting of two full professors in physical education and the heads of the men's and women's 105 Foundations programs, rated the remaining 166 statements.

The judges were asked to rate the 166 statements on a 1 to 11 continuum from the student's least to the most understanding of the physical education objectives, respectively. The judges were further asked to look for clarity and understandability of the statements.

The judges' ratings were compiled. The mean score of the judges' ratings were used to place the statements along the "student's understanding of Foundation's objectives" continuum. Those value statements with ratings of plus or minus 1.5 standard deviation from the mean were designated as having agreement among the judges.

2. Preliminary scale development

These value statements were again subjectively evaluated by the author and co-investigator. Duplicate items were eliminated and word corrections were made as indicated by the judges. The remaining 104 statements comprised the preliminary scale. The method of presentation statements of the preliminary scale was after the Likert technique. There are five possible responses to each statement:

<u>Response</u>	<u>Score Value</u>
Strongly Agree	5
Agree	4
Neutral Opinion	3
Disagree	2
Strongly Disagree	1

Those statements which were negative in nature as determined by the author were scored in the reverse of the above.

Total individual scores were the sum of the responses.

C. Assessment of Clarity and Discriminatory Ability of Items

The 104 selected statements were randomly placed on the questionnaire to be presented to a pilot group. The preliminary scale was administered by the co-investigator to 15 male and female freshmen students (some were majors in physical education and others that had not had the 105 Foundations course) in an attempt to discover which value items would, in fact, discriminate.

The results of the questionnaire were tabulated by sex. Those items which subjectively appeared to discriminate were selected out to be included in a short form questionnaire. Those items which were redundant and/or showed all students answering 100% identically were eliminated from the long form of the questionnaire. Short form items were included in both instruments. The resulting two questionnaires were 86 and 26 items in length (See Appendix B).

D. Determination of Concurrent Validity

1. The pre-experimental administration of the long and short forms of the questionnaire was conducted. The revised preliminary scale items were again randomized and administered to 49 female students enrolled in the 105 Foundations course spring term. The useful sample consisted of 25 students in the short form group, and 24 students in the long form group. The following testing procedures were utilized in order to control for the student's bias regarding the results of the questionnaire having any personal bearing on them: (a) The administration was conducted by an unknown male investigator; (b) The students were asked to exclude their names or any identification with the exception of the form number of the questionnaire so that we might keep the long and short forms separate for computation; (c) The reason for the questionnaire was explained to the students

as being a part of a large study being conducted by the Sociology Department in an effort to describe a profile of the freshman student at Michigan State University.

Note: The author was not involved in this procedure with the exception of being present at the beginning and end of the session. The author was also the classroom instructor.

The above procedures were used in an effort to keep the students naive to the purpose of the study, and thereby, secure more truthful responses to the items rather than the ones the students think would be appropriate for a physical education class.

2. An analysis of results of the pre-experimental questionnaire to determine concurrent validity was conducted in the following manner.

A Pearson Product Moment "r" was computed with the total scores of the highest 10% of the students and correlated with the lowest 10% of the total scores, item by item for both long and short forms. Secondly, a simple correlation was computed with each item's total score against the total score for the questionnaire.

The level of acceptance established for concurrent validity was an "r" of .5 or greater for both correlations.

E. Determination of Reliability--Coefficient of Stability

The test-retest method for assessing reliability is recognized by Lentz (23) and Krech (7) as the best means of determining the reliability of a questionnaire since the results tend to be an over-conservative estimate. The test-retest method, therefore, was used to determine the coefficient of stability.

1. The reliability assessment was conducted independently of the pre-post experimental study. Sixty-two freshmen females enrolled in a service skills course during the same time period of the attitude study served as the sample group. Identical long form questionnaires were administered. The testing procedures were essentially the same as those stated for the pre-experimental group with the exception that the author gave the instructions.

Following an intervening four-week period, a re-randomized questionnaire containing the same items again in the Likert technique was again administered to this group. The reason for the second presentation was explained to the students that the analysis of results conducted by the Sociology Department had uncovered errors in the previous questionnaire and the old instrument had been reconstructed.

2. Simple correlations were computed item by item, pre against post for those students participating in both presentations. Also the "r" for the total score for the first testing with the total score of the second testing was computed. Only those items resulting in an "r" of .5 or above were considered acceptable.

F. Comparison of Long and Short Forms

1. The long form, pre-experimental responses were rescored with the 25 short form items. Total scores for each student were computed. A calculation of the difference between means of the long form mean per subject per item with the short form mean per subject per item was run to determine if the short form items were more discriminative. A "t" of 2.81 at the .01 level of confidence was necessary to reject the Null hypothesis of no significant difference between the two forms.
2. To determine sample similarity, and to provide a basis for investigation of attitude change an analysis of difference between the means of the original short form questionnaire and the rescored short form totals were computed. A "t" of 2.41 at the .01 level of confidence was considered necessary to reject the Null hypothesis of no difference between the two sample groups.

Assessment of Attitudes

- A. Determination of Initial Freshmen Attitudes upon Entrance to the 105 Foundations course.
1. To determine the initial freshmen attitude toward physical education and physical activity upon entrance to the 105 Foundations course, an analysis of the pre-experimental responses, both long and short forms against a neutral opinion of three by a "t"-test for the differences between means was calculated. A "t" score of 2.81 or greater for the long form and a "t" of 2.80 for the short form at the .01 level of confidence was considered acceptable to reject the Null hypothesis of no difference from a neutral opinion of the freshmen upon entrance to the 105 Foundations course.
 2. To assess if there had been any change in attitude resulting from the 105 Foundations course, both long and short forms were again administered to the sample on the last formal class day by the unknown male investigator. The students were informed that the need for the second presentation of the questionnaire was due to errors in construction of the first instrument and this repeat was an attempt to correct those errors. The testing procedure followed was identical to that

followed in the pre-experimental administration of same. A Chi Square analysis of significant differences from pre to post was conducted.

Final Scale Construction

- A. Selection of items exhibiting acceptable levels of validity and reliability compose the final questionnaire.
- 1. Those items exhibiting acceptable levels of validity and reliability were selected out to comprise the final questionnaire (see Appendix B).

CHAPTER IV

ANALYSIS OF DATA

In an effort to determine if the 105 Foundations course required of all freshmen students at Michigan State does meet its general attitudinal objectives, the following samples were drawn and an analysis of results conducted according to the experimental design.

Experimental Sample

A total of 75 students were at least partially involved in the testing procedures. Of the 75, 17 students were eliminated from the calculations because they were not present for both administrations of the questionnaire. An additional nine students were not considered in the analysis since they were of upper class ratings according to the Registrar's Office. The remaining 49 students comprised the long and short form groups with 24 and 25, respectively.

Statements for Rating

Of the 166 value statements originally presented to the judges for evaluation, 80 statements were eliminated during the editing procedures. Of the 86 used in the

assessing instrument, 13 of the statements' ratings were considered invalid due to word changes. Item 62 was omitted from the original long form questionnaire.

Judges' Ratings of Statements

In order to determine the degree of agreement among the judges and because the value statements were not rank-ordered, but allowed to be placed in any one of 11 categories, the means of the ratings were taken. This, then, gives the item a position along the continuum of the "student's understanding of the objectives of 105 Foundations." This can be seen on Table 1. Only those statements with a standard deviation from the mean of plus or minus 1.5 were deemed acceptable and retained in the continuum development. Of the 72 statements analyzed, 33 items were retained. The continuum appears adequate for those statements indicating little understanding of 105 Foundations, the opposite end of the continuum is slightly weaker, but the entire middle region is almost without judges' consensus.

Determination of Concurrent Validity

To determine the level of internal consistency the pre-experimental results for both the long form with a sample of 24 subjects and the short form with a sample of 25 subjects were analyzed with the Pearson Product Moment method of correlation. The 10% highest total scores of

TABLE 1.--Acceptable statements selected on judges' ratings (plus or minus 1.5 standard deviation).

Mean Rating	S. D.	Item Number	Statement
11.00	.0	81	Daily exercise should be carried on through life.
10.50	.574	55	Physical activity should become an integral part of the person's life.
10.25	.760	60	The main outcome of physical education is fulfillment of the individual's physical potential.
10.25	.900	22	Physical movement is a need and a joy.
9.75	1.250	15	There is sheer pleasure in physical exertion.
9.50	1.288	57	Physical education forms sensible ideas about fitness.
9.00	1.150	36	There is value in exercise and activity.
8.75	1.500	49	Regardless of how smart you are, your life is limited by how fit you are.
8.50	1.000	39	One should enjoy the physical aspects of life.
7.33	.980	23	I have found physical activities which I can enjoy in the coming years.
4.75	.953	84	Competition is good for everyone.
4.60	1.240	7	A physical education course will make you aware of conditions that can be improved on in your social life.
2.75	.500	38	The main purpose of physical education is to tell the person his or her capabilities in athletic events.
2.25	.500	82	Present information on health scares you into becoming fit.
2.00	.810	2	A good physical workout on the week-end is adequate exercise for the week.
1.75	.500	41	The only valuable outcome of an activity class is from the exercises done.
1.50	1.000	46	Television commercials are good sources of methods for staying fit.
1.50	.570	13	One has to be an athlete to be physically fit.
1.50	1.000	76	Being able to play any games well is of little importance to me.
1.50	.570	77	It is difficult to secure information concerning body health.
1.30	.489	86	Physical fitness is good, but man can survive without it.
1.30	.960	58	I don't think that physical education should be compulsory.
1.25	.760	51	Physical education classes gave me all the physical activity that I will ever need.
1.25	.295	20	Our medical technology is so advanced that we do not need to be physically fit.
1.25	.480	3	All that physical education does is show you your weaknesses.
1.00	0	5	Exercises do not do that much good.
1.00	0	12	Physical education is a big waste.
1.00	0	42	Tough exams tire me so I do not need any physical activity after taking one.
1.00	0	53	There is no need to be able to plan a personal physical fitness program.
1.00	0	66	Physical education is ignored by most students.
1.00	0	73	There is no reason for an overweight person to change his present condition since he has been this way all of his life.
1.00	0	68	I see almost no value in physical education.
1.00	0	79	I do not take part in a sport activity unless persuaded by a friend.

the two samples were selected out and correlated with the 10% lowest total scores of the two samples. Each question was correlated separately.

Of the 25 value statements retained in the short form, 19 items resulted in correlations of .5 or above. From the 83 remaining statements in the long form, 60 showed "r" values of .5 or above.

To compensate for the natural bias resulting from the use of only the high and low total scores of the two samples, a simple correlation of each item against the total score of the questionnaire was used to more closely identify the internal consistency. From this set of calculations, 49 value statements in the long form showed an "r" of .5 or above and 12 of the 25 short form value statements were adequate.

The final selection of statements showing concurrent validity were those which survived the item analysis of both correlations above .5. These are indicated on Table 2 with both correlation values noted. The short form emerged with 11 valid statements while the long form resulted in 47 of the 86 as valid indicators of the total score.

Determination of Reliability of the Long Form Questionnaire

The reliability coefficient of stability was figured by the test-retest method. The responses of a sample independent of the experimental group consisting of 60 subjects was drawn. Simple corrections were run

TABLE 2.--The results of correlations computed for the concurrent validity of the short and long forms of questionnaire.

Item No.	Correlation of 10% Highest Scores per Item with 10% Lowest Total Scores per Item	Correlation of Total Sample Score per Item with Total Score of Questionnaire	Item No.	Correlation of 10% Highest Scores per Item with 10% Lowest Total Scores per Item	Correlation of Total Sample Score per Item with Total Score of Questionnaire
Short Form					
4. (14)*	.80	.60	14. (48)	.97	.70
6. (24)	.79	.61	15. (49)	.80	.58
8. (29)	1.00	.71	17. (55)	.97	.74
9. (30)	.93	.64	19. (59)	.79	.75
10. (32)	.77	.61	23. (76)	.94	.82
Long Form					
4.	.80	.58	37.	.92	.55
6.	.923	.69	41.	1.00	.72
7.	.50	.64	42.	.87	.54
9.	.60	.59	44.	.92	.66
10.	.68	.50	45.	.92	.73
11.	.93	.68	48.	.92	.68
12.	.96	.81	54.	.83	.68
15.	.70	.67	55.	.96	.83
17.	.67	.58	56.	.70	.67
19.	.87	.59	57.	.96	.78
20.	.66	.65	58.	.81	.54
21.	.78	.61	59.	.68	.66
22.	.83	.74	64.	1.00	.78
24.	.96	.82	68.	.60	.58
25.	.88	.68	71.	.80	.62
26.	.83	.54	72.	.62	.80
29.	.73	.54	74.	.70	.53
30.	.97	.76	75.	.87	.65
31.	.93	.82	78.	.87	.73
32.	.82	.84	79.	.98	.74
33.	.66	.50	81.	.93	.80
34.	.87	.67	84.	.87	.50
35.	.92	.72	85.	.89	.74
36.	.88	.54			

*Corresponding long form numbers.

"r" = .5 or above for both items.

between pre and post responses to the questionnaire. Thirty items met the criteria of an "r" of .5 which is considered an adequate level of acceptance for a group (7, 260). The reliability coefficient for the total questionnaire scores of pre against post was found to be .769. Considering the extended length of time (four weeks) intervening between test and retest administrations of the questionnaire, the "r" appears to be outstandingly high. The results of the calculations are presented in Table 3.

Comparison of Long and Short Forms
of the Questionnaire

The responses of the pre-experimental administration were utilized to establish if the short form was more discriminative of attitudes than the long form. The pre-experimental long form was rescored for the 25 short form items only. The sum totals of responses for each subject, both long and rescored short form were obtained. Next the mean response per subject per item was figured. A "t"-test for the differences between these means was figured. To establish a significant difference between the forms, at the 1% level of confidence, "t" values of greater than 2.81 were necessary.

As tabulated in Table 4, at no time did the "t" value begin to approach the significant level of 2.81 to allow for rejection of the Null hypothesis of no difference between the long and short form.

TABLE 3.--The results of correlations to determine the reliability of the long form questionnaire.

Item Number	"r" Results*	Item Number	"r" Results*
2	.51344	36	.52344
4	.62496	37	.50906
5	.66653	49	.57603
7	.67109	50	.55425
8	.58054	53	.50431
9	.60060	54	.50763
10	.55098	55	.61366
11	.55928	58	.68856
12	.62084	63	.55453
15	.56971	67	.53051
17	.64099	68	.51924
22	.62400	76	.51971
23	.51864	79	.66990
29	.52797	84	.69102
31	.73640		
32	.55247	Pre-Post Totals	.76940

*All items at "r" values of .5 or above.

TABLE 4.--The results of the "t"-test for the differences between means for a comparison of long and short forms of questionnaire.

Subject N = 24	Pre Long Form Total	Mean/Item	Rescored Short Form Total	Mean/Item	"t"
400	393	4.79	119	4.76	.0050
401	302	3.68	91	3.64	-.0069
402	315	3.84	100	4.00	.0278
403	317	3.86	91	3.64	-.0383
404	262	3.20	79	3.16	-.0069
405	301	3.67	87	3.48	-.0331
406	355	4.33	102	4.08	-.0435
407	327	3.99	99	3.96	-.0052
408	313	3.82	97	3.88	.0104
409	368	4.49	114	4.56	.0121
410	244	2.96	68	2.72	-.0418
411	344	4.20	106	4.24	.0069
412	276	3.37	78	3.12	-.0435
413	278	3.39	83	3.32	-.0121
414	290	3.54	90	3.60	.0104
415	304	3.71	87	3.48	-.0400
417	302	3.68	92	3.68	.0000
418	327	3.99	100	4.00	.0017
419	376	4.59	117	4.68	.0156
420	348	4.24	105	4.20	-.0069
422	271	3.30	83	3.32	.0034
423	243	2.96	76	3.04	.0139
425	320	3.90	99	3.96	.0104
426	373	4.55	111	4.44	.0191

An additional analysis was conducted to estimate if differences did exist between the two sample groups. Another "t"-test for the difference between the means of the total sum of the original short form and the rescored short form was found to be "t" equals .2417 and therefore, we cannot reject the Null hypothesis of no difference between the two samples with a significant "t" equal to 2.41 with 40 degrees of freedom for the 5% level of confidence.

Assessment of Attitudes

Determination of Initial Attitudes

To establish the initial attitudes of the freshmen women toward physical education upon entrance into the 105 Foundations program, the responses of the pre-experimental questionnaires were analyzed by the "t"-test for differences between means. The mean total response for each statement was calculated with the neutral opinion score of three. In order to reject the Null hypothesis of no difference between the two means a "t" value of 2.81 and 2.80 are necessary to assume a 1% level of confidence for the long and short forms respectively. Of the short form items, 17 were sufficiently positive in nature to reject the Null hypothesis and one item was sufficiently negative in nature to justify rejection of the Null hypothesis. Those significant items are indicated in Table 5.

TABLE 5.--Results of the "t"-test of the difference between means for initial freshmen attitude responses.

Item No.	"t"	Item No.	"t"	Item No.	"t"
Short Form					
1. (2) *	-14.2118	11. (35)	11.9587	18. (57)	7.6881
2. (3)	17.6433	12. (36)	8.2758	19. (59)	5.6336
4. (14)	6.6469	13. (39)	12.9703	21. (68)	12.9703
5. (20)	6.2610	14. (48)	5.0593	22. (73)	9.8539
8. (29)	5.7657	15. (49)	4.3424	23. (76)	2.8823
9. (30)	5.3353	17. (55)	5.7734	24. (81)	7.4639
Long Form					
1.	12.1370	33.	12.4370	59.	5.0614
2.	-10.2501	34.	5.1090	61.	6.3713
3.	4.0130	35.	11.1240	64.	6.7753
5.	4.5992	36.	12.4370	67.	4.9998
6.	3.8240	37.	7.2167	68.	8.1872
11.	3.6130	38.	6.3651	69.	3.8672
12.	5.6802	39.	10.8499	70.	4.3030
13.	6.1800	41.	6.2541	71.	4.0433
14.	7.4160	42.	5.2033	72.	5.8009
16.	3.9995	43.	3.7092	73.	4.4890
18.	6.8097	44.	9.0467	74.	4.5064
19.	3.7080	45.	8.1299	75.	5.0614
20.	16.8571	46.	8.9536	76.	5.6014
21.	4.4268	47.	7.4581	77.	4.3718
22.	2.9925	48.	4.5442	78.	7.3628
23.	4.9531	49.	3.9536	79.	4.8007
25.	7.3628	51.	9.6807	80.	10.0588
26.	3.2946	54.	5.2439	81.	4.0895
27.	9.4919	55.	4.9708	83.	3.5192
28.	8.7676	56.	3.7032	84.	3.3848
29.	5.6872	57.	6.2677	85.	4.5442

NOTE: All items are significant at the 1% level of confidence.

*Parentheses indicate corresponding long form number.

Sixty-two of the 86 items comprising the long form of the questionnaire were beyond the required level of significance in a positive direction and one item survived in the negative direction.

Attitude Change

In an effort to determine if 105 Foundations was in fact meeting its attitudinal objectives and developing sound positive attitudes toward the four basic goals, a Chi Square analysis of pre versus post responses was computed. Rejection of the Null hypothesis of no change in attitudes required a value of 7.779, 9.488, and 13.277 for the 10%, 5%, and 1% level of confidence respectively (see Table 6). Five of the short form and 22 of the long form items had sufficient values to be considered significant at the 10% confidence level.

The Bio-Physiological objective demonstrated a greater variety of fluctuation. There were, however, a larger number of items comprising this general attitudinal objective. Only in this area were there any initial unfavorable attitudes, but upon post-experimental analysis they did move toward the positive. The trend in the other three general attitudinal areas, showing significant X^2 changes, was in a positive direction. The only exception was item 29 in the Psychological area. The item states: "Physical activity can help me to relax and enjoy life." It is the author's contention that the Physical Fitness

TABLE 6.--Chi square analysis of attitude change.

Item	Objective	χ^2
Short Form		
1. (2) ^a	Bio-Physiological	9.435 ^b
7. (26) ^a	Sociological	10.744 ^b
17. (55) ^a	General	23.229 ^c
24. (81) ^a	Bio-Physiological	20.711 ^c
26. (84) ^a	General	22.500 ^c
Long Form		
2.	Bio-Physiological	10.771 ^b
4.	Bio-Physiological	24.071 ^c
6.	General	22.814 ^c
7.	Sociological	16.133 ^c
8.	Psychological	8.292
9.	General	9.033 ^b
16.	Bio-Physiological	10.397 ^b
29.	Psychological	11.083 ^b
30.	Psychological	36.618 ^c
32.	Psychological	11.825 ^b
33.	Bio-Physiological	8.823
41.	Bio-Physiological	20.586 ^c
47.	Psychological	7.818
49.	Bio-Physiological	20.577 ^c
55.	General	7.821 ^b
60.	General	11.214 ^b
63.	Sociological	32.633 ^c
70.	Sociological	12.738 ^b
71.	Bio-Physiological	8.988
77.	Bio-Physiological	9.758 ^b
81.	Bio-Physiological	11.060 ^b
85.	General	8.485

^aLong form equivalent numbers.

^bSignificant at 5% level of confidence.

^cSignificant at 1% level of confidence.

NOTE: All items are significant at the 10% level of confidence.

exercises used in a training program were not perceived by the students as a medium for relaxation and enjoyment.

Comparison of Pre and Post Attitudes

A comparison of the initial attitudes toward physical education and those attitudes indicated upon completion of the 105 Foundations course were evaluated in terms of direction of change by the means for each pair of significant items.

Of the five significant χ^2 statements in the short form, two items originally showing no significant difference from the neutral opinion of three, during post testing became positive and the negative item moved toward the positive, but remained below three. One positive item moved in a negative direction, but remained above three and the last positive statement became more strongly positive.

Seven of the 24 long form items not significant from three during pre analysis were acceptable in the Chi Square comparison in a positive direction; two items shifted toward the positive, but remained below three. Six previously significant positive items reversed in a negative direction and six positive items became more strongly positive: a stronger favorable attitude toward physical education.

One item was significant in the χ^2 comparison, but the mean value was not altered (see Graph 1).

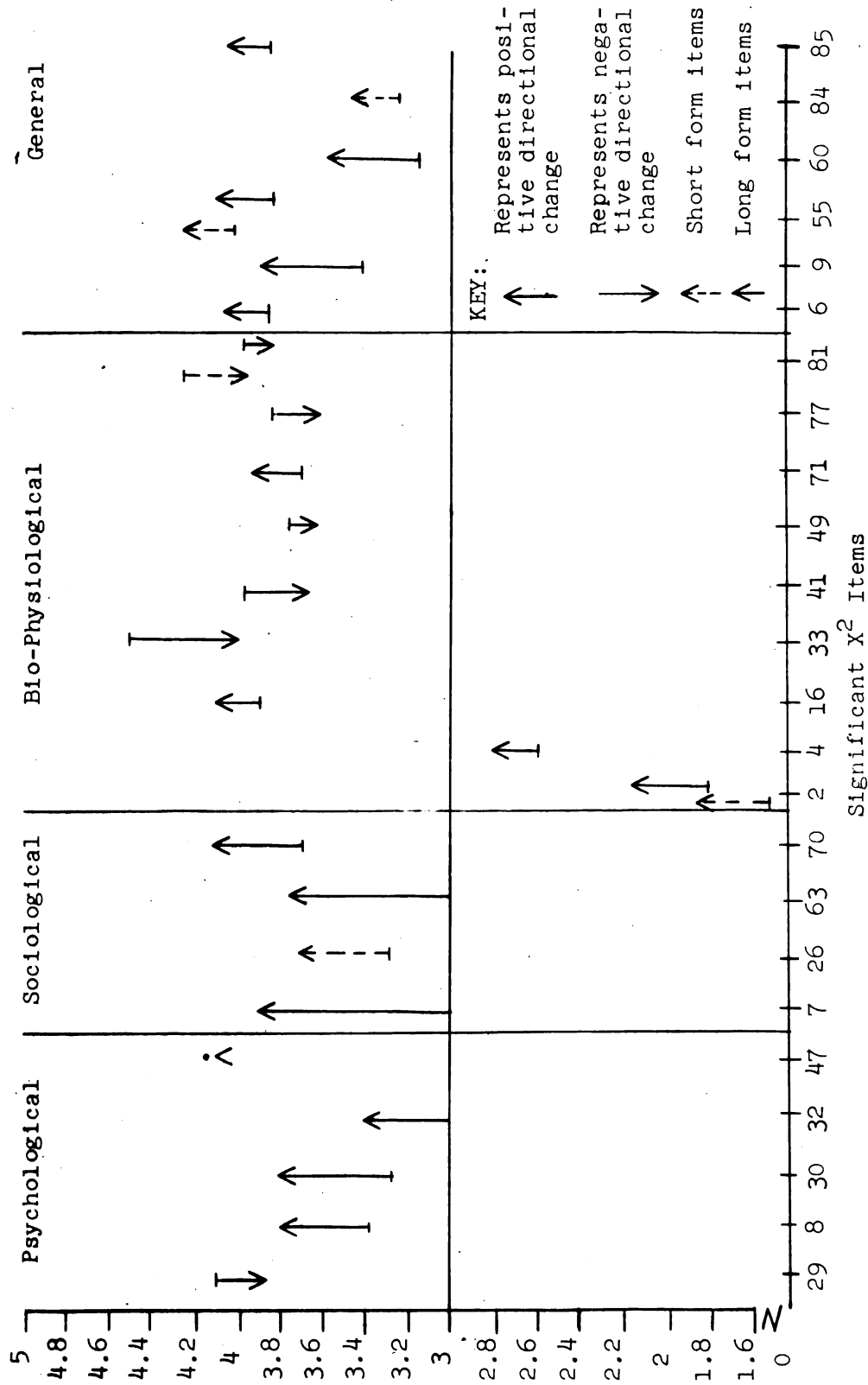


Fig. 1.--The mean plots of directional change for significant χ^2 items grouped by the general attitudinal objectives of the Foundations course.

CHAPTER V

SUMMARY, RESULTS, AND RECOMMENDATIONS

Summary

The primary purpose of this study was to determine if the 105 Foundations course at Michigan State University, required for all freshmen, did in fact meet its general attitudinal objectives. Additional secondary goals were included in the study: the development of a reliable, valid instrument for assessing such attitudes and the determination of freshmen women's attitudes toward physical education and activity upon entrance into the Foundations course.

A long and short form questionnaire was constructed to elicit response tendencies toward the four general objectives of the Foundations course and was administered to 49 freshmen women students enrolled in that course spring term. The two forms of the questionnaire were administered to the sample upon entrance to the Foundations course on the last formal class day by an unknown male investigator.

The means and standard deviations were used to determine agreement among the judges. The reliability of the long form of the questionnaire was determined by the simple correlation technique. Concurrent validity

of both long and short forms of the questionnaire was established by two methods:

1. A Pearson Product Moment correlation of the 10% highest total scores of the two samples with the 10% lowest total scores was computed.
2. Simple correlations of the pre-experimental responses with the total score for the entire questionnaire were figured.

A "t"-test for the differences between the means of the long form and the long form rescored with only the 25 short form items were computed to determine if there was any difference between the two forms of the questionnaire. The similarity of the two sample groups was determined by the "t"-test for the difference between means of the original short form and the rescored short form. The initial attitude of the freshmen was established by computing the differences between the means of the pre-experimental responses and a neutral opinion of three. The Chi Square comparison was the statistical tool used to establish an attitude shift with the change in means as the indicator of the direction of the change.

Results

Development of An Instrument for Assessment

1. The reliability of the Attitudes of Freshmen Toward Physical Education, long form questionnaire, was found to have an "r" value of .768.

2. The Attitudes of Freshmen Toward Physical Education questionnaire for 20 of the 25 short form questionnaire items and 60 of the 83 long long questionnaire items met the requirements for concurrent validity (" r " = .5 or above).
3. The results of a "t"-test indicated no significant difference between the long and short forms of the questionnaire at the 1% level of confidence. Therefore, no significant difference between the two forms was assumed.
4. The sample groups were not found to be different from each other by a "t"-test analysis at the 5% confidence level. Therefore, the long and short form sample groups were considered the same.

Assessment of Attitudes

1. The results of the "t"-test indicated that the initial attitudes of the freshmen women toward physical activity were significantly different from a neutral opinion of three at the 1% level of confidence for 18 short form items, one being negative and the remaining positive, and 62 of the long form items, one being negative with the remaining positive. Therefore, freshmen women have a strongly favorable initial attitude toward physical activity upon entrance to Michigan State University.

2. The X^2 comparison of responses demonstrated a change in attitude for five of the short form and 22 of the long form items at the 10% level of confidence. Twenty of the combined statements moved in a favorable direction while seven reversed toward the negative. On the whole the Bio-Physiological objective demonstrated a greater variety of fluctuation. There were, however, a larger number of items comprising this general attitudinal objective. Only in this area were there any initial unfavorable attitudes, but upon post-experimental analysis they did move toward the positive.

The trend in the other three general attitudinal areas, showing significant X^2 changes, was in a positive direction. The only exception was item 29 in the Psychological area. The item states: "Physical activity can help me to relax and enjoy life." It is the author's contention that the Physical Fitness exercises used in a training program were not perceived by the students as a medium of relaxation and enjoyment.

Recommendations for Further Study

1. The four general attitudinal objectives of the Foundations course should be further defined and clarified for a more thorough evaluation of outcomes.

2. More value statements should be developed to represent the student's understanding of the objectives to insure adequate coverage of the delineated objectives. Specifically needed are additional negative statements in the composition of the scale. A starting point for the value statements may be found in the recommended final scale (see Appendix B) and those items retained from the judges' ratings of statements (see Table 1).
3. Attitude investigation with the following experimental design may prove fruitful.

	Pre-Experimental Administration Of Questionnaire	Experimental Variable	Post-Experimental Administration Of Questionnaire
A.	X	0	0
B.	0	0	X
C.	0	X	X
D.	X	X	X
E.	X	0	X

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APPENDICES

APPENDIX A

RAW DATA OF SUBJECTS' RESPONSES TO QUESTIONNAIRE

--LONG FORM

RAW DATA OF SUBJECTS' RESPONSES TO QUESTIONNAIRE

--SHORT FORM

JUDGES RATINGS OF STATEMENTS

[illegible]

1555145341113555555140555531133351554143155555
244324443242444434440344442344414422424424444
1444334442224444344430344442244414422424423432
154415441111144341443053244114441441154524444
453414453113313125331301415123422154224443341333
1444244442325444443550444442242154324424444444
1544343224322445453240344451232414423423334553
245424442242444424440444242444424412424244544
14542444215444441445403515412444454412414424441
4444244442424444424440344432244424422414443444
15551555425555551555503555512355155511515533453
334244344424235544243304412551144414431155444444
14552434224234443334034224214434243124413424442
422242212424222242220324424422243234242222222
2444344422225455344402555521444414433515544443
14441444324244444344403334412444414411443442444
144415442142433443230233432244414433243443444
11441444444244445434044444124444444444444444
1144144511334444354440243442245412424424442444
243414432242444535334044354243341442245144334544
313311312222243534333023354323333243233344334433
511151114515111151410111315551154410111144444
42442442244424424424402444422444444244444444
12541444514244442544045442553455344144444444
255511354514254552544045424145441553333333333
3444244442434443543330244243444434333333333333
224324344144222312433053333443443333333333333333
15551554515155544154550533333333333333333333333
1455155551514554415440453431144434443443443443
14441444415114444144440432333333333333333333333
1444113444242444441442303444414444415333341442444
2555155511425554424550555451145514551151444444
444434442242444444444444444444444444444444444
2555245542415555342504444441244551442255534444
15551554314154554424044454411444414452242445244
24441541224224344434045223432444424422424423344
24431532322444444444403322443244442442242443333
1534243512334414453130445555431440155334533334153
3533153311424311355550133551233341131133551333413
1144415444144444444444442344411444112434424441
24442544442424444424440344442244424433424442344
155535451115555254304512231155551555125155514351
145424452224444232303422221344443224144233334
42441544224244444244403422221345424444242442344
34441133421334424233044555234432233414244434444
155515553151555525555055425511555515551151555255
145515541515555155555550542551555515551151555255
42344464748495051525354555657585960616263646566676869707172737475767778798081828384858687888990919293949596979899100

JUDGES RATINGS OF STATEMENTS

Item Number	1	2	3	4	Item Number	1	2	3	4
1	4	4	10	9	45	6	3	8	-
2	3	2	2	1	46	1	1	3	1
3	1	1	8	1	47	4	8	7	9
4	1	6	1	3	48	9	1	5	1
5	1	1	1	1	49	1	8	8	8
6	1	5	3	-	50	1	6	9	9
7	6	4	8	5	51	1	2	1	1
8	7	6	5	7	52	6	6	5	8
9	10	2	4	2	53	1	1	1	1
10	6	2	1	2	54	9	7	1	1
11	1	1	1	1	55	1	1	1	1
12	2	2	1	1	56	1	6	1	1
13	1	8	10	10	57	9	8	1	2
14	1	4	9	7	58	1	2	1	1
15	1	6	4	10	59	7	8	1	1
16	5	6	1	1	60	1	1	1	1
17	6	2	1	8	61	8	-	3	9
18	1	4	1	1	62	2	3	5	1
19	6	2	5	10	63	1	1	1	1
20	1	4	9	4	64	9	5	7	1
21	6	2	1	9	65	1	1	1	1
22	1	10	9	11	66	2	3	1	1
23	7	7	8	-	67	1	1	1	1
24	5	3	5	10	68	1	1	1	1
25	6	7	10	4	69	1	1	1	1
26	6	6	5	9	70	8	4	9	5
27	6	8	11	9	71	1	1	1	1
28	6	8	11	11	72	1	1	1	1
29	1	1	7	1	73	1	1	1	1
30	5	4	10	9	74	1	5	7	4
31	1	9	10	4	75	3	1	10	1
32	7	10	10	11	76	1	1	3	1
33	7	5	8	11	77	2	1	1	2
34	10	8	10	10	78	6	6	9	1
35	8	6	8	4	79	1	1	1	1
36	3	3	2	3	80	2	4	6	8
37	3	9	9	9	81	1	1	1	1
38	7	1	2	5	82	2	3	2	2
39	1	2	2	1	83	4	5	6	9
40	2	1	1	1	84	4	6	5	4
41	1	1	1	1	85	5	3	5	1
42	1	7	9	3	86	1	2	-	1
43	2	8	7	10					
44	1								

APPENDIX B

INSTRUCTIONS AND QUESTIONNAIRE

FINAL SCALE CONSTRUCTION

ATTITUDES OF FRESHMEN TOWARD PHYSICAL ACTIVITY

Instructions for Questionnaire

This is a questionnaire designed to explore the attitudes of freshmen toward physical activity. It is concerned with your beliefs and feelings. There are no right or wrong answers. This is not a test.

There will be 86 statements for your consideration. Each statement has five possible responses; Strongly disagree (#1), Disagree (#2), No opinion (#3), Agree (#4), and Strongly agree (#5). The response is to be recorded on your answer sheet in the following manner:

Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
1	2	3	4	5

After reading each statement you will know at once, in most cases, whether you agree or disagree with the statement. If you are undecided (or neutral) about the statement, then mark no opinion. Mark the response that you feel best reflects your personal opinion.

We are not concerned about connecting any person with any paper, so please answer each statement as you actually feel about it. Be sure to ANSWER EVERY STATEMENT.

- × 1. It is good to know what exercises are appropriate for specific body areas.
- *2. (1) A good physical workout on the week-end is adequate exercise for the week.
- *3. (2) All that physical education does is show you your weaknesses.
- 4. I am never too busy to exercise.
- *5. Exercises do not do that much good.
- *6. Physical education courses are nearly worthless.
- 7. A physical education course will make you aware of conditions that can be improved on in your social life.
- 8. It is possible to tell a great deal about a person by the way he or she walks down the street.
- × 9. Physical education gives interest in being active.
- *10. (3) A healthy body is foremost in my mind.
- × 11. Physical activity is an enjoyable break from classroom drudgery.
- × *12. × Physical education is a big waste.
- *13. One has to be an athlete to be physically fit.
- *14. (4) Physical education encourages active part rather than passive observing.
- × 15. There is sheer pleasure in physical exertion.
- × 16. It is important to be active when you are at middle age.
- 17. We need to move and discover muscles to be aware of our movement capabilities.
- 18. Physical activity provides a change of pace.
- × 19. A person must be physically fit in order to meet the stresses of life.
- × *20. (5) Our medical technology is so advanced that we do not need to be physically fit.

21. Physical activity gives an individual an interest beyond his work.
22. Physical movement is a need and a joy.
23. I have found physical activities which I can enjoy in the coming years.
- *24. (6) Physical education gives me the means to remain physically fit throughout my life.
25. Many things you do in life are concerned with physical education.
- *26. (7) Physical activity provides an understanding of spectator sports.
27. Now is the time to acquire skills necessary for active participation now and in later life.
28. Sport activities are enjoyable.
- *29. (8) Physical activity can help me to relax and enjoy life.
- *30. (9) Being physically educated gives meaning to activities that a person engages in daily.
31. Physical education motivates you to do exercises out of class.
- *32. (10) Physical education modifies one's outlook on life by giving that person a feeling of worth.
33. It is necessary to have physical activity at all ages.
34. You acquire better living through recreational endeavors.
- *35. (11) Using my leisure for physical activity is a waste of time.
36. (12) There is value in exercise and activity.
37. Physical activity is a means of working off tension.
- *38. The main purpose of physical education is to tell the person his or her capabilities in athletic events.
39. (13) One should enjoy the physical aspects of life.

- *40. Undesirable traits cannot be modified through physical education.
- *41. The only valuable outcome of an activity class is from the exercises done.
- *42. Tough exams tire me so I do not need any physical activity after taking one.
- 43. Physical education should be stressed more at early ages.
- 44. Being physically active adds zest to life.
- 45. Exercise can replace idle moments.
- *46. Television commercials are good sources of methods for staying fit.
- 47. Man should know how to use his body to help satisfy his psychological needs.
- 48. (14) Physical education teaches broad principles which a person can apply to himself at any age.
- 49. (15) Regardless of how smart you are, your life is limited by how fit you are.
- 50. (16) My day would not be complete if I haven't exercised.
- *51. Physical education classes gave me all the physical activity that I will ever need.
- 52. There is a need to retire from the daily grind through physical activity.
- *53. There is no need to be able to plan a personal physical fitness program.
- 54. You have a higher regard for the body once you know a little how it works.
- 55. (17) Physical activity should become an integral part of the person's life.
- 56. Competing with another person is exciting.
- 57. (18) Physical education forms sensible ideas about fitness.
- *58. I don't think that physical education should be compulsory.

- 59. (19) Principles of physical education should be utilized in everyday activity.
- 60. (20) The main outcome of physical education is fulfillment of the individual's physical potential.
- 61. Physical education should make me more acceptable to change in respect to activity.
- 63. Physical education helps a student to find himself, within peer groups.
- 64. One should learn to enjoy physical exercise.
- +65. People are afraid to be "active."
- +66. Physical education is ignored by most students.
- 67. A physically fit person is more optimistic than a run-down person.
- *68. (21) I see almost no value in physical education.
- *69. Physical weariness derived from participating in a vigorous game over-shadows any pleasure.
- 70. Physical education should give you knowledge of how you appear to others.
- 71. A person must be physically fit in order to meet the stresses of life.
- 72. Physical fitness permits one to move more efficiently.
- *73. (22) There is no reason for an overweight person to change his present condition since he has been this way all of his life.
- 74. Taking a swim or playing a game during the noon-hour would be a satisfying experience.
- 75. Physical activity helps resist psychological disorders.
- *76. (23) Being able to play any games well is of little importance to me.
- *77. It is difficult to secure information concerning body health.
- 78. Physical activity can be fun now and when you are older.

- *79. I do not take part in a sport activity unless persuaded by a friend.
- 80. Understanding the body is necessary for a weight control program.
- 81. (24) Daily exercise should be carried on through life.
- +82. (25) Present information on health scares you into becoming fit.
- 83. When exercise is experienced, a pleasant fatigue follows.
- 84. (26) Competition is good for everyone.
- 85. You need to be aware of the forms of physical activity around you.
- *86. Physical fitness is good, but man can survive without it.

*Indicates those items considered negative in nature.

()Indicates corresponding short form number.

+Omitted from statistical analysis due to inability to interpret context.

NOTE: Item No. 62 was omitted from the original questionnaire.

Final Scale Construction

A final form of the questionnaire can be extracted from the preceding information utilizing the reliability and validity coefficients at a minimum of "r" equals .5 for both as criteria for an item to be included. Eighteen statements from the long form meet this criteria for acceptance. Of these 18 only 3 are negative value statements. While only eight of the items have acceptable judges' ratings, the continuum as a whole is well represented. Seven of the items may be considered indicators of general physical education objectives, one item is indicative of the human movement objective of 105 Foundations, five items represent the bio-physiological objective, one corresponds to the sociological objective and the remaining four indicative of the psychological objective.

Item No.	Statement
4.	I am never too busy to exercise.
7.	A physical education course will make you aware of conditions that can be improved on in your social life.
9.	Physical education gives interest in being active.
10.	A healthy body is foremost in my mind.
11.	Physical activity is an enjoyable break from classroom drudgery.
15.	There is sheer pleasure in physical exertion.
17.	We need to move and discover muscles to be aware of our movement capabilities.
22.	Physical movement is a need and a joy.
29.	Physical activity can help me to relax and enjoy life.
31.	Physical education motivates you to do exercises out of class.
32.	Physical education modifies one's outlook on life by giving that person a feeling of worth.
36.	There is value in exercise and activity.

Item No.	Statement
37.	Physical activity is a means of working off tension.
54.	You have a higher regard for the body once you know a little how it works.
*58.	I don't think that physical education should be compulsory.
*68.	I see almost no value in physical education.
*79.	I do not take part in a sport activity unless persuaded by a friend.
84.	Competition is good for everyone.

*Indicates those items considered negative in nature.

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