

AN ABSTRACT OF THE THESIS OF

Glenn David Ruhl for the degree of Doctor of Philosophy in
College Student Services Administration presented on
February 24, 1987.

Title: A Causal Study of Attitudes Toward Intercollegiate
Athletics of Oregon State University Undergraduate Students
in Three Academic Majors

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Abstract approved: ~~_____~~
Charles E. Carpenter

The purpose of this study was to determine and explain attitudes toward intercollegiate athletics of undergraduate students in three academic majors attending Oregon State University.

The attitudes of a proportionate random sample consisting of 215 students were measured according to their responses to thirty-two Likert scale items containing six sub-scale areas.

The investigation duplicated the methodology used by T. M. Jensen, W. M. Leonard and R. D. Liverman (1981, 1982). Attitudes by sex and academic major were examined for statistical variation. Social, biographical and demographic responses were analyzed regarding the causal path model

proposed by Jensen, Leonard and Liverman (1982). Multiple regression determined the estimated relationship between variables.

In general, intercollegiate athletics were favorably perceived. Statistically significant differences were found by academic major for the total scale score, and in four of the six sub-scales.

No statistically significant differences were found by sex or for interaction effects between art and computer science respondents in total and sub-scale scores, or between academic majors and two of the sub-scales.

Regression analysis of the path model linkages proposed by Jensen, Leonard and Liverman (1982) was conducted with the response data. Eight of twenty-six linkages were found to have no statistical significance.

The statistical relationships obtained suggested a possible explanation for student attitudes toward intercollegiate athletics. A revised causal path model with three additional linkages was proposed.

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A Causal Study of
Attitudes Toward Intercollegiate Athletics
of Oregon State University Undergraduate Students
in Three Academic Majors

by

Glenn David Ruhl

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

Completed February 24, 1987

Commencement June 1987

APPROVED:

Redacted for privacy

Professor of Education, in charge of major

Redacted for privacy

Head of Department of Post-Secondary Education
Redacted for privacy

Dean of School of Education

Redacted for privacy

Dean of Graduate School

Date thesis is presented February 24, 1987

Typed by Glenn D. Ruhl

DEDICATION

Max always came back. He had nothing to say about what might have been and he never quit. And when it was over and a social occasion offered, full of admiration, I asked him, "Max, you had one of the greatest seasons I ever saw a man put on. How does it look to you now that it's over?" "Well," said Max, "I have been wondering. Does it have to be this hard?" (Cady, 1978:8).

This thesis, which marks the end of one "season" and the beginning of another, is dedicated to my wife Mary Louise. It is my fondest wish that I might return to her all she has given to me.

ACKNOWLEDGEMENTS

My sincere gratitude is extended to the following for their role in the completion of this endeavor:

My major professor, Charles Carpenter
and graduate committee consisting of professors,
Will Holsberry, Tom Grigsby, Dow Poling and Howard Wilson

Professors Charlotte Lambert and Margaret Milliken

My mother and father, Martha and David Ruhl

My wife, Mary Louise

"Robbie"

The students who participated in this study

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A Causal Study of
Attitudes Toward Intercollegiate Athletics
of Oregon State University Undergraduate Students
in Three Academic Majors

Chapter I - INTRODUCTION

Involvement in play, sport and athletics is ubiquitous and characteristic of American culture (Sage, 1984:9; Freedman, 1986). Estimates of what Americans annually spend on leisure and recreation range from 60 (Sage, 1984:11) to 300 billion dollars (U.S. News and World Report, 1977:62-63). "Sports," observed James Reston, "are now more popular than politics in America, increasingly so since the spread of television" (Sage, 1984:13).¹ Play, sport, and athletics are, as George Sage declared, "big business" in the United States (Sage, 1984:11).

Student involvement in play, sport and athletics is very evident in the educational system of the United States. The number of students participating in these activities,

¹ Reston's observation (Eitzen, 1984:13-14) was based on the amount corporations were willing to pay for broadcasting sports as opposed to political events, except nominations and inaugurations of Presidents. Sage claimed that up to 25 hours of professional sports are broadcast per week, often with 6 to 8 hours on a single Sunday (Eitzen, 1984:10).

even without consideration of play, recreational sport and, if required, "physical" instruction, emphasizes the significance of sport and athletics in American education.

At the high school level alone, in excess of 6.4 million students participate annually on interscholastic athletic teams (Sage, 1984:10). In higher education, over 170,000 student-athletes participate in National Collegiate Association (NCAA) sponsored competitions in 35 different sports at an investment of 5 billion dollars each year (Sage, 1984:11). When totals for National Athletic Association of Intercollegiate Athletics (NAIA) sanctioned institutions and junior and technical colleges are included, the magnitude of intercollegiate athletics in the United States becomes even more enormous.

Howard D. Richardson recognized the important position held by athletics in American higher education:

For some time athletic programs in institutions of higher learning have received increasing publicity and have been featured items of discussion by many individuals and groups. This publicity has led to an increasing role that athletics play in our society. That society demands the athletic programs is readily apparent when attendance figures are announced and also reflected in the increasing numbers of people watching sporting events on television. Society's demands are also identified in the passage of legislation guaranteeing equal opportunity for participation (Richardson, 1979:56).

Play, sport, and athletics provide a tertiary means for investigating society. Christopher Lasch proclaimed they do this "better than the stage because the stage must

rely on imitation" (Lasch, 1977:24). If, as Lasch has implied, play, sport and athletics present life "first-hand," then sport² may be "a mirror of society" (Boyle, 1963; Guttman, 1978:10; Eitzen, 1984:43-77):

Sport is a microcosm of society. If we know how sport is organized, the type of games played, the way winners and losers are treated, the type and amount of compensation given the participants, and the way rules are enforced, then we surely also know a great deal about the society in which it exists (Eitzen, 1984:43-44).

Institutions of higher learning are "living organisms" in the body of a larger culture, according to Edwin H. Cady, with "the health of the culture riding on their fate" (Cady, 1978:36).

Institutions must, John P. Williams urged, "identify those undertakings which they believe are most significant" (Williams, 1973:18). The amount of time, finances and participation society devotes to play, sport and athletics, has established their significance.

In American higher education the student and intercollegiate athletics are deserving of serious study. The study of intercollegiate athletics provides insight into the larger dimensions of American higher education.

Having an awareness of the relationships that exist in the structure of higher education establishes understanding.

² Sport in this context refers to a spectrum of physical movement activities including play and athletics. Further discussion concerning the "play, sport, athletics" continuum is contained in Chapter 2.

It is through understanding that human beings develop the criteria to make judgments. The attainment of this level of understanding is, however, a problem whose laborious solution is no less yielding today than it was for Francis Bacon:

Human understanding is no dry light, but receives infusion from the will and affections; whence proceed sciences which may be called "sciences as one would." For what a man had rather were true he more readily believes. Therefore he rejects difficult things from impatience of research; sober things, because they narrow hope; the deeper things of nature from superstition; the light of experience, from arrogance and pride; things not commonly believed, out of deference to the opinion of the vulgar. Numberless, in short, are the ways, and sometimes imperceptible, in which the affections color the understanding (Seldes, 1976:939-40).

The National Collegiate Athletic Association (NCAA) contended the issue facing higher education is not whether intercollegiate athletics should exist; rather, it is to see that they are conducted in a manner consistent with an institution's published objectives and educational mission (NCAA, 1981:iii).

Society is capable, as Aristotle lamented about the early Greeks (Brubacher, 1966:245), of placing too much emphasis on play, sport and athletics (Dalmolen, 1986). In American higher education, academics often fall behind athletics in importance and value (Ryan, 1929:93; Williams, 1973).

It was conceded from an early date that intercollegiate athletics are part of American higher

education (Ryan, 1929). In 1904, R. H. Jesse exclaimed that if "properly" regulated intercollegiate athletics could be a "means of grace" or of benefit to an institution. If not "properly" regulated, however, they can "become a source of degradation" (Ryan, 1929:31).

Investigating the components of higher education is a challenging task. For human understanding through critical evaluation and investigation to take place, a "starting point" must be established.

Jay Coakley noted the following qualification involved in understanding sport:

Unfortunately, research will never be able to show us what the relationship between sport and society should be. It only alerts us with a starting point for shaping what it will be in the future (Coakley, 1984:38).

The study of the student and intercollegiate athletics should proceed with this awareness.

The Problem

C. Gilbert Wrenn observed that there was a tendency by administrators to look at the outcomes, rather than the consequences in the lives of individual students resulting from a given program (Wrenn, 1949). Robert H. Shaffer remarked:

If the colleges and the universities of the country do an effective job with the students enrolled, both in giving them something of real value and in helping them understand what it is they have, there should be no real difficulty in explaining the needs and problems

of higher education to the various publics involved (Shaffer, 1961).

An effective system of education is developed through the understanding of its components. W. H. P. Faunce of Brown University argued in the early part of the century, "to find the elements of supreme interest to American youth, and utilize those elements in the various 'projects' of the curriculum" is part of the "wisdom" involved in understanding the role of play, sport and athletics in higher education (Savage, 1929:137).

The understanding of the student and those "intangible factors we call motivation, attitudes and social skills" (Williamson, 1938) is a requirement for anyone involved with the pedagogical process. This calls for a "new and active concern" for understanding and honesty in intercollegiate athletics, an area that constitutes an "integral facet of higher education and American society" (NCAA, 1981:3).

D. Stanley Eitzen recognized that the serious study of play, sport and athletics, has been virtually non-existent in the social sciences until the past decade (Eitzen, 1984). From a "social science perspective," the study of sport and athletics is in its "infancy" (Eitzen, 1984:14). Only scattered research, and most of that being done by people in physical education (Williams, 1973; Jensen et al., 1981, 1982) exists, despite the "public visibility and profound influence on the educational enterprise" by intercollegiate athletics (Williams, 1973:17).

Few studies have been done in the area of values and intercollegiate athletics (Steers, 1956; Williams, 1973; Maas, 1975; Stevenson, 1975; Kniker, 1975; Matross, 1980; Jensen et al., 1981; Sowa and Gressard, 1983). It is argued, because intercollegiate athletics are a major educational concern, that additional research must be conducted (Kniker, 1974; Eitzen, 1984).

Studies indicate little is known about the attitudes of students toward intercollegiate athletics nor do we understand the impact intercollegiate athletics have on the individual, the total student body, the institution and the community (McPherson, 1980). Intercollegiate athletics, therefore, must be analyzed in order that their "place and purpose in relation to the over-all educational curriculum" (AAHPER, 1963:15) and contribution to the total development of the student is "in conformity with the entire educational process" (AAHPER, 1963:18).

Purpose of the Study

The purpose of the present study was to determine the attitudes toward intercollegiate athletics of undergraduate students in three diverse academic majors attending Oregon State University and to explain these attitudes through the application of a causal model.

Ted M. Jensen, Wilbert M. Leonard and Robert D. Liverman (1981, 1982) expanded upon Gerald M. Kenyon's

(1969) conceptualization of sport involvement to present a refined theory of attitudes toward intercollegiate athletics. The causal model and theoretical basis for the present study duplicates the methodology of this exploratory work based on the theoretical constructs established by Kenyon (1969).

Two major questions were asked in the investigation:

1. What are undergraduate student attitudes toward intercollegiate athletics at Oregon State University within diverse academic majors?

2. How can the above student attitudes toward intercollegiate athletics at Oregon State University be explained?

A corollary to the second question was the investigation of the theoretical framework established by Jensen, Leonard and Liverman (1981, 1982), as an appropriate basis for the explanation of student attitudes toward intercollegiate athletics.

The causal model was derived from path analysis which postulated the direct and indirect linkages between antecedent and intervening variables concerning student attitudes toward intercollegiate athletics at Oregon State University.

Significance of the Study

Intercollegiate athletics now face financial and ethical problems, but the most critical issue facing their survival, is the increased public doubt concerning their desirability (Evans, 1974:2; Eitzen, 1984). Criticisms toward athletics from within higher education have existed since their inception. Faculty (Aydelotte, 1917; Ryan, 1929; Savage, 1929), coaches (Ryan, 1929; Reed, 1985), administration (Sargent, 1892, 1910; Savage, 1914, 1929; Hutchins, 1937³; Hanford, 1974; Nyquist, 1979), and students (Johnson, 1971; Shaw 1972; Evans, 1974; Cady, 1978; Rooney, 1980), have all raised serious questions concerning intercollegiate athletics.

A consensus has not been reached concerning the place of intercollegiate athletics in the educational milieu (Babbidge, 1968). Part of the reason for the lack of understanding concerning intercollegiate athletics is the wide variation in sport, institution, administration and student involved.

As early as 1909, W. P. Bowen expressed concern and surprise that educational leaders failed to grasp the value of intercollegiate athletics (Bowen, 1909:156). Given the

³ Robert L. Hutchins' famous 1937 statement that "colleges should aim to cultivate the intellect, and not to develop the body, character, or personality" remains the major argument by the academic community against intercollegiate athletics.

seriousness of the situation, John F. Rooney reasoned, colleges should admit they are in the entertainment business and university and state pride are worth paying for (Rooney, 1980:158). Other administrators like Robert L. Hutchins (Hutchins, 1937) and Maurice Mitchell (Mitchell, 1982), have argued intercollegiate athletics serve no useful purpose for higher education. In many cases, opinions by administrators for and against intercollegiate athletics are based on unsubstantiated emotional responses (Hutchins, 1937; Eitzen, 1984:195-225).

There is a major need to incorporate intercollegiate athletics into the academic community if the problems associated with them are to be solved (Cady, 1978:189; NAIA, 1985:3; Eitzen, 1984:96). Eitzen recognized the dilemma that exists:

On the positive side, the games provide entertainment, spectacle, excitement, and festival, along with excellence in athletics. On the negative side, big-time athletics have severely compromised academe (Eitzen, 1986:31).

The president of Columbia University in 1904, Nicholas Murray Butler, stated:

To prohibit intercollegiate athletic contests is, in my opinion, more than unwise; it is unreasonable. To regulate and control them, however, is of the first importance (Eliot, 1937:442).

The need for regulation and control remains a contemporary problem. In 1986, John Slaughter, the chancellor of the University of Maryland, urged:

The real issue and the place where universities themselves are at fault - is that universities have not continued to remind themselves that intercollegiate athletic programs should be secondary to the principal mission of the institution, and that it is not so important to win that you compromise many other things that are more important. That's the thing we have to remind ourselves of (Slaughter, 1986:33).

Success in controlling intercollegiate athletics is indeed, what Cady called, "a journey, not a destination" (Cady, 1978:190). For the control of intercollegiate athletics to exist there must be a clear understanding of what it is that is being controlled; herein lies a major problem and challenge in understanding the elements of intercollegiate athletics.

"Detailed information and accurate facts," exclaimed Williams, "about intercollegiate athletics are almost impossible to obtain" (Williams, 1973:70-71). This is especially true in the case of student attitudes toward intercollegiate athletics. This point was noted by T. Jensen, W. Leonard and R. Liverman:

Ironically, there is a dearth of research regarding attitudes toward intercollegiate athletics. It is as if the results would be so self-evident that the time and effort involved in carrying out such an investigation would be seriously questionable (Jensen et al., 1981:67).

Equating the value of an activity to the number of people involved has been a primary measure of the success and importance of intercollegiate athletics. "From the educational point of view," claimed Charles W. Eliot of

Harvard University in 1906, "the value of any sport is to be tested chiefly by the number of persons who habitually take part in it for pleasure during" and after "the educational period" (Ryan, 1929:94). This participation may be active or passive in a number of roles, such as player, coach and administrator.

Intercollegiate athletics must be modified considering the changes taking place in higher education. Student support for intercollegiate athletics is diminishing in some parts of the United States (Evans, 1974:2-4; Vanderzwaag, 1984:230). Using the University of Maryland as an example, Neil Isaacs pointed out, the sports program, while financed by students, actually discouraged participation (Isaacs, 1977:C1). Returning to the argument for greater numbers, Frank N. Gardner called for the "values" of intercollegiate athletics to be available to more young men and women (Gardner, 1960:368). Although this would be an expensive task, advised Gardner, "it would be well worth the price" (Gardner, 1960:368).

Though a very limited number of students compete in intercollegiate athletics, "the burden falls more or less on all alike" (Russell, 1937:204). William T. Foster, president of Reed College in 1915, wrote:

Intercollegiate athletics provide a costly, injurious, and excessive regime of physical training for a few students, especially those who need it least, instead of inexpensive,

healthful, and moderate exercise for all students, especially those who need it most (Foster, 1915:377).⁴

The student-athlete has become increasingly separated from the student body (Hart and Clement, 1986:3). The enormous amount of time and effort required by the student-athlete to compete serves to effectively distinguish them from their classmates (Ryan, 1929:11; Meggysey, 1970). James Rhatigan reported student-athletes in basketball will miss 26 percent of their classes, and 30 percent if involved in post-season play (Rhatigan, 1984:44).

Rooney acknowledged there are a lot of first-class student-athletes, but claims to have met many more who were not capable of, or did not care about, obtaining a baccalaureate degree (Rooney, 1980:xvii). This corresponded to what he discovered was the nature of some athletic departments:

Many athletic departments are the antithesis of what the university is supposed to be, a place in which the pursuit of truth and knowledge can be carried on in an environment of honesty and intellectual integrity. To bring a person to an institution for the primary purpose of athletic competition is not in keeping with these purposes, and even less so is the special treatment afforded the athlete on campus, treatment that effectively separates him from the mainstream of university life (Rooney, 1980:144).

⁴ Foster's words may have had a lasting effect on Reed College. There are no varsity athletics at this institution.

According to Michael S. McPherson, "sports" have become the top priority for the student-athlete (McPherson, 1986). The student, in this case, should be presented to the public as an athlete, not as someone working toward graduation and obtaining a degree (Koppett, 1981). Former American Athletic Association president John B. Kelly said:

What does not seem to have concerned us is the extent to which we damage the character of a young competitor when we validate the lies, the cheating, and the deceit he practices trying to abide to a thoroughly outmoded amateur code. Instead of teaching the great lessons of sport-honesty, integrity, and fair play - we are sanctioning the worst. It is worse than hypocrisy. It is dishonorable, disreputable, and disgusting (Kelly, 1972:76).

The American university's involvement in intercollegiate athletics must be carefully evaluated (Rooney, 1980:145). Students are the future alumni who supply, perhaps, the greatest source of support for an institution (Vanderzwaag, 1984:231). Intercollegiate athletics must be brought in line with the culture and subcultures they serve (Cady, 1978). An awareness of student attitudes toward intercollegiate athletics, and how these attitudes are formed, will establish a starting point for their understanding.

Objectives of the Study

There were four objectives involved in conducting this investigation: (1) to review the literature concerning the historical and cultural origins, and research involving

student attitudes toward intercollegiate athletics, (2) to describe the attitudes toward intercollegiate athletics of undergraduate students in three diverse academic majors at Oregon State University in accordance with current and previous research on the topic, (3) to refine a causal model to explain the results of the study, and (4) to make a contribution toward the understanding of the relationship between the undergraduate student and intercollegiate athletics.

Definitions

In order to assist in the understanding of student attitudes toward intercollegiate athletics, the following definitions of the terms used in the investigation are necessary:

1. Administration is planning, organizing, directing, and controlling human or material resources to accomplish predetermined goals (ERIC, 1984:6).

2. Athletics are sports, games or physical contests engaged in competitively. Although a review of the literature reveals definite distinctions between the concepts of play, sport, games and athletics, for the purposes of the present study, the terms are used interchangeably.

3. Attitude is a latent or non-observable, complex, but relatively stable behavioral disposition reflecting both

direction and intensity or feeling toward a particular object, whether it be concrete or abstract (Kenyon, 1968:567).

4. Attitude Measure is a procedure or device used to obtain quantified descriptions of an individual's predispositions to react to certain people, subjects, situations, ideas, and so on (ERIC, 1984:20).

5. Causal pertains to the production of an effect. For example, causal research is the investigation of the mechanism by which a prior event or agent produced a later event (Dooley, 1984:27). When used in conjunction with path analysis, the term causal implies a possible effect. Thus, causal interpretation of statistics is an extension of the verbal interpretation of those statistics (Duncan, 1966:15). This represents a plausible method for explaining a theoretical model in statistical terms.

6. Development indicates progression from earlier stages to later stages of growth or organization. It includes the gradual realization of potential, usually accompanied by advances in size, complexity, efficiency, etc. It is not to be confused with "change," which refers to alterations, modifications, etc., that are not sequential and progressive (ERIC, 1984:69).

7. Influences are factors directly or indirectly affecting the condition (behavior, development, etc.) of an

organization or entity, that alter some situation or determine some result (ERIC, 1984:127).

8. Intercollegiate Athletics are athletics between or among colleges, universities or professional schools (ERIC, 1984:20).

9. Model refers to one possible patterning of causal relationships (Dooley, 1984:232).

10. Multiple Regression is one statistical procedure for conducting multivariate research (Dooley, 1984:232).

11. Multivariate is the analysis of three or more variables.

12. Opinions are judgments or conclusions based on evidence that is insufficient to produce certainty (ERIC, 1984:181).

13. Path Analysis is a pictorial representation of a causal model which include the estimates of relationships derived from multiple regression (called path coefficients) (Dooley, 1984:232). The purpose of path analysis is to present a means to determine the consistency of a given set of statistical interpretations (Duncan, 1966:15).

14. Path Coefficient is a standardized regression coefficient obtained from multiple regression analysis which describes the magnitude of association between two variables in path analysis (Dooley, 1984:232).

15. Student defines a person enrolled in a college or university to follow a particular course of studies (Page et al., 1980:279).

16. Student-Athlete defines a student who engages in a particular sport for the educational, physical, mental, and social benefits therein and to whom participation in that sport is an avocation (NCAA, 1983:9).

17. Student Development is the aspects of an individual's development that are influenced by their schooling (ERIC, 1984:254).

Delimitations of the Study

The review of literature was delimited to American sources in the English language. Although sport and athletics are subject to considerable attention in German language sources, information concerning intercollegiate athletics is, from the author's inquiry, non-existent.

The examination of student attitudes toward intercollegiate athletics was delimited to a proportionate random sample of the student population in three academic majors attending Oregon State University fall term 1986.

Assumptions of the Study

The following assumptions were made concerning the investigation:

1. The results of the study based on the "Student Attitude Toward Intercollegiate Athletics Scale" are valid depending on the reliability and objectivity of this instrument.

2. The categories of the representative student population tested consisted of sufficient numbers in order to provide for statistical analysis.

3. The respondents understood the directions and terminology of the instrument and participated honestly.

4. The choice of academic majors reflected diverse student populations for path analysis of the study results.

Study Hypotheses

The major study or research hypothesis tested in the investigation was differences will exist by sex and academic major regarding attitudes toward intercollegiate athletics. There were three null hypotheses formulated to statistically test the study hypothesis. In addition, it was hypothesized that attitudes toward intercollegiate athletics could be explained through the application of a causal model.

Rationale for the Study Hypotheses

An examination of the literature devoted to the topic reveals student attitudes toward intercollegiate athletics can be explained by methods of statistical analysis. Student attitudes can be broken down into sub-scales which provide valid data useful for making comparisons between and among test subjects. Research conducted, in chronological order, by Steers (1956), Ogilvie and Tutko (1971), Williams (1973), Harold and Lowe (1973), Hanford (1974), Smith (1980), Matross (1980), and Jensen, Leonard and Liverman (1981, 1982), support the study hypotheses for the investigation.

Null Hypotheses

The following hypotheses were statistically researched:

Ho 1. There will be no statistically significant difference by field of study in the attitudes of students toward intercollegiate athletics.

Ho 2. There will be no statistically significant difference by sex in the attitudes of students toward intercollegiate athletics.

Ho 3. There will be no statistically significant interaction between sex and academic major in student attitudes toward intercollegiate athletics.

Summary

The first chapter emphasized the importance of understanding the central role of the student in higher education and the magnitude of sport in America. It is through the study of student beliefs and their sub-culture that the unique context of sport and intercollegiate athletics in the United States can be understood.

Since their inception, conflicting opinions and persistent problems have beset the administration, governance, role and function of intercollegiate athletics in American higher education. It remains clear that an urgent need exists, through scholarly research, for an understanding of the topic.

Sport and athletics continue to occupy major positions in American society and higher education. The problems and importance of the topic are self-evident through the amount of attention devoted to it. There is, nevertheless, surprisingly little scholarly research directed toward intercollegiate athletics or their major component - the student. It is with this assertion that the statement of the problem, and significance for its study, is presented.

The first chapter concludes with the study hypotheses for the investigation, including delimitations and limitations, by which the research of undergraduate students', in three academic majors, attitudes toward intercollegiate athletics at Oregon State University was

conducted. Also included in the chapter were the objectives of the study and definition of terms used.

It was believed that the study would provide information relevant to the overall understanding of intercollegiate athletics.

Chapter II - REVIEW OF RELATED LITERATURE

The following chapter is concerned with the literature associated with the investigation of student attitudes toward intercollegiate athletics and the causal model approach to data analysis. The chapter contains four major sections: (1) the historical background for the study, (2) the measurement of attitude, (3) a chronological account of the research conducted regarding student attitudes toward intercollegiate athletics, and (4) the literature concerning the construction of a causal model for data analysis.

Historical Background

The idea of sport or "contest" may be linked to civilization (Eitzen, 1984). From the early Greek and Roman foundation, western civilization has accepted the idea that human beings are not mere instruments for production, but are valuable persons with identities capable of constant enrichment (Eitzen, 1984). Sport may be an opiate of the masses (Coakley, 1984), or it may serve the needs of a few but, like art and music, sport adds value to life.

The idea of leisure and recreation, including play, sport and athletics, is often met with suspicion in societies that value the ethics of work. In the United

States, the educational value of play, sport and athletics in higher education has gained a slow and begrudging acceptance rarely, if ever, experienced in other societies (Chu et al., 1985).

There have been several historical studies concerned with the development of play, sport and athletics in the United States (Dulles, 1940; Betts, 1974; Rader, 1983). The authors concurred intercollegiate athletics resulted from the intellectual, moral and cultural climate of American society. This form of "zeitgeist" enabled play, sport and athletics to develop in American higher education in ways unlike any other culture. Consequently, a "culture of athletics" (Steitze, 1971) formed that remains truly unique to American higher education (Chu et al., 1985).

The Need for Definition

A review of the literature concerning intercollegiate athletics indicates different terminology is used to describe the topic. The terminology applied to play, sport and athletics, as universal forms of human movement (Flath, 1976), requires clear definition in order to understand the context in which these concepts are used.

A great deal of controversy involving intercollegiate athletics results from the nature of the competition involved:

If basic, substantive issues, such as:
sponsorship, objectives, intended audience,
controls of government, financial base,

ideological base, mode of organization, and participant's primary motives are to be understood and used to establish policy guidelines; there must be an in-depth consideration of the nature of play, sport, and athletics (Flath, 1976).

Historically, the word "sport" comes from the middle English and French words "desport" and "disport" which mean "to carry away from the work." James Keating observed the terms "sport and athletics" are often used interchangeably in contemporary English, yet the historical meaning of the two words points out an important distinction (Keating, 1964).

For Keating (1964), the word "sport" means "a pleasant pastime, entertainment or amusement, recreation or diversion." In contrast to the term sport, the word "athlete," Keating pointed out, is derived from the Greek word "athlein" which means to compete for a prize, or the noun "athlos" which means a prize rewarded for the successful completion of a contest (Keating, 1964). As the rewards increase so, too, does the cost and level of competition.

Competition can exist in play, sport, athletics or warfare. It is the level of competition, or degree of intensity involved, that causes the greatest concern. Competing for a "prize" greatly alters the spirit and final product of the contest:

Thus, we see that historically and etymologically, sport and athletics have characterized radically different types of human

activity, different not in so far as the game itself or the mechanics or rules are concerned, but different with regard to the attitude, preparation, and purpose of the participants. Man has always desired some release or diversion from the sad and serious side of life. This of course, is a luxury and it is only when a hostile environment is brought under close reign and economic factors provide a modicum of leisure that such desires can be gratified. In essence, sport is a kind of diversion which has for its direct and immediate end, fun, pleasure and delight, and which is dominated by a spirit of moderation and generosity. Athletics, on the other hand, is essentially competition activity, which has for its end, victory in the contest and which is characterized by a spirit of dedication, sacrifice and intensity (Keating, 1964:25-35).

Play, sport and athletics can take place at any level in higher education. Students competing in these activities do so for various levels of reward. Reward in play, sport and athletics, is a highly individual concept. For some, this may involve the joy of exercise, to others, a form of scholarship (Callois, 1961; Vanderzwaag, 1972; White, 1973; Flath, 1976). As the reward for participation increases, the greater the cost becomes to the institution and student.

The cost of sport and athletics can be measured in many ways, ranging from economically to psychologically. The limits for the cost of sport and athletics to higher education will, ultimately, be derived from the values, beliefs and attitudes established by society. Understanding the terminology applied to these activities will provide insight about their ultimate intent.

Sport as a Universal Condition

Juvenal, the Roman poet and satirist, remarked derisively about the society of his day that people need only bread and entertainment to preserve happiness ("panem et circenses" - Decimus Junius Juvenalis, c.50-c.130). Edward Bellamy, writing some 1800 years later, believed that if "bread" was the first necessity of life, then "recreation" was a close second (Bartlett, 1980:666).

Play, sport and athletics provide "diversion" for many people. Throughout history, play, sport and athletics, have been notable human activities: From the play of children in ancient societies through the early Greek festivals, Roman circus games and gladiatorial combats, pageants and jousts of the medieval Europeans, to the modern olympic games and international spectacles (Flath, 1976).

For mankind, Johan Huizinga (1950) suggested in his classic essay Homo Ludens, play is a central and vital human activity (Huizinga, 1950:10,13). Indeed, Huizinga implied that one could deny nearly all abstractions: justice, beauty, truth, goodness, mind, God, even seriousness, but not play (Huizinga, 1950:10,13). Huizinga maintained:

The spirit of playful competition is, as a social impulse, older than culture itself and pervades all life like a veritable ferment. Ritual grew up in sacred play; poetry was born and nourished on play; music and dancing were pure play. Wisdom and philosophy found expression in words and forms derived from religious contests. The rules of warfare, the conventions of noble living were built upon play-patterns. We have to conclude, therefore,

that civilization is, in its earliest phases, played. It does not come from play like a babe detaching itself from the womb; it arises in and as play, and never leaves it (Huizinga, 1950:173).

Scholarly support for the universal nature of play and sport as a human condition (Caillois, 1958) and empirical evidence from anthropological studies (Linton, 1954; Murdock, 1950; Eichberg, 1974) confirm the views expressed by Huizinga.

At times of peace, mankind appears to require an outlet for competitive urges. The reason most often provided for this trait is that play and sport serve as a convenient "release" in a work-oriented society, or that these activities are pleasurable ways to spend one's leisure time. Coupled with what the Greeks referred to as "agon" or the compulsion to compete, and "arete" or the yearning for excellence, play, sport and athletics, furnish mankind with an intrinsic mechanism to cope with life.

Psychiatrist W. C. Menninger claimed "competitive games provide an unusually satisfactory outlet for the instinctive aggressive drive" (Vanderzwaag, 1972:52-53). Fellow psychiatrist A. A. Brill supported and expanded the previous analysis:

Were it not for the great and necessary catharsis provided by sports, combative instincts, dammed up within man, would break out in a disastrous way (Vanderzwaag, 1972:43).

The idea of play, sport and athletics, as a means to manage the "tension" of society by providing both spectators

and participants with an outlet for "aggressive" energy is a well-documented theme (Roberts and Sutton-Smith, 1971; Slusher, 1967; Vanderzwaag, 1972; Proctor and Echard, 1976; Marsh, 1978). Warfare, or competition taken to the extreme (Flath, 1976), is the ultimate example of the "aggressive drive," leaving activities such as play, sport and athletics, appealing alternatives.

Faith in sport and athletics, Robert Lipsyte pointed out, has been vigorously promoted by industry, the military, government and the media, with the values of the arena and the locker room "imposed on our national life" (Eitzen, 1984:3). Most sports, Harry Edwards has exclaimed, have few, if any, intrinsic social or political qualities. "Those qualities which such activities do possess are sufficiently 'liquid' to fit comfortably within many diverse and even conflicting value and cultural traditions" (Edwards, 1973).

While play, sport and athletics have the ability to "enhance" life through the development of cooperation and concern for others they, unfortunately, can also have the opposite effect by developing intense rivalries and a complete lack of compassion for others (Orlick, 1974:2).

The Origins of Intercollegiate Athletics

W. H. Cowley and Willard Waller (1935) observed that the culture of the student was either invented by members of that group or borrowed from another (Cowley and Waller, 1935:132-142). The student body, like any culture, passed

values and beliefs from one generation to the next (Freedman, 1956:14).

With the United States being "culturally young," new and fresh traditions were easily established and transmitted to succeeding generations. Cowley and Waller contended students sought a means for solidarity or,

a ground on which to meet, to understand one another's conversation, and to feel a sense of oneness. Extracurricular activities-especially athletics-furnished the necessary common denominator (Cowley and Waller, 1935:132-142).

Intercollegiate athletics evolved from student activities, invented to reflect their traditions or culture (Cady, 1978:36). They emerged from being student-run and organized to become, at times, "the most dominant aspect of collegiate life" (Davenport, 1985:14). It is doubtful, though, if the students first involved with intercollegiate athletics realized they were creating an activity which became, as Cady exclaimed, "an instrument of glamor so potent. . .it altered the character of college life after the Civil War" (Cady, 1978:39).

The accessibility of higher education in America also contributed to its distinctiveness. Richard Mandell notes the following numbers to illustrate this point:

Even before the Civil War the United States had 250 colleges. In 1880, England with a population of 23 million, was getting along with four universities, while Ohio, with a population of three million, had 37 institutions of higher learning. By 1904 about 250,000 young Americans were enrolled in universities and

colleges. The numbers in France and Germany were approximately 20,000 each (Mandell, 1984:187).

Given the wide variety of educational institutions and students that characterized American higher education, Donald Chu (1985) presented a sociological explanation for the development of intercollegiate athletics. Chu contended there was no well-accepted understanding of what the American college should do. Ultimately, Chu reasoned, presidents of schools concerned with the survival of their institutions employed athletics as a means of attracting money, students and visibility (Chu, 1985:35-55). This explanation provides, in part, one possibility concerning the conditions which permitted and sanctioned intercollegiate athletics.

John S. Brubacher and Willis Rudy (1976) pointed out that aside from the construction of a number of gymnasium facilities, pre-Civil War American higher education does not provide examples of sanctioned athletic activities. Administrative acceptance was gradual, reflecting the belief that extracurricular activity such as athletics and sport "tended to absorb much of the superabundant youthful energies which in earlier times had gone into fomenting rebellions" (Brubacher and Rudy, 1976:56).

The American student directed their "youthful energies" toward sport in a way that would not have been possible anywhere else. Cady exclaimed:

Another way, historically accurate. . . is to observe that the circumstances and conditions of early American college life demanded creative responses from the students. They could not have adopted the traditions of English or European life, itself confused and bewildered by recent developments, had they known them well. There was a perfectly American situation, and they responded (Cady, 1978:35).

The view that sport was "wasteful" and in opposition to the Puritan mind, and the belief that athletics had no place in the academic setting, did not prevent games from being played (Brubacher and Rudy, 1966). Eventually, by the nineteenth century, improved economic conditions and relaxed religious orthodoxy allowed a certain "tolerance" toward sport, as a so-called "extra-curricular activity," although it was not sanctioned as a part of the formal curriculum (Brubacher and Rudy, 1966).

Cady (1978) implied the unique quality of American college sport could be attributed to the attending students:

The games which grew into American college sports were indigenous to the student populations because the boys were people in transit, through the colleges, from boy-life to adult-life and brought the games to college with them (Cady, 1978:22).

These students enthusiastically applied themselves toward their leisure-time activities. Early American higher education, as Mandell (1984) suggested, provided considerable opportunity for this aspect of collegiate life.

The American college typically offered an easy and irrelevant curriculum. By the late nineteenth century the American college had evolved into a peculiar institution which performed the socially tranquilizing function of

keeping the boisterous children of the prosperous classes out of the way for a few years. In order to keep themselves busy the students developed what historians of American higher education have called "the extra curriculum" (Mandell, 1984:187).

Organized extracurricular student activities involving sport, often referred to as intramural, or "within the walls" of the school, were the predecessors of intercollegiate athletics (Means, 1973:2). Play activities conducted by students evolved into games, sports and athletics. Ultimately, when the level of competition and goals of the participants dictated, athletics emerged.

Given its popularity at the time, boating (Cady, 1978:38) was an understandable choice for the first intercollegiate athletic competition - a race between Harvard and Yale held August 3, 1852 (Whiton, 1901:58; Lewis, 1967:38).

Boating was transformed by students from play to an athletic activity involving inter-school competition between students and clubs. Eventually, intramural competitors extended their activities and issued extramural challenges to rival institutions of higher learning:

Races grew formal, and the idea of college interclub all-star boat was obvious. "Varsity" for "university" was a word ready to hand from Oxford and Cambridge (Whose ideas of training, technique, and design taught the colleges how to whip the professionals). Anyone could have foretold the outbreak of intercollegiate competition (Cady, 1978:38).

From this somewhat innocuous beginning, a tremendous expansion of sporting activity occurred in the late nineteenth century (Brubacher, 1966; Mandell, 1984) aided, perhaps, by the rise in popularity of team sports and the publication of Thomas Hughes' Tom Brown's Schooldays (Lewis, 1970:222-227).

By the 1890s intercollegiate athletics were established as an integral part of the collegiate environment. Collegiate sport and athletics, with increased alumni influence, financial burden and specialization, imperceptibly went from being administered by students to being managed from the "outside" (Savage, 1929). Louise Cobb noted:

The difficulties of student-and-alumni controlled intercollegiate athletics were critical at many times during this period. The troubles that were encountered in the 1850s were magnified enormously with the expansion of schedules and of sports (Cobb, 1943:23).

This situation forced, what Vanderzwaag (1984) insisted, was the involvement of college administrators "to control what had been established by the students" (Vanderzwaag, 1984:217). Along with this were increased costs resulting from the development of facilities, payment of coaches, training methods, and commercialization, which increased the need for faculty involvement (Brubacher and Rudy, 1976:132). This did, however, bring intercollegiate athletics to the attention of many administrators who saw

the opportunity for profit, prestige and recruitment potential (Savage, 1929; Brubacher and Rudy, 1976).

Unfortunately, intercollegiate athletics did not emerge without the creation of a number of persistent problems. Joanna Davenport (1985) noted the issue concerning the relationship of athletics to higher education is yet to be resolved:

If the basic question of the relationship of athletics to higher education had been addressed by the presidents and faculties years ago, we would not even have to ask the question [of what the relationship of athletics to higher education is]. Unfortunately, the issue remains unanswered (Davenport, 1985:14-15).

Students lost their "administrative" position at a relatively early stage in the development of intercollegiate athletics. C. W. Hackensmith (1966) described the control of intercollegiate athletics and observed that in 1900 three types of control were in effect: centralized control by faculty; faculty and student control; and exclusive student control (Hackensmith, 1966:397-398). Hackensmith indicated by 1919:

In actual practice institutional authorities administered athletics in 40 schools, faculty and students in 108, students and alumni in 63, and students only in 6 (Hackensmith, 1966:424).

Howard Savage's Carnegie Report (1929) involving a three-year investigation on the issue of athletics in colleges and universities stated that it was the responsibility of the president and faculty to "bring

athletics into sincere relation to the intellectual life of the college" (Savage, 1929:xii). The National Collegiate Athletic Association has affirmed this position and added students¹ along with administrators and faculty in the institutional governance structure (NCAA, 1981:iv). Cady remarked, "nobody above the level of the director and his coevals like the dean of students or the registrar ought, ideally, to be involved in the daily conduct of athletics" (Cady, 1978:192). Students by the 1960s demanded, "quite properly" Cady added, greater participation in the area of athletics (Cady, 1978:192).

The difficulty inherent in the previous statements exists, however, in that a clear understanding of the "sincere relationship" or "institutional governance" structure is not provided. There are many opinions about intercollegiate athletics but there is little indication that these opinions are based on scholarly analysis.

Student opinion is of great importance in the conduct and administration of sport and athletics. Without input from the student population, an institution risks becoming a non-humane environment without direction (Appleton, Briggs, Channing, Rhatigan and Anderson, 1978:150) doomed to inexorable collapse. The extent of student involvement and control is, therefore, of great importance (Johnson, 1971)

¹ "No student athletes are included among the legislators of the NCAA or serve in the regional conferences which formulate specific policy" (Renick, 1974:545-552).

and students must believe they have opportunity for input (Vanderzwaag, 1984:216). This point suggests that intercollegiate athletics need to be student-oriented, which is how play, sport and athletics became a part of college life in the first place (Vanderzwaag, 1984:216).

The National Collegiate Athletic Association (NCAA) declared, "sports and athletics of all kinds-intercollegiate, intramural and recreational - are and will continue to be rooted in our educational institutions as they are in American society" (NCAA, 1981:iii). Although this often made assumption (AAHPER, 1963; Slaughter, 1986:33) may not be true, if one considers the enormous significance of sport and athletics in American higher education and society, it is difficult to imagine anything short of a major revolution in thinking or political structure altering their status. Given the prevalence of intercollegiate athletics, students, like the public, appear to desire and support this activity (Jensen et al., 1981).

Great concern is expressed by society (Eitzen, 1984) and students (Hess, 1971; Underwood, 1984) regarding intercollegiate athletics relating to their interpretation (Flath, 1976), conduct (Eitzen, 1984), and how to legitimately accommodate student interests and rights. The issues and concerns facing intercollegiate athletics remain persistent problem areas for American higher education (Zeigler, 1975:339-351; Cady, 1978:194).

The Essential Role of the Student

An obvious central component in the area of intercollegiate athletics is the student. Students play a major role - whether as athletes, spectators, contributors of student-fees, or in their possible future positions as alumni and tax-payers - in determining the nature of intercollegiate athletics.

Intercollegiate athletics grew out of a student initiated and governed activity, to be later "taken-over" by concerned faculty and administration. This was a logical consequence given the transient nature of the student. It is unsure why the administration of higher education, based on the conduct and structure of intercollegiate athletics, has traditionally displayed little awareness with respect to the primary component of the system - the student.

The Measurement of Attitude

The literature devoted to the concept of attitudes and their measurement is extremely varied and substantial (Roth, 1983). Today, the concept of attitude is applied to a latent or non-observable, complex, but relatively stable behavioral disposition reflecting both direction and intensity or feeling toward a particular object, whether it be concrete or abstract (Kenyon, 1968:567).

The modern approach to the concept of measuring attitude originated in nineteenth-century German

experimental psychology (Boring, 1950). The German school of thought emphasized the problems of motivation and non-observable traits that determined behavior.² The first attempts to measure or scale attitudes were made on this basis (Thurstone, 1928).

Influential and innovative work in the area of attitude measurement was conducted by L. L. Thurstone (1928) and Rensis Likert (1932). A massive amount of literature and research concerning attitude measurement has followed the early works of Thurstone and Likert. For the purposes of this study, however, it was noted that few studies focused on attitude measurement in the area of the student and athletics in higher education.

There are a number of sources available which cover the development of attitude measurement chronologically (Allport, 1954; Green, 1954; Edwards, 1957; Cattell, 1950; Roth, 1983). These sources contain considerable information that is helpful in understanding the origins of attitude analysis.

Research conducted by Allen Edwards (1957) on techniques of attitude scaling supplements Raymond Cattell's (1950) work concerning the measurement of attitude from a position of factor-analysis.

² The Wurzburg school approached attitude as the "task" (aufgabe) to "regulate" (einstellung) "awareness" (bewusstseinslage).

B. F. Green (1954) described each method of measuring attitude in relationship to the variation of an "underlying latent attitude." Green defined attitudes as a set of social items that can form a basis for reference. The type or content of the attitude is derived from an individual's response or "attitude universe" (Guttman, 1944). In this method of attitude measurement, a mathematical model relates the responses or "observed variables" (Green, 1954) to the attitude or "latent variable."

The collection of information concerning attitudes is attempted through the administration of instrumentation designed to elicit responses indicative of individual or group attitudes. This instrumentation can consist of a questionnaire, inventory or survey, containing a collection of items which sample responses from a particular attitude universe. A rating or attitude scale is obtained for the instrumentation on the basis of a score obtained from the numbers assigned to item responses. It is very important, therefore, that the properties of reliability and validity are applied to any test instrument involved with the measurement of attitude.

The measurement of attitude, depending on the researcher's definition of the term, has been either unidimensional or multidimensional (Roth, 1983:13). It is commonly believed that attitudes are characterized by their "direction" or degree of agreement, and "intensity" or level

of this agreement (Krech, Crutchfield, and Ballachet, 1962). In short, attitudes have elements of feeling (affective), thinking (cognitive), and behavior or predispositions toward actions (Berkowitz, 1975; Jensen et al., 1982).

Student Attitudes Toward Intercollegiate Athletics

The literature concerning sport and athletics as areas for social research is quite recent (Mandell, 1984:305). The reason for the previous scholarly neglect is largely due to the traditional view of sport and athletics as lower forms of culture unworthy of serious study (Maheu, 1962; Weiss, 1969; Mandell, 1984).

Literature devoted to student participation in sport and athletics is limited, with few examples of empirical research (McPherson, 1980). Although involvement with sport and athletics is "claimed" to provide values, attitudes, social skills and moral fiber (McPherson, 1980), there is little evidence in the form of research to support these assumptions.

It is suggested that every institution of higher learning can benefit from the on-going study of their program of intercollegiate athletics (NCAA, 1981:3). The highly unique characteristics of sport and athletics in American higher education (UNESCO, 1956) make the study of intercollegiate athletics a challenging task.

The literature is very extensive concerning the problems, skepticism and difficulties associated with the student-athlete (Michner, 1976; Underwood, 1980; Rhatigan, 1984) and the call has been made for educators to become aware of this area (Hurley and Cunningham, 1984; Golden, 1984; Harrold and Lowe, 1973).

The potential for student dissatisfaction with respect to intercollegiate athletics has also received attention (Kidd, 1970; Harrold and Lowe, 1973). Few studies though, deal with the entire student-body, including both athletes and non-athletes, and their perceptions and concerns whether intercollegiate athletics are a valuable part of higher education.

Numerous authors have focused on the need to rehabilitate intercollegiate athletics (Savage, 1929; Marimon, 1972). The literature, with the call for reform notwithstanding, generally agrees that sport and athletics are part of the fiber of American higher education (Schwank, 1971; Rhatigan, 1984; Eitzen, 1984). It is acknowledged that a wide variety of students are affected by legislation (West, 1984; Leach and Connors, 1984), and it is almost impossible for any student to escape the influence, directly or indirectly, of intercollegiate athletics (Isaacs, 1977).

The first treatise on the sociology of sport, H. Risse's Soziologie des Sports (Risse, 1921), does not provide examples of systematic research or empirical

research data. Empirical studies concerning sport and athletics began to appear between 1930 and 1960 (Cowell, 1937), with the work by Frederick Cozens and Florence Stumpf (1953) recognized as one of the first efforts to discuss the social role of sport in the United States (Sage, 1984:17).

David Kenneth Steers (1956) surveyed the attitudes and interests of senior students attending the University of Delaware as related to athletic participation. This study dealt with varsity athletes and non athletes and how they differed in attitudes and interests. Steers concluded that all students were generally favorable in their attitude toward intercollegiate athletics. Female students, however, did not regard athletic participants as highly as their male counterparts. The major student objection Steers found was the possibility of physical injury and the amount of time intercollegiate athletics took away from studies and from non-athletic extracurricular activities.

Although the methods of sport involvement are likely to be mutually reinforcing, they can be differentiated for analytical purposes (Jensen et al., 1982). In this way, the characteristics of the concept of attitude (Berkowitz, 1975) parallel the Kenyon (1969) classification paradigm of sport involvement.

Kenyon (1969) proposed a theory of sport involvement that suggested individuals participate in sport and athletics in three ways: (1) behavioral, (2) affective, and (3) cognitive.

The first method of involvement in sport, behavioral, includes actual participation in the activity or "active" participation, and "passive" participation, as in the case of individuals who watch, read or talk about sport or athletics.

Kenyon used affective involvement to describe the participant's feeling about sport or athletics. In this case, the participant may believe the activity serves as a cathartic experience or a waste of time, either satisfactory or unsatisfactory.

The final method of involvement in Kenyon's theory, cognitive, refers to the individual's knowledge of the activity, its rules, personalities and characteristics.

Thomas J. Sheehan and William L. Alsop (1972) hypothesized that athletic participation could be a method for transferring values through a precise sequence.

John P. Williams (1973) conducted research on the relationship of student values and attitudes toward intercollegiate athletics at Iowa State University. Williams found few academic or social differences between those who approved of the program and those who saw little benefit in it. Williams survey of attitudes toward

intercollegiate athletics deals with areas of intellect, social achievement, age, class standing and school affiliations in relationship to attitudes.

Williams (1973) found significant tendencies for students' intellectual and critical thinking orientations to be inversely related to their support of athletics. He also found inverse correlations between age, class standing, the desire for graduate study and a favorable attitude toward athletics. Williams found student's social achievement orientations to be directly related to their support of athletics. Although a conflict was found between athletic and academic interests, Williams found students expressed more support than disapproval of intercollegiate athletics.

Williams (1973) noted that research on student values concerning intercollegiate athletics correlated positively with desires for social aggrandizement and negatively with academic competitiveness (Williams, 1973:72). Williams pointed out that national surveys on student attitudes toward intercollegiate athletics failed to examine the value commitments behind the attitudes (Williams, 1973:72). Williams concluded:

Research findings are inconclusive on the question of whether student values are primarily independent variables - constantly shaping the college environment; or whether values are dependent - upon what the student finds in his college experience and subcultural associations (Williams, 1973:51).

The most important finding of Williams in his study of student attitudes toward intercollegiate athletics concerned students who were most interested in intellectualism and critical thinking. They had many more reservations about intercollegiate athletics than did students uninvolved with ideas. Students who prized social achievement, Williams concluded, were favorable in their attitudes.

Roger D. Harrold and Benjamin Lowe (1973) surveyed attitudes toward intercollegiate athletics in the contemporary student value system. The authors found that the majority of students were either favorable or indifferent toward intercollegiate athletics. Harrold and Lowe pointed out small numbers of students were highly charged on the issue. Fewer than 50 percent of the students polled believed that intercollegiate athletics were an integral part of the university setting. The students agreed that athletics were of value to the athlete and spectator and that the non-participant and non-spectator found little of value in athletic programs. Students who considered themselves primarily spectators were more supportive of the athletic program than those who preferred participation.

In his 1971 survey regarding student spectator interest toward intercollegiate athletics, George H. Hanford (1974) reported increasing interest in 47 percent and declining interest in 43 percent of the students surveyed.

Hanford claimed these figures showed intercollegiate athletics as a positive student activity in the United States. There was an almost universal reporting of increasing interest in sports activity participation of all kinds (Hanford, 1974:120). The one exception was the northeast region where 57 percent reported a decline in interest.

Chris Stevenson (1975) suggested that participation in sports and physical education classes may have no greater positive outcome than participation in any other extracurricular activity, either competitive or noncompetitive.

Gerald Maas (1975) surveyed Iowa State University students concerning intramural sports and related sports interests and found 85.4 percent of the students questioned wanted to participate in intramural activity and that most of those who participated supported intercollegiate athletics. Maas found that 71.6 percent of the women and 71 percent of the men believed the athletic program was an integral part of the university and both recreational and educational. Intercollegiate athletics were believed by 15.3 percent of the men and 12.5 percent of the women to be out of touch with contemporary student values. Intercollegiate athletics were believed to be irrelevant to the proper functioning of the university by 12.7 percent of the men and 9.5 of the women surveyed (Maas, 1975:2-10).

James Michner (1976) noted a study dealing with student reaction to intercollegiate athletics at Hamilton College showed 58 percent of the students believed there was not enough emphasis on intramural activity. Of the 275 respondents to the survey, 46 percent believed the emphasis on intercollegiate athletics was right, 44 percent believed there was not enough emphasis, and 10 percent believed there was too much emphasis.

Bonnie L. Froll and John M. Winkworth (1977) found students at the University of California at Davis had high interest in informal activities. Intercollegiate athletics and sports had more interest for undergraduate students than for graduate and professional students.

Grant Smith (1980) investigated student attitudes toward intercollegiate athletics at three Arizona universities. Smith found that students did not believe student-athletes should be given special privileges or offered special classes. Students were against the practice of the athletic department having exclusive use of athletic facilities and money. Smith reported students, without exception, believed money that would have gone toward intercollegiate athletics should be made available for the entire student body and for general university use. This was found to be consistent with their opinion that athletes should not get special privileges and with their ranking of athletics within the school setting (Smith, 1980:99)

Smith (1980) found students reacted negatively to the importance placed on winning and whether athletics should be a major priority of the school (Smith, 1980:98). Smith, however, pointed out his findings show students perceived intercollegiate athletics positively. The students surveyed by Smith who had participated in athletics at high school and university, and those who participate in intramural activity were significantly more positive than were non-participants in the area of the athletic program's value to the student. Smith speculated that the participant's personal contact with the athletic program and similar recreational activities established positive attitudes toward the intercollegiate athletics program (Smith, 1980:97).

Smith (1980) observed that students were adamant in their conviction that non-revenue producing sports should be a part of the intercollegiate athletics program (Smith, 1980:100) and found students to be against the practice of charging admission for athletic events. Students expressed a neutral opinion whether the athletic program should be self-supporting. Students also stated they did not attend their particular institution because of the athletic program. The only exception to this being those recruited for participation in a particular sport. The intercollegiate athletic program was seen as an important

aspect of collegiate life but not as a prime motivator for attending school (Smith, 1980:100-101).

In general, Smith (1980) found that students had a positive perception of the value of intercollegiate athletics. Athletic participants exhibited significantly more positive attitudes than did non-participants. The students were more positive in their perceptions of the value of the athletic program to the institution than they were of its value to the individual student.

Ronald P. Matross (1980) surveyed a random sample of 471 students attending the University of Minnesota and found student attitudes toward intercollegiate athletics were equally divided between those who attended athletic events and those who had not. The students surveyed believed intercollegiate athletics helped the quality of life at the university, enhanced personal development of the student-athletes, and provided entertainment. Most students expressed interest in expanding women's intercollegiate athletics and to maintain programs for men. It was found that those students attending intercollegiate athletic events were more favorable in their attitudes toward this activity than those who had not.

Ted M. Jensen, Wilbert M. Leonard and Robert D. Liverman (1981) conducted a study in which 287 students at Illinois State University expressed attitudes toward intercollegiate athletics. The instrument used focused on

six sub-scales: intellect, athletes' traits, morality, lifestyle, tradition, school spirit and college life, and the business of athletics. The student responses received indicated intercollegiate athletics were perceived positively.

Jensen, Leonard and Liverman (1981) noted a large amount of helpful research which focused on attitudes toward physical education. This research was broken down into the following categories: (1) academic major (Waltner, 1968; Tarbell, 1965), (2) sex (Mullins, 1970; Lemen, 1965; Calderwood, 1967; Horner, 1977; MacDonald, 1974; Howdeyshell, 1976; Stone, 1969), (3) participation (MacDonald, 1974; Bensch, 1970; Horner, 1977), (4) physical fitness (Petracek, 1978; Smith, 1973; Allerdice, 1965), (5) year in school (Costello, 1965), (6) socio-economic status (Ziatz, 1976; Hernandez, 1977; Stone, 1969; Mullins, 1970), (7) ethnicity and race (Mullins, 1970; Swan, 1969; Bohnke, 1973; Hernandez, 1977) and, (8) residence (Howdeyshell, 1976; Stone, 1969) (see Jensen et al., 1981:67).

Although Jensen, Leonard and Liverman (1981) found student attitudes toward intercollegiate athletics primarily positive, there were certain negative overtones. The most negative student responses concerned the "big-business" aspects of intercollegiate athletics, the anti-intellectual effects of athletic programs, the belief that certain students gain admission to college only on the basis of

athletic prowess, the perceived view that collegiate athletics opens the door for gamblers and gambling, and the belief that athletes do not take their academic requirements seriously enough (Jensen et al., 1981:72) The authors concluded:

In short, the negative character of intercollegiate athletics appears to surround their commercial nature and some of its potential consequences (e.g., gambling) and the influence it has upon differential entrance requirements for the athletes vs. non-athletes and the academic goals of athletes (Jensen et al., 1981:72).

Intercollegiate athletics were viewed as fostering character building and preparing athletes for future careers. The athletes were seen as "ambassadors of goodwill" for their institution. In addition, athletics were seen as good preparation for life's competition, preparation for a healthy body, teaching a sense of fair play and sportsmanship, contributing to the development of poise and self-assurance, an opportunity for wholesome, organized activity, and preparation for life in the business world (Jensen et al., 1981:73).

In terms of student attitudes toward intercollegiate athletics by sex and major, Jensen, Leonard and Liverman (1981) discovered no significant differences for male and female attitudes; however, they did observe significant differences by major. Finding no significant interaction between gender and major suggested the effect of gender and major as being independent of each other.

Jensen, Leonard and Liverman (1981) found physical education majors had a significantly more favorable attitude toward intercollegiate athletics, with sociology and mathematics majors, the additional groups surveyed, showing no significant difference. In short, major explained 10 percent of the variation in attitudes toward intercollegiate athletics.

Other findings by Jensen, Leonard and Liverman (1981) concerning student attitudes toward intercollegiate athletics included: no differences, either main or interactive, by major or sex concerning attitudes about athletes' traits; no difference between major and sex regarding the morality of athletics; tradition, school spirit and college life student attitudes did not differ by sex but they did differ by major; significant differences concerning the business of athletics, with physical education majors rating the business side of athletics higher than either sociology or mathematics majors. Females also rated the business aspects of intercollegiate athletics substantially more favorably than did males.

Jensen, Leonard and Liverman (1982) contended that student attitudes toward intercollegiate athletics are the result of various theoretical frameworks. The authors employed the technique of path analysis to derive a causal model concerning student attitudes toward intercollegiate athletics based on the data collected in their 1981 study.

The authors used a beta weight equal to or greater than .10 as the criterion for acceptance of a causal sequence within their path model, noting twenty-six linkages for all majors (Jensen et al., 1982):

C. J. Sowa and C. F. Gressard (1983) surveyed 150 randomly selected students at the University of Virginia concerning the relationship of athletic participation to student development. The authors found no overall difference in developmental level between athletes and non-athletes and between the male and female students and no interactions. Athletes scored lower than non-athletes on educational plans, career plans, and mature relationships with peers. Sowa and Gressard found no differences by sex and no interactions between athletic participation and sex.

In conclusion, the literature reveals that previous studies have found students' attitudes generally favorable toward intercollegiate athletics (Steers, 1956; Harrold and Lowe, 1973; Williams, 1973; Maas, 1975; Budig, 1978; Smith, 1980; Jensen et al., 1981).

The Causal Model Method for Data Analysis

A causal model presents one possible patterning of relationships that lead to the production of an effect (Dooley, 1984:27,232). This model can present statistical data in diagrammatic form through the technique of path analysis.

Path analysis is a pictorial representation of a causal model which includes theorization concerning relationships derived from statistical procedures employing multiple regression or path coefficients (Dooley, 1984: 232). This statistical method of analysis involves multivariate (three or more) variables. Path analysis does not present an explanation for discovering causes. It can, however, assist with interpretations useful for future research.

The method of path analysis was first proposed by Sewall Wright in a series of essays concerning the quantitative development of genetics (1921, 1934, 1954, 1960a,b). Wright's method of path analysis addressed linear, additive and causal relationships among variables (Borgatta, 1969:5).

Social scientists focusing on linear causal models have seen the usefulness of employing path analysis. Early work by Hubert M. Blalock (1964), Herbert A. Simon (1957) and Herman Wold and Lars Jureen (1953) advanced the use of this method of social research. The appeal of path analysis for social scientists is that it provides an extension of the usual verbal interpretation of statistical data:

It is usually easy to give a plausible interpretation of any significant statistic taken by itself. The purpose of path analysis is to determine whether a proposed set of interpretations is consistent throughout (Wright, 1960b:444).

Wright (1921, 1934, 1960a) developed the notion of the "path diagram" to represent hypothetical variables conceived as continuous variables. Kenneth C. Land (1969) noted the following conventions concerning the drawing of path diagrams:

1. The postulated causal relations among the variables of the system are represented by unidirectional arrows extending from each determining variable to each variable dependent on it.

2. The postulated noncausal correlations between exogenous variables of the system are symbolized by two-headed curvilinear arrows to distinguish themselves from causal arrows.

3. Residual variables are also represented by unidirectional arrows leading from the residual variable to the dependent variable. However, literal subscripts are attached to residual symbols to indicate that these variables are not measured.

4. Finally, the quantities entered beside the arrows on a path diagram are the symbolic or numerical values of the path and correlation coefficients of the postulated causal and correlational relationships (Land, 1969:6-7).

Path analysis uses standard multiple regression equations to examine theoretical models which, in the case of causal models, are depicted in path diagrams.

In path analysis, the direct and indirect hypothesized variable relationships are compared to empirical or statistical outcomes using a "goodness of fit" approach (Jensen et al., 1982). If the statistical data are consistent with the model, the model is retained. Jensen, Leonard and Liverman (1982) noted:

If the data do not fit the model then revision and further testing of the revised conceptual scheme is called for. Hence, path analysis is a methodological modality by which one may test (and ultimately construct) theoretical explanations of social phenomena (Jensen et al., 1982:6).

Jensen, Leonard and Liverman (1982), in reference to the development of an exploratory causal model concerning college students' attitudes toward intercollegiate athletics, pointed out that path analysis makes the same assumptions as regression analysis:

The independent variables are linearly related to the dependent variables and among themselves; the model is additive meaning that the effects of the independent variables can be added together to make a prediction on the dependent variable; low multicollinearity, i.e., independent variables are not associated; variables achieve interval/ratio level of measurement assumptions; there is a normal distribution of the dependent variable within categories of the independent variable; and the variance in the dependent variable is equal across categories of the independent variable, i.e., homoscedasticity. In addition to these six prerequisites, there are three additional ones in the path analysis scheme. Firstly, the variables should have some clear causal theoretical ordering. This is frequently the result of the temporal sequencing of the variables. Secondly, the conceptual model is treated as closed in the sense that all germane variables have been accounted for. Thirdly, the proposed model contains no feedback loops or reciprocal causation and it is therefore called a recursive system in which the causal flow is unidirectional (Jensen et al., 1982).

Otis Dudley Duncan (1966) provided examples for the use of path analysis in sociological research. Drawing upon the earlier work of Simon (1957), Blalock (1964) and Bouden (1965), Duncan presented a thorough analysis for the

development of the application of path analysis to sociological examples.

Jensen, Leonard and Liverman (1982) observed path analysis can be used with non-metric data (Bohrnstedt and Carter, 1971; Boyle, 1970; Lyons, 1971).

Caution is recommended for overly simple applications of the techniques of path analysis (Borgatta, 1969). Raymond Bouden (1965) presented a method for linear causal analysis that noted earlier models (Simon, 1957; Blalock, 1964) did not have convincing empirical illustrations.

The mathematical principles and mechanics of different methods for path analysis have been illustrated in a number of sources (Tukey, 1954; Li, 1955; Turner and Stevens, 1959; Wright, 1960; Duncan, 1966; Heise, 1969; Land, 1969). Essentially, there are two models for representing relationships between variables (Wold and Jureen, 1953:30). Models can be appropriate for primarily descriptive purposes and they can be used in theoretical and systems analysis (Borgatta, 1969:39).

Summary

The previous chapter has focused on the historical foundation for the study and the literature pertaining to the research conducted with respect to student attitudes toward intercollegiate athletics.

The origins of intercollegiate athletics were presented from the point of view that sport is a universal condition. The culture of the United States, unlike any other, provided individuals with unprecedented opportunity for higher education. American students represented a cultural mosaic that brought sport to the collegiate environment in a wide range of activities. It was out of this social climate that intercollegiate athletics developed.

The literature reveals that students are concerned about intercollegiate athletics and are generally favorable in their attitudes toward this activity. Most studies, however, are descriptive in their approach and offer few attempts at providing a causal explanation for prevailing attitudes.

The construction of a causal model through the techniques of path analysis can assist in the explanation of student attitudes toward intercollegiate athletics. This method of data analysis can be applied to the social sciences by which hypothesized relationships and interrelationships can be related to statistical data. The resulting information can be applied to a theoretical framework or model that can be used to explain social phenomena, such as student attitudes toward intercollegiate athletics.

Chapter III - METHODOLOGY

The present study examined student attitudes toward intercollegiate athletics at Oregon State University. The investigation duplicated the research methodology conducted by Jensen, Leonard and Liverman (1981, 1982) in which student attitudes toward intercollegiate athletics were explained through the presentation of a causal model.

The following chapter describes the population and sample of the study, the research instrument, the method and collection of data, and how the statistical analysis was conducted.

Population

A brief description of Oregon State University will assist in understanding this investigation.

Oregon State University is a medium-sized, coeducational post-secondary institution with an enrollment of approximately 14,800 students (Oregon State University Registrar, October, 1986). The university is located in Corvallis, Oregon, a small city (population approximately 42,000) in the Willamette valley region of the state.

Oregon State University grants baccalaureate, master's, and doctoral degrees. The university is the state's land- and sea-grant institution. It is classified as IA in the National Collegiate Athletic Association (NCAA) listings.

The population for the study consisted of resident, undergraduate students in three academic majors attending Oregon State University Fall Term 1986. Resident, in this case, refers to place of residence as the state of Oregon.

The Sample

Purposive sampling was used to select three distinct, by academic major, student groups. The major advantage of purposive sampling is that it provides information from respondents that are crucial to a study (Williamson, Karp and Dalphin, 1977:111). A drawback of this method, however, is there is little control over who is selected within the category or that those selected are representative of some clearly specified population of more general interest (Williamson, Karp and Dalphin, 1977:111). The results, therefore, may not be generalizable beyond the population of resident Oregon students majoring in art, computer science and physical education at Oregon State University.

The academic majors, consisting of art, computer science and physical education, were selected based on diversity, as expressed through respective curricula, and

their capacity to reflect attitudes characteristic of diverse student populations attending Oregon State University.

A random sample was obtained from the Oregon State University Registrar's office of all students majoring in art, computer science and physical education during Fall Term 1986. The Oregon State University Computer Center was used in the selection process to generate a proportionate random sample from the 1986 Fall Term registration listings.

The study used a total sample size of 304 with each academic major represented by male and female students. The sample size was based on proportionate equal representation reflecting the total number of undergraduate students registered Fall Term 1986 in the three academic majors relative to the investigation.

The purposive sample contained only resident undergraduate students in the selected academic majors. This was done to eliminate potential study biases and to obtain homogeneous, proportionate equal representation from each category.

The cost restrictions of investigating larger samples provided a justification and rationale for the size and scope of the research. The sample size, nevertheless, reflected minimum standards for meaningful analysis (Backstrom and Hursh-Cesar, 1981:69), and allowed for statistical power within .05 of the population proportion

with a 95 percent level of confidence (Isaac and Michael, 1984:193).

The Research Instrument

The research instrument used in the study was a thirty-two item Likert scale developed by Charles D. Ward (1970) to study justification (the rationale for) and attitude change.¹ The instrument was used by Jensen, Leonard and Liverman (1981) to measure student attitudes toward intercollegiate athletics and titled the "Attitude Toward Intercollegiate Athletics" scale.

In addition to the instrument, the latter investigation included nineteen social, demographic and biographical items. These descriptive items, refined and adapted to twenty for the present investigation, are included for the path analysis and causal model.

The research instrument contained sixteen items favorable and sixteen items unfavorable toward intercollegiate athletics. Jensen, Leonard and Liverman (1981) broke the total scale down into six sub-scales based on content validity, logical coherence and quasi-linear consistency testing.

In using quasi-linear consistency testing, Jensen, Leonard and Liverman (1981) judged whether an item should be

¹ See Appendix A.

included in a scale by correlating the responses to a given item with the total scale score.

Jensen, Leonard and Liverman (1981, 1982) provided sufficient evidence concerning the reliability and validity of the instrument to justify its use as an indicator of student attitudes toward intercollegiate athletics. (Refer to Appendix A.)

The attitude scale was not changed for the present study in order to reflect previous levels of reliability and validity. The survey instructions and individual questions contain the original wording and construction.

Six sub-scales were identified by Jensen, Leonard and Liverman (1981). The authors noted:

These sub-scales (along with the general instrument) were designed to make valid comparisons between and among groups with respect to their general attitudes toward intercollegiate athletics (Jensen et al., 1981:68).

Jensen, Leonard and Liverman (1981) described the six sub-scales and their content included in "the attitude toward intercollegiate athletics scale" as follows:

1. The Intellect sub-scale was composed of six items. The items were generally biased against intercollegiate athletics. The statements dealt with the "mind" as opposed to the "body" and the appropriateness of the allocation of finances to sports as opposed to intellectual concerns (Jensen et al., 1981:69). [Note items 2,13,23,26,29,31.]

2. Four items comprised the Athlete's Traits sub-scale. Two of the statements were pro-athlete; two were anti-athlete. . . All four of the items were athlete specific (Jensen et al., 1981:69). [Note items 1,14,21,31.]

3. Six items constituted the Morality sub-scale. Two items were positive and dealt with sportsmanship and noble efforts. Four items were negative in tone and dealt with the "evils" of athletics (Jensen et al., 1981:70). [Note items 3,5,7,9,17,27.]

4. The Lifestyle sub-scale overlapped with the other sub-scales somewhat. It dealt with the degree to which athletics foster preparation for life's activities. Five statements were concerned with unfavorable outcomes from intercollegiate athletics. All dealt with life situations and attitudes toward life situations (Jensen et al., 1981:70-71). [Note items 4,5,7,16,18,20,22,25.]

5. The Tradition, School Spirit, and College Life sub-scale was made up of seven items all noting favorable qualities of intercollegiate athletics. All of the items were college or tradition specific (Jensen et al., 1981:71). [Note items 6,8,12,24,28,30,32.]

6. The Business of Athletics sub-scale used the four remaining items from the intercollegiate athletics scale. Each of the four statements expressed opinions opposed to athletics and sports. Three of the items involved the business/financial side of intercollegiate athletics (Jensen et al., 1981:71). [Note items 10,11,15,19.]

The research instrument, along with the items comprising the sub-scales, is located in Appendix A.

Collection of Data

A cover letter (Appendix B) indicating the purpose of the study, the research instrument including instructions as indicated by Ward (1970), and a self-addressed stamped

envelope, were sent to each subject. This was followed by a post card mailed one-week later (Appendix C) which expressed thanks to those who had returned the instrument and urged those who had not returned their questionnaires to do so.

A second mailing of the instrument and a cover letter urging the nonrespondents to return the survey was made three weeks after the initial mailing. Phone interviews and verbal reminders were made two weeks later to the students remaining negligent in the return of the questionnaire.

An adequate return rate, in keeping with the guidelines of the Research Division of the National Education Association (Isaac and Michael, 1984:134-135) based on 316 mailings, was expected within 30 days. The mailing sample size was based on an estimated noncompletion rate of 40 percent and a desired sample size of 180 (Backstrom and Hursh-Cesar, 1981:85). A return rate of 50 percent is considered acceptable for mail surveys (Dillman, 1978:21).

Statistical Treatment of the Data

Percentages in each category for all items contained in the attitudes toward intercollegiate athletics scale were calculated from the data collected. As in the case of the Jensen, Leonard and Liverman (1981) study, items were recorded with the higher the score the more positive the attitudes toward intercollegiate athletics.

The examination of the univariate distributions of the responses to the items contained in the research instrument allowed one to conclude whether student attitudes toward intercollegiate athletics were positive or negative.

Descriptive statistical analyses, including the mean, and percentages, were used to describe the responding population.

The study contained three variables; one dependent and two independent. The dependent variable consisted of student attitudes toward intercollegiate athletics, and the independent variables were sex and academic major.

The present study employed the methods of analysis used by Jensen, Leonard and Liverman (1981,1982) to look for differences on the sub-scales by academic major, sex, and interaction and main effects. An examination of the statistical treatment of data conducted by the Jensen, Leonard and Liverman (1981,1982) studies reveals appropriate methodology was used (Courtney, 1986).

When over two variables are used, and a distinction is made between dependent and independent variables, a statistical measure by analysis of variance can be used. This methodology takes into consideration that one variable is dependent and a covariate² is not used.

² Referring to statistical removal of the linear effects on the dependent variable (student attitudes toward intercollegiate athletics) from the dependent variables (sex and academic major).

If the possible interaction among variables is desired, and no pre-specified relationships are being tested, analysis of variance (ANOVA) and the F test can be used when the dependent variable is interval and the independent variables are nominal (Hays, 1973).

There are a number of assumptions for statistical inference based on the use of interval scaled variables (Sechrist, 1985). These suppositions include the beliefs that: (1) the observations will be independent, (2) the observations come from a population normally distributed with interval scaled variables, and (3) the internally scaled variables, when involving more than one variable, have equal variance within categories of the other variables.

The responses to the sub-scales were examined for the presence of differences. The statistical method employed for this evaluation was a two-way analysis of variance (ANOVA) using the F statistic, and Tukey Multiple Test of Comparison, where appropriate. In addition, significant variation was explained through Eta squared correlation ratios.

The two-way analysis of variance, an extension of the one way method encompassing two rather than one independent variable, measured the data to test the null hypotheses that two independent variables, sex and academic major, differ when selected from universes with the same arithmetic means.

The F statistic tested the means to point out if significant differences existed. The null hypotheses were tested with a .05 level of significance, based on previous investigations and sample size, for statistical analysis. A level of significance indicated the variables were independent of each other.

The Tukey Multiple Test of Comparison was used when the null hypothesis was rejected and the significantly different means were unknown. This test assisted in the explanation of variance and the development of inferential statements concerning the population sample.

The Eta squared correlation ratios were used to explain the percentage of variation in attitudes toward intercollegiate athletics that could be attributed to either sex or major.

Data obtained were entered into a double entry table for each sub-scale similar to those employed by Jensen, Leonard and Liverman (1981). The following example illustrates a double entry table used in the study:³

Figure 3.1

Double Entry Table For Data Analysis

| <u>ACADEMIC MAJOR</u> | <u>SEX</u> | |
|-------------------------|-----------------|-------------------|
| | <u>Male (M)</u> | <u>Female (F)</u> |
| Art (A) | | |
| Computer Science (CS) | | |
| Physical Education (PE) | | |

³ Refer to Jensen et al. (1981:73) for another example.

The rows in the double entry table illustrated in Figure 3.1 consist of the three academic majors, with the columns dealing with the male and female categories. In each case, the independent variables will occupy either a row or a column. Thus, the null hypotheses were statistically tested as follows:

1. Ho 1. There will be no statistically significant difference by field of study in the attitudes of students toward intercollegiate athletics. This null hypothesis was statistically tested by observing the row means.

2. Ho 2. There will be no statistically significant difference by sex in the attitudes of students toward intercollegiate athletics. This null hypothesis was statistically tested by observing the column means.

3. Ho 3. There will be no statistically significant difference by gender and academic major in student attitudes toward intercollegiate athletics. This null hypothesis was statistically tested by observing the interaction between rows and columns.

Jensen, Leonard, and Liverman (1981) observed the following method for testing the interaction between two variables as in the case of Ho 3:

The F test provides a test for the column means (gender) apart from the row means (major) and vice versa. Such an F-ratio is called a test for main effects (Jensen et al., 1981:74).

The simultaneous use of both row and column means determined if the two variables interacted (Jensen et al., 1981:74).

It was understood retained null hypotheses could be the result of inadequate evidence. Statistical significance indicated predictive probability rather than chance.

The possibility for retention of null hypotheses diminishes along with the found level of significance; therefore, expectation for the existence of differences and relationships existing in the data increased along with the discovered significance value.

The Causal Model

A causal model was used to provide a possible explanation for the data obtained concerning student attitudes toward intercollegiate athletics.

The development of a causal or path model consisted of seven steps (Fararo, 1978:468-69): (1) the variables were defined, (2) the assumptions were stated, noting the causation among variables, unmeasured exogenous, or outside causes, and linear relations, (3) a diagram was drawn and labeled indicating the "path coefficients," (4) the linear equations were described, (5) the correlations were expressed in terms of coefficients, (6) an estimation of coefficients was made linking variables in the system, and (7) the predictions, based on the theoretical construct, were checked.

The present study duplicated the methodology of Jensen, Leonard, and Liverman (1981,1982) who first proposed

the use of path analysis to explain student attitudes toward intercollegiate athletics. The causal model proposed in the present study was founded on the path model variables established by this earlier work (Jensen et al., 1982).

The Jensen Leonard and Liverman Refined Theory

The causal model developed by Jensen, Leonard and Liverman (1982) is comprised of seventeen path model variables. These variables, adapted for the present study, include:⁴

1. SEX: Sex of the respondent.
2. FAMSIZ: Size of the respondent's family.
3. SOCLAS: Perceived social class of the subject.
4. HISPORT: Subject's level of activity in high school sports.
5. SOCLUB: Subject's level of activity in social clubs in high school.
6. HREL: How religious the subject considers themselves to be.
7. POL: The political persuasion of the subject.
8. MAJOR: The respondent's academic major.
9. PHYSACT: How physically active the subject now is in sports.

⁴ Abbreviations used in the Jensen et al. (1982) path diagram are indicated by the respective variables.

10. USEPEF: How often the subject uses physical education and recreation facilities, other than as a classroom.

11. PHYSFIT: How physically fit the subject considers themselves to be.

12. SOCACT: How socially active the subject is at university.

13. ATTSPORT: How often the subject attends intercollegiate athletic events.

14. G.P.A.: The subject's grade point average.

15. QUALSL: How satisfied the subject is with the quality of university social life.

16. QUALEP: How satisfied the subject is with the quality of the university educational programs.

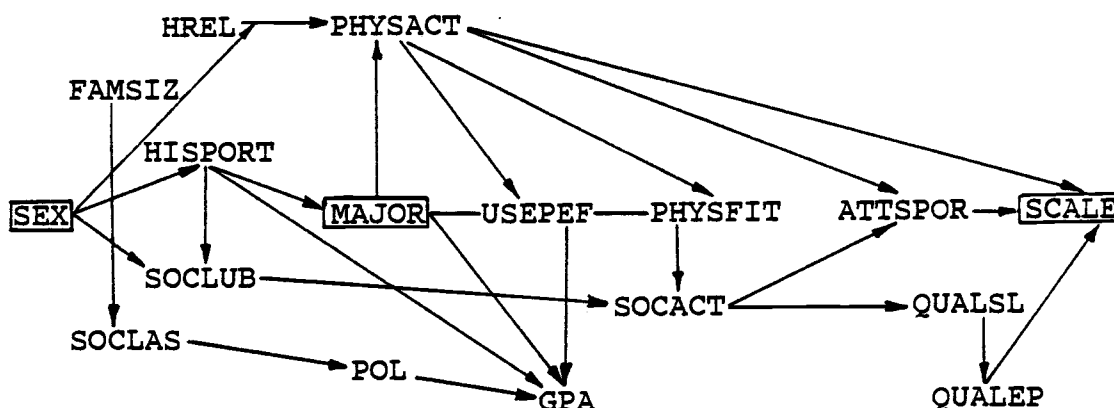
17. QUALAP: How satisfied the subject is with the quality of the intercollegiate athletics program.⁵

18. SCALE: The subject's score on the "Attitudes Toward Intercollegiate Athletics" scale.

⁵ Variable 17 is added for the purposes of the present investigation. It was not included in the Jensen, Leonard and Liverman (1982) study.

Figure 3.2

Jensen, Leonard and Liverman
Refined Theory of
Attitudes Toward Intercollegiate Athletics



Jensen, Leonard and Liverman (1982) provided a rationale for the linkages in the path diagram illustrated in Figure 3.2. This rationale was based on a combination of theoretical, empirical, intuitive and/or logical conceptualizations (Jensen et al., 1982).⁶

Results from the present investigation were applied to the theoretical foundation established by Jensen, Leonard and Liverman (1982). Multiple regression equations were used to establish the relationship between variables and to determine the validity of the Jensen, Leonard and Liverman (1982) theoretical model. The path coefficients obtained represented the relative amount of contribution of the

⁶ The Jensen, Leonard and Liverman rationale for the path diagram linkages can be found in Appendix M.

specific variables in the regression equation after the influence of other variables in the equation had been accounted for (Jensen et al., 1982). The path coefficients, or beta values, measured the relative weights attached to the independent variables in contributing to the mean of the dependent variable (Agresti and Agresti, 1979: 349). The beta value is, in general, not symmetric (Agresti and Agresti, 1979: 349). The larger the absolute beta value, the greater the effect produced by a standard deviation change.⁷

Conclusion

Elliot J. Feldman, director of the University Consortium for Research on North America, supported the use of comparative research as an important method for the conduct of field research in the social sciences:

All noncomparative research ultimately depends on abstract or ad hoc criteria. Comparative research seems superior to me because it provides concrete grounds for judgement while improving our awareness of a wider range of choices and possibilities (Feldman, 1981:7).

Jensen, Leonard, and Liverman (1981,1982) conducted their study of student attitudes toward intercollegiate athletics at Illinois State University. Because of the similarity in size, student population, and athletic

⁷ For a more complete discussion of beta weights, or path coefficients, refer to Agresti and Agresti (1979), pages 502-505 and 348-353.

program, between Oregon State University and the previously mentioned institution, it was believed that duplicating this work would provide meaningful conclusions regarding the effectiveness of the theoretical construct, methodology and research design, concerning student attitudes toward intercollegiate athletics.

Chapter IV - RESULTS AND DISCUSSION

The following chapter describes the findings from the current investigation of undergraduate student attitudes toward intercollegiate athletics at Oregon State University. The chapter reviews the results of the investigation through statistical analysis with respect to a theoretical framework and study hypotheses. A possible explanation for the study results is provided through path analysis and a causal model. The chapter concludes with a discussion of previous research on the topic relating to the present investigation.

Introduction

The instrument used in data collection, titled the "Attitudes Toward Intercollegiate Athletics" survey, consisted of a thirty-two item Likert scale questionnaire. The questionnaire contained an equal number of favorable and non-favorable items dealing with attitudes toward intercollegiate athletics.

Scoring of the instrument was conducted by giving a value between one and five to each response based on the degree of favor toward intercollegiate athletics. The total score on the questionnaire represented the level of positive

attitude toward intercollegiate athletics ranging from 32 to 160 possible points.

The questionnaire was broken down into sub-scales which measured various aspects of intercollegiate athletics including: (1) Intellect, (2) Athletes' Traits, (3) Morality, (4) Lifestyle, (5) Tradition, School Spirit, and College Life, and (6) The Business of Athletics. As in the case of the total questionnaire scale, the degree of favor indicated by each sub-scale was scored¹.

Twenty social, demographic and biographical information items were included with the instrument. Information from these items was used in the path analysis and correlation. This provided statistical data used to explain attitudes through a causal model.

Collection and Analysis of Data

Data Collection

A total of 304 surveys were mailed to a proportionate random sample of undergraduate students in three academic majors attending Oregon State University Fall Term 1986. The total number of surveys sent and returned by academic major is summarized in Table 4.1.

¹ An example of the scoring chart used to record the scale responses for each subject can be found in Appendix E.

Table 4.1

Total Number of Surveys Sent and Returned by Major

| Academic Major | Number Sent | Number Returned |
|--------------------|-----------------------|-----------------|
| Art | 51 | 35 (68.63%) |
| Computer Science | 100 | 73 (73.00%) |
| Physical Education | 153 | 107 (69.93%) |
| | Unusable ² | 21 (6.91%) |
| TOTAL | 304 | 236 (77.63%) |

The survey received a response rate of 83.34 percent, with a total of 215 usable instruments returned. Response rate was calculated using "The Total Design Method" (Dillman, 1978), where:

$$\begin{aligned}
 \text{Response Rate} &= \frac{\text{Number Returned}}{\text{Number in Sample} - \text{Noneligible \& Nonreachable}} \times 100 \\
 &= \frac{236}{304 - 21} \times 100 = 83.34\%
 \end{aligned}$$

A total (N) of 215 usable surveys comprised the sample used for data analysis. A breakdown of the survey sample is contained in Tables 4.2 and 4.3.

² Unusable returns included those filled in incorrectly or incomplete (i.e., certain questions were omitted, etc.). Only surveys returned in correct complete form were used in the study.

Table 4.2
Total Sample Description

| Academic Major | Male | Female | Total |
|--------------------|------|--------|-------|
| Art | 6 | 29 | 35 |
| Computer Science | 56 | 17 | 73 |
| Physical Education | 33 | 74 | 107 |
| TOTALS | 95 | 120 | 215 |

Table 4.3
Subject Distribution by Class

| Class | Art | Computer Science | Physical Education | TOTAL |
|-----------|-----|------------------|--------------------|-------|
| Freshman | 8 | 14 | 23 | 45 |
| Sophomore | 7 | 14 | 23 | 44 |
| Junior | 10 | 18 | 32 | 60 |
| Senior | 10 | 27 | 29 | 66 |

Analysis of Data

The analysis of the research instrument provided information through which student attitudes were broken down into sub-scales. This provided statistical data used in making comparisons between and among respondents and their attitudes toward intercollegiate athletics.

Three null hypotheses were statistically researched in the investigation. The null hypotheses were applied to the total and sub-scale scores by sex and academic major. The null hypotheses consisted of:

Ho 1. There will be no statistically significant difference by field of study in the attitudes of students toward intercollegiate athletics.

Ho 2. There will be no significant difference by sex in the attitudes of students toward intercollegiate athletics.

Ho 3. There will be no statistically significant interaction between sex and academic major in student attitudes toward intercollegiate athletics.

Attitudes Toward Intercollegiate Athletics by Sex and Academic Major

A two-way analysis of variance (ANOVA) was conducted for the major scale score and for each of the sub-scales. Results of this process using the F statistic were used to statistically test the null hypotheses.

Total Scale Group Results by Sex and Academic Major

Analysis of the total scale score indicated attitudes toward intercollegiate athletics varied by major but not sex for the sample studied. A Tukey Multiple Test of Comparison showed physical education majors were significantly more favorable in their attitudes toward intercollegiate athletics than either majors in art or computer science. Art and computer science majors showed no significant difference in attitude. The means for the three groups are indicated in Table 4.4.

Table 4.4

Means for the Total Scale

| MAJOR | MEAN |
|--------------------|--------|
| Art | 104.34 |
| Computer Science | 100.09 |
| Physical Education | 113.62 |
| Total Sample | 107.52 |

There was no significant interaction effect between sex and academic major for the total scale.

The mean for the female respondents was 109.43 and for male respondents was 105.10. There was no significant difference found by sex.

An eta squared value obtained for major of .107 indicated that academic major explained 11 percent of the variation of attitudes toward intercollegiate athletics.

Conversely, 89 percent of the variation was attributable to other sources. The explained variance is significant at the .001 level.

The results of the analysis of variance for the total scale by sex and academic major are indicated in Table 4.5.

Table 4.5

Attitudes Toward Intercollegiate Athletics
By Sex and Academic Major

| EFFECT | SS | df | MS | F | p |
|-------------|-----------|-----|-----------|--------|------|
| SEX | 1.123 | 1 | 1.123 | .004 | .905 |
| MAJOR | 6855.900 | 2 | 3427.950 | 12.515 | .000 |
| SEX x MAJOR | 71.469 | 2 | 35.735 | .130 | .874 |
| Within | 57245.457 | 209 | 273.90171 | | |
| p < .05 | | | | | |

Intellect Sub-scale

The analysis of variance for the Intellect Sub-scale indicated variance by major but not sex. No significant interaction effect between academic major and sex was found. A Tukey Multiple Test of Comparison established physical education majors as being higher than either art or computer science for this sub-scale. No significant difference between art and computer science majors was found. The means for the three groups are indicated in Table 4.6.

Table 4.6
Means for the Intellect Sub-Scale

| MAJOR | MEAN |
|--------------------|-------|
| Art | 18.88 |
| Computer Science | 18.39 |
| Physical Education | 21.09 |
| Total Sample | 19.81 |

The means by sex for the intellect sub-scale were 19.20 for males, and 20.31 for females. There was no significant difference found by sex.

An eta squared value of .068 determined for the analysis of variance indicated 7 percent of the variation in attitudes toward intercollegiate athletics was attributable to academic major. Factors other than academic major are responsible for 93 percent of the variance as indicated by this value. The explained variance is significant at the .001 level.

The results for the analysis of variance for the Intellect sub-scale are indicated in Table 4.7.

Table 4.7
Intellect Sub-Scale By Sex and Major

| EFFECT | SS | df | MS | F | p |
|-------------|----------|-----|----------|-------|------|
| SEX | 4.157 | 1 | 4.157 | .255 | .620 |
| MAJOR | 246.875 | 2 | 123.437 | 7.584 | .001 |
| SEX x MAJOR | .347 | 2 | .174 | .011 | .978 |
| Within | 3401.751 | 209 | 16.27632 | | |
| p < .05 | | | | | |

Athlete's Traits Sub-Scale

The analysis of variance for the Athlete's Traits sub-scale did not produce significant differences by sex, academic major, or interaction effects, for attitudes toward intercollegiate athletics. The means for the three groups are indicated in Table 4.8.

Table 4.8
Means for the Athlete's Traits Sub-Scale

| MAJOR | MEAN |
|--------------------|-------|
| Art | 13.02 |
| Computer Science | 12.49 |
| Physical Education | 13.71 |
| Total Sample | 13.18 |

The means by sex for the Athlete's Traits sub-scale were 12.75 for males, and 13.53 for females. There were no significant differences found by sex.

An eta squared value of .026 for major indicated 3 percent of the variation could be attributed to this source, while 97 percent is the result of other factors. There was no significant variation found for sex. The explained variance is significant at the .001 level.

The results for the analysis of variance for the Athlete's Traits sub-scale are indicated in Table 4.9.

Table 4.9

Athlete's Traits Sub-Scale by Sex and Major

| EFFECT | SS | df | MS | F | p |
|-------------|----------|-----|---------|-------|------|
| SEX | .612 | 1 | .612 | .088 | .760 |
| MAJOR | 38.836 | 2 | 19.418 | 2.792 | .062 |
| SEX x MAJOR | 18.668 | 2 | 9.334 | 1.342 | .262 |
| Within | 1453.516 | 209 | 6.95462 | | |
| p < .05 | | | | | |

Morality of Athletics Sub-Scale

The analysis for the Morality of Athletics sub-scale indicated variance by major. No main effects were found for either sex or interaction. A subsequent Tukey Test of Multiple Comparison noted physical education majors differed significantly from computer science majors on the Morality

of Athletics sub-scale. No significant differences were found between art and physical education, or computer science and art. The means for the three groups are indicated in Table 4.10.

Table 4.10
Means for the Morality Sub-Scale

| MAJOR | MEAN |
|--------------------|-------|
| Art | 20.65 |
| Computer Science | 19.76 |
| Physical Education | 21.86 |
| Total Sample | 20.95 |

The means for the Morality of Athletics Sub-Scale were 20.24 for males and 21.53 for females. There was no significant difference found for sex.

An eta squared value of .051 determined for the analysis of variance indicated 5 percent of the variation could be explained by major, while 95 percent was attributable to other sources. The explained variance is significant at the .001 level.

The results of the analysis of variance for the Morality of Athletics Sub-Scale are indicated in Table 4.11.

Table 4.11
Morality of Athletics Sub-Scale by Sex and Major

| EFFECT | SS | df | MS | F | p |
|-------------|----------|-----|----------|-------|------|
| SEX | 19.505 | 1 | 19.505 | 1.509 | .218 |
| MAJOR | 145.673 | 2 | 72.837 | 5.636 | .004 |
| SEX x MAJOR | 28.647 | 2 | 14.324 | 1.108 | .332 |
| Within | 2701.015 | 209 | 12.92352 | | |
| p < .05 | | | | | |

Lifestyle and Intercollegiate Athletics Sub-Scale

The analysis of variance for the Lifestyle and Intercollegiate Athletics sub-scale indicated variance by major but not sex. A Tukey Multiple Test of Comparison indicated physical education majors rated this sub-scale significantly higher than art or computer science majors. There was no significant difference found between art and computer science. The means for the three groups are indicated in Table 4.12.

Table 4.12
Means for the Lifestyle Sub-Scale

| MAJOR | MEAN |
|--------------------|-------|
| Art | 27.68 |
| Computer Science | 27.47 |
| Physical Education | 30.05 |
| Total Sample | 28.79 |

The means by sex for the Lifestyle and Intercollegiate Athletics sub-scale were 28.48 for males and 29.04 for females. There was no significant difference found by sex.

An eta squared value of .063 for major indicated 6 percent of the variation could be attributed to this source. Other factors contributed to 94 percent of the variance. No significant variation was found by sex. The explained variation is significant at the .001 level.

The results of the analysis of variance for the Lifestyle and Intercollegiate Athletics sub-scale are indicated in Table 4.13.

Table 4.13

Lifestyle and Intercollegiate Athletics Sub-Scale
by Sex and Major

| EFFECT | SS | df | MS | F | p |
|-------------|----------|-----|----------|-------|------|
| SEX | .151 | 1 | .151 | .007 | .894 |
| MAJOR | 315.855 | 2 | 157.927 | 6.965 | .002 |
| SEX x MAJOR | 16.725 | 2 | 8.362 | .369 | .697 |
| Within | 4738.639 | 209 | 22.67291 | | |
| p < .05 | | | | | |

Tradition, School Spirit and College Life Sub-Scale

The analysis of variance for the Tradition, School Spirit and College Life sub-scale indicated variance by sex but not major. No significant interaction effect was found. A Tukey Multiple Test of Comparison established Physical education majors as significantly higher on this sub-scale than either art or computer science majors. There was no significant difference between art and computer science majors. The means for the three groups are indicated in Table 4.14.

Table 4.14
Means for the Tradition Sub-Scale

| MAJOR | MEAN |
|--------------------|-------|
| Art | 21.31 |
| Computer Science | 19.61 |
| Physical Education | 24.02 |
| Total Sample | 22.08 |

The means for the Tradition, School Spirit, and College Life sub-scale were 21.89 for males and 22.24 for females. There was no significant difference found by sex.

An eta squared value of .15 determined for the analysis of variance indicated 15 percent of the variance was attributable to major. An eta squared value of .01, or 1 percent, was indicated for the explained variance by sex. Sources other than sex and major accounted for 84 percent of the explained variance at the .001 level on this sub-scale.

The results of the analysis of variance for the Tradition, School Spirit, and College Life sub-scale are indicated in Table 4.15.

Table 4.15

Tradition, School Spirit and College Life Sub-Scale
by Sex and Major

| EFFECT | SS | df | MS | F | p |
|-------------|----------|-----|----------|--------|------|
| SEX | 36.512 | 1 | 36.512 | 1.604 | .204 |
| MAJOR | 850.221 | 2 | 425.111 | 18.671 | .000 |
| SEX x MAJOR | 22.854 | 2 | 11.427 | .502 | .612 |
| Within | 4758.735 | 209 | 22.76907 | | |
| p < .05 | | | | | |

Business of Athletics Sub-Scale

No significant effects for sex, major or interaction were found for the Business of Athletics Sub-Scale. The means for the three groups are indicated in Table 4.16.

Table 4.16

Means for the Business Sub-Scale

| MAJOR | MEAN |
|--------------------|-------|
| Art | 12.85 |
| Computer Science | 12.17 |
| Physical Education | 13.28 |
| Total Sample | 12.84 |

The means by sex for the Business of Athletics sub-scale were 12.43 for male, and 13.17 for female. There was no significant difference found by sex.

An eta squared value of .0196 was determined for the analysis of variance, indicating less than 2 percent of the variance on the Business of Athletics sub-scale was explained by major, with 98 percent of the variance attributable to sources other than sex or major. Negligible explained variance existed by sex.

The results of the analysis of variance for the Business of Athletics sub-scale are indicated in Table 4.17.

Table 4.17
Business of Athletics Sub-Scale
By Sex and Major

| EFFECT | SS | df | MS | F | p |
|-------------|----------|-----|---------|-------|------|
| SEX | 2.803 | 1 | 2.803 | .435 | .517 |
| MAJOR | 26.939 | 2 | 13.469 | 2.092 | .124 |
| SEX x MAJOR | .816 | 2 | .408 | .063 | .929 |
| Within | 1345.363 | 209 | 6.43714 | | |
| P < .05 | | | | | |

Summary of Two-Way ANOVA and Hypotheses Testing

The collection of data and subsequent analysis suggested student attitudes toward intercollegiate athletics can be measured. This supports the general hypothesis for the study that student attitudes toward intercollegiate athletics can be interpreted through multiple explanatory principles. Use of data obtained through the "Attitudes

Toward Intercollegiate Athletics" survey can be applied to a theoretical framework. This information can be used to interpret student attitudes toward intercollegiate athletics.³

Three null hypotheses were statistically tested in the investigation. Results of this testing, in order of hypothesis, were:

1. Ho 1. There will be no statistically significant difference by field of study in the attitudes of students toward intercollegiate athletics.

This hypothesis was rejected for the total scale score, and the following sub-scales: Intellect and Athletics; Morality and Athletics, and; Lifestyle, Tradition, School Spirit and College Life.

In the cases where differences were found, subsequent multiple comparison testing for significant differences, indicated: (a) physical education majors rated the total scale score, and sub-scale scores higher than computer science, (b) physical education majors rated the total scale score, and Intellect, Lifestyle, Tradition, School Spirit and College Life sub-scale scores higher than art, (c) no significant differences were found between art and computer science majors in total score and sub-scale scores.

³ Application of the survey results to the theoretical framework of the study are contained in the second part of the present chapter.

Ho. 1 was retained for the Athlete's Traits and Business and Athletics sub-scales. No evidence existed to reject this hypothesis.

2. Ho 2. There will be no statistically significant difference by sex in the attitudes of students toward intercollegiate athletics.

This hypothesis was retained, as no evidence existed which indicated its truth or falsity.

3. Ho 3. There will be no statistically significant interaction between sex and academic major in student attitudes toward intercollegiate athletics.

This hypothesis was retained. Sufficient evidence for a conclusion was not observed.

A summary of the results of the two-way analysis of variance as a function of sex and academic major are presented in Table 4.18.

Table 4.18

Summary of Two-Way Analysis of Variance
 For Attitudes Toward Intercollegiate Athletics
 As a Function of Academic Major and Sex

| Scale and Sub-Scales | Probability Levels | | Eta Squared | |
|---------------------------------|--------------------|------|-------------|-----|
| | Major | Sex | Major | Sex |
| 1. Total Scale | .000 | .905 | 11% | * |
| 2. Intellect & Athletics | .001 | .620 | 7% | * |
| 3. Athlete's Traits | .062 | .760 | 3% | * |
| 4. Morality & Athletics | .004 | .218 | 5% | * |
| 5. Lifestyle | .002 | .894 | 6% | * |
| 6. Tradition & School Spirit | .000 | .204 | 15% | 1% |
| 7. Business & Athletics | .124 | .517 | 2% | * |

Significant at $p < .05$

*

Explained variation was negligible.

Attitudes Toward Intercollegiate Athletics Discussion

Student attitudes toward intercollegiate athletics can be measured and interpreted through the administration of appropriate instrumentation.

The instrument used for the present investigation, the "Attitude Toward Intercollegiate Athletics" scale, was scored to reflect the degree of positive or favorable attitude, ranging from a possible low of 32 to a possible high of 160. A neutral response to all questions would result in a score of 96; therefore, it was concluded, scores greater than this value indicated a generally positive attitude toward intercollegiate athletics.

Examination of the study sample found a mean score of 107.52, indicating a generally favorable attitude toward intercollegiate athletics. Scores ranged from a minimum of 43 to a maximum of 153, for a range of 110. Results for the total scale score indicating student attitudes toward intercollegiate athletics for the present investigation are described in Figure 4.1.

Figure 4.1

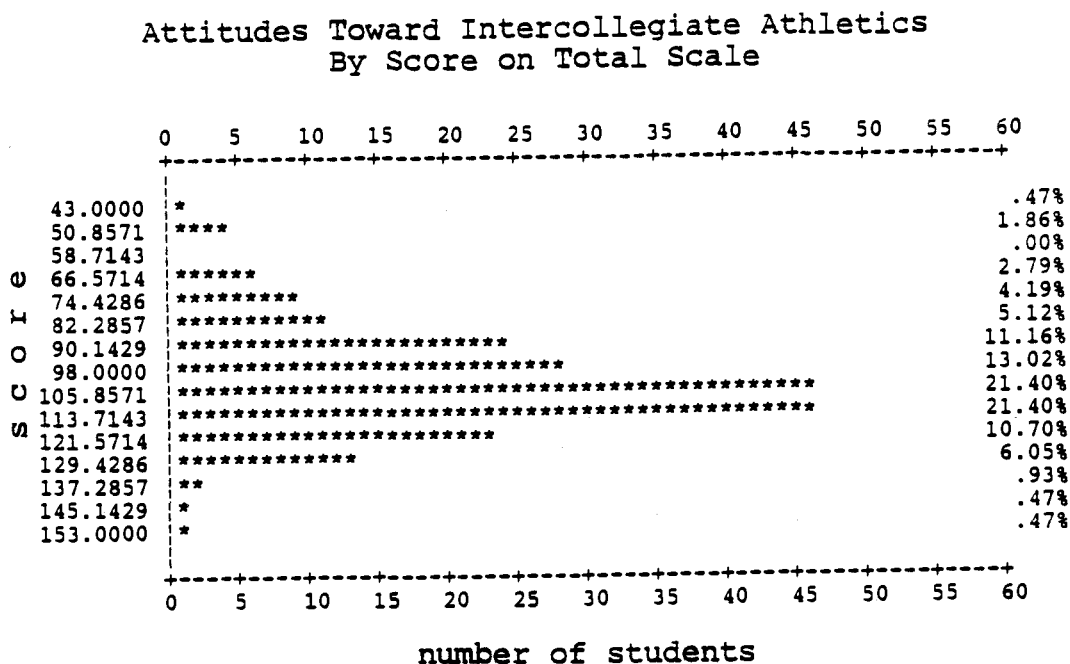


Table 4.19

Frequency of Total Scale Scores

| Variable | 3 | Smallest Value: | 43.00 | Largest Value: | 153.00 |
|--------------|-----------|-----------------|----------------|----------------|---------|
| Category | Frequency | Percent | Cum. Frequency | Percent | |
| 43.00<= - < | 50.86 | 1 | .47% | 1 | .47% |
| 50.86<= - < | 58.71 | 4 | 1.86% | 5 | 2.33% |
| 58.71<= - < | 66.57 | 0 | .00% | 5 | 2.33% |
| 66.57<= - < | 74.43 | 6 | 2.79% | 11 | 5.12% |
| 74.43<= - < | 82.29 | 9 | 4.19% | 20 | 9.30% |
| 82.29<= - < | 90.14 | 11 | 5.12% | 31 | 14.42% |
| 90.14<= - < | 98.00 | 24 | 11.16% | 55 | 25.58% |
| 98.00<= - < | 105.86 | 28 | 13.02% | 83 | 38.60% |
| 105.86<= - < | 113.71 | 46 | 21.40% | 129 | 60.00% |
| 113.71<= - < | 121.57 | 46 | 21.40% | 175 | 81.40% |
| 121.57<= - < | 129.43 | 23 | 10.70% | 198 | 92.09% |
| 129.43<= - < | 137.29 | 13 | 6.05% | 211 | 98.14% |
| 137.29<= - < | 145.14 | 2 | .93% | 213 | 99.07% |
| 145.14<= - < | 153.00 | 1 | .47% | 214 | 99.53% |
| 153.00<= - < | 160.86 | 1 | .47% | 215 | 100.00% |

The number of responses for each question can be found in Appendix D. In general, the students sampled perceived intercollegiate athletics as a positive part of the collegiate environment. The only negative views were expressed through the following responses:

1. A large portion of the sample (63 percent) did not believe every student should feel an obligation to support their athletic teams (Item 8).

2. A large portion of the sample (59 percent) did not believe everyone should read the sports page in the college newspaper (Item 32).

3. A large portion of the sample (46 percent) believed many undeserving students get into college only because of their athletic ability (Item 26).

Extremely positive views regarding intercollegiate athletics were expressed through the following responses:

1. A large number of the students sampled (59.53 percent) agreed with the view college athletes are ambassadors of goodwill to other schools (Item 1).

2. A large number of the students sampled (62.33 percent) did not believe money spent on athletics would be better spent on books for the college library (Item 2).

3. A very large portion of the sample (77.67 percent) disagreed with the view that the evils of intercollegiate athletics are slightly greater than their benefits (Item 3).

4. A large number of the students sampled (61.40 percent) believed participation in intercollegiate athletics is good preparation for competition in later life (Item 4).

5. A very large number of the students sampled (75.35 percent) agreed intercollegiate athletics provide a valuable link between the university community and its alumni (Item 6).

6. A very large portion of the sample (74.88 percent) did not believe intercollegiate sports foster a brutal and ruthless outlook toward the physically weak (Item 7).

7. A large portion of the sample (64.65 percent) did not believe athletic programs are anti-intellectual in their effects (Item 13).

8. A very large portion of the sample (80.93 percent) disagreed with the view that there are too many kinds of intercollegiate sports (Item 15).

9. A large number of the students sampled (62.33 percent) agreed with the view that intercollegiate sports teach students a sense of fair play and good sportsmanship (Item 17).

10. A large portion of the sample (66.51 percent) agreed intercollegiate athletics develop poise and self-assurance among those who participate (Item 20).

11. A large portion of the sample (62.33 percent) disagreed with the view that most athletes are glory-seeking egotists (Item 21).

12. A large portion of the sample (59.07 percent) agreed intercollegiate athletics give our young people a chance for wholesome, organized exercise (Item 22).

13. A very large number of the students sampled (66.98 percent) disagreed with the view that intercollegiate athletics build the mind at the expense of the body (Item 23).

14. A very large number of the students sampled (81.86 percent) agreed with the view that intercollegiate athletics have been a part of the American tradition and should remain so (Item 28).

Path Analysis for the Investigation

The theoretical framework for the present investigation was established in the work conducted by Jensen, Leonard and Liverman (1981, 1982) regarding student attitudes toward intercollegiate athletics. The results of the Jensen, Leonard and Liverman, investigation (1981) concerning student attitudes toward intercollegiate athletics were used to construct a theoretical causal model (1982), employing the methods of path analysis, to:

determine the linkages, both direct and indirect, between the socio-demographic variables (independent variables) and

attitudes toward intercollegiate athletics
(dependent variable) (Jensen et al., 1981:89).

The Jensen, Leonard and Liverman (1982) causal model used a beta weight of greater than or equal to .10, as the level for acceptance of a causal sequence within their path model (Jensen et al., 1982:9). A total of twenty-six path model linkages were listed for the Jensen, Leonard and Liverman (1982) path model.

The path coefficients used for the causal models are standardized beta values, which are identical to their standardized regression equation counterparts. The standardized beta coefficients are the same as partial correlation coefficients with all influential factors held statistically constant.⁴

The direction of the causal relationship is indicated by a directional arrow. In the case of the current theory of attitudes toward intercollegiate athletics, all causal relationships are unidirectional. The independent variables are noted as the starting point for the indicating causal arrows pointing to the dependent variables.

Jensen, Leonard and Liverman (1982) used the following criterion for determining inclusion into their model for the causal effects between variables:

According to Land (1969) there are three analytic modalities one may employ to assess the fit of the empirical data to the

⁴ The causal model is a closed system; that is, all influential theoretical factors are taken into account.

theoretical model: 1) One may take account of how much variation in the dependent variables is accounted for by the independent variables in the model; 2) Examining the size or magnitude of a path coefficient helps one decide whether or no it warrants inclusion in the proposed model. Land (1969) recommends deletion of path coefficients less than .05 whereas Lin (1976) suggests eliminating path values of less than .01. Both persons, however, advance these cutoff points as "rules of thumb;" 3) One may use the computed values to evaluate the model's ability to predict correlation coefficients not employed in the computation of the path coefficients (Jensen et al., 1982:8).

Results obtained in the present investigation were applied to the theoretical framework provided by the exploratory causal model of Jensen, Leonard and Liverman (1982). Multiple regression estimated the relationship between dependent and independent variables, with standardized beta values applied to the indicated path model linkages.

It should be noted that the standardized beta values represent the relative amount of contribution of a particular variable in the regression equation after the influence of the other variables in the equation have been accounted for. For all beta values, it is the absolute degree of relationship between variables that is of importance.

A comparative description of the results obtained through multiple regression is contained in Table 4.20.

Table 4.20
Path Model Linkages⁵

| Linkage | | | | Standardized beta Values | |
|--|-----------|-----------|-----------|--------------------------|-------|
| Independent | | Dependent | | Jensen et al. | Ruhl |
| 1. | Sex | --- | Hrel | -.152 | -.136 |
| 2. | Sex | --- | Hisport | .148 | -.045 |
| 3. | Sex | --- | Soclub | -.314 | -.210 |
| 4. | Family | --- | Soclas | -.190 | .124 |
| 5. | Soclas | --- | Pol | .106 | .047 |
| 6. | Pol | --- | G.P.A. | -.113 | .013 |
| 7. | Hisport | --- | Soclub | .203 | .291 |
| 8. | Hisport | --- | Major | -.395 | -.271 |
| 9. | Hisport | --- | G.P.A. | -.131 | -.014 |
| 10. | Hrel | --- | Physact | .106 | -.056 |
| 11. | Major | --- | Physact | -.329 | -.274 |
| 12. | Major | --- | Useprf | -.134 | -.087 |
| 13. | Useprf | --- | G.P.A. | .109 | .010 |
| 14. | Useprf | --- | Physfit | .105 | .502 |
| 15. | Physact | --- | Useprf | .575 | .516 |
| 16. | Physact | --- | Physfit | .521 | .686 |
| 17. | Physact | --- | Att sport | .464 | .469 |
| 18. | Physact | --- | Scale | .192 | -.333 |
| 19. | Physfit | --- | Socact | .193 | .344 |
| 20. | Socact | --- | Att sport | .165 | .381 |
| 21. | Socact | --- | Qualsl | .340 | .263 |
| 22. | Qualsl | --- | Qualep | .323 | .126 |
| 23. | Qualep | --- | Scale | .124 | -.217 |
| 24. | Soclub | --- | Socact | .293 | .377 |
| 25. | Att sport | --- | Scale | .300 | -.550 |
| 26. | Major | --- | G.P.A. | .295 | -.038 |
| The current study included an additional variable not used by Jensen et al., Qualap (Quality of Athletic Program). | | | | | |
| 27. | Qualap | --- | Scale | n/a | -.902 |
| 28. | Socact | --- | Qualap | n/a | .214 |
| 29. | Qualap | --- | Qualep | n/a | .165 |

For all Path Model Links, $\beta \geq .10$

⁵ A full description of the variable descriptors can be found in Appendix F.

Examination of the results for the present investigation indicate a number of the Jensen, Leonard and Liverman (1982) relationships were not significant when applied to the data obtained. These items, referring to Table 4.11, included the following:

1. No significant relationship was found between the sex of the respondent and their level of activity in high school sports, at $\beta \geq .10$ (Item 2).

2. No significant relationship was found between the respondent's social class and their political persuasion, at $\beta \geq .10$ (Item 5).

3. No significant relationship was found between the respondent's political persuasion and their grade point average, at $\beta \geq .10$ (Item 6).

4. No significant relationship was found between the respondent's level of activity in high school sports and their grade point average, at $\beta \geq .10$ (Item 9).

5. No significant relationship was found between the respondent's degree of religiosity and their level of physical activity, at $\beta \geq .10$ (Item 10).

6. No significant relationship was found between the respondent's academic major and their use of physical education and recreation facilities, at $\beta \geq .10$ (Item 12).

7. No significant relationship was found between the respondent's use of physical education and recreation

facilities and their grade point average, at $\beta \geq .10$ (Item 13).

8. No significant relationship was found between the respondent's academic major and their grade point average, at $\beta \geq .10$ (Item 26).

The additional variable concerning the respondent's satisfaction with the quality of intercollegiate athletic program, was significantly related to the following:

1. There was a high degree of relationship between the respondent's total scale score and their satisfaction with the quality of athletic program, at $\beta \geq .10$ (Item 27).

2. The respondent's level of activity in social clubs had a significant relationship to their level of satisfaction with the quality of athletic program, at $\beta \geq .10$ (Item 28).

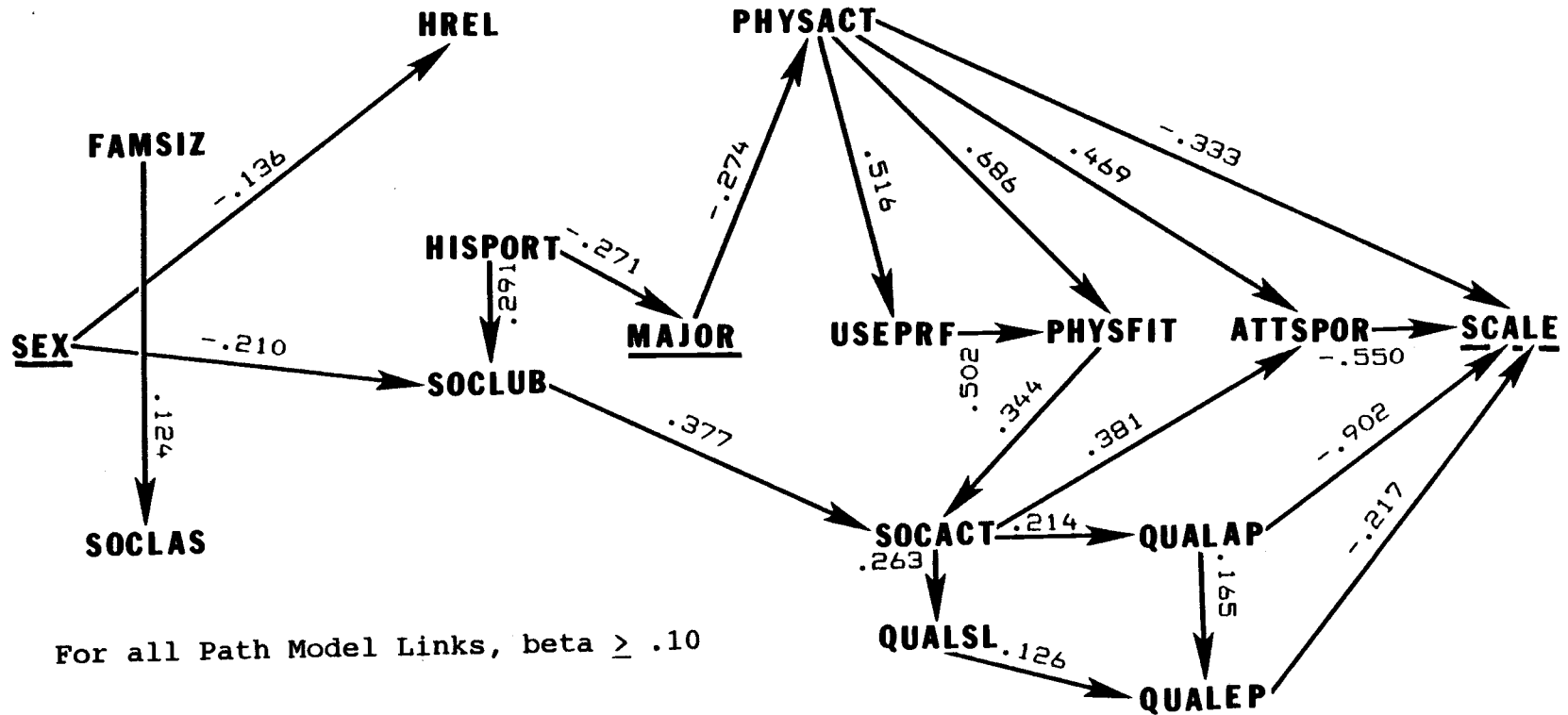
3. There was a significant relationship between the respondent's satisfaction with the quality of educational program and quality of athletic program, at $\beta \geq .10$ (Item 29).

It was, therefore, concluded that a revised causal model for the present investigation was in order, taking into consideration the results obtained. The revised causal model is presented in Figure 4.2.⁶

⁶ The Jensen et al. (1982) exploratory causal model for their refined theory of attitudes toward intercollegiate athletics can be found in Chapter 3.

Figure 4.2

Ruhl Refined Theory of
Student Attitudes Toward Intercollegiate Athletics



The following conclusions, based on the results of the present study for all academic majors, are included in the revised causal model:

1. The respondent's perceived social class was related to family size, with the higher the perceived class, the smaller the family size.

2. Female respondents had a higher degree of religiosity than male respondents.

3. The respondent's sex was related to their level of activity in high school social clubs, with females being more active in social clubs than males.

4. The respondent's level of activity in high school social clubs was related to their level of activity in high school sports. The greater the level of activity in social clubs, the greater was their activity in high school sports.

5. There was a significant relationship between the respondent's level of activity in high school sports, and academic major in university. Physical education majors were more active in high school sports, than either art or computer science majors.

6. The higher the respondent's activity in high school social clubs, the greater their level of social activity in university.

7. Respondents majoring in physical education were more physically active than those majoring in art or computer science.

8. The greater the respondent's level of physical activity, the greater their use of physical education and recreational facilities.

9. The greater the respondent's physical activity, the greater was their perceived level of physical fitness.

10. The greater the respondent's use of physical education and recreation facilities, the greater their perceived level of physical fitness.

11. The greater the respondent's level of physical activity, the greater their attendance at intercollegiate athletic events.

12. The greater the respondent's level of physical activity, the greater their degree of favor in their attitudes toward intercollegiate athletics.

13. The greater the respondent's perceived level of physical fitness, the greater their level of social activity.

14. The greater the respondent's level of social activity, the greater their attendance at university intercollegiate athletic events.

15. The greater the respondent's level of social activity, the more favorable their opinion as to the quality of collegiate social life.

16. The more favorable the respondent's opinion as to the quality of collegiate social life, the more favorable

their opinion as to the quality of their educational program.

17. The greater the respondent's opinion as to the quality of their educational program, the more favorable their attitudes toward intercollegiate athletics.

18. The greater the respondent's attendance at intercollegiate athletic events, the more favorable their attitudes toward intercollegiate athletics.

19. The greater the respondent's satisfaction with the quality of collegiate athletic program, the more favorable their attitudes toward intercollegiate athletics.

20. The greater the respondent's level of collegiate social activity, the greater their satisfaction with the quality of the intercollegiate athletic program.

21. The greater the respondent's satisfaction with the quality of intercollegiate athletic program, the greater their level of satisfaction with their collegiate educational program.

Application of Data to the Theoretical Framework

The theoretical framework for the present investigation is based on the studies conducted by Jensen, Leonard and Liverman (1981, 1982) into student attitudes toward intercollegiate athletics. The Jensen, Leonard and Liverman (1982) work was based on G. S. Kenyon's (1969) conceptualization of sport involvement, the notion of

attitude theory, and the logical consideration of antecedent variables related to sport attitudes.

Resulting data obtained in the present empirical investigation indicates student attitudes toward intercollegiate athletics are positive. This supports the findings of Jensen, Leonard and Liverman (1981). The current study found significant differences by major regarding attitudes toward intercollegiate athletics, including selected sub-scales. This also supports the findings of Jensen, Leonard and Liverman (1981).

No significant differences by sex were found in student attitudes toward intercollegiate athletics in the present study. This did not support the findings of Jensen, Leonard and Liverman (1981), which found significant differences by sex on two of the sub-scales (Jensen et al., 1981:84).

The present investigation examined the responses of only one academic major common with the Jensen, Leonard and Liverman (1981) study (physical education). Two academic majors (art and computer science) differed from the earlier inquiry (sociology and mathematics). Jensen, Leonard and Liverman (1982:15) recognized their outcomes might not be discovered with other samples of respondents.

The theoretical basis for the development of attitudes contained in the Jensen, Leonard and Liverman (1981) refined theory of student attitudes toward

intercollegiate athletics is founded on four propositions (Krech, Crutchfield, and Ballachey, 1962):

1. Individuals form attitudes toward things that help to satisfy needs (Katz, 1960). Attitudes perform four significant functions for the individual: (a) instrumental, adjustive, utilitarian, (b) ego-defensive, (c) value expressive, and (d) knowledge.

2. Individuals form attitudes based on information they receive.

3. Individuals form attitudes based on one's group affiliations.

4. The individual's personality plays a major role in the acquisition and formation of attitudes.

The first proposition is displayed by respondents who feel an obligation to comply with the pervasive nature of sport in society. This is done by fulfilling the need to be a part of a group through a common denominator, in this case sport. Thus, sport fulfills an instrumental, adjustive or utilitarian function.

Sport and athletics may be perceived as providing social segregation, thus tending to create a negative attitude in the respondent. The failure of an individual to become a part of a certain social group may contribute to negative feelings toward that group. The individual's attitudes in this case, therefore, are held for ego-defensive reasons.

An individual may find the opportunity to express beliefs and convictions through their attitudes toward sport. In this way, attitudes toward sport are value-expressive.

An individual's attempt to create meaning out of the present may include previous knowledge. Reflecting on past experiences may provide insight and understanding into present conditions and, in so doing, contribute to the formation of attitudes.

The second proposition may be exhibited by a respondent's attitude formation based on the information received. The various media sources, including television and print, may contribute to the degree of favor or disfavor with respect to attitude formation.

The third proposition implies that the individual may express attitudes based on group affiliation. Attitude formation may be the result of the individual's need to feel a part of a group, either politically or socially. Thus, the physical education major may feel a greater need to express favorable attitudes toward intercollegiate athletics than either art or computer science majors, if it is perceived that this is the prevailing attitude.

The fourth proposition concerning an individual's personality in the acquisition of attitudes (Adorno et al., 1950), has not been sufficiently examined regarding sport

attitude formation to make further comment (Jensen et al., 1982:18).

Kenyon's suggestion that sport involvement may occur in three different ways (behavioral, affective, and cognitive) is supported through the current and previous investigations. This theoretical basis is congruent with the significant characteristics of the attitude concept (Jensen et al., 1982:2). It may be concluded, therefore, that attitudes toward intercollegiate athletics can be explained through these principles.

Comparison with Related Studies

The present investigation found student attitudes toward intercollegiate athletics generally positive in nature. This finding is in keeping with the studies conducted by Steers (1956), Williams (1973), Harrold and Lowe (1973), Smith (1980), Budig (1978), Matross (1980), and Jensen, Leonard and Liverman (1981), which also found student attitudes toward intercollegiate athletics to be favorable.

The present investigation found attitudes toward intercollegiate athletics as a function of the student's field of study. This finding was in agreement with the conclusions made in the work conducted by Waltner (1968) and Jensen, Leonard and Liverman (1981).

No statistically significant differences by sex in student attitudes toward intercollegiate athletics were found in the present study. This concurs with the findings of Jensen, Leonard and Liverman (1981). These results are in disagreement with Mullins (1970), who found differences by sex regarding student attitudes toward physical activity.

The present investigation found no differences between male and female students with respect to favorable attitudes toward intercollegiate athletics. This conclusion is in agreement with the findings of Jensen, Leonard and Liverman (1981), and Sowa and Gressard (1983), who found no differences between male and female students, and no interactions concerning the relationship of athletic participation to student development. Lemen (1965) also found collegiate women to have favorable attitudes toward physical activities and physical education.

The student's level of physical activity, as indicated by the response to the present survey, appears to have a difference with respect to attitudes toward intercollegiate athletics. This supports the findings of Jensen, Leonard and Liverman (1981), which found physical activity leads to differences in attitudes toward athletics. Horner (1979) found that an interscholastic athletics program for junior high school girls produced no significant effect in the girl's attitudes toward interscholastic athletics.

The present study was in agreement with the research conducted by MacDonald (1974), and Jensen, Leonard and Liverman (1981), which found participants and non-participants differed regarding their attitudes toward intercollegiate athletics.

The present study concurred with the research of Jensen, Leonard and Liverman (1981), which found indirect effects of physical fitness upon attitudes toward intercollegiate athletics. The findings of Jensen, Leonard and Liverman (1981) indicated physical fitness was associated with social activity, which in turn was associated with attendance at intercollegiate athletic events and favorable attitudes toward intercollegiate athletics and fitness. Petracek (1978) found students with high physical fitness viewed the benefits of a physical education class more favorably.

The present investigation indicated the level of activity in high school sports may have an effect on the choice of academic major in college and in the student's attitudes toward intercollegiate athletics. This supports the results from the study conducted by Smith (1980), and Jensen, Leonard and Liverman (1981). Sluiter (1960), in a study of attitudes at a state college, found high school experiences had little influence on attitudes toward physical education.

Results of the present investigation supported the findings by Ziatz (1976) and Jensen, Leonard and Liverman (1981), which found no apparent influence by social class on attitudes. Williams (1973) found social achievement orientations directly related to support for intercollegiate athletics.

The present investigation found a very large number of students (82 percent) that believed intercollegiate athletics should remain a part of the American tradition. The current study is in disagreement with Harrold and Lowe (1973) who found less than 50 percent of the students in their study who believed intercollegiate athletics were an integral part of the collegiate setting. Results obtained by Smith (1980), and Maas (1975), who found 71 percent of all surveyed students believed the athletic program was an integral part of the university, are in agreement with the current investigation.

Summary

The data obtained in the present investigation on student attitudes toward intercollegiate athletics has been presented in the previous chapter.

It was found that student attitudes toward intercollegiate athletics are generally positive in nature. Statistically significant differences were found by major but not sex for the overall attitude and for selected sub-

scales. No statistically significant differences were found by sex with respect to attitude.

Results of the current study were applied to the theoretical framework established by Ted M. Jensen, Wilbert M. Leonard and Robert D. Liverman (1981, 1982). The studies conducted by Jensen, Leonard and Liverman (1981, 1982), resulted in their presentation of a refined theory of attitudes toward intercollegiate athletics. This theory was based on the theoretical basis for sport involvement established by G. M. Kenyon (1969), the theoretical basis for the attitude concept (Krech, Crutchfield, and Ballachey, 1962; Katz, 1960; Adorno et al., 1950), and logical postulations.

Jensen, Leonard and Liverman (1982) developed an exploratory causal model concerning student attitudes toward intercollegiate athletics. This model was reviewed in the present investigation through path analysis.

The present investigation found agreement with a majority of the theoretical framework established by Jensen, Leonard and Liverman (1981, 1982). A number of the relationships obtained in the current study, however, did not agree with the previous investigation. An alternative refined theory of intercollegiate athletics, described through a causal model, was presented based on the results of the current study.

A review of the theoretical framework for the investigation and a comparison with related research, completed the chapter.

In agreement with the Jensen, Leonard and Liverman investigations (1981, 1982), it is concluded that an amalgamation of principles are involved in the explanation of student attitudes toward intercollegiate athletics.

Chapter V - SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

The purpose of the study was to determine and explain the attitudes toward intercollegiate athletics of undergraduate students in three diverse academic majors attending Oregon State University.

The review of literature focused on the historical background for the study, the measurement of attitude, path analysis, and previous research.

The investigation duplicated the methodology used by T. M. Jensen, W. M. Leonard and R. D. Liverman (1981, 1982) in their study of college students' attitudes toward intercollegiate athletics. The Jensen, Leonard and Liverman (1982) theory of student attitudes toward intercollegiate athletics was examined through the application of data obtained in the present investigation.

The attitudes of a proportionate random sample consisting of 215 students were measured according to their responses to the survey instrument developed by C. Ward (1970) titled "Attitudes Toward Intercollegiate Athletics." The instrument, consisting of thirty-two Likert scale items, contained six sub-scale areas: (1) Intellect, (2) Athlete's Traits, (3) Morality, (4) Lifestyle, (5) Tradition, School

Spirit, and College Life, and (6) Business of Athletics. In addition to the instrument, twenty social, biographical and demographic items were included.

The following null hypotheses were statistically examined:

Ho 1. There will be no statistically significant difference by field of study in the attitudes of students toward intercollegiate athletics.

Ho 2. There will be no statistically significant difference by sex in the attitudes of students toward intercollegiate athletics.

Ho 3. There will be no statistically significant interaction between sex and academic major in student attitudes toward intercollegiate athletics.

Responses were analyzed for the degree of favorable attitude toward intercollegiate athletics on the total scale and for each sub-scale. Two independent variables, sex and academic major, were analyzed for differences regarding the dependent variable, attitudes toward intercollegiate athletics.

A two-way analysis of variance (ANOVA) using the F statistic, was used as a statistical design. A Tukey Test for Multiple Comparisons, when appropriate, and correlation ratios were used to provide information regarding statistical variation.

Social, biographical and demographic responses were analyzed with respect to the causal path model proposed by Jensen, Leonard and Liverman (1982). Multiple regression determined the estimated relationship between variables, with the calculated standardized beta values determining statistical significance.

Conclusions and a refined theoretical causal model, based on the data collected, concerning student attitudes toward intercollegiate athletics was presented. This causal model provided a possible explanation concerning the attitudes measured in the present study.

Conclusions

In general, student attitudes toward intercollegiate athletics were favorably perceived. Statistically significant differences were found by academic major for the sample, consequently rejecting H_0 1, for the total scale score, and in four of the six sub-scales.

Physical education majors were more favorable in their attitudes toward intercollegiate athletics than art and computer science majors. Physical education respondents scored higher than computer science respondents on all sub-scales, and higher than art respondents on the Intellect and Tradition, School Spirit and College Life sub-scales.

There were no statistically significant differences found between art and computer science respondents in total and sub-scale scores.

No significant differences were found between academic majors for the Athlete's Traits, and Business and Athletics sub-scales.

No statistically significant differences were found by sex, or for interaction effects; thus, Ho 2 and Ho 3 were retained. Lack of statistically significant evidence would not support any conclusions based on Ho 2 and Ho 3.

A regression analysis of the path model linkages proposed by Jensen, Leonard and Liverman (1982) was conducted with the response data. A total of eight of the twenty-six linkages were found to have no statistical significance. A revised path model was offered which included three additional linkages.

It was concluded that student attitudes toward intercollegiate athletics could be explained through multiple explanatory principles. Attitudes can be explained inferentially through the analysis of statistical data. Thus, the statistical relationships obtained through correlation and multiple regression assisted in providing a possible explanation for student attitudes toward intercollegiate athletics.

Implications

Undergraduate student attitudes toward intercollegiate athletics were primarily positive at Oregon State University. Statistically significant data resulting on the Intellect, Athlete's Traits, Morality, Lifestyle, and Tradition and School Spirit sub-scales, implied attitudes were variable by academic major.

The statistical relationships between multiple variables were diagrammatically presented as a causal model. This representation provided a visual explanation of the possible relationships that contributed to the measured attitudes.

A lack of data regarding some of the Jensen, Leonard and Liverman (1982) conclusions, suggested that the political persuasion and grade point average of the subject, may not relate to attitudes toward intercollegiate athletics. In addition, the lack of relationship between the sex of the respondent, their level of activity in high school sports, the degree of religiosity and level of physical activity, along with academic major and use of facilities, implied that the Jensen, Leonard and Liverman (1982) theory may require revision.

A further implication resulting from the present study is the need for continued investigation of path linkages dealing with student attitudes. Additional research is needed to strengthen the proposed causal models. The causal

models imply student attitudes toward intercollegiate athletics are variable.

Researcher's Observations

There is little empirical research directed toward intercollegiate athletics. Additional research would assist in establishing a clearer understanding of the scope and effects intercollegiate athletics have on higher education.

The success or failure of any educational program depends upon what society deems important as a collective whole. A review of the literature indicates sport is an integral part of American society. At the collegiate level, research concerning student attitudes toward intercollegiate athletics, indicates generally positive opinions with respect to this activity.

Anyone involved in the administration, conduct or development of intercollegiate athletics, should strive to attain a greater level of awareness concerning this endeavor. The central importance of the student, both as an athlete, spectator and future supporter, should not be overlooked. The intentions of any program involving the student should fall in line with the role, function and mission of the institution in which they are a part. In this way, understanding student attitudes provides a contribution toward fulfilling the goals, needs and objectives of higher education.

Path analysis, like all inferential statistical procedures, provides a mechanism to develop conclusions. Understanding student attitudes must involve more than their mere measurement. The proper use of path analysis and the development of causal relationships can depict plausible explanations for measured attitudes.

Policy formation, program development and needs assessment is aided through the investigation of prevailing attitudes. The present study can serve to strengthen the foundation established concerning student attitudes toward intercollegiate athletics.

Recommendations for Further Study

The following recommendations are submitted in concurrence with the results of the present investigation and previous research conducted into the topic of student attitudes toward intercollegiate athletics:

1. An examination should be conducted into an expanded number of students and student groups. Possibilities exist for attitude research concerning the topic which focuses on such student categories as graduate, ethnic background, older than average, international, and part-time.

2. Student attitudes toward intercollegiate athletics may differ with respect to the type of educational institution attended. Additional replication and

comparative studies are recommended that deal with students in different educational settings, such as the community college, technical school, private college and public university.

3. A cross-cultural investigation of the topic is recommended which considers the unique aspects of intercollegiate athletics in America. For example, the different administrative structure and conduct of intercollegiate athletics in Canada and the United States, may provide valuable information concerning student attitudes in their respective cultures.

4. Further refinement and study into the nature of attitudes and their measurement is suggested. Instrumentation for the collection of data requires constant revision and improvement. It is recommended, therefore, that further work into the measurement of attitudes toward intercollegiate athletics be conducted.

5. It is recommended that comparative studies between students, faculty and administration, regarding attitudes toward intercollegiate athletics be undertaken.

6. Finally, additional research is needed in the theoretical foundations for attitude development, particularly concerning sport and athletics.

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APPENDICES

APPENDIX A
Research Instrument

ATTITUDES TOWARD INTERCOLLEGIATE ATHLETICS

Statements about Intercollegiate Athletics appear below.

Directions:

You will agree with some of the statements, disagree with some, and be uncertain about others. There are no "right" or "wrong" answers. Whatever you happen to think about it is the right answer for you. Please read carefully and indicate your replies by circling responses that best represent your attitudes.

SA = if you **strongly agree** with the statement.

A = if you **agree** with it.

N = if you are **neutral**.

D = if you **disagree** with the statement.

SD = if you **strongly disagree** with it.

| | 1 | 2 | 3 | 4 | 5 |
|---|----|---|---|---|----|
| | SA | A | N | D | SD |
| 1. College athletes are ambassadors of goodwill to other schools. | — | — | — | — | — |
| 2. Money spent on athletics would be better spent on books for the college library. | — | — | — | — | — |
| 3. The evils of intercollegiate athletics are slightly greater than their benefits. | — | — | — | — | — |
| 4. Participation in intercollegiate athletics is good preparation for competition in later life. | — | — | — | — | — |
| 5. Intercollegiate athletics make people think that winning is more important than sportsmanship. | — | — | — | — | — |
| 6. Intercollegiate athletics provide a valuable link between the University community and its alumni. | — | — | — | — | — |
| 7. Intercollegiate sports foster a brutal and ruthless outlook toward the physically weak. | — | — | — | — | — |
| 8. Every student should feel an obligation to support his/her athletic teams. | — | — | — | — | — |

| | SA | A | N | D | SD |
|--|----|---|---|---|----|
| 9. Intercollegiate sports stimulate athletes to their noblest efforts. | — | — | — | — | — |
| 10. College coaches are paid more than they are worth. | — | — | — | — | — |
| 11. The "big-business" aspect of college athletics is a perversion of educational goals. | — | — | — | — | — |
| 12. Sports contests are the most enjoyable events of the term. | — | — | — | — | — |
| 13. Athletic programs are anti-intellectual in their effects. | — | — | — | — | — |
| 14. Most college athletes are serious students. | — | — | — | — | — |
| 15. We have too many different kinds of intercollegiate sports. | — | — | — | — | — |
| 16. Athletics promote concern for a healthy body. | — | — | — | — | — |
| 17. Intercollegiate sports teach students a sense of fair play and good sportsmanship. | — | — | — | — | — |
| 18. Intercollegiate sports turn many idealistic participants into disillusioned cynics. | — | — | — | — | — |
| 19. The gross commercialism of intercollegiate athletics is like that of any other big business - profit is the motive, not sport. | — | — | — | — | — |
| 20. Intercollegiate athletics develop poise and self-assurance among those who participate. | — | — | — | — | — |
| 21. Most athletes are glory-seeking egotists. | — | — | — | — | — |
| 22. Intercollegiate athletics give our young people a chance for wholesome, organized exercise. | — | — | — | — | — |

| | SA | A | N | D | SD |
|--|----|---|---|---|----|
| 23. Intercollegiate athletics build the body at the expense of the mind. | — | — | — | — | — |
| 24. Without the stimulation of athletic competition college life would become bland and unexciting. | — | — | — | — | — |
| 25. Intercollegiate athletics teach a student to compete and thus prepare him/her for later participation in the business world. | — | — | — | — | — |
| 26. Many undeserving students get into college only because of their athletic ability. | — | — | — | — | — |
| 27. Intercollegiate athletic competition is an open field for gambling and gamblers. | — | — | — | — | — |
| 28. Intercollegiate athletics have been a part of the American tradition and should remain so. | — | — | — | — | — |
| 29. Money for athletic scholarships would be better spent on academic scholarships and work grants. | — | — | — | — | — |
| 30. If intercollegiate athletics were discontinued, school spirit would be destroyed. | — | — | — | — | — |
| 31. Athletes do not take academic requirements seriously enough. | — | — | — | — | — |
| 32. Everyone should read the sports page in the college newspaper. | — | — | — | — | — |

Please Answer the Following Items: (Circle the appropriate number)

33. How active were you in Sports in high school?

1. Very active.
2. Active.
3. Somewhat active.
4. Not too active.
5. Not at all active

34. How active were you in **Social Clubs** in high school?

1. Very active.
2. Active.
3. Somewhat active.
4. Not too active.
5. Not at all active.

35. What is your **Religion**?

1. Protestant
2. Catholic
3. Jewish
4. Other
5. None

36. How **Religious** do you consider yourself to be?

1. Very religious.
2. Religious
3. Somewhat religious
4. Not too religious
5. Not at all religious

37. How **Physically Active** are you in sports now?

1. Very active.
2. Active.
3. Somewhat active.
4. Not too active.
5. Not at all active.

38. How **Socially Active** are you at Oregon State University?

1. Very active.
2. Active.
3. Somewhat active.
4. Not too active.
5. Not at all active.

39. How **Physically Fit** do you consider yourself to be?

1. Very fit.
2. Fit.
3. Somewhat fit.
4. Not too fit.
5. Not at all fit.

40. How often do you use the **Recreation and Physical Education Facilities** (other than as a classroom) at Oregon State University?
1. Very often.
 2. Often.
 3. Not too often.
 4. Not at all.
41. How often do you use the **Library**?
1. Very often.
 2. Often.
 3. Not too often.
 4. Not at all.
42. Would you be interested in having your **Optimal Weight** calculated or your **Physical Fitness** level evaluated by the Department of Recreational Sports?
1. Yes
 2. Maybe
 3. No
43. Would you be interested in having the library do a computerized **Literature Search** for you?
1. Yes
 2. Maybe
 3. No
44. How satisfied are you with the **Quality of Social Life** at Oregon State University?
1. Very satisfied.
 2. Satisfied.
 3. Not too satisfied.
 4. Not at all satisfied.
45. How satisfied are you with the **Quality of Educational Programs** at Oregon State University?
1. Very satisfied.
 2. Satisfied.
 3. Not too satisfied.
 4. Not at all satisfied.

46. Politically would you consider yourself to be:
1. Very liberal.
 2. Liberal.
 3. Neutral.
 4. Conservative.
 5. Very Conservative.
47. Which of the following do you think is **Most Important** in playing a game?
1. To play as well as you can.
 2. To beat the other player or team.
 3. To play the game fairly.
48. Which of the following do you think is **Least Important** in playing a game?
1. To play as well as you can.
 2. To beat the other team or player.
 3. To play the game fairly.
49. What terms would you consider best describes you and your parents' **Social Class**?
1. Upper Class.
 2. Upper Middle Class.
 3. Middle Class.
 4. Working Class.
 5. Lower Class.
50. While you were growing up at home, how large was your family including your parents and brothers and sisters?
1. Small (total of 4 or less in the family)
 2. Medium (5 to 7)
 3. Large (8 or more)
51. How often do you attend **Intercollegiate Sports Events** at Oregon State University?
1. Very often.
 2. Often.
 3. Not too often.
 4. Not at all.

52. How satisfied are you with the Quality of the Intercollegiate Athletic Program at Oregon State University?

1. Very satisfied
2. Satisfied
3. Not too satisfied
4. Not at all satisfied

Thank you for completing this Questionnaire!

APPENDIX B
Cover Letter



A merged School serving Oregon State University and Western Oregon State College with graduate and undergraduate programs in Education.

December 2, 1986

Dear Student:

Intercollegiate athletics are sports, games, or physical contests engaged in competitively between or among colleges, universities, or professional schools.

There are many beliefs regarding the value, both positive and negative, of intercollegiate athletics. Students, however, rarely have the chance to express an opinion regarding this activity.

I am a doctoral candidate in education at Oregon State University interested in the topic of student attitudes toward intercollegiate athletics. You have been randomly selected as a representative student in your academic major. Because a great deal of attention has been placed on the particular academic majors chosen for this study, it is critical that each survey be completed and returned.

Use the postage-paid envelope to return the survey as soon as possible. The identification number is for mailing purposes only, in order to note information concerning the return of the survey. Reporting the results of this study will be on a group basis; therefore, your response will be strictly confidential.

Your participation is very important. The information you provide will be part of my doctoral thesis. If you have any questions about the study, please feel free to contact me at 752-5621. Please indicate if you would like a summary of the survey results.

Thank you for your time and consideration.

Sincerely,

Redacted for privacy

Glenn D. Ruhl
Doctoral Candidate
Oregon State University

encs.

APPENDIX C
Follow-Up Postcard

December 9, 1986

Last week you were mailed a survey concerning student attitudes toward intercollegiate athletics.

If you have returned your survey, thank you. If you have not, please do so immediately. The survey only takes a few minutes to complete.

Your participation is vital to the success of this study. All information, of course, will be strictly confidential. If you did not receive the survey, or it has been misplaced, please call me at 752-5621 and I will send another one to you.

Thank you

Glenn D. Ruhl
Doctoral Candidate
Oregon State University

APPENDIX D
Summary of Survey Responses

TOTAL RESPONSES BY QUESTION

| Question | | A-M | A-F | CS-M | CS-F | PE-M | PE-F | TOTAL |
|----------|----|-----|-----|------|------|------|------|-------|
| 1. | SA | 2 | 1 | 4 | 0 | 4 | 15 | 26 |
| | A | 3 | 13 | 27 | 7 | 17 | 35 | 102 |
| | N | 1 | 13 | 13 | 5 | 6 | 19 | 57 |
| | D | 0 | 2 | 12 | 5 | 5 | 4 | 28 |
| | SD | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 2. | SA | 1 | 3 | 6 | 0 | 0 | 0 | 10 |
| | A | 0 | 3 | 5 | 5 | 1 | 5 | 19 |
| | N | 3 | 6 | 18 | 4 | 5 | 16 | 52 |
| | D | 1 | 14 | 23 | 7 | 15 | 39 | 99 |
| | SD | 1 | 3 | 4 | 1 | 12 | 14 | 35 |
| 3. | SA | 1 | 0 | 2 | 0 | 0 | 1 | 4 |
| | A | 0 | 3 | 7 | 3 | 3 | 2 | 18 |
| | N | 0 | 5 | 5 | 3 | 3 | 10 | 26 |
| | D | 2 | 13 | 32 | 6 | 13 | 37 | 103 |
| | SD | 3 | 8 | 10 | 5 | 14 | 24 | 64 |
| 4. | SA | 1 | 2 | 5 | 3 | 8 | 15 | 34 |
| | A | 4 | 13 | 22 | 4 | 21 | 34 | 98 |
| | N | 0 | 8 | 14 | 4 | 3 | 16 | 45 |
| | D | 0 | 4 | 11 | 5 | 0 | 9 | 29 |
| | SD | 1 | 2 | 4 | 1 | 1 | 0 | 9 |
| 5. | SA | 1 | 1 | 2 | 1 | 3 | 4 | 12 |
| | A | 2 | 5 | 18 | 5 | 5 | 16 | 51 |
| | N | 1 | 8 | 12 | 3 | 8 | 15 | 47 |
| | D | 2 | 13 | 17 | 7 | 14 | 32 | 85 |
| | SD | 0 | 2 | 7 | 1 | 3 | 7 | 20 |
| 6. | SA | 1 | 5 | 16 | 1 | 11 | 17 | 51 |
| | A | 3 | 16 | 23 | 11 | 17 | 41 | 111 |
| | N | 1 | 5 | 9 | 5 | 5 | 15 | 40 |
| | D | 0 | 2 | 8 | 0 | 0 | 1 | 11 |
| | SD | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| 7. | SA | 1 | 2 | 2 | 0 | 1 | 0 | 6 |
| | A | 0 | 1 | 8 | 3 | 4 | 0 | 16 |
| | N | 1 | 6 | 9 | 3 | 5 | 8 | 32 |
| | D | 3 | 15 | 24 | 6 | 13 | 47 | 108 |
| | SD | 1 | 5 | 13 | 5 | 10 | 19 | 53 |

| Question | | A-M | A-F | CS-M | CS-F | PE-M | PE-F | TOTAL |
|----------|----|-----|-----|------|------|------|------|-------|
| 8. | SA | 0 | 1 | 1 | 0 | 2 | 1 | 5 |
| | A | 2 | 5 | 8 | 2 | 8 | 9 | 34 |
| | N | 1 | 6 | 5 | 3 | 10 | 15 | 40 |
| | D | 2 | 11 | 27 | 9 | 9 | 37 | 95 |
| | SD | 1 | 6 | 15 | 3 | 4 | 12 | 41 |
| 9. | SA | 1 | 2 | 3 | 0 | 2 | 8 | 16 |
| | A | 2 | 6 | 15 | 4 | 16 | 33 | 76 |
| | N | 1 | 15 | 23 | 5 | 11 | 25 | 80 |
| | D | 2 | 5 | 13 | 8 | 3 | 8 | 39 |
| | SD | 0 | 1 | 2 | 0 | 1 | 0 | 4 |
| 10. | SA | 1 | 1 | 6 | 0 | 4 | 2 | 14 |
| | A | 0 | 5 | 7 | 0 | 5 | 14 | 31 |
| | N | 3 | 21 | 30 | 12 | 10 | 39 | 115 |
| | D | 2 | 2 | 11 | 5 | 13 | 14 | 47 |
| | SD | 0 | 0 | 2 | 0 | 1 | 5 | 8 |
| 11. | SA | 1 | 3 | 11 | 0 | 2 | 5 | 22 |
| | A | 2 | 9 | 22 | 11 | 9 | 23 | 76 |
| | N | 1 | 10 | 15 | 3 | 8 | 29 | 66 |
| | D | 2 | 7 | 7 | 2 | 11 | 14 | 43 |
| | SD | 0 | 0 | 1 | 1 | 3 | 3 | 8 |
| 12. | SA | 1 | 1 | 2 | 1 | 4 | 10 | 19 |
| | A | 2 | 3 | 9 | 2 | 16 | 19 | 51 |
| | N | 1 | 12 | 13 | 3 | 6 | 25 | 60 |
| | D | 1 | 11 | 20 | 8 | 6 | 17 | 63 |
| | SD | 1 | 2 | 12 | 3 | 1 | 3 | 22 |
| 13. | SA | 1 | 2 | 2 | 0 | 1 | 2 | 8 |
| | A | 0 | 3 | 9 | 3 | 2 | 7 | 24 |
| | N | 1 | 6 | 16 | 3 | 5 | 13 | 44 |
| | D | 3 | 12 | 23 | 8 | 18 | 42 | 106 |
| | SD | 1 | 6 | 6 | 3 | 7 | 10 | 33 |
| 14. | SA | 0 | 1 | 1 | 0 | 2 | 2 | 6 |
| | A | 1 | 4 | 12 | 3 | 6 | 22 | 48 |
| | N | 3 | 15 | 18 | 5 | 11 | 33 | 85 |
| | D | 1 | 8 | 20 | 9 | 10 | 15 | 63 |
| | SD | 1 | 1 | 5 | 0 | 4 | 2 | 13 |
| 15. | SA | 0 | 0 | 0 | 0 | 2 | 1 | 3 |
| | A | 0 | 0 | 3 | 1 | 2 | 2 | 8 |
| | N | 1 | 3 | 13 | 2 | 2 | 9 | 30 |
| | D | 4 | 20 | 25 | 11 | 16 | 37 | 113 |
| | SD | 1 | 6 | 15 | 3 | 11 | 25 | 61 |

| Question | | A-M | A-F | CS-M | CS-F | PE-M | PE-F | TOTAL |
|----------|----|-----|-----|------|------|------|------|-------|
| 16. | SA | 0 | 7 | 12 | 2 | 14 | 26 | 61 |
| | A | 4 | 15 | 32 | 10 | 14 | 36 | 111 |
| | N | 1 | 2 | 7 | 3 | 2 | 6 | 21 |
| | D | 1 | 5 | 5 | 2 | 3 | 6 | 22 |
| | SD | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17. | SA | 0 | 1 | 5 | 0 | 6 | 16 | 28 |
| | A | 3 | 18 | 24 | 6 | 18 | 37 | 106 |
| | N | 2 | 7 | 12 | 7 | 5 | 14 | 47 |
| | D | 0 | 3 | 14 | 4 | 4 | 7 | 32 |
| | SD | 1 | 0 | 1 | 0 | 0 | 0 | 2 |
| 18. | SA | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| | A | 1 | 1 | 7 | 0 | 3 | 6 | 18 |
| | N | 1 | 14 | 25 | 8 | 7 | 32 | 87 |
| | D | 4 | 11 | 20 | 9 | 13 | 29 | 86 |
| | SD | 0 | 3 | 4 | 0 | 8 | 7 | 22 |
| 19. | SA | 1 | 0 | 5 | 2 | 3 | 5 | 16 |
| | A | 0 | 8 | 20 | 7 | 12 | 12 | 59 |
| | N | 2 | 9 | 11 | 3 | 4 | 29 | 58 |
| | D | 3 | 9 | 18 | 4 | 12 | 21 | 67 |
| | SD | 0 | 3 | 2 | 1 | 2 | 7 | 15 |
| 20. | SA | 1 | 1 | 6 | 2 | 7 | 13 | 30 |
| | A | 3 | 18 | 30 | 5 | 19 | 38 | 113 |
| | N | 1 | 10 | 12 | 8 | 6 | 21 | 58 |
| | D | 1 | 0 | 8 | 1 | 0 | 2 | 12 |
| | SD | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 21. | SA | 1 | 2 | 1 | 0 | 2 | 1 | 7 |
| | A | 0 | 3 | 9 | 1 | 6 | 5 | 24 |
| | N | 1 | 7 | 13 | 6 | 9 | 14 | 50 |
| | D | 4 | 12 | 24 | 6 | 10 | 44 | 100 |
| | SD | 0 | 5 | 9 | 4 | 6 | 10 | 34 |
| 22. | SA | 0 | 2 | 4 | 0 | 5 | 8 | 19 |
| | A | 3 | 12 | 23 | 8 | 19 | 43 | 108 |
| | N | 2 | 10 | 17 | 5 | 6 | 15 | 55 |
| | D | 1 | 4 | 12 | 4 | 2 | 7 | 30 |
| | SD | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| 23. | SA | 1 | 1 | 1 | 0 | 2 | 0 | 5 |
| | A | 0 | 6 | 11 | 6 | 3 | 5 | 31 |
| | N | 1 | 4 | 10 | 2 | 5 | 13 | 35 |
| | D | 3 | 13 | 25 | 6 | 13 | 45 | 105 |
| | SD | 1 | 5 | 9 | 3 | 10 | 11 | 39 |

| Question | | A-M | A-F | CS-M | CS-F | PE-M | PE-F | TOTAL |
|----------|----|-----|-----|------|------|------|------|-------|
| 24. | SA | 2 | 2 | 2 | 0 | 10 | 14 | 30 |
| | A | 2 | 10 | 7 | 4 | 13 | 26 | 62 |
| | N | 0 | 2 | 13 | 2 | 4 | 12 | 33 |
| | D | 1 | 10 | 20 | 6 | 4 | 17 | 58 |
| | SD | 1 | 5 | 14 | 5 | 2 | 5 | 32 |
| 25. | SA | 0 | 0 | 3 | 2 | 5 | 11 | 21 |
| | A | 3 | 13 | 17 | 2 | 15 | 32 | 82 |
| | N | 1 | 9 | 10 | 3 | 8 | 21 | 52 |
| | D | 1 | 6 | 24 | 10 | 4 | 10 | 55 |
| | SD | 1 | 1 | 2 | 0 | 1 | 0 | 5 |
| 26. | SA | 1 | 3 | 8 | 3 | 5 | 5 | 25 |
| | A | 3 | 10 | 23 | 6 | 12 | 20 | 74 |
| | N | 1 | 13 | 19 | 6 | 8 | 30 | 77 |
| | D | 1 | 3 | 5 | 1 | 6 | 16 | 32 |
| | SD | 0 | 0 | 1 | 1 | 2 | 3 | 7 |
| 27. | SA | 2 | 0 | 1 | 1 | 3 | 0 | 7 |
| | A | 1 | 2 | 19 | 7 | 13 | 16 | 58 |
| | N | 2 | 16 | 18 | 3 | 8 | 32 | 79 |
| | D | 1 | 10 | 17 | 5 | 6 | 21 | 60 |
| | SD | 0 | 1 | 1 | 1 | 3 | 5 | 11 |
| 28. | SA | 4 | 9 | 16 | 3 | 20 | 32 | 84 |
| | A | 0 | 13 | 28 | 8 | 10 | 33 | 92 |
| | N | 0 | 4 | 8 | 5 | 2 | 8 | 27 |
| | D | 1 | 2 | 1 | 1 | 1 | 1 | 7 |
| | SD | 1 | 1 | 3 | 0 | 0 | 0 | 5 |
| 29. | SA | 1 | 5 | 5 | 1 | 1 | 1 | 14 |
| | A | 1 | 5 | 14 | 5 | 9 | 13 | 47 |
| | N | 2 | 10 | 20 | 5 | 7 | 30 | 74 |
| | D | 2 | 9 | 15 | 5 | 9 | 24 | 64 |
| | SD | 0 | 0 | 2 | 1 | 7 | 6 | 16 |
| 30. | SA | 0 | 0 | 5 | 1 | 8 | 10 | 24 |
| | A | 0 | 17 | 13 | 3 | 16 | 33 | 82 |
| | N | 3 | 6 | 13 | 5 | 5 | 16 | 48 |
| | D | 2 | 5 | 21 | 8 | 4 | 13 | 53 |
| | SD | 1 | 1 | 4 | 0 | 0 | 2 | 8 |
| 31. | SA | 1 | 1 | 6 | 0 | 2 | 2 | 12 |
| | A | 2 | 8 | 17 | 6 | 6 | 12 | 51 |
| | N | 1 | 8 | 16 | 8 | 12 | 30 | 75 |
| | D | 2 | 11 | 15 | 2 | 12 | 22 | 64 |
| | SD | 0 | 1 | 2 | 1 | 1 | 8 | 13 |

| Question | | A-M | A-F | CS-M | CS-F | PE-M | PE-F | TOTAL |
|----------|----|-----|-----|------|------|------|------|-------|
| 32. | SA | 0 | 0 | 0 | 0 | 1 | 2 | 3 |
| | A | 1 | 1 | 6 | 0 | 4 | 12 | 24 |
| | N | 2 | 8 | 11 | 4 | 15 | 21 | 61 |
| | D | 1 | 17 | 18 | 7 | 11 | 30 | 84 |
| | SD | 2 | 3 | 21 | 6 | 2 | 9 | 43 |

DEMOGRAPHIC RESPONSES

| | | | | | | | | |
|-----|----|---|----|----|---|----|----|----|
| 33. | 1: | 3 | 8 | 12 | 1 | 26 | 49 | 99 |
| | 2: | 1 | 11 | 15 | 4 | 5 | 8 | 44 |
| | 3: | 0 | 6 | 12 | 6 | 2 | 7 | 33 |
| | 4: | 2 | 2 | 5 | 3 | 0 | 4 | 16 |
| | 5: | 0 | 2 | 12 | 3 | 0 | 6 | 23 |
| 34. | 1: | 0 | 5 | 5 | 1 | 7 | 24 | 42 |
| | 2: | 1 | 8 | 10 | 1 | 11 | 24 | 55 |
| | 3: | 2 | 8 | 20 | 8 | 8 | 17 | 63 |
| | 4: | 2 | 6 | 14 | 4 | 5 | 4 | 35 |
| | 5: | 1 | 2 | 7 | 3 | 2 | 5 | 20 |
| 35. | 1: | 3 | 10 | 25 | 5 | 15 | 28 | 86 |
| | 2: | 0 | 6 | 8 | 5 | 6 | 24 | 49 |
| | 3: | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| | 4: | 0 | 9 | 5 | 4 | 6 | 16 | 40 |
| | 5: | 3 | 4 | 17 | 2 | 6 | 6 | 38 |
| 36. | 1: | 0 | 3 | 6 | 3 | 5 | 8 | 25 |
| | 2: | 0 | 11 | 12 | 3 | 7 | 16 | 49 |
| | 3: | 2 | 9 | 13 | 6 | 9 | 27 | 66 |
| | 4: | 1 | 2 | 11 | 4 | 7 | 18 | 43 |
| | 5: | 3 | 4 | 14 | 1 | 5 | 5 | 32 |
| 37. | 1: | 2 | 2 | 7 | 1 | 11 | 17 | 40 |
| | 2: | 0 | 7 | 14 | 3 | 14 | 24 | 62 |
| | 3: | 3 | 12 | 17 | 4 | 3 | 21 | 60 |
| | 4: | 1 | 5 | 15 | 6 | 3 | 11 | 41 |
| | 5: | 0 | 3 | 3 | 3 | 2 | 1 | 12 |
| 38. | 1: | 1 | 4 | 3 | 0 | 7 | 6 | 21 |
| | 2: | 1 | 8 | 18 | 5 | 15 | 21 | 68 |
| | 3: | 3 | 7 | 19 | 4 | 5 | 26 | 64 |
| | 4: | 0 | 8 | 14 | 5 | 2 | 15 | 44 |
| | 5: | 1 | 2 | 2 | 3 | 4 | 6 | 18 |

| Question | | A-M | A-F | CS-M | CS-F | PE-M | PE-F | TOTAL |
|----------|----|-----|-----|------|------|------|------|-------|
| 39. | 1: | 1 | 2 | 4 | 0 | 10 | 12 | 29 |
| | 2: | 2 | 14 | 28 | 4 | 18 | 36 | 102 |
| | 3: | 3 | 11 | 19 | 7 | 5 | 20 | 65 |
| | 4: | 0 | 1 | 5 | 6 | 0 | 6 | 18 |
| | 5: | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 40. | 1: | 2 | 4 | 6 | 1 | 10 | 14 | 37 |
| | 2: | 3 | 9 | 22 | 5 | 12 | 27 | 78 |
| | 3: | 1 | 11 | 24 | 8 | 6 | 23 | 73 |
| | 4: | 0 | 5 | 4 | 3 | 5 | 10 | 27 |
| 41. | 1: | 0 | 2 | 3 | 1 | 3 | 12 | 21 |
| | 2: | 5 | 8 | 18 | 4 | 17 | 27 | 79 |
| | 3: | 1 | 17 | 28 | 11 | 12 | 32 | 101 |
| | 4: | 0 | 2 | 7 | 1 | 1 | 3 | 14 |
| 42. | 1: | 2 | 18 | 30 | 7 | 24 | 41 | 122 |
| | 2: | 2 | 9 | 15 | 7 | 2 | 24 | 59 |
| | 3: | 2 | 2 | 11 | 3 | 7 | 9 | 34 |
| 43. | 1: | 4 | 13 | 19 | 4 | 10 | 25 | 75 |
| | 2: | 0 | 13 | 24 | 7 | 14 | 33 | 91 |
| | 3: | 2 | 3 | 13 | 6 | 9 | 16 | 49 |
| 44. | 1: | 1 | 1 | 7 | 1 | 6 | 11 | 27 |
| | 2: | 4 | 21 | 36 | 12 | 20 | 50 | 143 |
| | 3: | 1 | 6 | 13 | 4 | 6 | 13 | 43 |
| | 4: | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 45. | 1: | 1 | 6 | 4 | 1 | 5 | 12 | 29 |
| | 2: | 5 | 18 | 43 | 8 | 22 | 52 | 148 |
| | 3: | 0 | 4 | 7 | 6 | 4 | 10 | 31 |
| | 4: | 0 | 1 | 2 | 2 | 2 | 0 | 7 |
| 46. | 1: | 0 | 0 | 3 | 0 | 3 | 0 | 6 |
| | 2: | 3 | 18 | 16 | 4 | 10 | 21 | 72 |
| | 3: | 2 | 3 | 16 | 6 | 11 | 30 | 68 |
| | 4: | 1 | 7 | 18 | 5 | 6 | 23 | 60 |
| | 5: | 0 | 1 | 3 | 2 | 3 | 0 | 9 |
| 47. | 1: | 4 | 24 | 41 | 13 | 29 | 68 | 179 |
| | 2: | 0 | 0 | 2 | 0 | 3 | 0 | 5 |
| | 3: | 2 | 5 | 13 | 4 | 1 | 6 | 31 |
| 48. | 1: | 0 | 0 | 1 | 0 | 0 | 4 | 5 |
| | 2: | 6 | 28 | 53 | 16 | 29 | 66 | 198 |
| | 3: | 0 | 1 | 2 | 1 | 4 | 4 | 12 |

| Question | | A-M | A-F | CS-M | CS-F | PE-M | PE-F | TOTAL |
|----------|----|-----|-----|------|------|------|------|-------|
| 49. | 1: | 1 | 1 | 0 | 1 | 1 | 0 | 4 |
| | 2: | 2 | 17 | 14 | 4 | 13 | 30 | 80 |
| | 3: | 2 | 10 | 38 | 9 | 15 | 39 | 113 |
| | 4: | 1 | 1 | 4 | 3 | 3 | 5 | 17 |
| | 5: | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 50. | 1: | 3 | 12 | 25 | 7 | 14 | 29 | 90 |
| | 2: | 3 | 13 | 28 | 7 | 18 | 35 | 104 |
| | 3: | 0 | 4 | 3 | 3 | 1 | 10 | 21 |
| 51. | 1: | 3 | 3 | 9 | 1 | 15 | 23 | 54 |
| | 2: | 0 | 9 | 15 | 5 | 13 | 21 | 63 |
| | 3: | 1 | 11 | 25 | 6 | 4 | 25 | 72 |
| | 4: | 2 | 6 | 7 | 5 | 1 | 5 | 26 |
| 52. | 1: | 1 | 0 | 3 | 1 | 2 | 9 | 16 |
| | 2: | 4 | 20 | 28 | 6 | 26 | 54 | 138 |
| | 3: | 0 | 5 | 18 | 9 | 4 | 11 | 47 |
| | 4: | 1 | 4 | 7 | 1 | 1 | 0 | 14 |

APPENDIX E
Scoring Chart

ACADEMIC MAJOR: _____

SEX: _____

| Case # | CODE | Subscale | Total | | | | Total | Score on Scale |
|--------|------|----------------|-------|--|--|--|-------|----------------|
| | | 1. Intellect | | | | | | |
| | | 2. Ath. Traits | | | | | | |
| | | 3. Morality | | | | | | |
| | | 4. Lifestyle | | | | | | |
| | | 5. Tradition | | | | | | |
| | | 6. Business | | | | | | |
| | | 1. Intellect | | | | | | |
| | | 2. Ath. Traits | | | | | | |
| | | 3. Morality | | | | | | |
| | | 4. Lifestyle | | | | | | |
| | | 5. Tradition | | | | | | |
| | | 6. Business | | | | | | |
| | | 1. Intellect | | | | | | |
| | | 2. Ath. Traits | | | | | | |
| | | 3. Morality | | | | | | |
| | | 4. Lifestyle | | | | | | |
| | | 5. Tradition | | | | | | |
| | | 6. Business | | | | | | |
| | | 1. Intellect | | | | | | |
| | | 2. Ath. Traits | | | | | | |
| | | 3. Morality | | | | | | |
| | | 4. Lifestyle | | | | | | |
| | | 5. Tradition | | | | | | |
| | | 6. Business | | | | | | |
| | | 1. Intellect | | | | | | |
| | | 2. Ath. Traits | | | | | | |
| | | 3. Morality | | | | | | |
| | | 4. Lifestyle | | | | | | |
| | | 5. Tradition | | | | | | |
| | | 6. Business | | | | | | |

APPENDIX F

Path Model Descriptors

| DESCRIPTOR | VARIABLE NUMBER | LEVELS | DESCRIPTION |
|-----------------|--------------------|--------|--|
| <u>SEX</u> | 1 | (2) | Sex of the Respondent |
| <u>MAJOR</u> | 2 | (3) | Respondent's Academic Major |
| <u>SCALE</u> | 3 | () | Respondent's score on the <u>Attitude Toward Intercollegiate Athletics</u> scale |
| <u>HISPORT</u> | 4 | (5) | How active the respondent was in high school sport |
| <u>SOCCLUB</u> | 5 | (5) | How active the respondent was in social club activities in high school |
| <u>HREL</u> | 6 | (5) | How religious the respondent considers themselves to be |
| <u>PHYSACT</u> | 7 | (5) | How physically active the respondent is now in sport |
| <u>SOCACT</u> | 8 | (4) | How socially active the respondent is at Oregon State University |
| <u>PHYSFIT</u> | 9 | (5) | How physically fit the respondent considers themselves to be |
| <u>USEPRF</u> | 10 | (4) | How often the respondent uses non- classroom PE/REC facilities |
| <u>QUALSL</u> | 11 | (4) | How satisfied the respondent is with the quality of social life at OSU |
| <u>QVALEP</u> | 12 | (4) | How satisfied the respondent is with the quality of their education at OSU |
| <u>QUALAP</u> | 13 | (4) | How satisfied the respondent is with the quality of OSU intercollegiate athletics |
| <u>POL</u> | 14 | (5) | The political persuasion of the respondent (from liberal to conservative) |
| <u>SOCCLAS</u> | 15 | (5) | The perceived social class of the respondent and their family |
| <u>FAMILY</u> | 16 | (3) | Size of the respondent's family |
| <u>ATTSPORT</u> | 17 | (4) | How often the respondent attends OSU intercollegiate athletic events |
| <u>G.P.A.</u> | 18 | () | The respondent's Grade Point Average |

APPENDIX G
Descriptive Statistics¹

¹ Key to variables in this appendix: 1 = Total Score; 2 = Sub-scale 1; 3 = Sub-scale 2; 4 = Sub-scale 3; 5 = Sub-scale 4; 6 = Sub-scale 5; 7 = Sub-scale 6.

Total Scale

File: A-CS-PE size: 215 * 9
 MISS= -9999.000 LL= 1 UL= 215

| DESCRIPTIVE STATISTICS: | | | | |
|-------------------------|---------------------|---------------|--------------------|-----------|
| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
| 1 | 107.5209 | 17.5195 | 215 | 1.1948 |
| | Skewness = -12.3499 | | Kurtosis = .9611 | |
| 2 | 19.8186 | 4.1916 | 215 | .2859 |
| | Skewness = -3.2327 | | Kurtosis = .6653 | |
| 3 | 13.1860 | 2.6883 | 215 | .1833 |
| | Skewness = -.7430 | | Kurtosis = .0985 | |
| 4 | 20.9581 | 3.7107 | 215 | .2531 |
| | Skewness = -2.1642 | | Kurtosis = .6124 | |
| 5 | 28.7953 | 4.8803 | 215 | .3328 |
| | Skewness = -2.9474 | | Kurtosis = .5348 | |
| 6 | 22.0884 | 5.1796 | 215 | .3532 |
| | Skewness = -1.3685 | | Kurtosis = -.2477 | |
| 7 | 12.8419 | 2.5638 | 215 | .1748 |
| | Skewness = -1.1561 | | Kurtosis = .5631 | |
| 8 | 4.3349 | .7422 | 215 | .0506 |
| | Skewness = -.4603 | | Kurtosis = -.9621 | |
| 9 | 1.5581 | .4978 | 215 | .0339 |
| | Skewness = -.1157 | | Kurtosis = -1.9549 | |

File: A-CS-PE size: 215 * 9
 MISS= -9999.000 LL= 1 UL= 215

| DESCRIPTIVE STATISTICS: | | | | |
|-------------------------|----------|---------------|-----|-----------|
| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
| 1 Scale Score | 107.5209 | 17.5195 | 215 | 1.1948 |
| 2 Intellect | 19.8186 | 4.1916 | 215 | .2859 |
| 3 Traits | 13.1860 | 2.6883 | 215 | .1833 |
| 4 Morality | 20.9581 | 3.7107 | 215 | .2531 |
| 5 Lifestyle | 28.7953 | 4.8803 | 215 | .3328 |
| 6 Tradition | 22.0884 | 5.1796 | 215 | .3532 |
| 7 Business | 12.8419 | 2.5638 | 215 | .1748 |
| 8 | 4.3349 | .7422 | 215 | .0506 |
| 9 | 1.5581 | .4978 | 215 | .0339 |

File: A-CS-PE size: 215 * 7
MISS= -9999.000 LL= 1 UL= 215

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|-----|-----------|
| 1 | 107.5209 | 17.5195 | 215 | 1.1948 |
| 2 | 19.8186 | 4.1916 | 215 | .2959 |
| 3 | 13.1860 | 2.6883 | 215 | .1833 |
| 4 | 20.9581 | 3.7107 | 215 | .2531 |
| 5 | 28.7953 | 4.8803 | 215 | .3328 |
| 6 | 22.0884 | 5.1796 | 215 | .3532 |
| 7 | 12.8419 | 2.5638 | 215 | .1748 |

MALE

File: A-CS-PE size: 215 * 9
MISS= -9999.000 LL= 1 UL= 215
GFI 9]= 1.000

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 105.1053 | 19.3811 | 95 | 1.9385 |
| 2 | 19.2000 | 4.6071 | 95 | .4727 |
| 3 | 12.7474 | 2.9857 | 95 | .3063 |
| 4 | 20.2421 | 4.1838 | 95 | .4293 |
| 5 | 28.4842 | 5.1279 | 95 | .5221 |
| 6 | 21.8947 | 5.7101 | 95 | .5358 |
| 7 | 12.4316 | 2.8645 | 95 | .2935 |

FEMALE

File: A-CS-PE size: 215 * 9
MISS= -9999.000 LL= 1 UL= 215
GFI 9]= 2.000

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|-----|-----------|
| 1 | 109.4333 | 15.7132 | 120 | 1.4333 |
| 2 | 20.3083 | 3.7792 | 120 | .3457 |
| 3 | 13.5333 | 2.3832 | 120 | .2172 |
| 4 | 21.5250 | 3.1939 | 120 | .2912 |
| 5 | 29.0417 | 4.6822 | 120 | .4274 |
| 6 | 22.2417 | 4.7366 | 120 | .4334 |
| 7 | 13.1667 | 2.2579 | 120 | .2061 |

Art

ART

File: A-CS-PE size: 215 * 8
 MISS= -9999.000 LL= 1 UL= 215
 GFI B1= 3.0000

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 104.3429 | 19.3603 | 35 | 3.2725 |
| 2 | 18.8857 | 4.9751 | 35 | .8409 |
| 3 | 13.0286 | 2.6289 | 35 | .4444 |
| 4 | 20.6571 | 3.8344 | 35 | .6481 |
| 5 | 27.6857 | 5.2735 | 35 | .8914 |
| 6 | 21.3143 | 5.5560 | 35 | .9391 |
| 7 | 12.8571 | 2.2770 | 35 | .3849 |
| 8 | 3.0000 | .0000 | 35 | .0000 |

File: ART-M size: 6 * 7
 MISS= -9999.000 LL= 1 UL= 6

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 102.6667 | 31.5130 | 6 | 12.8651 |
| 2 | 18.5000 | 6.9210 | 6 | 2.8255 |
| 3 | 13.3333 | 3.1411 | 6 | 1.2824 |
| 4 | 19.1667 | 6.6156 | 6 | 2.7008 |
| 5 | 27.0000 | 7.4027 | 6 | 3.0221 |
| 6 | 21.8333 | 6.1343 | 6 | 3.3208 |
| 7 | 13.1667 | 3.6560 | 6 | 1.4926 |

File: ART-F size: 29 * 7
 MISS= -9999.000 LL= 1 UL= 29

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 104.6897 | 16.6457 | 29 | 3.0910 |
| 2 | 18.9655 | 4.6326 | 29 | .8603 |
| 3 | 12.7655 | 2.5702 | 29 | .4773 |
| 4 | 20.9655 | 3.0762 | 29 | .5712 |
| 5 | 27.8276 | 4.8849 | 29 | .9071 |
| 6 | 21.2069 | 5.0595 | 29 | .9395 |
| 7 | 12.8621 | 2.0129 | 29 | .3738 |

Computer Science

CS

File: A-CS-PE size: 215 * 8
 MISS= -9999.000 LL= 1 UL= 215
 GFI 61= 4.000

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 100.0959 | 18.6623 | 73 | 2.1843 |
| 2 | 18.3973 | 4.5084 | 73 | .5277 |
| 3 | 12.4932 | 2.7494 | 73 | .3218 |
| 4 | 19.7671 | 4.1450 | 73 | .4851 |
| 5 | 27.4795 | 5.2944 | 73 | .6157 |
| 6 | 19.6164 | 4.9543 | 73 | .5799 |
| 7 | 12.1781 | 2.7856 | 73 | .3260 |
| 8 | 4.0000 | .0000 | 73 | .0000 |

File: CS-M size: 56 * 7
 MISS= -9999.000 LL= 1 UL= 56

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 100.5357 | 19.1035 | 56 | 2.5328 |
| 2 | 18.2143 | 4.6621 | 56 | .6220 |
| 3 | 12.5536 | 2.9226 | 56 | .3906 |
| 4 | 19.8750 | 4.2472 | 56 | .5676 |
| 5 | 27.7321 | 5.1996 | 56 | .6945 |
| 6 | 19.7679 | 5.2327 | 56 | .6993 |
| 7 | 12.0714 | 2.8658 | 56 | .3830 |

File: CS-F size: 17 * 7
 MISS= -9999.000 LL= 1 UL= 17

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|---------|---------------|----|-----------|
| 1 | 98.6471 | 17.6031 | 17 | 4.2694 |
| 2 | 18.5882 | 4.2729 | 17 | 1.0363 |
| 3 | 12.2941 | 2.1437 | 17 | .5199 |
| 4 | 19.4116 | 3.8500 | 17 | .9435 |
| 5 | 26.6471 | 5.8783 | 17 | 1.3772 |
| 6 | 19.1176 | 3.9982 | 17 | .9697 |
| 7 | 12.5294 | 2.5524 | 17 | .6190 |

Physical Education

PE

File: A-CS-PE size: 215 * 8
 MISS= -9999.000 LL= 1 UL= 215
 GFI 9J= 5.000

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|-----|-----------|
| 1 | 113.6262 | 13.5622 | 107 | 1.3111 |
| 2 | 21.0935 | 3.2259 | 107 | .3119 |
| 3 | 13.7103 | 2.5735 | 107 | .2488 |
| 4 | 21.8692 | 3.0932 | 107 | .2990 |
| 5 | 30.0561 | 4.1136 | 107 | .3977 |
| 6 | 24.0280 | 4.4029 | 107 | .4256 |
| 7 | 13.2897 | 2.4146 | 107 | .2334 |
| 8 | 5.0000 | .0000 | 107 | .0000 |

File: PE-M size: 33 * 7
 MISS= -9999.000 LL= 1 UL= 33

DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 113.3030 | 14.6296 | 33 | 2.5467 |
| 2 | 20.7879 | 3.7812 | 33 | .6582 |
| 3 | 12.9697 | 3.1273 | 33 | .5444 |
| 4 | 21.0606 | 3.5261 | 33 | .6138 |
| 5 | 30.0303 | 4.2626 | 33 | .7455 |
| 6 | 25.5152 | 4.1164 | 33 | .7166 |
| 7 | 12.9697 | 2.7327 | 33 | .4757 |

File: PE-F size: 74 * 7
 MISS= -9999.000 LL= 1 UL= 74

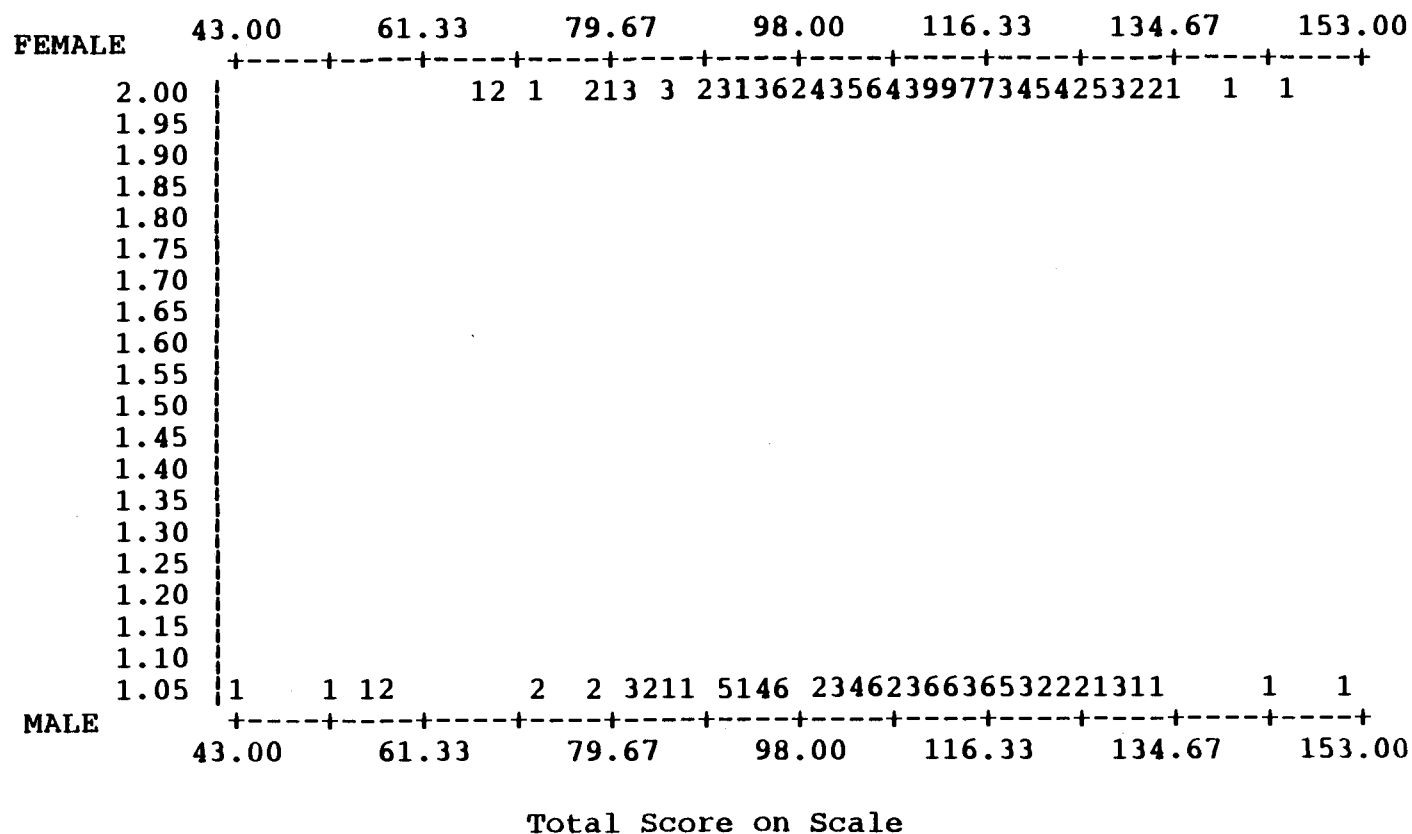
DESCRIPTIVE STATISTICS:

| VARIABLE: | MEAN: | ST.DEVIATION: | N: | ST.ERROR: |
|-----------|----------|---------------|----|-----------|
| 1 | 113.7703 | 13.1603 | 74 | 1.5299 |
| 2 | 21.2297 | 3.9635 | 74 | .4645 |
| 3 | 14.0405 | 2.2296 | 74 | .2592 |
| 4 | 22.2297 | 2.8311 | 74 | .3291 |
| 5 | 30.0676 | 4.0657 | 74 | .4726 |
| 6 | 25.3649 | 4.3904 | 74 | .5104 |
| 7 | 13.4324 | 2.2640 | 74 | .2632 |

Appendix H

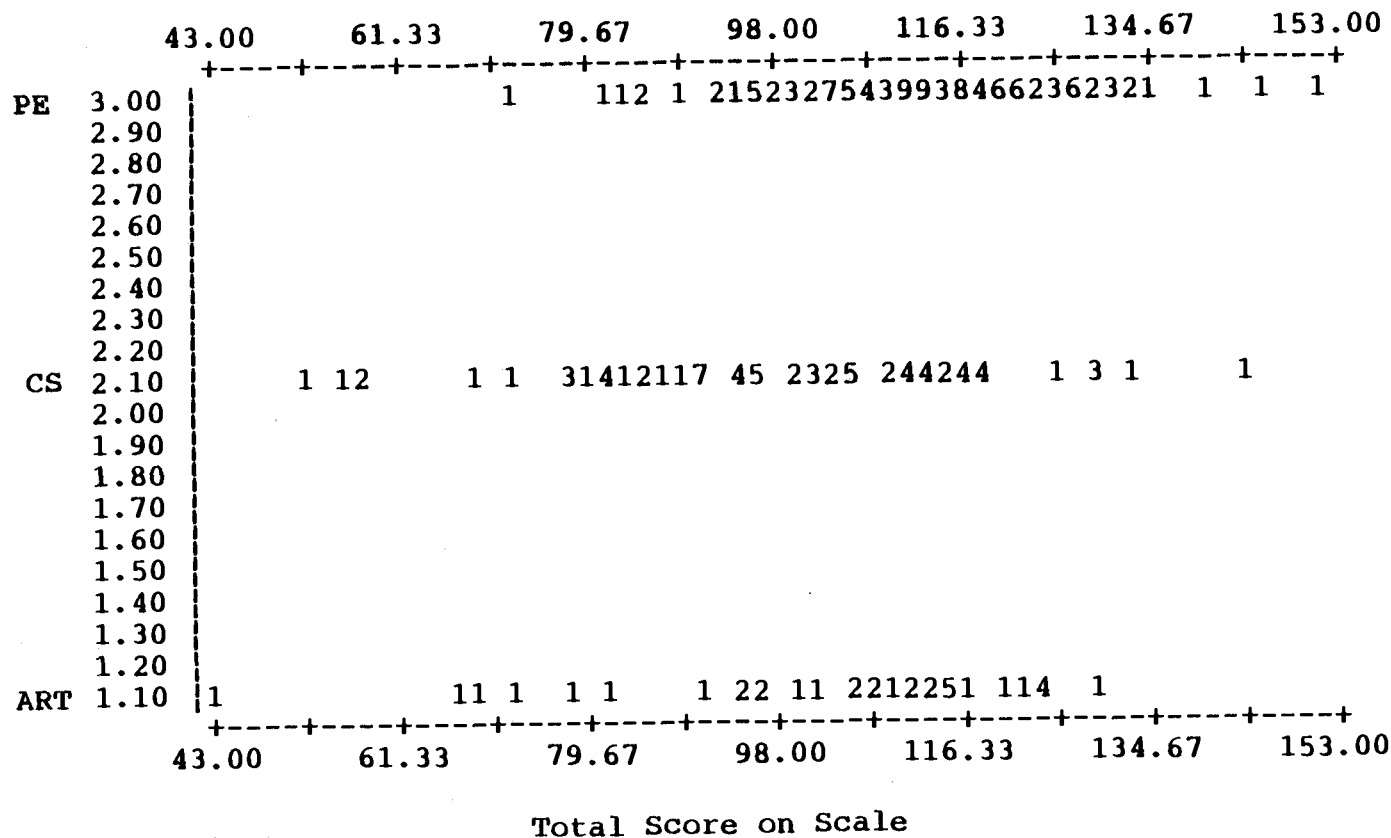
Distribution by Sex of Total Scale Score

SEX



Distribution by Academic Major of Total Scale Score

MAJOR



APPENDIX J

Formulae Used for Statistical Analysis

Significance of the Difference Between Means (Spence et al., 1976:129):

$$s_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{(\sum X_1^2 + \sum X_2^2) - (N_1 \bar{X}_1^2 + N_2 \bar{X}_2^2)}{(N_1 + N_2 - 2)} \left(\frac{1}{N_1} + \frac{1}{N_2} \right)}$$

Degrees of Freedom (Spence et al., 1976:129):

$$df = N_1 - 1 + N_2 - 1 = N_1 + N_2 - 2$$

Equation of a Regression Line (Spence et al., 1976:154-155):

$$Y_{pred} = \left(\frac{rs_Y}{s_X} \right) X - \left(\frac{rs_Y}{s_X} \right) \bar{X} + \bar{Y}$$

$$X_{pred} = \left(\frac{rs_X}{s_Y} \right) Y - \left(\frac{rs_X}{s_Y} \right) \bar{Y} + \bar{X}$$

Standard Error of the Mean Difference (Spence et al., 1976:172):

$$t = \frac{\bar{X}_0}{s_{\bar{X}_0}} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{s_{\bar{X}_1}^2 + s_{\bar{X}_2}^2 - 2r_{12}s_{\bar{X}_1}s_{\bar{X}_2}}}$$

where $df = N - 1$

Computational Formulae for Finding
Sums of Squares (Spence et al, 1976:185-189):

Total:

$$SS_{tot} = \left(\sum_{tot} X^2 \right) - \frac{(\sum_{tot} X)^2}{N_{tot}}$$

Between Groups:

$$SS_{bg} = \sum_i \left[\frac{(\sum X_i)^2}{N_i} \right] - \frac{(\sum X)^2}{N_{tot}}$$

Within Groups:

$$SS_{wg} = SS_{tot} - SS_{bg}$$

$$SS_{wg} = \sum_i \left[(\sum X_i^2) - \frac{(\sum X_i)^2}{N_i} \right]$$

Two-Way Analysis of Variance (ANOVA):

$$SS_{A \times B} = N \left[\sum_i (\bar{X}_{AB} - \bar{X}_A - \bar{X}_B + \bar{X}_{tot})^2 \right]$$

$$MS_A = \frac{SS_A}{df_A} \qquad M_{A \times B} = \frac{SS_{A \times B}}{df_{A \times B}}$$

$$\text{where } df_A = m - 1; \qquad \text{where } df_{A \times B} = (m - 1)(n - 1)$$

$$MS_B = \frac{SS_B}{df_B} \qquad MS_{wg} = \frac{SS_{wg}}{df_{wg}}$$

$$\text{where } df_B = n - 1; \qquad \text{where } df_{wg} = N_{tot} - (m)(n)$$

$$F_A = \frac{MS_A}{MS_{wg}}; \quad F_B = \frac{MS_B}{MS_{wg}}; \quad F_{A \times B} = \frac{MS_{A \times B}}{MS_{wg}}$$

Tukey's Multiple Comparison Test (Spence et al., 1976:196):

$$hsd = q_{\alpha} \sqrt{\frac{MS_{wg}}{N_i}}$$

Eta Squared (Explained Variation)
Correlation Ratios (Hays 1973:683):

$$r^2_{y \cdot x} = \frac{SS_{bx}}{SS_{tot}}$$

APPENDIX K

Jensen et al. (1982), Rationale for Path Diagram Linkages

1. Sex is related to sport participation and spectatorship (Leonard, 1980), sport interests and preferences (Stone, 1969) . . . Sport participation for high school males is one criteria for determining popularity (Coleman, 1961; Eitzen, 1975). Gender is associated with indicants of religiosity. Females' participation in organized religious activities is higher than males (Glock, 1959). Traditionally, they have been socialized toward expressive, socio-emotional, nurturant, and dependent roles, whereas males have been reared toward task, instrumental and independent roles (Clausen, 1968).
2. Sex also correlates with sport participation. For much of history females have been systematically denied opportunities to participate and, if they did, received such derogatory labels as "Amazons" and "anomalies." Prior to the 1970s it was not uncommon to find only intramural athletic activities available to females and female roles in sport have been of the indirect primary involvement type. eg., cheerleaders (Kenyon, 1969).
3. High school social clubs (e.g., dramatics, music) have appealed to women, not men. Therefore, females more often participate in such organizations. Intramural social clubs for females are, in some ways, functional equivalents of sport for males.
4. Family size and social class demonstrate a reciprocal influence since fertility is inversely correlated with social class but, when social class is held constant, there will be proportionately greater resources per person in small families than large ones hence, social class may be perceived as higher in families with a relatively small number of offspring.
5. Social class, historically, has been linked with political ideology. Voting patterns of upper class individuals are conservative (Berelson and Steiner, 1964: 572).
6. Those who engage in high school sports probably channel their time, efforts and energies into physical (vis-a-vis intellectual) endeavors. Such commitments may motivate them to consider physical education as a major in college. Whether justified or not, physical education is not viewed as expecting the same work demands and scholastic rigor as

majors in other fields (e.g., chemistry, physics, biology). Empirical inquiries have supported the stereotypic poor academic performances of athletes, particularly those athletes who also major in physical education (Harrison, 1976).

7. Religiosity is linked to physical activity. Although the infinite soul is "housed" in the finite body; while on earth the body is metaphorically viewed as the temple of the soul. Consequently, religiosity may be directly connected with engagement in physical activity. Further, Edwards (1973) has argued that values appear to mirror core Protestant values.

8. Physical education, as a major, is more directly linked to physical activity than are other majors . . . the encouragement of physical activity leads to greater use of facilities than is the case with non-PE majors.

9. Grades will probably be more important to those harboring traditional values and beliefs (i.e., those who are conservative) than those who actively engage in social change maneuvers.

10. Use of physical facilities [recreational sports etc.] is directly connected to physical fitness.

11. One's own interest in physical activity may cultivate interest in others' physical and/or competitive activities . . . physically active people identify with athletes and, by extension, athletics. Athletes and athletics provide a reference group for them and probably favorably dispose them to athletics, i.e., contribute to cultivating favorable attitudes toward intercollegiate athletics.

12. Because physically fit individuals probably feel better and display confidence they will tend to lead more active social lives.

13. Logically, [it is expected] a direct correspondence [exists] between using physical facilities and physical fitness.

14. Engagement in social activity will positively affect perceptions of the quality of social life on campus. Social psychologically, this is the argument that attitudes are consequent to instead of preceding behavior (Festinger, 1957), although the latter is a plausible argument.

15. Higher education entails activities other than classroom instruction, research and book learning. It may also be a rewarding and consciousness-raising social and/or

intellectual and/or personal experience. Therefore, we expected a positive association between perceptions of the quality of social life and perceptions of the quality of educational programs. Since intercollegiate athletics are meaningful features of a campus' social life we believed there [would be] a correlation between perceptions of the quality of educational programs and collegiate athletics attitudes.

16. Attending athletic events will correlate with positive intercollegiate athletic attitudes (another version of the behavior affecting attitudes scheme).