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REENTRY WOMEN: THE RELATIONSHIP OF Q-ACH, EXTRAVERSION-INTROVERSION, AND LOCUS OF CONTROL TO PHYSICAL PERSISTENCE ON TWO PSYCHOMOTOR TASKS

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REENTRY WOMEN: THE RELATIONSHIP OF Q-ACH, EXTRAVERSION-INTROVERSION, AND LOCUS OF CONTROL TO PHYSICAL PERSISTENCE ON TWO PSYCHOMOTOR TASKS

by

Susan M. Molstad

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Although adult women returning to college represent one of the fastest growing groups in higher education, little information exists regarding their specific characteristics. Reference to physical activity and the reentry woman is notably missing. The purpose of this study was to examine the relationship of selected psychological variables to physical task persistence, a quality associated with physically active individuals.

Data were collected from a random sample of 35 traditional and 35 reentry women undergraduates enrolled at the University of North Carolina Spring semester, 1980. On a specified date, temporal persistence on a gross physical balance task and an eye-hand manipulative task was measured. Measures of achievement motivation (Q-ACH), extraversion (EXT), and internal locus of control (LOCUS) were collected at another time. In addition, each subject completed a Personal Data Questionnaire.

One significant difference was found between the samples on the five measurement variables. Traditional women persisted significantly longer ($<.05$) on the gross physical balance task than reentry women. The subjects were similar on the remaining variables. Members of both groups were characterized as equally persistent on the eye-hand manipulative task, highly achievement oriented, moderately extraverted, and internally controlled.

Discriminant analyses were computed to predict "low" and "high" persisters for the total sample and each subsample from the psychological

variables. Six analyses were carried out, three for each task. None of the equations was significant. The variable locus of control (LOCUS) was entered on two occasions but was not significant in either case.

One follow-up analysis based on selected items from the Personal Data Questionnaire was significant. Persistence for all subjects on the gross physical balance task could be predicted correctly 64.45 percent of the time from present level of involvement in physical activity (Q24), past level of involvement in physical activity (Q25), age (GROUP), and socioeconomic status (SES). None of the other discriminant equations to predict persistence was significant.

Although the questionnaire items proved to be better predictors of persistence than the psychological variables, it was hypothesized that factors other than those examined may have moderated the effect of the predictor variables. Implications of the findings for motor skill acquisition and the nature of college and university physical education programs were noted. The study of persistence within an interactional paradigm was indicated.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

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CHAPTER I

INTRODUCTION

Adult women returning to college represent one of the fastest growing groups of postsecondary students (Carnegie Commission on Higher Education, 1971; Kelman & Staley, 1974). Results of a recent survey conducted by the Census Bureau show a 187% increase in the number of female students between the ages of 25 and 34 (Bureau of the Census, 1979). Women older than 35 increased 94% between 1972 and 1977 (Stone, 1979). According to census estimates by 1985, 40% of all college students will be over 25. The figures cited above support an observation by Cross (1972b) that "the segment of the population with the greatest potential for enormous expansion within higher education consists of mature women" (p. 48).

Reentry women, as they are sometimes called, are students who attend college after an absence from formal education for a period of time. The average age of these students is between 36 and 40 although they may be as young as 24 or as old as 80 (Dib, 1978). Their reasons for returning to school are complex and varied. Some are enrolled in regular degree programs, part or full-time; others take courses, with or without credit, through continuing education or adult education programs.

As institutions became aware of this new and expanding student population, they were challenged to provide appropriate and flexible courses of study. Services needed to be available to mature women at suitable times and places and in a manner compatible with the adult

experience and life patterns (Campbell, 1973). However, even today, "little information exists about the specific needs and interests of these populations or about their personal characteristics or modes of learning" (Astin, 1976c, p. 55).

Researchers generally agree that little is known about the mature woman student whose educational career has been interrupted (Cross, 1968; Steele, 1974). The existing information is mostly descriptive in nature and is the outgrowth of demographic studies. In one such study by Campbell (1973) the returning woman is characterized as being highly motivated, serious, persistent, adaptable, and interested in learning for its own sake. However, she also noted that these women had to learn to be persistent, and to overcome fears and feelings of inadequacy that accompany competing with younger students. Because the educational careers of reentry women have been interrupted they often operate from an outdated knowledge base. In addition, the roles of reentry women have more than likely been complex and conflicting.

Data reveal that a comparatively small proportion of women in our society engage in sport or physical activity to any degree (Ferris, 1971; Robinson, Converse, & Szalai, 1972). Many factors appear to operate that constrain or deter women from selecting sport as a form of leisure activity. Participation in physical activity is in part a function of education and socioeconomic status (Kenyon, 1966; Robinson, 1967). In addition, activity level seems to decrease with age and with the complexity of roles associated with marriage (Richardson & Hall, 1974).

Women returning to higher education form a small, yet important subpopulation of women in general. Although some individuals express a

concern for the total life development of the reentry woman (Troll, Israel, & Israel, 1977), reference to physical activity is notably missing. With few exceptions (Alexandra, 1976; Demko, 1978; Dib, 1978), there is little evidence that program organizers are sensitive to this aspect of the lives of mature women students. In a recent review of research and descriptive studies of returning women students, no mention is made of physical activity (Scott, 1980).

Total growth of the adult reentry woman should evidence a concern for their physical activity needs, interests, and abilities. As Troll (1977) says, "what you feel about yourself determines or shapes what you will do with what you've got--your body and your options" (p. 9). Determining the psychological and behavioral characteristics of these women is one of the first steps toward being able to facilitate the integration of physical activity in various forms into their lifestyles.

Statement of the Problem

The purpose of this study was to examine the relationships among selected psychological characteristics and the physical task persistence of two student groups, traditional women undergraduates and reentry women undergraduates. More specifically, measures of Q-ach, extraversion-introversion, and locus of control were studied as well as persistence measures on a gross physical balance task and an eye-hand manipulative task.

The study was designed to answer two separate yet related questions. First, do reentry students differ from traditional students on three psychological tests and two measures of physical task persistence?

Second, is it possible to predict persistence on the tasks by members of either group from scores on the selected psychological measures?

Question one was answered by an examination of the following research hypotheses:

1. Traditional women students and reentry women students differ in the amount of time they are willing to persist on a gross physical balance task and an eye-hand manipulative task.

2. Traditional women students and reentry women students' scores are different on measures of Q-ach, extraversion-introversion, and locus of control.

The remaining six hypotheses were tested by determining whether or not persistence on either psychomotor task could be predicted from scores on the psychological measures. It was hypothesized that on the gross physical balance task:

3. "Low" persisters and "high" persisters in the total sample are differentiated by their Q-ach, extraversion-introversion, and locus of control scores.

4. "Low" and "high" persisting traditional women students are differentiated by their Q-ach, extraversion-introversion, and locus of control scores.

5. "Low" and "high" persisting reentry women students are differentiated by their Q-ach, extraversion-introversion, and locus of control scores.

Finally, it was hypothesized that on the eye-hand manipulative task:

6. "Low" persisters and "high" persisters in the total sample are differentiated by their Q-ach, extraversion-introversion, and locus of control scores.

7. "Low" and "high" persisting traditional women students are differentiated by their Q-ach, extraversion-introversion, and locus of control scores.

8. "Low and "high" persisting reentry women students are differentiated by their Q-ach, extraversion-introversion and locus of control scores.

Definition of Terms

The following meanings were specified for terminology used in this report:

Extraversion-introversion. A relatively stable personality dimension derived by analyzing habitual responses and consistent approaches of individuals to problems and situations (Eysenck, 1952). The Eysenck Personality Inventory Extraversion Scale was used as a measure of this personality construct in the present study (Eysenck & Eysenck, 1968).

Eye-hand Manipulative Task. A fine motor coordination task involving the manipulation of parallel rods such that a small steel ball moves along them and drops into a specified area. The task, a manufactured game called Ego Trip 2, required minimal body movement and was executed from a sitting position.

Gross Physical Balance Task. A test designed by Bass (1939) to measure static balancing ability. The object of the task was to balance on a narrow stick on the nonpreferred foot while blindfolded.

Internal Locus of Control. The degree to which people believe they exercise control over their own lives (Rotter, 1966). The internal subscale of Levenson's (1974) instrument was used as a measure of internality.

Persistence. A willingness to continue a course of action in spite of opposition or failure (The American College Dictionary, 1948).

Physical Task Persistence. The amount of time, to the nearest hundredth of a second, a subject continued to try to be successful on the motor tasks in this study.

Q-ach. A measure of achievement motivation developed by Robinson (Robinson & Argyle, 1962) and modified by Hall (1974b). A 25-item scale which included two sets of questions corresponding to a need for success and a fear of failure. Q-ach was the final score derived by summing the scores of the subscales.

Reentry Women Undergraduates. Students enrolled at the University of North Carolina at Greensboro at the time of data collection, 25-50 years of age, who entered school for the first time, or who returned after at least a three-year absence.

Task Competence Motivation. One kind of achievement motivation identified by Veroff, McClelland, & Ruhland (1974) as "a motivation to meet the demands of a task" (p. 182). The subjects tried to meet the challenges of the task regardless of the degree of success they experienced.

Traditional Women Undergraduates. Students enrolled at the University of North Carolina at Greensboro at the time of data collection, who entered the program immediately following graduation from high school.

Trait. An observed collection of individual action tendencies (Hall & Lindsey, 1978).

Assumptions

The following assumptions were acknowledged in this study. They identify ideas upon which the research was based that were not tested as an integral part of the study.

1. Q-ach, extraversion-introversion, and locus of control instruments are valid measures of independent psychological constructs.

2. Psychomotor tasks can be used as measures of persistence (Gunner, 1975; Yeary, 1971). The specific tasks in this study have psychological as well as physiological components, and are capable of generating a measure of physical persistence.

3. "Time on task" is a valid measure of physical persistence in the execution of the tasks.

4. Strength and athletic experience, although acknowledged to be related to task performance, have a minimal influence on the execution of the tasks used in the present study.

5. "Physical persistence" is a generalized personality trait characteristic of individuals across situations (Eysenck, 1970).

Scope of the Study

Subjects were selected randomly from women undergraduate students enrolled at the University of North Carolina at Greensboro, Spring semester, 1980. The sample was comprised of 35 traditional women between the ages of 18 and 22, and 35 reentry women aged 25 through 50. Women with physical limitations and pregnant women were excluded from the study.

All data were collected by the primary investigator in two administrations per subject between February 4 and April 4, 1980. No attempt

was made to control for a subjects prior athletic experience or present level of involvement in physical activity.

Significance

Perhaps it is self-evident that older women returning to school to complete their education possess a high degree of motivation. Although researchers who examine participants in programs especially designed for reentry women concur with this idea (Campbell, 1973), there is evidence that these women have special problems associated with returning to school. Often women return with inadequate or outdated preparation, contributing to low self-confidence, and an inability to recognize talents and interests. They have difficulty in generating viable alternatives (Brooks, 1976). Lack of knowledge about the personal growth of adult women students led Tittle and Denker (1977) to call for measures with such focus to "be a priority for research and development" (p. 550).

It has been reported that women returning to college lack confidence in their physical abilities. In a study conducted by Astin (1976a), students participating in continuing education for women programs expressed a feeling of insecurity about their athletic ability. In a post program survey, three-fifths of the respondents rated themselves no better than average in athletic ability, and a much smaller percentage rated themselves in the highest 10% (p. 72). Of the 23 characteristics surveyed, athletic and mathematical ability were rated lowest. Adult women enrolled in the regular college curriculum gave themselves an even lower rating in these specific abilities.

Many adult women students view lack of physical fitness as a problem. Thirty-one percent of the students interviewed by Magill and Cirksena (1978) reported a lack of physical endurance and energy. In addition, many women had a limited perception of the kinds of recreation available to them as well as the kinds of activity they might enjoy (Alexandra, 1976). Consequently, some reentry women did not know how to choose appropriate activities or integrate them into their lifestyles.

Administrators and others involved in the educational process may reinforce or influence reentry students' attitudes toward movement. Physical education classes are often viewed as barriers to reentry women rather than as a valuable addition to their lives. Westervelt (1975) stated that the requirements, originally instituted to serve the development needs of younger women, are "embarrassing or inappropriate" for older women (p. 21). Myers (1964) viewed the requirement as a nuisance to mature women. There is a need for understanding the dynamics of these perceptions and what can be done to facilitate an increased awareness of the role physical activity might play in the lives of reentry women. It is important that a variety of options be available to these students, based on their particular characteristics.

More specifically, "persistence" is believed by many to be a quality characterizing those who are physically active (Yeary, 1971). Athletes for example, have been described as possessing a kind of stick-to-itiveness which contributes to their continued and consistent involvement in sport (Duquin, 1978). In fact, "persistence has traditionally been viewed as a personality characteristic inherent in the

successful athlete" (Duquin, 1978, p. 62). Yet the psychological factors that contribute to persistence on physical tasks are still unclear (Farley, 1968; Yeary, 1971). Analyzing the psychological variables believed to be relevant to this construct and to physical task perserverence may further clarify the relationship that may exist between the two.

Whether or not reentry women differ from traditional women college students has not been studied. Knowledge from such research is important if the physical activity needs of reentry women are to be understood and adequately met in programs of higher education as well as elsewhere.

CHAPTER II

REVIEW OF LITERATURE

The literature pertaining to reentry women is largely descriptive in nature and does not focus on specific characteristics of members of the group. Therefore, in addition to reviewing research in the broad areas of education, psychology, and physical education, information was reviewed from numerous subdisciplines. Some of these included counseling, adult education, the psychology of women, personality, sport psychology, and sport sociology. Although little research was found which specifically reported the psychological characteristics and motor task persistence of women, the works cited on the following pages provide a framework for considering the topic of the present study.

The chapter is organized into two major sections: (a) reentry women in higher education, and (b) the concept of persistence. The first part is further categorized according to programs for reentry women, psychological characteristics of the returning woman, and reentry women and physical activity. The second major section addresses the measurement of physical task persistence from an historical perspective, and the relationships among personality, persistence, and physical performance. The chapter concludes with a brief summary.

Reentry Women in Higher Education

According to Brandenberg (1974), one of the most significant changes in the composition of the undergraduate population is the increasing

number of women returning to school as regularly matriculated students. Many women return to school during "middle motherhood" or typically between the ages of 35 and 40 following an extended interruption of their educational experience (Brandenberg, 1974). Some reasons for attending college at a later stage in life include job retraining, additional courses for job advancement, enrichment of life experiences, and the development of leisure-time skills (Hanson & Lenning, 1973). Generally, older students have received less attention than those of traditional age from counselors and other college personnel. Many writers suggest that before colleges can effectively help adult students, they must make an effort to understand the students and their special needs (Howard, 1975; Magill & Cirksena, 1978; Steele, 1974). Women students especially are thought to experience problems in returning to student life and therefore are in need of special outreach programs to facilitate their educational growth (Kelman & Staley, 1974).

Programs for Reentry Women

Current continuing education programs for women are traceable to the 1960s when universities began to notice the increase in the number of mature women returning to college. Comprehensive programs of counseling and informational services are presently offered to women by many large universities and community colleges (Scott, 1980). The literature on special programs for women ranges from general surveys to outlines of specific courses for reentry women at a community college (Walsh, 1979). Many model programs are found in the community college system where the greatest effort to deal with the educational needs of reentry women appears to exist. A review such as that by Magill and

Cirksena (1978) about programs at five community colleges in the San Francisco Bay area is typical of the research on this topic. Reported data consisted of interview and questionnaire responses to the students' reasons for returning to school, personal characteristics, and their needs and problems upon reentry.

Addis (1967) stated that the greatest need of students returning to school after a period of absence was "more assistance in academic orientation and personal adjustment to a new pace and mode of living" (p. 293). The kinds of problems encountered by adult women are both material and psychological. They often face institutional barriers to entrance and success in school. These barriers may be (a) difficulty getting information, (b) lack of academic counseling leading to course scheduling problems, and (c) limitations on transfer of credit. Some of the psychological problems include (a) lack of support by family and friends, (b) feelings of inadequacy, (c) conflict with home responsibilities, and (d) lack of people with whom to talk (Magill & Cirksena, 1978, p. 23). When Magill and Cirksena (1978) administered a questionnaire to 124 women enrolled at five community colleges to determine potential problems, lack of self-confidence (34%) and lack of energy or physical endurance (31%) were identified most often. In a survey conducted by Demko (1978) of 29 Michigan community colleges, leisure time and personal enrichment courses were most often requested by older students. Because adults generally participate less in extracurricular activities, it appears there is a need to provide special opportunities for them--perhaps by forming groups whose members are similar in age and interests (Hanson & Lenning, 1973).

Brandenberg (1974) noted that the uncertainty and insecurity felt by returning women may have been reinforced by college services that were primarily geared for younger students. Older women often felt anxiety about using such services and viewed them as being meant for the "kids" (p. 15). Carsman (1977) commented that extending services to include these women ". . . may be the single most important component to the realization of the new older woman--one who is truly re-created" (p. 145).

Psychological Characteristics of Reentry Women

Knowledge about the psychological qualities characteristic of reentry women is helpful in understanding the personal barriers they face when entering the educational setting. However, most research has focused on program content and/or demographic data rather than the psychological characteristics of the participants (Campbell, 1973). Reported research consistently characterizes the reentry woman as strongly motivated, serious, persistent, and interested in learning for its own sake, in spite of expressed fears about entering college. A reason sometimes given for returning to school is the need for a "feeling of achievement" or "sense of competency." In a survey conducted by Hanson and Lenning (1973), older students tended to be more motivated to do well than the younger students. Positive self-estimates of abilities in the above cited study and one reported by Astin (1976a) were limited to certain characteristics. Two-thirds of the subjects interviewed by Astin (1976a) rated themselves above average or in the top 10% in effectiveness on the job, academic ability, physical appearance, and drive to achieve. However, on four traits--i.e., math ability,

athletic ability, public speaking, and artistic ability--as many as three-fifths rated themselves no better than average (p. 72).

Reentry women appear to be searching for identity and integrity through new educational experiences; they are doing so by expressing a greater need for independence. Results of a study by Baruch (1967) indicated that a temporal cycle in the achievement motive is associated with the age and family situation of college educated women. The decline in achievement drive experienced by women beginning a family is followed by a return to the previous level once the children are grown. Baruch supports the contention that a relationship does exist between age and achievement motivation as both feminists (e.g. Friedan, 1970) and women psychologists (Bardwick, 1971) have suggested.

Studies conducted to measure psychological constructs other than achievement motivation are few. Hooper and Rice (1978) studied the locus of control of adult students following counseling. Using a scale developed by Levenson (1974), they hypothesized that students making changes such as a return to school would also increase their belief in their control over their lives. The total sample consisted of 298 females and 37 males (N = 335) who had been counseled through the Continuing Education Services of the University of Wisconsin between October 1972 and June 1974. The results of the research revealed that the respondents were predominantly internally controlled. However, they did not necessarily attribute the change directly to the counseling experience. No differences between male and female respondents were found on any of the locus-of-control subscales. Hooper and Rice (1978) pointed out the need to examine the level of motivation, locus of

control, and other personality variables in relation to the approval of significant others, which was also shown to be an important factor in a woman's decision to return to higher education.

The above cited variables have potential to be better predictors of academic success, as well as other kinds of behaviors, than the more traditional predictors such as IQ or grade point average. No other studies were reviewed which pertained directly to the locus of control variable or other psychological characteristics of adult reentry women.

Reentry Women and Physical Activity

A national adult physical fitness survey sponsored by the President's Council on Physical Fitness in 1972 showed that women with more education participated to a greater degree in physical activity than those with less education (Clarke, 1974). Of the 530 women with some college education, 53% engaged in walking, 29% in bicycling, 23% in calisthenics, 22% in swimming, 5% in jogging, and 1% in weight training (p. 8). In a survey conducted to determine how the average American woman spends her time, Robinson (1977) found that the total amount of time spent in physical activity by employed women and housewives was two percent and one percent respectively. He also reported that more educated women were above average in activity. One needs to be cautious in comparing such reports because of the differential units of participation and arbitrary classification of subjects. However, both surveys reflected the fact that educated women were more active. This information together with the data supporting a decrease in physical activity with age (Kenyon, 1966; Clarke, 1974) provides a point of departure for examining reentry women, who are both older and more educated.

Hendricks (1977) stated that "to attain anything approaching an adequate grasp of the adjustments facing women in their middle years, it is necessary to understand the role leisure and free-time activities play in their lives" (pp. 114-115). Women who return to school often have a limited perception of the kinds of recreation available to them, such as hobbies, games, and athletic activities (Alexandra, 1976). Although few articles deal with the specific physical activity needs of reentry women, existing information indicates that these women view physical ability as one sphere of their lives in need of attention (Astin, 1976a; Demko, 1978; Magill & Cirksena, 1978).

Psychological characteristics related to participation. Researchers have tried to identify the psychological characteristics associated with college women and their participation in physical activity. Siegal (1973) studied the relationship of extraversion-introversion, body cathexis, and the estimation of the passage of time. College females who liked and disliked physical activity were subjects in her study. Based on Eysenck's excitation-inhibition theory of arousal, it was expected that those who liked physical activity would be more extraverted. Sixty undergraduate non-physical-education majors were tested. No significant difference was found between those who liked physical activity and those who disliked physical activity on the Eysenck Personality Inventory Extraversion Scale. However, those who disliked activity scored higher on introversion.

Extraversion-introversion was also one of the characteristics measured by Burdeshaw (1971) in a study of the personality profiles of nonswimming university women. Persistent nonswimmers who had received

instruction were compared to nonswimmers who had never received instruction. A multiple discriminant analysis calculated on the data from Catell's 16-Factor Personality Data Questionnaire revealed no differences between the groups. Subsequent univariate F tests showed that the nonswimmers with no previous instruction were more introverted than the persistent nonswimmers. The latter group showed an inclination toward extraversion. A tendency toward self-directed, independent behavior was exhibited by members of both groups. The data suggest that the personality pattern typifying the persistent nonswimmer is one that may be inhibited by the rather rigid goals customarily associated with group instruction in swimming. These people may not persist in efforts to be successful in such a situation. Burdeshaw (1971) speculated that the persistent nonswimmer may need individualized and flexible goals and highly motivating techniques in order to continue to try to become a swimmer (p. 84).

Investigations by Hall (1974b) and Richardson (1974) were conducted to identify the relative importance of postulated determinants of adult women's involvement in physical activity. Although the studies were conducted independently of one another, they used the same instrumentation and thus the results are comparable. In both samples all subjects were married and college graduates. Altogether 135 women from Great Britain, 123 from Canada, and 318 from the United States were tested.

The four types of determinants hypothesized to explain female involvement in sport and physical activity were (a) socializational, (b) dispositional, (c) attitudinal, and (d) situational. The

psychological variables included in the dispositional category were body image, self-esteem, need to achieve success, and need to avoid failure. The data from the psychological and socialization measures are related to the present study.

A stepwise multiple regression procedure, entering variables one at a time based on their contribution to the unexplained variance, was executed to compute equations. Of the variables retained in the analysis, "activity level when younger" was the most powerful predictor of participation for both the British and American women. It accounted for over half of the explained variance in each case. "Present family interest" explained nearly 62% of the variance in the Canadian sample. For all samples, the contribution of dispositional variables was minimal (Richardson & Hall, 1974). The overall explained variance for the British sample was 72.7%, for the Canadian sample 65.4%, and for the United States sample 38%.

No studies were located in which the locus of control of mature women students was measured in relation to their level of physical activity. However, two studies examining the locus of control of physically active men provide some reference for analyzing this construct.

Sonestroem and Walker (1973) hypothesized that internally controlled subjects who held positive attitudes toward physical activity would exhibit higher fitness levels and would be more active than other subjects. The data of 102 university male upperclassmen supported this hypothesis. In a more recent study by Rotella and Bunker (1978), the locus of control and achievement motivation of male participants in a

national championship tennis tournament and members of a local retired seniors group were examined. All subjects were 65 years of age or older. Scores on Rotter's Internal-External Locus of Control Scale indicated that all the subjects were internally oriented; the competitive tennis players were slightly more internal than their counterparts ($p = .10$). However, the tennis players did not score higher than the volunteer local retirees on the Achieving Tendency Scale for Males as expected. This finding refutes the idea that high achievement motivation is necessary for success in sports. In fact it supports Bird's (1980) contention that achievement motivation is a situation-specific phenomenon and warrants assessment within particular contexts. An examination of these characteristics of physically active older women awaits investigation.

Most articles dealing with the barriers confronting reentry women focused on the inappropriateness of required physical education for older students. In a publication entitled "Education Planning for Mature Women," Kline (1973) addressed this particular issue. She said, "for the woman . . . who spends approximately 96 hours a week on household and family associated tasks which necessitate much physical activity, the physical education requirement is unnecessary" (p. 173). Instead, she proposed a number of alternatives for physical self-improvement including sessions to discuss the effects of harmful habits such as smoking, overeating, excessive drinking--nutritional concepts, and the maintenance of income during career adjustment to reduce stress (Kline, 1973, p. 299). Westervelt (1975) viewed physical education requirements as "embarrassing or inappropriate" for older women as they

were originally designed and instituted to serve the developmental needs of younger women (p. 21). Astin (1976b) agreed with Westervelt's opinion and went on to say that "busy adult women find it difficult enough to fit academic classes into their schedules without the addition of gym courses" (p. 54). Myers (1964) supported these arguments and called the requirement a nuisance to mature women. She observed that "most married women, particularly those who have small children or do their own housework, get plenty of exercise" (Myers, 1964, p. 138). The attitudes of these writers are typical of those who address the issue. If physical education is mentioned at all in the literature of reentry women, it is usually viewed as a barrier to be overcome or unnecessary.

It should be noted that not all educators view the physical development aspect of the returning woman in this manner. Weg (1977) recognized the need to develop the whole person all through the lifespan--intellectually, emotionally, and physically. She argued that for young and old alike, physical activity is conducive to feelings of well-being and self-confidence. Of the aging woman, Weg stated that "a woman's greatest damage is created not by the small decreases in the efficiency of her physiology, but by her acceptance of a negative image of herself" (Weg, 1977, p. 24).

In an address to the Southern Association for Physical Education of College Women, Kivett, home economist and expert on the subject of aging, emphasized the importance for all people to maintain their physical and mental health, particularly the aging (Kivett, 1979). She encouraged physical educators to develop courses suited for older returning students and to counsel them in their physical activity needs.

Such courses might include physical skill learning in middle and older adulthood, the maintenance of emotional and physical health, and instruction in the use of leisure time. These steps she viewed as necessary in order to help others lead productive and independent lives in their later years.

Some college and university personnel have begun to integrate courses in health and physical education into their adult program curriculums. Alexandra (1976) described a one-year program designed for low-income, urban women returning to school. Included in the curriculum was a required course entitled "Health Education II" which emphasized health, mental fitness, and physical fitness. In the semester following the first offering of the required course, seven out of 23 students enrolled in elective health or physical education courses.

Dib (1978) reviewed 19 community college programs in Southern California specifically designed for adults over 55. Numerous recreational courses, many with a fitness and health orientation, were available to these students. Examples of activity offerings included jazz dancing, disco dancing, yoga, golf, tennis, backpacking, and wilderness camping. A similar kind of program was described by Demko (1978) in a survey of 29 Michigan community colleges.

Only one report was reviewed in which an approach to teaching physical activity to reentry women as well as senior citizens was described. The purpose of a badminton course offered at Berea College in Kentucky was to establish an atmosphere of learning for the reentered student that would guarantee a feeling of success during each lesson (Chrisman, 1979). Sixteen women ranging in age from 37 to 78 were

members of the class. Modifications in the game and format of the class were carefully planned to facilitate goal attainment of this particular group of students. In an evaluation questionnaire following the course many women indicated a revitalized approach to living and new incentives to move facilitated by an increased sense of well-being (Chrisman, 1979, p. 26).

The Concept of Persistence

Persistence has been defined and measured in numerous ways. The present study was focused on the willingness of individuals to continue to try to perform two kinds of motor tasks in spite of repeated failure. These behaviors were analyzed in relation to selected psychological characteristics of the participants. Thus, the review of research in this section was limited to (a) an historical overview of the meaning and measurement of physical task persistence, and (b) the relationship among personality, persistence, and physical performance.

Physical Task Persistence: An Historical Overview

The meaning of "persistence" is derived from the latin word persistere, where per means by way of, and sistere to stand. It conveys the idea of remaining unchanged or fixed in a voluntary continuous course of action (Ryans, 1939c, p. 733). Persistence has been recognized in the literature as a behavioral manifestation of motivation. The general testing paradigm involves a situation in which a person is confronted with a very difficult or insolvable task and is either unrestricted in the time given to solve it or is permitted an unlimited number of attempts. The measure of persistence, then, is either the

total lapsed time for attempting a solution or the number of trials executed before giving up or turning to an alternative activity (Feather, 1962).

The concept of persistence has intrigued investigators since the early 1900s. Fernald's (1912) early notions encompassed the qualities of the term as well as the influence of the stimulus or situation. He said:

> While the principle quality included into what is to be measured is so called will, pluck, spunk, sand, determination, endurance or persistence, in any exercise of this faculty, other mental functions are involved and cannot be ignored, e.g. courage, faith, judgment, and appreciation of the stimulus (Fernald, 1912, p. 331).

In order to test the belief that the success or failure of individuals to continue to strive to achieve depends largely on their ability to endure discomfort, Fernald measured the amount of time subjects were willing to stand with their heels off the floor supporting their weight on their toes. A sample of nondelinquent subjects endured twice as long as delinquents.

A follow-up study conducted by Bronner in 1914 (cited in Ryans, 1939c), involved the holding of two-pound dumbbells at shoulder level. Only 11% of the delinquent girls tested exceeded the median holding time of college girls. Bronner concluded that members of the delinquent group seemed to have much less will power and physical endurance and were not willing to endure physical discomfort for the sake of achieving the particular goal.

Researchers next began to define persistence as a personality trait. They expressed concern primarily for classifying different kinds of persistence according to the amount a person possessed. Often a

variety of tasks were investigated, from insolvable puzzle tasks to unusual measures of physical endurance. For example, Hartshorne, May, and Maller (1929) administered three persistence tasks, one of which tested the amount of time a subject was willing to stand on one foot. Small correlations were found (from -1.11 to .10) among the measures for subjects ranging in age from nine to 16. There was, however, a tendency for persistence to increase with age.

In 1933, Howells administered a series of tasks to male and female students at the University of Colorado. The tests were designed to measure the ability of subjects to persist in spite of increasing stress and discomfort. Subjects experienced squeezing a hand dynamometer, needle pricking, the application of increasing amounts of heat to the skin with electric coils, electric shock, pinching a finger, and forcing a blunt peg into the flesh. The multiple correlation among the tests was .80 and it was concluded that the measures constituted a reliable measure of the tendency to persist (Howells, 1933).

Utilizing factor analytic techniques, Thornton (1939) attempted to identify commonalities among various measures of persistence. In addition to the pressure tests used by Howells, he collected breath-holding time. These measures were correlated with other performance data such as word building and scores on perceptual ability tests. The analysis did not reveal any factor universal to all the tests. Thus according to Thornton, they were not all measuring the construct called persistence (Thornton, 1939, p. 38). These conclusions contradict a series of findings by Ryans (1938a, 1938b, 1938c) who demonstrated the existence of a general factor of persistence. Ryans (1939c) suggested

that attention be given to tests purporting to measure persistence. He noted that they have often been administered under varying conditions and to dissimilar samples; methodological flaws not to be ignored. Ryans concluded that the existence of a general trait of persistence has neither been proven or disproven although evidence for and against such a proposition has been presented (Ryans, 1939c, p. 737).

Eysenck's extensive investigation of persistence began in the 1950s. Based on the findings of selected earlier research, he identified more specific types of persistence, namely persistence on physical tasks and persistence on ideational tasks (Eysenck, 1970, pp. 79-80). These types of persistence were more specifically delineated. In addition, Eysenck set forth the notion that persistence as a general factor characterizes individuals to a greater or lesser degree.

Eysenck was primarily concerned with identifying the dimensions of personality through factor analysis. His research during the 1950s was designed to theoretically account for the relationship between persistence and personality. He measured the construct by a physical endurance test that involved holding a leg above an adjacent chair for an indefinite length of time. Eysenck proposed that differences between introverts and extraverts were related to physical endurance (Eysenck, 1957, p. 215).

Investigations of persistence during the above time period generally focused on differences between subjects or groups of subjects on numerous persistence tasks. Nygård (1977) described the emphasis as "what characterized persistent individuals in contrast to nonpersistent ones" (p. 20). Characteristics of the tasks or situations were of

little interest. In other words, inquiry was addressed to persistence regardless of task qualities. More recent studies have taken into account individual and situational differences. The review of such works follows.

Personality, Persistence, and Physical Performance

Certain psychological characteristics are believed to be related to task persistence. However, the evidence supporting any given relationship is nonconclusive. In an early study Ryans (1939b) developed a persistence test comprised of three sections measuring (a) continued effort in a learning situation, (b) self-estimation on a functional scale, and (c) endurance of the cumulative effects of muscular fatigue. The purpose of the study was to determine the relationship of persistence as measured by the test to personality dimensions of the Bernreuter Personality Inventory. Forty male and female junior college students were tested. Differences approached statistical significance in only two cases. There was a tendency for more persistent individuals to be more stable emotionally. Low persisters showed greater neurotic tendencies. In addition, less persistent subjects tended to be on the extraversion end of the scale (Ryans, 1939b, p. 231).

Howarth (1961) administered the Maudsley Personality Inventory to 309 subjects. They were then categorized into three groups, extraverts, introverts, and intermediates according to score. Subjects were also equated for neuroticism. When the final sample of 50 subjects was assessed on a battery of persistence tests, including breath holding and leg endurance, extraverts were superior on most of them (p. 55). Howarth's conclusions were in conflict with those of Ryans (1939b).

Eysenck's early works do not support the relationship of extraversion to the general factor of task persistence (Eysenck, 1952, 1957, 1970). In fact, Eysenck alleged that persistence is a trait or a consistent series of responses associated with individuals characterized as introverted (Eysenck, 1970, p. 13). He summarized his findings and those of many earlier researchers when he said:

> The evidence is fairly conclusive that persistence constitutes an important trait in our culture; that this trait is relatively unitary in nature and can be measured to the extent indicated by a validity of .9. In addition to this general factor of persistence, we find groups of activities which cluster together and define more specific types of persistence, such as persistence in physical tasks or persistence in ideational tasks. These smaller and less important factors also are subject to measurement with a degree of validity probably not much below general persistence itself. Persistence, as measured by tests, is fairly closely related to persistence as rated by others, and can be said to predict performance in life situations to a definitely significant extent. Persistence tends to show slight correlations with intelligence, more impressive ones with "w" or lack of neuroticism, and with introversion (Eysenck, 1970, pp. 79-80).

The overall conclusion drawn by Eysenck is questionable when physical task persistence and ideational task persistence are examined separately. In fact, Costello and Eysenck (1961) found introverts to be less persistent on physical tasks involving pain tolerance than extraverts. Seventy-two children of both sexes between the ages of 14 and 17 years were assigned to high and low groups according to scores on the Junior Maudsley Personality Inventory. They were asked to squeeze a hand dynamometer as long as possible. Extraverts were roughly 30% more persistent than introverts (Costello & Eysenck, 1961, p. 169). The hypothesis that extraverts tend to be more persistent on physical tasks was supported. No differences were noted with respect to neuroticism or sex.

Farley (1968) reported a study in which he developed a direct set of questions to operationalize the notion of "drive" or "energenic task involvement" to predict physical task persistence on a simple psychomotor task. In addition to the Drive Scale, measures were taken on the need achievement (nAch) subscale of the Edwards Personal Preference Scale, the Manifest Anxiety Scale, the Brengelmann Drive Scale and the Marlowe-Crowne Social Desirability Scale. The persistence of 35 undergraduate university students was tested on the hand dynamometer followed two months later by the Drive Scale and the other personality measures. The correlation between drive and persistence was .44 ($p = .05$), indicating a significant relationship between the self-descriptions of drive and duration of persistence on the dynamometer (Farley, 1968, p. 281). None of the other correlations were significant. Farley suggested the use of individual difference instruments such as the Drive Scale when trying to account for the variance in physical persistence in relation to personality measures.

An investigation by Dalton (1979) also involved the measure of a psychomotor task. The purpose of the study was to determine the effect of training with effort attribution reinforcement on the persistence of a cognitive task and a motor task. Ninety-six male and female fifth and sixth grade students were trained and then tested on a cognitive paper-and-pencil maze puzzle and a motor "space tilt" game. They received prespecified general or effort attribution verbal reinforcement for their performances. Effort attribution significantly increased the persistence time on both tasks. Dalton (1979) hypothesized that the subjects attributed success or failure on the tasks to effort and

thus were willing to continue longer on each task. In addition, there was a tendency for the subjects trained on the motor task to persist longer than the subjects trained on the cognitive task. Analyses of responses to questionnaire items dealing with locus of control and achievement tendency and task persistence showed no interaction. However, the motor trained subjects generally responded more internally than the cognitive trained subjects. The results indicated the need for further research on the effect of personality variables on task persistence.

Researchers concerned with the broader subject of sport performance have also been interested in the relationship between personality and persistence. In a study involving motor ability, Whiting and Stembridge (1965), used the Maudsley Personality Inventory to differentiate between swimmers, nonswimmers, and persistent nonswimmers. They found that male university students who received instruction and still could not swim were more introverted than nonswimmers who had never received instruction. Differences in the mean extraversion scores between the two groups only reached the 10% level of significance (p. 353). However, in a second sample, persistent nonswimmers aged 11 and 12 were significantly more introverted and neurotic than swimmers. These findings are in direct contradiction with those of Burdeshaw (1971) in a similar study of university women reported earlier in the chapter.

Yeary (1971) recognized the significance of a psychological component in competitive sport she called persistence or motivation. The purpose of the study was two-fold. First, an attempt was made to assess differences in the achievement motivation and anxiety scores of

university female athletes in selected sports. Second, after dividing the 103 subjects into low and high achievers based on scores of the Mehrabian Achievement Scale, the investigator measured the absolute isometric endurance holding time of all subjects. Two-thirds of maximum strength on a hand dynamometer constituted this measure. None of the derived values from the ANOVA analyses comparing holding times of low and high achievers was significant. Yeary (1971) concluded that it was not possible to use grip strength as a measure of persistence to discriminate between subjects of varying levels of achievement. The psychological factor and the physiological or muscular strength component could not be separated.

These results were supported in a study conducted by Gunner (1975) who hypothesized that performance and persistence on a hand dynamometer were a function of Atkinson's theory of achievement motivation. Although nonathletes were tested, the results confirmed the point that persistence did not differentiate subjects with low and high tendency to achieve success (T_s) or tendency to avoid failure (T_{af}) scores. Gunner concluded that performance on a hand dynamometer was not a function of achievement motivation.

The only other published study found in the literature review that investigated the relationship of psychological characteristics to physical persistence was conducted by Singer & Powell (1975). The effect of four different conditions of mental activity on the ability of subjects to hang from a bar using only their hands was analyzed. Thirty-six male college student volunteers were given different mental activities to think about while hanging from the bar. No relationship

between the conscious mental behaviors and physical performance was detected. Singer & Powell (1975) suggested that the lack of interaction might be due to the subjects' varying ability to endure pain and fatigue. They also noted the lack of a state of training. Moreover, they indicated that personality variables were not controlled (Singer & Powell, 1975, p. 83).

Summary

The first portion of the chapter reviewed selected literature about reentry women and higher education. It was noted that the number of older women students returning to college is steadily increasing. Although certain kinds of programs have been in existence for these students since the early 1960s, relatively little is known about the participants. Physical education received minimal consideration. With few exceptions (Alexandra, 1976; Chrisman, 1979; Demko, 1978; Dib, 1978; Kivett, 1979) the physical development of women in the middle years of life has not been considered. Those who addressed the issue often viewed physical education as a barrier to be overcome by women continuing their educations (Astin, 1976b; Kline, 1973; Myers, 1964; Westervelt, 1975).

The latter text of the chapter revealed that few studies were conducted in which the interaction of personality, physical task persistence, and sport performance was examined. The majority of early research was focused on identifying "persistence" as a personality trait or characteristic and was usually equated with the extent to which an individual could endure pain or fatigue (Eysenck, 1952; Fernald, 1912; Hartshorne, May, & Maller, 1929; Howells, 1933; Thornton, 1939).

More recently, the properties of the task and/or environment have been considered. However, the results were often confounded by the particular measure of persistence employed. Grip strength, as measured by the hand dynamometer, was considered to be a measure of individual strength differences rather than a measure of the quality defined as "persistence" (Costello & Eysenck, 1961; Farley, 1968; Gunner, 1975; Yeary, 1971). The complexity and elusiveness of the concept have made it difficult to study. Although "persistence" appears to have validity as a construct, the exact nature of the phenomenon in relation to other variables remains unclear.

CHAPTER III

PROCEDURES

The methods used to investigate the research problem are described in this chapter. The text is organized into four related sections: (a) the design of the study, (b) pretesting procedures, (c) data collection, and (d) treatment of the data. A rationale for using the specific psychomotor tasks and psychological measures is included in the description. In addition, the Personal Data Questionnaire developed by the investigator is discussed.

Design of the Study

In order to study the physical task persistence and psychological characteristics of two groups of women college students, data were collected on five measures; two psychomotor tasks designed to elicit persistence, and three written psychological measures. Obtained scores from traditional women undergraduate students were compared to reentry women undergraduate students on all measures. Using the paper-and-pencil scores as independent variables, discriminant analyses were computed to determine their usefulness in predicting low and high persisters on each motor task. In addition, a Personal Data Questionnaire (PDQ) was administered to collect personal and demographic information from each subject. The following test offers a rationale for (a) the psychomotor tasks, (b) the written psychological measures, and (c) the Personal Data Questionnaire. It also describes the instrumentation in detail.

Psychomotor Tasks

The psychomotor tasks were intended to elicit a subject's desire to achieve success when asked to perform two different kinds of physical tasks. The first, a gross physical balance task, is a measure of static balancing ability and necessitates the use of the total body. The second, a fine manipulative task, is believed to be a measure of eye-hand coordination, a more specific motor ability. Although there is evidence that performance on such tests is task specific (Bachman, 1961; Henry & Rogers, 1960), it has also been shown that certain underlying abilities are important in the execution of a wide variety of sports skills (Fleishman, 1967, 1975; Singer, 1975).

The particular motor tasks selected for use in the present study were assumed to be distinctly different with respect to the major abilities needed to execute each; i.e., one requires the use of the total body while the other does not. Moreover, performance on the tasks does not depend primarily on strength or prior athletic experience. These important elements, then, are not likely to contaminate performance. Yet, both the balance and eye-hand manipulations are interesting and provide a challenge to subjects of varying levels of ability. Finally, the tasks are administered in a small area, and if necessary, are easily transported to another location for testing. Execution is not dependent upon numerous environmental controls. Scoring is readily accomplished by a trained observer, and the tasks yield compatible scores making for an easy comparison of the results.

A description of each psychomotor task is given below. The object of the task as well as the equipment used is explained. A diagram and photograph are appended.

Gross physical balance task. Static balance refers to a kind of balance in which total body movement is limited; the adjustments made are small (McCloy & Young, 1954). The Bass (1939) Stick Test is a measure of static balance. A diagram of the task and photograph of performance are presented in Appendix A, pages 120-122. The only modification in the task as originally conceived by Bass (1939) was the addition of a blindfold. Occluding vision made it impossible for the subject to rely on visual sensory information to maintain balance. This element was incorporated into the performance to increase the difficulty of the task. It was expected that a truer measure of persistence would be elicited as a result.

The object of the task was to balance on the nonpreferred foot lengthwise along a stick 1 inch wide, 1 inch high, and 12 inches long for a predetermined period of time. The goal, although possible, was purposely designed to be extremely difficult. The appropriate length of predetermined time was identified during the pilot test. In the present study one minute was set as the goal. Testing took place in a space free from obstructions. All subjects were tested individually by the principal investigator.

The equipment needed in the gross physical balance task included:

1 Bass Stick mounted on 1/4 inch plywood
1 pair Nesco eye goggles
1 Casio Chronograph model number F-200
1 Lafayette number 99-90300 4-digit hand tally counter

Eye-hand manipulative task. The apparatus used in this task was a game designed by Mafnif, Inc., Mentor, Ohio, called Ego Trip 2. It was considered to be a measure of fine eye-hand coordination. The game

consists of a wooden frame 18 inches long lined with sponge and numbered for scoring, two rods connected at one end into pivotal holes, and a steel ball approximately 1 inch in diameter. A top view of the task is presented in Appendix A, page 123, followed by a photograph of a subject in the actual test setting.

To begin the task, the steel ball is placed on top of the rods at the pivot point. The object of the task is to manipulate the rods so that the ball rolls along them toward the body. Because the rods are angled upward from the pivotal end of the apparatus, the farther the ball travels, the more likely it is to fall between the rods. Therefore, the task becomes increasingly difficult the closer the target area is to the body. For purposes of this study, the target goal was set at "11". As in the execution of the gross physical balance task, the goal was difficult but not impossible. It was assumed that the subject was challenged but generally unsuccessful at the task. This assumption was tested in the pilot study.

During the performance of the eye-hand manipulative task, the subject was seated in front of a table where the Ego Trip 2 was located, facing a wall free from distractions. Subjects were tested individually by the principal investigator. A complete list of the equipment needed for the eye-hand manipulative task is as follows:

1 chair
1 table 28 inches in height
1 Ego Trip 2
1 rubber mat
1 Casio Chronograph model number F-200
1 Lafayette number 99-90300 4-digit hand tally counter

Psychological Measures

Trait personality theorists believe that behavior can be analyzed to identify underlying traits which represent the tendency for a person to act or behave in a certain way (Williams, 1978). In a recent article, Morgan (1980) proposed that the trait approach to investigating sport performance is credulous provided certain methodological problems are controlled. Accordingly, the present study utilizes a multivariate model that incorporates a number of operationally defined independent and dependent variables.

Numerous authorities suggest that a link exists between personality and physical abilities. There is evidence that individual psychological characteristics contribute to motor performance (Bird, 1979; Kane, 1964, 1978; Williams, 1978). In the present study, three psychological characteristics believed to be potential predictors of physical task persistence are measured. Q-ach and extraversion-introversion are considered relatively stable personality traits (Eysenck, 1970; Kagen & Moss, 1962). The third independent variable, locus of control, is thought to be the result of varying sources of reinforcement (Lefcourt, 1976; Rotter, 1966). A description of the variables and a theoretical rationale for the inclusion of each follows.

Q-ach. Robinson's Achievement Scale (see Argyle & Robinson, 1962) modified and used by Hall (1974b) and Richardson (1974), is a measure of achievement motivation. The scored scale consists of two sets of questions, one reflecting a need for success (nAch+), and the other a fear of failure (nAch-). The total achievement score (Q-ach) is determined by adding the scores of the subscales. In addition, 10

filler items are included in the scale but not scored. A copy of the questionnaire, directions, and scoring are presented in Appendix A, pages 125-127. Administration time for the 25-item Likert scale is approximately 10 minutes.

Hall (1974b) conducted an extensive analysis of the items in Robinson's scale to determine the validity and reliability of the measure. A principal-factor solution with orthogonal rotation factor analysis showed a slightly negative association between the failure avoidance items and the success motive items. Content and construct validity were deemed adequate; however, Hall (1974b) noted that the measures should be used and interpreted with caution (p. 85).

Internal consistence reliability of each subscale was computed using Cronbach's alpha. The reliability for nAch- was .38 and for nAch+ .56 (Hall, 1974b, p. 86). In a similar study Richardson (1974) found reliabilities of .45 and .62 for the respective subscales (p. 112).

Numerous researchers have discussed the need to consider achievement motivation as a multifaceted construct (Donnelly & Birrell, 1978; Veroff, McClelland, & Ruhland, 1975; Yamuchi & Doi, 1977). The psychomotor tasks in this study were designed to elicit a particular kind of achievement motivation called "task competence" (Veroff et al., 1975, p. 182). Given the demands of the tasks, the questions in Robinson's Achievement Scale were regarded as accurately reflecting a subject's willingness to try as hard as possible to be successful. In addition, it has been shown that women learn to value task competence as a goal as opposed to other kinds of achievement (p. 187). The dual nature of the questions in the scale adds to it its appropriateness as a measure to be included in the present study.

Extraversion-introversion. The extensive work of Eysenck (1952, 1957, 1970) forms the theoretical basis for the analysis of the extraversion-introversion personality dimension. Through factor analytic techniques, Eysenck (1952) identified a series of traits that cluster to characterize a personality type. Although he described two dimensions, stability-instability and extraversion-introversion, only the latter was examined in the present study. Eysenck and Eysenck's (1968) Personality Inventory (EPI) Form A, available from the Educational and Industrial Testing Service was administered to each subject. The 24 extraversion-introversion items in the scale were scored, resulting in a measure of the degree of extraversion (E) exhibited by the subject. The inventory also included a response distortion (Lie) scale to detect subjects attempting to falsify answers. Since only "yes" or "no" answers are required on the 57-item scale, administration time is approximately 10 minutes.

Test-retest reliabilities are between .84 and .94 for the complete test, and .80 and .94 for the separate forms A and B (Eysenck & Eysenck, 1968, p. 15). Evidence of factorial, construct, and concurrent validity is presented by the authors (pp. 16-19). As further validation of the scale, Harrison and McLaughlin (1969) found a positive correlation of .72 between self-ratings of extraversion and the "E" scale of the EPI.

Eysenck's (1952) concept of personality included a "persistence" dimension. There is evidence that "physical persistence," a special kind of persistence, is positively related to individuals characterized as being extraverted (Costello & Eysenck, 1961; Eysenck, 1957; Lynn & Eysenck, 1961). Researchers in sport psychology using the EPI have

generally supported extraversion as a personality type characteristic of athletes (Alderman, 1974; Morgan, 1968, 1974; Morgan & Johnson, 1978). Therefore, the EPI is considered to be appropriate for use in this study. In addition, the inclusion of a Lie scale is an effective means of controlling response distortion, a common methodological problem in studies where psychometric measures are administered (Morgan, 1980).

Locus of control. This construct is defined as the extent to which individuals believe they have a causal effect in determining their destinies based on self-appraisal (Lefcourt, 1976; Rotter, 1966). It is representative of the degree to which people accept personal responsibility for what happens to them.

For example, people who perceive themselves as the primary agents of self-control and who feel responsible for most events in their lives are said to be internals or "I" persons (deCharms, 1968). Positive or negative events are viewed by such individuals as the consequence of one's own actions. Likewise, those who conclude that most events in their lives are due to factors beyond their control are regarded as externals or "E" persons. According to Rotter (1966), expectancies regarding the source of reinforcement results in a generalized belief about the causal relationship between one's behavior and the consequences.

In an effort to further refine Rotter's (1966) I-E Scale, Levenson (1974) differentiated three sources of control; internal (I), powerful others (P), and chance (C). The scale is composed of 24 questions with the answers arranged in a six-point Likert format. Each subscale

contains eight questions, and all are independent from the others and scored separately. A copy of the scale and the scoring reference are found in Appendix A, pages 128-129. Administration time is approximately 10 minutes.

Internal consistency estimates of Levenson's (1974) scale are moderately high and in accord with those obtained by Rotter (1966). Kuder-Richardson reliabilities resulted in a correlation of .64 for the "I" scale, .77 for the "P" scale, and .78 for the "C" scale (Levenson, 1974, p. 378). Corresponding split-half reliabilities calculated with the Spearman-Brown method were .62 for the "I" scale, .66 for the "P" scale and .66 for the "C" scale (p. 378). Test-retest reliabilities for a one-week period were .64, .78, and .74 respectively (p. 379).

Lefcourt (1976) stated that locus of control is a particularly valuable construct when used in relation to other variables of similar relevance to the criteria under investigation (p. 142). There is considerable evidence that locus of control plays a mediating role in determining whether persons pursue achievement goals (Lefcourt, 1976; Wolk & Ducette, 1973). Furthermore, persistence in activities that are necessary to the achievement of valued goals, has been shown to be related to internality (Mischel, Zeiss, & Zeiss, 1974) in spite of repeated failure (Kukla, 1972).

Persistence is also believed to be a quality influencing the performance of championship athletes (Duquin, 1978). Participants who attribute their success or failure to internal causes and who are achievement oriented are likely to exhibit greater persistence in the next athletic encounter (p. 66). Furthermore, internality appears to be positively related to the amount of voluntary exercise in which

people engage (Sonestroem & Walker, 1973) and to older adults who are physically active (Rotella & Bunker, 1978).

Personal Data Questionnaire

A 27-item questionnaire designed by the investigator was administered to all subjects. The purpose of the instrument was to collect information regarding personal and demographic characteristics of the subjects. Such data contribute to a more complete description of the sample. Particular subject characteristics may be selected for follow-up investigation after the initial analysis of the data.

The PDQ was completed by subjects immediately following the administration of the psychological measures. A copy of the questionnaire is presented in Appendix A, pages 130-133.

Pre-Testing Procedures

The following text is organized into two parts. The first describes the pilot testing modifications; the second, the methods used in the selection of the subjects.

Pilot Test

Although persistence on physical tasks appears to be important in numerous human endeavors (Singer & Powell, 1975), valid measurement of the characteristic is often difficult to achieve. Attempts by researchers to measure physical persistence have been plagued by a variety of problems. The kind of task chosen and the object of the task are likely to affect the degree of persistence exhibited by the subject (Nygård, 1977; Ryans, 1939c). Differences between subjects in strength or abilities specifically related to the task have often

confounded persistence measures (Gunner, 1975; Yeary, 1971). There are, of course, individual differences which contribute to the issue.

The pilot study was conducted to determine whether or not the tasks initially identified were appropriate for the present study. Six subjects representative of those in the final sample were tested in January, 1980. Subjects ranged in age from 21 to 46 and were considered similar to the women to be tested in age, intelligence, and educational experience. All subjects in the pilot test were volunteers.

In addition to evaluating each psychomotor task, other related purposes of the pilot study were to (a) practice task administration, (b) determine the length of time needed to test each subject, (c) determine the specific criterion for measuring persistence, (d) set the level of goal attainment for each task, and (e) establish the upper time limit for the eye-hand manipulative task.

All subjects were tested individually in Rosenthal Laboratory at the University of North Carolina at Greensboro. Following an explanation of the study, the psychomotor tasks were randomly administered. The amount of time the subject continued to try to achieve the goal was recorded as well as the number of repetitions before discontinuation on each task. This procedure was repeated for each subject. Based on the pilot study the following conclusions were drawn:

1. The psychomotor tasks are appropriate for the study.
    a. The tasks appear to involve different kinds of motor abilities.
    b. They are interesting and challenging to the subjects.
    c. They elited persistence for a measurable but not too lengthy period of time.

2. The average administration time for both tasks was 45 minutes. It was therefore decided that each subject's scores would be obtained over two days, one day for the tasks and a second day for the paper-and-pencil measures.

3. No consistent or clear relationship existed between the persistence measures on the two tasks. Therefore the index of persistence to be used is "time on task." This was accepted as more appropriate than "number of repetitions" or a combination of the two.

4. The preset goals for each task represent believable but not probable attainment levels. A goal of 1 minute on the gross physical balance task, and a score of 11 on the eye-hand manipulative task met these criteria.

5. One subject persisted 45 minutes on the eye-hand manipulative task. In order to keep testing time on Day 1 to a reasonable length, a maximum of 45 minutes was set for this task.

Because of the standardized nature of the paper-and-pencil measures and the ease of administration, pilot testing of these instruments was not necessary. However, following the psychomotor tasks, the Personal Data Questionnaire was administered to each subject. Items were analyzed for content, clarity, and thoroughness. Comments were requested regarding the questions, as well as suggestions for the inclusion of additional items. No major changes in the questionnaire were necessary based upon the trial administration.

Following the completion of the PDQ, subjects in the pilot study were formally debriefed. Any questions regarding the investigation were answered.

Selection of Subjects

The population under study consisted of female students enrolled as undergraduates, either part- or full-time, presently working toward the completion of a baccalaureate degree at the University of North Carolina at Greensboro. The sample consisted of subjects from two subgroups:

1. Traditional women undergraduates currently enrolled at the University of North Carolina at Greensboro.

2. Adult reentry women undergraduates currently enrolled at the University of North Carolina at Greensboro.

Subjects were selected randomly from computer cards provided by the Office of Institutional Research. Every student enrolled at UNC-G in the Spring of 1979 was represented. Following an initial card sorting to separate males and females, the women students were sorted into two groups by age. Traditional women students were between the ages of 18-22, reentry women between 25-50. A list of 150 in each age group was secured by using the last two digits in the social security number. An off-line printout of the names was obtained from the Computer Center.

Beginning with the first name on the list, potential subjects were telephoned by the investigator two weeks prior to testing. The purpose of the study was explained and qualified individuals were invited to participate. Due to the nature of the psychomotor tasks, persons with physical limitations and pregnant women were excluded from the study.

A testing date and time for Day 1 was arranged with those who agreed to participate. Subjects were instructed to dress comfortably and to wear smooth soled tennis sneakers. A postcard was sent to each subject one week prior to the test date as a reminder. Those who did not show at the appointed time were phoned once to reschedule. If they did not come a second time, another subject was contacted. This procedure was followed until 35 subjects in each group were tested.

Data Collection

Testing took place in the human performance laboratory of Rosenthal Gymnasium, School of HPERD, on the University of North Carolina at Greensboro campus. All data were collected between February 4 and April 4, 1980, between 8:00 am and 8:00 pm in individually arranged sessions.

Two separate days were used by the primary investigator to obtain measures. Physical task persistence on both psychomotor tasks was measured on Day 1. All paper-and-pencil psychological measures and the Personal Data Questionnaire were administered on Day 2. The second day of testing was scheduled as soon as possible following Day 1, and did not exceed a period of two weeks.[1] The specific procedures followed on each day of testing are described in the sections below.

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[1]Two reentry women were unable to come to the laboratory to be tested. One of these subjects was tested in Graham building on campus, the other in her home. In addition, it was necessary to collect paper-and-pencil measures of three traditional women undergraduates at their dormitories.

Psychomotor Tasks--Day 1

Physical persistence on two psychomotor tasks was measured on Day 1. The decision to obtain data in this order was based on the notion that the tasks posed less threat to subjects than the written instruments. Moreover, they were intended to stimulate interest in the study and serve as an incentive for subjects to return on Day 2 of testing.

At the beginning of the session the participant was asked to complete an Informed Consent Form with conditions previously approved by the School Review Committee for the protection of human subjects. A copy of the form is found in Appendix B, page 135.

General orientation information was read to the subject by the investigator (see Appendix B, page 136). The subject randomly determined which task to perform first by selecting one of two slips of paper. For the gross physical balance task the procedures were as follows.

Gross physical balance task. In order to determine the foot to be used for balancing, a simple test was performed. The subject was asked to walk toward a 10-inch playground ball placed on the floor, and gently kick it toward the opposite end of the room (photograph in Appendix B, page 137). This procedure was repeated three times if necessary, and the foot opposite the one used for kicking two out of three times was noted. Thus, the nonpreferred foot was used for the balance task. Shoes were provided for subjects not wearing a soft sole.

The Bass Stick Test, a measure of gross physical balancing ability, was placed on the floor. The following directions were read to the subject:

> This is called the Bass Stick Test. The object of the task is to balance blindfolded on your nonpreferred foot lengthwise along the stick for a one-minute period without touching the floor with your foot. You may continue to try and reach the goal as long as you wish. There is no limit on the number of times you may remount the stick.
>
> Begin by placing your nonpreferred foot on the stick and your preferred foot on the floor. When I tell you to, lift your foot off the floor and maintain balance on the stick as long as possible. I will inform you if you balance for one minute. When you have attempted the task as long as you desire, indicate you are stopping by saying "finished." I will be recording the total amount of time you attempt the task, as well as the number of times you lift your preferred foot off the floor to initiate balance.
>
> Do you have any questions? If not, you may practice the task for 30 seconds without the goggles.
>
> Place the goggles over your eyes and get into starting position. Start the task by lifting your foot from the floor when I say "begin."

The amount of time the subject continues to try and reach the goal, or physical task persistence, was measured on a Casio F-200 chronograph to the nearest 1/100 of a second. In addition, the number of times the subject lifted the preferred foot off the floor to initiate balance were counted on a Lafayette 4-digit hand tally counter. These two measures, "time on task" and "number of repetitions," were recorded on the data sheet shown in Appendix B, page 138.

Eye-hand manipulative task. The second task was performed immediately following the first task. The Ego Trip 2 apparatus was located on a table 28 inches in height. The subject was instructed to be seated in a chair in front of the table. The following directions were read by the investigator:

> The apparatus you see before you is called Ego Trip 2. The object of the task is to manipulate the rods such that the ball moves along them and drops into the wooden square. Do not lift the apparatus off the table or slide it back and forth. You may continue to try and reach the goal as long as you wish. When you

have attempted the task as long as you desire, indicate you are stopping by saying "finished." I will be recording the total amount of time you attempt the task, as well as the number of times you place the ball on the rods and begin again.

Do you have any questions? At this time you may practice the task for 30 seconds. Start to manipulate the rods when I say "begin."

Two measures were recorded, total time on the Casio F-200 chronograph and the number of times the subject placed the ball on the rods tallied on the Lafayette hand counter. The goal was "11" as predetermined in the pilot study. Following the completion of the task both scores were recorded on the data sheet.

At this time the subject was debriefed with regard to the psychomotor tasks. A second day of testing was arranged for the completion of the paper-and-pencil measures.

Paper and Pencil Data--Day 2

When possible, subjects were tested in small groups on Day 2. The psychological measures, staggered in order to prevent contamination, were completed by the subjects before the Personal Data Questionnaire. Total testing time was approximately one hour.

The general orientation instructions read to subjects at the beginning of the testing session are presented in Appendix B, page 139. A test packet containing all the measures was distributed to each subject. Directions for the Q-ach, extraversion-introversion, and locus of control tests were printed at the top of each measure. Questions regarding the completion of the tests were answered by the investigator.

Formal debriefing took place following the completion of the measures. Questions pertaining to any aspect of the study were answered, and the study of the relationships between the psychomotor task measures and the psychological measures was identified as an important aspect of the research. Subjects could then request that an abstract be sent to them upon the completion of the investigation.

Treatment of the Data

Treatment of the data includes (a) sample data reduction, and (b) statistical analyses of the obtained persistence and psychological scores and selected items from the Personal Data Questionnaire.

Sample Data Reduction

Thirty-five traditional women undergraduate students, ages 18-22 and 35 reentry women undergraduate students ranging in age from 25-50 were tested. Two subjects from each group were eliminated from the study because of Lie scale scores of five or more on the Eysenck Personality Inventory. Eysenck and Eysenck (1968) and Morgan (1968) recommend that data from subjects believed to be "faking" responses be viewed with skepticism. Thus, four subjects were eliminated from the final sample. Each group was comprised of 33 subjects, resulting in a total sample of 66.

The raw data for all 66 subjects on all the variables is tabled in Appendix C, pages 141-143. Subjects with Lie scale scores exceeding the acceptable limit are not included.

Statistical Analyses

Several statistical analyses were used in order to examine the data pertaining to the research hypotheses stated in Chapter I. All of

the procedures were available through the University of North Carolina at Greensboro Computer Center. The Statistical Analysis System (Barr, Goodnight, Sall, & Helwig, 1976) and the Statistical Package for the Social Sciences (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) packages were utilized.

Prior to examination of the hypotheses, an analysis of the descriptive nature of the data was presented. Information from selected Personal Data Questionnaire items such as age, race, marital status, occupation, and number of children provided a description of the sample. This was followed by an overview of the subjects' scores on the measurement variables. In addition to the mean, median, standard deviation, and range of scores, Spearman correlation matrices indicating the extent of the relationship among the variables were computed from the scores of members from each group.

Before applying the t-test procedure to determine the difference between obtained measures for each group on the five measurement variables, the Kolmogorov-Smirnov Test for approximating the normality of distributions was computed (Daniel, 1978). An examination of this output revealed that scores on the psychological measures, Q-ach, extraversion-introversion, and locus of control, were normally distributed. However, "time on task," the physical persistence measure on the psychomotor tasks, was not normally distributed. Consequently, a parametric procedure for comparing the groups on these variables was not appropriate. A nonparametric test was chosen to compare traditional and reentry women's persistence scores on the gross physical balance task and the eye-hand manipulative task.

The t-test procedure was used to compare the scores of each group on the psychological measures, and the NPARIWAY Wilcoxin Median procedure to compare the persistence scores on the two groups. A p value of .05 was accepted as statistically significant on all tests.

The second problem was to determine whether or not persistence on either psychomotor task could be predicted from scores on the psychological measures. This was accomplished through the use of the STEPWISE subprogram of the DISCRIMINANT program in the SPSS statistical package (Nie et al., 1975). The program, designed to specify the linear combination of variables that maximizes the difference between groups, selects the single best discriminating variable and then adds subsequent variables according to their ability to further discriminate between the groups. The contribution made by each variable is related to the variables already in the equation.

Discriminant analysis is a procedure in which group membership is predicted (Kerlinger & Pedhazur, 1973). Therefore, prior to the analyses subjects were divided into "low" and "high" persisters based on their persistence scores. The discriminant analyses were performed to determine how well the psychological variables were able to classify and predict the degree of persistence exhibited by a subject, in terms of the "percent correctly classified" (Spector, 1977).

A total of six STEPWISE discriminant analyses were performed, the first three predicting persistence on the gross physical balance task and the other three persistence on the eye-hand manipulative task. It was hypothesized that on each task low and high persisters in the total sample, the traditional sample, and the reentry sample could be

differentiated by their scores on the psychological measures. From these analyses it was possible to predict persistence on the total sample, and if the persistence of the traditional and reentry student subgroups was equally predictable.

An extended analysis of PDQ items related to a subject's past and present level of physical activity, as well as specific demographic items already identified, was indicated following an examination of the above discriminant functions. Additional STEPWISE equations were computed, using selected PDQ items as predictor variables. Six analyses were examined to determine whether or not these variables were better predictors of physical task persistence than the psychological variables. These computations, although not directly related to the hypotheses stated in Chapter I, added important information to the findings in this study. As in all previous discriminant analyses a p value of .05 was considered sufficiently significant.

CHAPTER IV

ANALYSIS OF THE DATA

This study was designed to investigate selected psychological and behavioral characteristics of two groups of women undergraduates, traditional students and reentry students. Three written instruments were administered to both groups to measure Q-ach, extraversion-introversion, and locus of control. The physical task persistence of each subject was measured on a gross physical balance task and an eye-hand manipulative task. In addition, each subject completed a questionnaire which provided additional personal information.

Two different kinds of statistical analyses were performed on the obtained data. First, comparisons were made on each of the five variables to determine whether or not differences existed between traditional and reentry students. Second, multivariate classification and prediction techniques were used to explore the relationships among the psychological variables and the degree of physical task persistence exhibited by the subject. Finally, the Personal Data Questionnaire items were examined and additional discriminant analyses computed where warranted.

Description of the Sample

Data were collected from 33 traditional women undergraduates and 33 reentry women undergraduates selected randomly from the University of North Carolina at Greensboro population, Spring semester, 1980.

Traditional students ranged in age from 18 to 23, with a mean age of 19.39 years. The average age of the reentry students was 34.15 years, the youngest being 25 and the oldest 48. A summary of the distribution of subjects by age is shown in Table 1.

Selected demographic and descriptive variables were analyzed to develop a broader profile of subjects in each group. The demographic characteristics of each group are displayed in Table 2. Variables specifically related to the student status of each group of subjects are shown in Table 3.

As Table 2 indicates, all subjects in the traditional group were single and childless. Less than half of them were employed in addition to taking classes. All 33 considered "student" their primary occupation, as opposed to that of "homemaker" or some other form of employment outside the living environment. Most reentry women, on the other hand, were married and the majority had children. The average age of marriage was 19.90 years. Over half of the reentry women were employed, and nearly 25% worked 31 or more hours each week. The majority of older women perceived their primary occupation as that of "student" or "worker" rather than "homemaker."

With respect to race, a large percentage of students in each group were white. Black students comprised 15% of the traditional sample and six percent of the reentry sample. One student in the latter group was oriental.

The description of the variables related to student status for members of each group given in Table 3 is indicative of the number of credit hours taken by subjects. It is particularly noteworthy that all

Table 1

Age Distribution of the Samples

Group[a]	Age	n	%
Traditional	18	11	33
	19	7	21
	20	7	21
	21	7	21
	22	1	3
Reentry	25-30	10	30
	31-35	9	27
	36-40	8	24
	41-45	4	12
	46-50	2	6

Note. Distribution variable comparison not appropriate.

[a] $n = 33$.

Table 2

Frequency Distribution of Selected

Demographic Variables

	Traditional		Reentry	
	n	%	n	%
Marital Status				
Single	33	100	3	9
Married	0	0	19	57
Divorced	0	0	7	21
Widowed	0	0	1	3
Separated	0	0	3	9
Children				
Yes	0	0	24	72
No	33	100	9	27
Employed				
No	18	54	14	42
0-10 hrs/wk	10	30	6	18
11-20 hrs/wk	4	12	2	6
21-30 hrs/wk	1	3	3	9
31> hrs/wk	0	0	8	24
Primary Occupation				
Student	33	100	13	39
Homemaker	0	0	8	24
Other	0	0	12	36
Race				
White	28	84	30	90
Black	5	15	2	6
Oriental	0	0	1	3

Table 3

Frequency Distribution of Variables

Related to Student Status

	Traditional		Reentry	
	n	%	n	%
Credits				
1-4	0	0	6	18
5-8	0	0	9	27
9 >	33	100	18	54
Year in School				
Freshman	14	42	12	36
Sophomore	3	9	5	15
Junior	10	30	8	24
Senior	6	18	8	24
Years Since Enrolled				
0-3	33	100	0	0
4-8	0	0	10	30
9-14	0	0	10	30
15-20	0	0	10	30
21-25	0	0	2	6
26 >	0	0	1	3
Major				
Physical Ed./Rec.	2	6	1	3
Social Science	3	9	8	24
Business	6	18	11	33
Arts	4	12	1	3
Bio. Science	1	3	1	3
Education	7	21	4	12
Health Related	3	9	2	6
Undecided	7	21	5	15

the traditional subjects were enrolled in nine or more hours, or were full-time students; only 54% of the reentry subjects were in this category. Of those remaining, 18% took 4 hours or less, and 27% registered for 5-8 credits.

The distribution of each group by class reflected the random nature of the selection process. In both groups the largest percentage of subjects were freshman. A fairly even number were distributed among the remaining three classes, with the exception of the sophomore class which had a low percentage in each group.

The "years since enrolled" variable applied only to reentry students. Traditional students entered college immediately following graduation from high school. The range of years since enrollment was three to 28 years. The average time away from school was 12.51 years, and as shown in the table, 90% returned after a three to 20-year absence from school.

The distribution of subjects according to major was also of interest. Few subjects in either group designated physical education or recreation as the major field of study. The largest number of traditional students reported majoring in education, while the largest group of reentry students were business majors. Social science was more popular among older students, and art was more popular with younger students. Of the former group, 20% were undecided about a major; in the latter group 15% were undecided.

The subjects included in the sample appeared to be representative of the population under study. In addition, the profiles presented were similar to those of other researchers studying the returning woman

college student (Brandenberg, 1974; Clements, 1974; Kelman & Staley, 1974).

Group Comparisons on Measurement Variables

A total of five measures were administered on two testing days. On Day 1, physical task persistence was measured on two psychomotor tasks. Q-ach, extraversion-introversion, and locus of control, the psychological measures, were obtained on Day 2. Means, standard deviations, medians, and the range of scores for each group of subjects on these variables are shown in Appendix D, page 145. The scores on the gross physical balance task (GP) and the eye-hand manipulative task (EH) reflect "time on task" and were recorded in seconds to the nearest 1/100 of a second. Lowest and highest possible scores on the psychological measures were noted at the bottom of the table.

In order to determine whether a parametric statistical procedure was appropriate for comparing the groups on these variables, the Kolmogorov-Smirnov Test for measuring the normality of distribution was computed (Daniel, 1978). The hypotheses were tested using the SAS 76 (Barr et al., 1976) procedure Univariate. A p value of .05 or greater was required to accept the overall hypothesis that the measures were distributed normally.

An examination of the psychological scores for each group indicated that they were normally distributed. However, the p values of the persistence measures for both groups were highly significant. The .01 level of significance was obtained for both the gross physical task and the eye-hand task scores of each group. It was concluded that

these measures were highly skewed and thus a nonparametric procedure was required for comparing the traditional and reentry subjects on the variables.

The Median 2-Sample Test was chosen to compare the groups on the physical task persistence measures. The findings are given in Table 4. The difference between groups on the gross physical balance task was significant at the .01 level. Traditional women students persisted significantly longer on this task than the reentry women students. No difference existed between the groups on eye-hand manipulative task.

Table 4

Median 2-Sample Test Between Groups on Physical Task Persistence

Variable	M	Z	Probability
TIME GP			
Traditional[a]	215.79		
Reentry[b]	119.34		
		2.68	.0072*
TIME EH			
Traditional	482.70		
Reentry	347.27		
		.24	.8070

[a] $\underline{n} = 33$.

[b] $\underline{n} = 33$.

* $\underline{p} < .01$.

The psychological scores were analyzed with the $\underline{t}$-test procedure for comparing group means. No significant differences between the

samples on any of the variables were found. Table 5 indicates that scores on Q-ach, extraversion-introversion, and locus of control tests of the two groups were very similar.

Table 5

t Test Between Groups on the Psychological Variables

Variable	$\bar{X}$	SD	*t*	Probability
Q-ACH				
Traditional[a]	53.15	6.15		
Reentry[b]	53.03	4.51		
			-1.59	.1154
EXT				
Traditional	13.03	4.82		
Reentry	12.69	3.76		
			-0.31	.7553
INT LOCUS				
Traditional	26.09	4.77		
Reentry	26.00	4.10		
			-0.08	.9341

[a] *n* = 33.

[b] *n* = 33.

Note. Only the *t* value on Q-ach approached the .05 level of significance.

Within-group correlation matrices helped to clarify the relationship among the variables. The correlation coefficients between the measures for traditional students are presented in Table 6. Two correlations were significant at the .01 level. A strong positive

relationship was evidenced between subjects' persistence times on the gross physical balance task and the eye-hand manipulative task. It could be expected that if a subject persisted for a long period of time on one task, a similar performance was likely on the other task. Variables Q-ACH and EXT were also significantly correlated, but inversely. Subjects with high scores on the achievement motivation scale tended to score low on the scale measuring extraversion.

Table 6

Spearman Correlations for Measurement Variables of Traditional Students (N = 33)

	TIME GP	TIME EH	Q-ACH	EXT	INT LOCUS
TIME GP	____	.686*	.046	-.012	.120
TIME EH		____	.141	-.83	.210
Q-ACH			____	-.418*	.274
EXT				____	-.006
INT LOCUS					____

* $p = < .01$.

In contrast, none of the correlation coefficients of members of the reentry group was significant. The relationships among the variables are presented in Table 7. The correlation involving the temporal persistence variables was the largest in the matrix, but did not reach .364, the required value to be significant at the .05 level (Roscoe, 1975).

Table 7

Spearman Correlations for Measurement Variables of Reentry Students (N = 33)

	TIME GP	TIME EH	Q-ACH	EXT	INT LOCUS
TIME GP	____	.217	-.039	-.017	.113
TIME EH		____	-.005	-.020	.140
Q-ACH			____	.009	-.201
EXT				____	.065
INT LOCUS					____

These findings further support the difference noted between the groups on the gross physical persistence measure. Given the significant correlation between the persistence times exhibited by traditional women on the tasks, and the lack of correlation exhibited by the reentry women on the measures, a difference between the groups could be expected.

Group Prediction Using Discriminant Analysis

Multivariate data analysis methods were utilized to examine the relationship among several measures. Discriminant analysis was used primarily because of its classification and prediction capabilities (Kaplan & Litrownik, 1977; Spector, 1977). The procedure is considered a valuable tool for understanding the complex relationships among measures. The SPSS (Nie et al., 1975) subprogram STEPWISE was used to compute the calculations.

Defining the Groups

So far in the present study, "group" referred to one of the two samples, traditional women students or reentry women students. Although these classifications were maintained for the discriminant analyses, it was necessary to further divide each subsample. Since discriminant analysis is a process used to predict and compare the physical task persistence of both samples from the psychological variables, subjects were classified as either "low" persisters or "high" persisters. Thus, the first step was to divide the subjects into clearly defined groups according to their persistence scores on the gross physical balance task and the eye-hand manipulative task. The groups for each analysis were labeled Group I, low persisters, and Group II, high persisters. The breakdown of subjects into these groups by task is shown in Appendix E, pages 147 to 152. Subjects with middle values were considered borderline cases and were excluded from the discriminant analyses.

A total of six discriminant analyses were performed. Three equations were computed for each task. The first analysis on each task examined the total group of subjects; the other two were split into the traditional and reentry subsamples.

Gross Physical Balance Task Analyses

The discriminating variables, i.e., the characteristics on which the groups were expected to differ were Q-ach, extraversion-introversion, and locus of control. One goal was to identify the group into which the subjects would likely be classified based on their scores on the psychological measures. A second goal was to determine whether or not it is possible to make a better prediction for traditional women students than reentry students on the gross physical balance task.

Fifty-five cases were used in the total sample analysis, 38 in Group I, and 17 in Group II (See Appendix E, page 147). None of the psychological variables reached the minimum F level of 1 for inclusion in the discriminant process. Therefore no standardized discriminant function coefficients or centroids were generated in the analysis of the total sample.

Separate discriminant analyses were computed for task persistence exhibited by traditional students and reentry students on the gross physical balance task. As in the first analysis, no variables achieved sufficient significance to enter the equation when testing the data of the traditional sample. In the reentry sample the LOCUS variable was entered into the equation; however, it did not reach the .05 level of significance (see Table 8). The standardized discriminant function

Table 8

Discriminant Analysis of Reentry Women

on the Gross Physical Balance Task

Step Number	Variable	F to Enter or Remove	Wilks' Lambda	Significance
1	LOCUS	1.3765	.9531	.2506

for LOCUS was 1.00 and the centroid (mean discriminant score) for each group was:

	N	Function 1
Group I	23	-0.1181
Group II	7	0.3882

This finding is interpreted to mean that high persisters in the reentry sample exhibited greater internal control than the low persisters. The percentage of cases classified correctly was 73.33.

Eye-hand Manipulative Task Analyses

Physical task persistence was also measured in the present study on an eye-hand manipulative task. As in the previous analyses, Q-ach, extraversion-introversion, and locus of control were the variables expected to discriminate between persistent and nonpersistent subjects.

A total of 49 subjects were included in the first analysis, 31 low persisters and 18 high persisters (see Appendix E, page 150). The only variable to reach the criterion for entry was LOCUS and it was not statistically significant. A summary of this information is shown in Table 9. Because only a single variable was included in the stepwise

Table 9

Discriminant Analysis for all Subjects on the Eye-hand Manipulative Task

Step Number	Variable	F to Enter or Remove	Wilks' Lambda	Significance
1	LOCUS	1.2269	.9745	.2737

procedure, the standardized discriminant function coefficient was 1. The group means on the function were:

	N	Function 1
Group I	31	-0.1205
Group II	18	0.2076

The above analysis indicates that those subjects who exhibited greater persistence on the eye-hand task were slightly above the mean on the obtained internal locus of control data. The percentage of subjects classified correctly into Groups I and II was 55.10, slightly better than might be expected from a random assignment.

When the total sample was divided into younger and older students on the eye-hand task, none of the variables was significant enough to enter the equation. The meager contribution of the LOCUS variable to the total sample analysis was negated when the traditional and reentry subsamples were formed.

Personal Data Questionnaire

The Personal Data Questionnaire designed by the investigator consisted of 27 questions. It was the final data provided by subjects on Day 2 of testing. The questions described and analyzed below were not discussed earlier in this chapter in the description of the sample. The items related to social position and participation in physical activity were considered to be relevant to the hypotheses investigated in this study. They were explored to provide more information in order to reflect on the problem from a broader sociological perspective.

There is evidence that interest in and choice of physical activity is a function of socioeconomic status (Kenyon, 1966; Richardson, 1974). In the present study Hollingshead's (1957) Two-Factor Index of Social Position was used to estimate subjects' positions in the status structure of society. Occupation and education were the two factors combined to form this measure of social position. Nonemployed subjects

were assigned the score of their husband if married, or that of the parent with the highest status score if not married. Raw scores from the measure were categorized into five groups. The highest social class was classified as Group I, the lowest, Group V. A summary of the classification for each subsample is given in Table 10. Subjects most frequently fell into Group III for both samples. The majority of the remaining subjects were classified into Groups I or II. More reentry women were in the top two groups than traditional women.

The degree of involvement in physical activity may be related to the number and age of a subject's children. This was particularly evident for the reentry women, 73% of whom had children. The mean number of children was 2.6. One returning woman was a grandmother. Male offspring accounted for 46% of the children, female offspring 54%. Reentry women generally had children who were above the age of five. One child was preschool age, 34% were between the ages of 11 and 15, and an additional 23% between the ages of 16 and 20. Twelve percent of the women had children 21 years or older. Thus the majority of children were at an age such that the constant attention of the mother was not required. No one in the traditional sample was a mother.

Another series of items on the questionnaire related specifically to the past and present level of physical activity engaged in by the subject. For the exact wording of the questions refer to numbers 21 through 25 of the Personal Data Questionnaire in Appendix A, page 133. The responses given by members of each group are discussed below.

Table 10

Social Position of Traditional

and Reentry Students

Group	Social Class					
	I 11-17[a]	II 18-27	III 28-43	IV 44-60	V 61-77	Total
Traditional						
n	5	9	11	6	2	33
%	15	27	33	18	6	100
Reentry						
n	6	11	11	3	2	33
%	18	33	33	9	6	100

[a]Low score is indicative of high social class.

The purpose of question 21 was to ascertain whether or not the subject was presently enrolled in a physical activity course at the University of North Carolina at Greensboro. Reentry women answered "yes" 15% of the time, while 39% of the traditional students indicated such enrollment. Thus, the majority of older women were not officially taking an activity class, while more than twice as many of the younger students were activity class participants. When those not enrolled were asked whether they intended to do so at some point in the future, 50% of the reentry students and 57% of the traditional students said "yes."

Few subjects in the reentry sample expressed an involvement in either an intercollegiate or intramural team at the university. Of the returning women, only one stated she engaged in intercollegiate competition. The remaining 32 subjects or 97% of the sample, were not involved in either form of competition. In the traditional sample, nine percent played on both intercollegiate and intramural teams and another nine percent on intramural teams only. Thus a larger percentage of younger students participated in university-sponsored sport contests. However, 82% of the traditional students were not members of either kind of team.

The overall activity level of each group of subjects is shown in Table 11. The largest difference between the groups was evident in the percentage of students involved 2-4 times per week. Fifty-seven percent of the traditional sample participated this often compared to 24% of the reentry sample. It was interesting to note that many of the reentry women were either very active or nearly nonactive. Thirty percent said they engaged in physical exercise at least 5-6 times per

Table 11

Present Level of Involvement in Physical Activity

of Traditional and Reentry Students

	Traditional		Reentry	
Q 24	n	%	n	%
Daily	3	9	4	12
5-6 times/wk	5	15	6	18
2-4 times/wk	19	57	8	24
Weekly	2	6	4	12
1/month or less	3	9	6	18
Nonactive	1	3	5	15

week. On the other extreme, 45% of the reentry group participated one time per week or less. These figures compared to 24% and 18% of the traditional group respectively. Overall, the traditional students were more active; however, a larger percentage of reentry students exercised five or more times a week.

A different pattern emerged when subjects were asked to state the degree they were involved in physical activity during their teen years. The data for both groups is presented in Table 12. Twenty-seven percent of the subjects in each group exercised daily, and 84% of the reentry women and 82% of the traditional women participated in activity at least two times per week. None of the older women were nonactive, while nine percent of the traditional women did not participate. It is evident that a greater percentage of older women were more active during their teen years than traditional women.

When compared to their present level of involvement members of both groups were more active during their teen-age years. This finding is consistent with data presented by Clarke (1974), Kenyon (1966), and Robinson (1977) who found a continual decrease in physical activity with age. In the present study the decrement in activity was greatest for members of the reentry group.

Based on the work of Hall (1974b) and Richardson (1974) who attempted to identify the sociological determinants of female participation in sport and physical activity, questions pertaining to past and present level of involvement were chosen to analyze further. In addition, socioeconomic status and actual group membership (whether or not the subject was a member of the traditional group or reentry group) were variables considered to be appropriate for extended analysis.

Table 12

Level of Involvement in Physical Activity of Traditional and Reentry Students During the Teen Years

	Traditional		Reentry	
Q 25	n	%	n	%
Daily	9	27	9	27
5-6 times/wk	11	33	5	15
2-4 times/wk	7	21	14	42
Weekly	3	9	2	6
1/month or less	0	0	3	9
Nonactive	3	9	0	0

The discriminant procedure STEPWISE was followed to compare earlier analyses with those using the level of activity, SES, and group membership items as predictor variables. The question answered by such analyses was whether or not these variables would be better predictors of physical task persistence than the psychological variables.

Discriminant Analyses of Questionnaire Items

Questions 24 and 25 were concerned with present and past level of involvement in physical activity respectively. Variable SES discussed previously was the computed index of social position based on Hollingshead's Two-Factor Index. Group membership (GROUP) was the initial classification of subjects as traditional or reentry students according to age. The latter variable was used only in the analyses when the data for all subjects were combined.

Gross physical balance task analyses. Data from 55 subjects classified as low and high persisters on the gross physical balance task were analyzed. The discriminating variables were Q24, Q25, SES, and GROUP. The STEPWISE procedure showed all four variables discriminated between Group I, low persisters, and Group II, high persisters. The inclusion of the variables in order of importance is presented in Table 13.

The analysis revealed that present level of involvement in physical activity was the best predictor of task persistence. Involvment during the teen years was the second best predictor. The data indicated that subjects who were more active in their pasts and who were presently involved in physical activity were also more persistent. In the third step the variable GROUP was significant. This indicated

that subjects classified as traditional students exhibited greater persistence on the task. Finally, social position in relation to the other variables, made it possible to further discriminate between low and high persisters. Persistent subjects were found more often in the higher socioeconomic strata than less persistent subjects. All variables exceeded the .05 level of significance.

Table 13

Discriminant Analysis for All Subjects on the Gross Physical Balance Task

Step Number	Variable	F to Enter or Remove	Wilks' Lambda	Significance
1	Q24	2.2368	.9035	.0210*
2	Q25	3.3445	.8617	.0209*
3	GROUP	1.0329	.8360	.0265*
4	SES	1.7559	.8191	.0376*

*Significant at the .05 level.

The standardized discriminant function coefficients and the group centroids are given in Table 14. The variable weighted the most in the discriminant function was Q25, past level of involvement in physical activity. The remaining variables were weighted less, although the values did not vary to a large degree. The percentage of subjects classified correctly into Groups I and II was 65.45 percent.

Table 14

Weights and Group Means for Persistence on the Gross Physical Balance Task

Variable	Standardized Discriminant Function Coefficients	Group	N	Centroids of Groups
Q25	-0.6211	I	37	-0.3217
Q24	-0.5202	II	18	0.6614
GROUP	-0.4483			
SES	-0.3479			

Separate discriminant analyses were performed to predict persistence on the gross physical balance task for traditional students and reentry students. One variable qualified for inclusion in the analysis for the traditional students. Q24, present level of physical activity, reached the required F level for entry, but was not significant. Past level of involvement and socioeconomic status values were not high enough to be included in the equation.

In the reentry group, Q25 and Q24 were included in the discriminant equation. Q25 was entered before Q24; however, neither item reached the .05 level of significance. Socioeconomic status was insignificant in this analysis.

In summary, when the total sample was examined, all the variables including GROUP reached significance. However, when the traditional and reentry subsamples were examined, none of the variables in the equation was statistically significant.

Eye-hand manipulative task analyses. Forty-nine subjects comprised the total sample on the eye-hand manipulative task. An equation for all subjects was first computed, then separate equations for traditional and reentry students were calculated.

Past level of involvement in physical activity, Q25, was the first variable entered into the equation for the total sample. It achieved a value of .1268 which was not considered significant. Q24, present level of activity, was the second variable entered. It was not significant either. Variables GROUP and SES were insignificant and were not included in the analysis.

Past level of involvement was also the first variable in the analysis of the traditional students apart from the reentry students. It was the only item entered but was not significant. None of the variables were of sufficient strength to enter the equation of the reentry students. Thus, variables Q24, Q25, and SES did not discriminate low persisters from high persisters on the eye-hand manipulative task.

To summarize, none of the variables in the equations to predict physical persistence on the eye-hand manipulative task was significant. Grouping the subjects by age did not increase the predictability on this task.

Summary of the Statistical Analyses

Data on five variables were analyzed from 33 traditional and 33 reentry women undergraduate students. When compared on the measures, the groups were significantly different on only one of the behavioral

variables, physical persistence on the gross physical balance task. No differences were found between the groups on persistence on the eye-hand manipulative task, Q-ach, extraversion-introversion, or locus of control.

Discriminant analyses were performed to determine the combination of psychological variables that best discriminated between low persisters and high persisters on the psychomotor tasks. A total of six analyses were executed; two predicting group membership from the total sample on each task, and four categorizing the subjects into traditional and reentry subsamples. A summary of the analyses and the findings are given in Table 15.

The variable LOCUS was entered into analyses three and four. However, it was not significant in either case. Variables Q-ACH and EXT were not used in any of the discriminant equations.

Six additional discriminant analyses were performed using selected items from the Personal Data Questionnaire as predictor variables. Past and present level of involvement in physical activity, SES, and group membership were the items analyzed. A summary of the analyses are presented in Table 16.

All four variables entered the equation and were significant in the analysis to predict persistence on the gross physical balance task of the total sample. Q24, present level of activity, was the most significant variable, followed closely by the other variables. Q24 was also entered into the next three equations but was not statistically significant in any of the three. Q25, past level of activity, was an important item in the third, fourth, and fifth analyses. However, at

Table 15

Discriminant Analyses Using Psychological Variables to Predict Low and High Persisters

Analysis	Sample	Task	Variable (s) Entered	Significant
1	Total	GP	None	No
2	Traditional	GP	None	No
3	Reentry	GP	LOCUS	No
4	Total	EH	LOCUS	No
5	Traditional	EH	None	No
6	Reentry	EH	None	No

Table 16

Discriminant Analyses Using PDQ Variables

to Predict Low and High Persisters

Analysis	Sample	Task	Variable (s) Entered	Significant
1	Total	GP	Q24, Q25, GROUP, SES	Yes
2	Traditional	GP	Q24	No
3	Reentry	GP	Q25, Q24	No
4	Total	EH	Q25, Q24	No
5	Traditional	EH	Q25	No
6	Reentry	EH	None	No

no time did it reach the required significance level. None of the variables entered the final equation to predict the persistence of reentry women on the eye-hand manipulative task. It is evident that the PDQ variables were better predictors of persistence on the gross physical balance task than the psychological variables.

CHAPTER V

DISCUSSION AND IMPLICATIONS

The scores obtained on the selected psychological measures and the physical persistence tasks of traditional and reentry students are more fully discussed in this chapter. The differences between the samples on the measures and the prediction of physical task persistence from the psychological variables and selected Personal Data Questionnaire items are considered. Factors believed to be moderating the degree of persistence exhibited by subjects are identified and examined.

Implications of the findings for the acquisition of motor skills are set forth with special emphasis on the role of the teacher in the process. A summary concludes the chapter.

Comparing Traditional and Reentry Students

The most notable difference between the samples was the degree of persistence exhibited by the younger students on the gross physical balance task. Traditional students persisted significantly longer on the overall body balance task than the reentry women. However, on the fine eye-hand manipulative task there was no difference between the persistence scores of the groups.

This finding was verified by a strong positive correlation between the traditional students' persistence times on the gross physical balance task and the eye-hand manipulative task. Younger students who were persistent on one task were also persistent on the other. The same was

not found for reentry students. There was no relationship between the persistence scores on the two tasks of older subjects.

Some researchers have purported that persistence is a general personality trait characteristic of persons across situations (Eysenck, 1970; Ryans, 1938a, 1938b, 1938c). The results of the present study refute these findings. Persistence in the present study can be clearly considered to be task specific. Reentry women who were persistent on one task were not necessarily persistent on the other. It might be speculated that the older women had less confidence in their ability to succeed on the task involving the whole body than the task primarily manipulative in nature. Perhaps reentry women were more persistent on the fine task because of greater past experience and success on tasks requiring fine movement patterns. A more focused definition of the term "physical persistence" is indicated based on the amount of body involvement required to perform the task. The terms "ideational persistence" and "physical persistence" as identified and defined by Eysenck (1970) are gross and warrant further refinement.

It should be noted that although a significant correlation existed between the persistence times on the two tasks of the traditional students, these subjects also persisted longer on the gross task than the eye-hand task. The mean time for traditional students on the first task was 238.26 seconds and the latter task 687.35 seconds. Reentry students average 185.84 seconds on the gross task and 603.10 seconds on the eye-hand task. Thus, persistence scores were not comparable between tasks for members of either group. The average time on the eye-hand task for both groups was similar and considerably longer than the time on the

gross task. These figures support the contention that persistence cannot be generalized across situations or tasks. Conjectures about the factors related to task specificity are discussed later in the chapter.

No differences were revealed between traditional and reentry women on the psychological measures. Members of both groups were highly achievement oriented, about midway on the extraversion scale, and internally oriented. See the mean scores in Appendix D, page 145. Because single variable comparisons were made between the samples on these particular measures such findings were not surprising.

The work of Baruch (1967) supports the relationship among high need achievement, age, and the return of adult women to higher education. On the extraversion measure traditional students scored slightly higher ($\bar{X}$ = 13.03) than reentry students ($\bar{X}$ = 12.29). Both means are consistent with a comparable student group norm reported by Eysenck (1968). The mean of the traditional student sample he tested was 13.1. Eysenck also tested a group of housewives whose average age was 42.2 years. The mean score of this older group of women was 12.2, nearly the same as the reentry sample in the present study (Eysenck, 1968). Overall, Eysenck's subjects and those in the present study were similar. All exhibited a medium degree of extraversion.

The internal orientation of the traditional and mature women students was expected. A sample of reentry women tested by Hooper and Rice (1978) following counseling upon entry achieved comparable scores on Levenson's (1974) Internal Scale. It was concluded that the respondents were predominantly internally oriented (Hooper & Rice, 1978).

Predicting Physical Task Persistence

In the present study, a series of discriminant analyses were calculated to predict the degree of persistence exhibited by the subjects on two psychomotor tasks. Before discussing the success of the analyses, it is important to examine the number of subjects classified as "low" or "high" persisters in each sample. Refer to Appendix E, pages 147-152. In each analysis, more subjects were classified as low persisters than high persisters. Regardless of the task or the group examined, it should be noted that subjects in this study were not particularly persistent. Although traditional students persisted significantly longer than reentry students on the gross physical balance task, more younger women were classified as low persisters than high persisters.

Six equations were computed to predict the physical task persistence of subjects from scores on the psychological measures. Achievement motivation (Q-ACH) and extraversion (EXT) were not included in any of the analyses. Internal locus of control (LOCUS) reached the level required for entry in two instances. In the reentry group, high persisters on the gross physical balance task were more internally oriented. Internal locus of control also entered the equation for all subjects on the eye-hand manipulative task. However, predictions could not be made in either case because the variable was not significant.

Persistence is a construct believed by some to be a quality characterizing those who are physically active (Duquin, 1978; Yeary, 1971). To date no one has been able to clearly define the concept or determine the extent to which it contributes to continued sport involvement. A measure of locus of control specifically related to adherence to physical

activity does not exist. However, it appears that Levenson's construct, although it represents a generalized expectancy about outcomes, has the most potential for predicting persistence of the three psychological measures in the study. As Lefcourt (1976) said, "without an expectation of internal control, persistence despite imminent failure . . . would be unlikely" (p. 66). This characteristic is believed to be essential for any prolonged achievement effort. Persistence only occurs among individuals who believe they can accomplish the desired goal through their own efforts (Lefcourt, 1976).

The lack of significance of the psychological variables when trying to predict physical task persistence is consistent with the findings of Hall (1974b) and Richardson (1974). In their research selected psychological traits were examined in an attempt to explain discrepant levels of interest and participation in physical activity among adult women. Q-ach was the measure of achievement motivation used in both studies along with indices of self-esteem and body image. These dispositional variables contributed very little to the computed multiple regression equations and path analyses. In a cross-cultural comparison of the results, the authors concluded that the motivational and psychological characteristics played a minimal role in determining the primary degree of involvement in physical activity (Richardson & Hall, 1974).

In the present study, it was not possible to predict the physical task persistence of any of the samples from scores on the psychological tests. These results occurred in spite of the fact that low and high persisters were classified to represent opposite ends of the continuum. Subjects with values in the middle range were excluded from the analyses.

The design of the study was focused purposely on the more extreme scores. This statistical strategy may be questioned by adherents of classical traditional analyses.

The problem of measuring psychological tendencies in relation to the performance of specific kinds of tasks is underscored in the findings. The position that narrow trait measures are generally better predictors of behavior than broad trait measures is supported (Zuckerman, 1979). Among physical educators, Kroll (1976) has suggested the use of sport specific inventories in favor of standardized general tests. The psychological measures in the present study did not differentiate traditional from reentry women or predict the level of persistence of members of either group. This may have been due to the general nature of the measures.

Because of the previous findings, six additional discriminant analyses were performed. The items selected from the Personal Data Questionnaire as predictor variables included present level of physical activity (Q24), past level of physical activity (Q25), socioeconomic status (SES), and age of the subjects (GROUP).

All four variables entered the equation and were significant when predicting persistence on the gross physical task for all subjects. One might expect past and present level of involvement in physical activity to be important factors, and in fact they were the first two variables identified. This finding is consistent with data obtained by Richardson and Hall (1974) who used multiple regression to predict the present activity level of adult women. They found that over half of the variance was explained by one factor--activity level when younger. Hall (1974b)

noted that attitudes toward physical activity and dispositional factors became unimportant when examined in a system that included past experience and present situational factors. This observation by Hall was reinforced in the present study by the fact that the PDQ items were better predictors of task persistence than the psychological variables. Subjects involved in physical activity during their teen years and who were presently active were more persistent.

The other two factors to enter the equation to predict persistence on the gross physical balance task for all subjects were age (GROUP) and socioeconomic status (SES). When used as a predictor variable, age (GROUP) differentiated subjects according to the amount of time they persisted. This is comparable to the reference made earlier in the chapter when a single variable comparison was made between the samples on the gross physical balance task. It is merely another way of pointing out that traditional students were more persistent than reentry students on this task. The last variable to enter the equation was SES. Generally subjects in the higher socioeconomic categories were more persistent. This finding is supported in the literature by Angrist (1967) who found that women with regular child-care help were more involved in leisure activities than women without help. In a recent study by Duncan (1978), women who participated in swimming, camping, hiking, horseback riding, bicycling, and tennis tended to be younger, better educated, and had higher occupational status than other women. Working women had less time and thus participated less frequently in most physical activities.

Altogether, the percentage of subjects who could be classified correctly as low or high persisters on the gross physical balance task

was 64.45 percent. This percentage is what might be expected when using predictor items of one type, i.e., sociological variables or psychological variables (Morgan, 1980). It should also be noted that Hall (1974b) and Richardson (1974) were not very successful in predicting the physical activity participation of adult women. In their studies, the overall explained variance using all types of variables was 72.7% for the British sample, 65.4% for the Canadian sample, and 38% for the United States sample.

Although the items in the present analysis predicted persistence better than that which would result from chance, a higher percentage would be necessary in order to consider the prediction successful. It appears, therefore, that many of the important predictors of persistence have yet to be identified.

None of the remaining equations to predict persistence on the gross task or the eye-hand task from the PDQ items was significant. Refer to Table 16, page 82. In all but the last analysis, present level of physical activity (Q24) and past level of physical activity (Q25) were entered into the equations. However, they were not significant.

It is evident that the Personal Data Questionnaire items were better predictors on the gross physical balance task for all subjects than the psychological variables. However, no more was revealed about the sub-samples on this task using the PDQ items. Therefore, the factors contributing to the difference between the traditional and reentry women on the gross physical balance task are still unknown. Younger students persisted longer but the reasons are still unclear.

Neither the psychological variables nor the PDQ items were good predictors of persistence on the eye-hand manipulative task. This was so for the sample as a whole and for the traditional and reentry subsamples.

Potential Moderating Variables[2]

One might speculate that factors other than those examined may have influenced persistence on the tasks. Some of these variables are included in Figure 1. Nygård (1977) suggests that one's perception of the difficulty of the task in relation to one's corresponding perception of ability on the task contributes to the degree of persistence exhibited. In the present study, it might be conjectured that subjects who continued to persist on the tasks perceived their failure to be due to a lack of effort. Less persistent subjects may have perceived failure to be the result of lack of ability or extreme task difficulty, two relatively stable factors. This interpretation is put forth by Weiner, Heckhausen, Meyer, and Cook (1972) who proposed that the choice to engage in achievement activity is mediated by variable factors such as effort and luck. Weiner et al. (1972) stated that if one believes failure in the present is caused by lack of effort or bad luck, failure in the future is not expected as much as if the outcome is ascribed to the difficulty of the task or a lack of ability. The latter two variables are viewed as stable factors. Thus individuals attributing failure to them are likely to discontinue their efforts. Persistence despite failure is

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[2]In the present study "moderating variable" refers to those factors not included specifically in the research design that are related to both the independent and dependent variables.

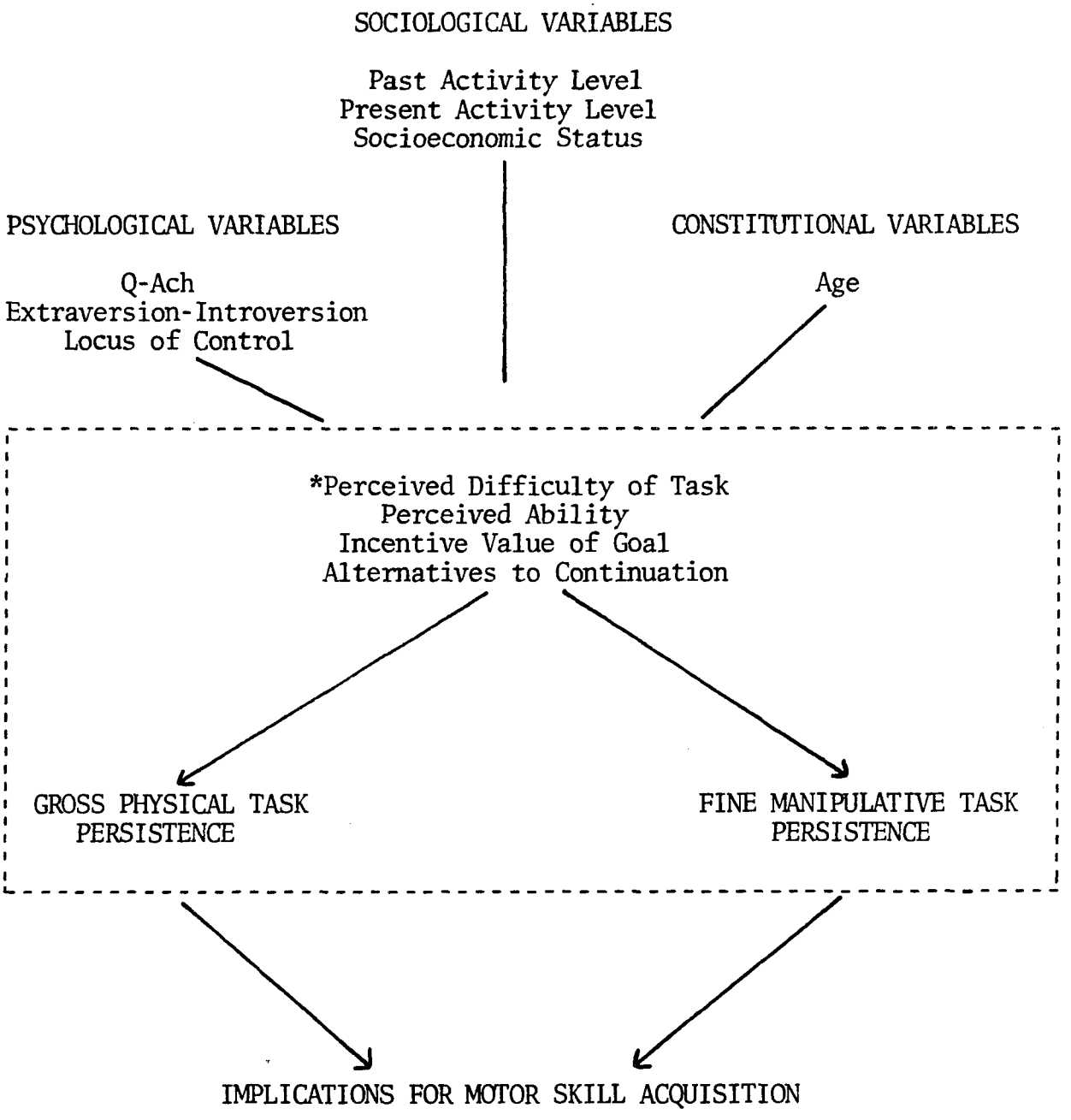

Figure 1. *Postulated moderating variables affecting physical task persistence.

thought to be more likely if the causes of failure are perceived as changeable, that is, nonstable.

Spreitzer and Snyder (1976) conducted a study in which perceived ability was used as an independent variable among others to predict the sport involvement of adults. A stepwise multiple regression analysis revealed that perceived ability was the strongest predictor of sport involvement for both men and women. However, it should be noted that seven independent variables used in the study explained only 40% of the variance among women. In a subsequent path analysis, perceived ability showed the strongest path to the endogenous variable in the model, adult sport involvement. Spreitzer and Snyder (1976) hypothesized that participation in physical activity as a youth affects an individual's perception of his/her athletic ability. Furthermore, this perception has a strong impact on the degree of adult participation in sport.

In the present study, reentry women were less persistent on the task involving the use of the whole body than the traditional women. Perhaps they perceived the task to be more difficult or their ability less than the younger students did--either or both of these perceptions resulting in a discontinuation of effort. The fact that vision was occluded on the gross physical balance task may have contributed to these perceptions. Identification of the specific characteristics of the task in relation to self-estimation of ability may help clarify the relationship of locus of control to achievement-related activities. The design and administration of tests to measure perceived control on tasks with varying characteristics is warranted.

Characteristics of the task other than level of difficulty may also have influenced persistence. The tasks in the study were chosen to elicit physical task persistence as opposed to ideational or cognitive task persistence. The statistical difference found between the samples on the gross physical balance task and the overall difference in persistence times on the tasks exhibited by all subjects strongly supports the view that varying degrees of persistence are elicited by different kinds of physical tasks. The concept of persistence lacks clarity, therefore, partly because of the grossness of the present definition of "physical task." In addition, not knowing the exact nature of the task requirements and specific neuromuscular demands of the tasks, adds to the confoundedness of the problem.

The value of the goal to the performer may also be an important element of persistence when examined within an achievement setting. For example, in the theoretical framework put forth by McClelland, Atkinson, Clark, and Lowell (1953), and expanded by Atkinson (1966), motivation was viewed as a function of the strength of the motive, the expectancy of success, and the value of the incentive. Atkinson (1966) defined incentive as "the relative attractiveness of a specific goal that is offered in a situation, or the relative unattractiveness of an event that might occur as a consequence of some act" (p. 12). The assumption established that the act which is performed out of a set of alternatives is the one for which the resultant achievement motivation is the strongest.

French and Lesser (1964) studied the characteristics of the achievement motive in women. They found that the achievement motivation

scores of subjects were high when the rated performance led to a goal the subjects valued, but not otherwise. One can only hypothesize about the value of the tasks in relation to the alternatives available to the women in the present study. Although members of both groups appeared to be challenged by the tasks, the reentry women expressed greater fear and less confidence toward their performance on the gross physical balance task. In addition, reentry women often verbalized a need to be elsewhere at a specific time, although their remarks were not specifically documented as data. Even though they consented to a testing session in which enough time had been allotted, outside pressures associated with academic and family responsibilities seemed to be related to persistence on the tasks.

All of the moderating variables reflect the importance of considering situational factors associated with persistence as well as personality factors. The fact that traditional and reentry students differed on the length of time they were willing to try to perform the gross physical task supports the contention that all situations do not elicit feelings of efficacy for given individuals (Nygård, 1977). The degree to which the person expects to master the task are moderated by the particular task demands. In addition, an individual's perception of his/her ability on a task is related to his/her perception of the task difficulty. These factors together with the value of the goal to the individual clearly combine to partially explain whether or not a task is continued or an alternative activity begun. The logical conclusion to be drawn is that persistence is a situation-specific phenomenon and not a personality characteristic exhibited across situations as purported by

Eysenck (1970) and Ryans (1938a, 1938b, 1938c). Of the various approaches to studying persistence, Nygård (1977) and Shepel and James (1973) concluded that the interaction between individual and situational characteristics is the most viable theoretical framework for examining the problem. Within physical education, Martens (1975) encouraged the examination of sport behavior within an interactional paradigm. The findings of the present study support this approach.

Implications for Motor Skill Acquisition

It is important to reflect on the findings of the present study with respect to motor skill acquisition, particularly the teacher's role in the process. In effect, the results identify considerations for directing skill-learning experiences. They are (1) the teacher's influence on the perceived difficulty of the task, (2) goal setting, and (3) "getting the idea of the movement," the initial stage of the learning process.

The underlying assumption of the aforementioned ideas is that persistence is a prerequisite to learning a new motor skill. That is, an individual must attempt a skill repeatedly, often in spite of failure, before a given level of competency is achieved. Gentile (1972) put it quite simply when she said, "without sufficient drive to sustain behavior, little behavioral change will be evident" (p. 14).

In order for motivation to be sustained to master the task, the learner must believe it is possible to be successful. The teacher is in a position to manipulate the level of difficulty of the task confronting the learner. Subsequent to performance, if the learner fails, a decision

is made as to whether or not it was due to lack of effort, bad luck, task difficulty, or lack of ability. According to Weiner et al. (1972), the first two reasons are unstable environmental conditions. They are viewed as internally controllable and thus lead less often to a discontinuation of the task. The reality of the interpretation was supported by Dalton (1979) who showed that persistence on a cognitive and a motor task were increased when the subjects attributed success or failure to effort. Thus, the teacher may be indirectly able to influence the control orientation of the learner. This is accomplished by manipulating the actual difficulty of the task, which in turn affects the learner's perception of the reasons for failure.

One might hypothesize that reentry women had little confidence in their ability to reach the goal on the gross physical balance task. Because they perceived the task to be too difficult in relation to their ability, they may have concluded that no amount of effort would lead to success. Consequently, most of them discontinued the task after a short period of time. The above explanation, albeit simplistic, is logical and supported by both published research and practical experience.

It is a well accepted tenet that one of the primary functions of the teacher of motor skills is to set appropriate goals for the learner (Gentile, 1972; Robb, 1972; Singer, 1975). Most of the time the goal is determined by the teacher with little input from the student. If, in fact, the goal set by the teacher is not valued by the student, the incentive for attainment may be diminished. What is suggested by the writer is an approach to teaching that emphasizes communication between the teacher and learner with regard to goal setting. It is important

that the goals the teacher sets are not only realistic and appropriate, but also valued by the learner.

The tasks in the present study may not have had the same value for reentry women as traditional women, especially when considered in relation to the alternatives to continuation. Although subjects were not required to participate in the study in the usual sense of the word, they knew little about the specific task requirements prior to testing.

Gentile (1972) points out that the nature of the teacher/learning environment determines the extent to which the teacher is responsible for defining a specific problem and establishing adequate motivation. One critical aspect of the environment is whether or not students are being taught by choice or as part of an imposed requirement (Gentile, 1972; Kroll, 1976). If the value of the goal or activity is greater for those who elect to participate, their persistence level may also be greater.

Teachers of activities consisting of gross body movements need to be sensitive to potential differences among students, especially in a program with required physical education. The difference in persistence between younger and older students on the gross physical balance task may have reflected a lack of confidence on the part of reentry women when involved in an activity requiring the use of the whole body. Since most physical activities involve gross movement to some degree this is of primary concern. Herein lie numerous implications for the requirement versus the elective argument for physical education as a part of the liberal education of young adults.

Insecurity about gross as opposed to fine movements also has implications for the initial stages of learning a motor skill. Implicit in the phrases "getting the idea of the movement" (Lawther, 1966) and the "formulation of an executive plan" (Robb, 1972) is that the learner must understand and perhaps attempt the movement as a whole prior to specific parts. The results of this study indicate that older learners may be less comfortable with this approach than younger learners. An examination of what is expected of the learner in the various stages of learning with respect to age differences is suggested.

Summary

When traditional and reentry women students were compared on five psychological and physical persistence variables only one significant difference was found. Traditional students persisted longer on the gross physical balance task than reentry students. The samples were more alike than different on the remaining variables.

All six discriminant equations to predict physical task persistence on the tasks using the psychological variables as predictor items were nonsignificant. The variable locus of control (LOCUS) was the only one entered on two occasions and it was not significant in either case.

One follow-up analysis based on selected items from the Personal Data Questionnaire was significant. Physical persistence for all subjects on the gross physical balance task could be predicted from present level of involvement in physical activity (Q24), past level of involvement in physical activity (Q25), age (GROUP), and socioeconomic status (SES). Approximately 65% of the subjects were classified correctly as low or

high persisters. None of the discriminant equations to predict the persistence of the subsamples on either task was significant.

Generally the variables used in the present study were not strong predictors of physical task persistence. For this reason, other factors believed to be moderating the effects of the predictor variables were identified and discussed. These included the subject's perceived ability on the task, the actual and perceived difficulty of the task, incentive value of the goal, and alternatives to continuation. The study of persistence within an interactional paradigm was indicated as proposed in the literature by Nygård (1977) and Martens (1975).

The results of the present study, when considered in relation to the postulated moderating variables, have implications for motor skill acquisition. The teacher is in a position to influence the actual and perceived difficulty of the task and to identify valued as well as realistic and appropriate goals. "Getting the idea of the movement," the initial stage of skill acquisition as conceptualized by Lawther (1966), was examined in light of the difference in persistence exhibited by traditional and reentry students on the gross physical balance task. Implications for a required versus an elective physical education program were noted.

If the assumption is accepted that persistence is necessary to the acquisition of motor skills, it may be worthwhile to reexamine the teaching/learning process with regard to age differences. Traditional and reentry students may differ with respect to some aspects of the process, particularly those related to task difficulty and to the perception of self as a competent mover.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RESEARCH RECOMMENDATIONS

Summary

Although reentry women have been a part of university populations for more than two decades, little research has been reported with regard to their personal characteristics, needs, or interests. Information pertaining to the mature woman student and physical activity is almost nonexistent (Scott, 1980). When interests and needs of reentry women are discussed, the topic poses particular challenges to physical educators. The physical education requirement is often viewed as another barrier to be overcome on the way to earning a degree (Westervelt, 1975).

The present study was conducted to examine differences between traditional women undergraduate students and reentry women undergraduate students. Because persistence is a quality believed to be characteristic of physically active individuals, it was one of the variables measured (Duquin, 1978). The physical task persistence of subjects in both groups was tested on a gross physical balance task and an eye-hand manipulative task. Selected psychological characteristics, i.e., achievement motivation (Q-ACH), extraversion (EXT), and internal locus of control (LOCUS), were also measured. In addition, a Personal Data Questionnaire was administered to each subject.

A random sample of 35 traditional and 35 reentry women enrolled at the University of North Carolina at Greensboro Spring semester of 1980 participated in the study. All data were collected over an eight-week

period on two independent testing days. Physical task persistence on both tasks was measured on Day 1, and the paper-and-pencil tests were completed on Day 2.

Univariate and multivariate statistical techniques were used to analyze the data. All procedures were available through the Statistical Analysis System 76 (Barr et al., 1976) and Statistical Package for the Social Sciences (Nie et al., 1975) computer packages.

In order to determine if the scores on the measures were normally distributed, the Kolmogorov-Smirnov approximation test was computed (Daniel, 1978). The temporal persistence scores on the psychomotor tasks were highly skewed. Consequently, the nonparametric Wilcoxin Median Test was used to compare the persistence scores of traditional and reentry students. The psychological scores were normally distributed and thus the *t*-test procedure to compare the means of the groups was regarded as appropriate. The .05 level of significance was considered acceptable on all calculations.

When the groups were compared on the five measurement variables, only one difference was found. Traditional women students persisted significantly longer on the gross physical balance task than reentry women students. There were no differences between the samples on persistence on the eye-hand manipulative task, Q-ach, extraversion, or internal locus of control.

Stepwise discriminant analyses were computed to predict "low" and "high" persisters on each task from the psychological scores. None of the analyses was significant. The variable LOCUS was entered into two equations but was not significant in either case.

A series of six follow-up analyses using selected items from the Personal Data Questionnaire as predictor variables were computed. The equation to predict the physical task persistence of all subjects on the gross physical balance task was significant. From present level of involvement in physical activity (Q24), past level of involvement in physical activity (Q25), age (GROUP), and socioeconomic status (SES), it was possible to correctly classify low and high persisters on the task 64.45 percent of the time. Of the remaining discriminant analyses, Q24, Q25, or both were entered into all but the last equation. However, the required significance level was not reached in any of the equations.

Although the Personal Data Questionnaire items were better predictors than the psychological variables, none of the variables differentiated low from high persisters with a reasonable degree of success.

Conclusions

Two separate yet related questions were asked in Chapter I. First, do reentry students differ from traditional students on two measures of physical task persistence and three psychological tests? The question was answered by comparing the scores of the groups with the Wilcoxin Median Test and the *t* test. Based on the obtained data it was concluded that (a) traditional women students persisted significantly longer than reentry women students on the gross physical balance task but not the eye-hand manipulative task, and (b) traditional and reentry women students were not different on measures of Q-ach, extraversion-introversion, and locus of control. All subjects were characterized as being highly motivated, average on the extraversion scale, and internally oriented.

The second question was whether or not it is possible to predict persistence on the tasks from scores on the selected psychological measures? The answer to this question was revealed through a series of discriminant analyses. It was concluded that on the gross physical balance task (a) "low" and "high" persisters in the total sample were not differentiated by their Q-ach, extraversion-introversion, and locus of control scores, (b) "low" and "high" persisting traditional women students were not differentiated by their Q-ach, extraversion-introversion, and locus of control scores, and (c) "low" and "high" persisting reentry women students were not differentiated by their Q-ach, extraversion-introversion, and locus of control scores.

It was also concluded that on the eye-hand manipulative task (a) "low" and "high" persisters in the total sample were not differentiated by their Q-ach, extraversion-introversion, and locus of control scores, (b) "low" and "high" persisting traditional women students were not differentiated by their Q-ach, extraversion-introversion, and locus of control scores, and (c) "low" and "high" persisting reentry women students were not differentiated by their Q-ach, extraversion-introversion, and locus of control scores.

Although the Personal Data Questionnaire items were better predictors of persistence on the tasks than the psychological variables, it was speculated that some factors affecting persistence had not been identified. It was hypothesized that the perception of the difficulty of the task in relation to self-perception of ability, the value of the task, and alternatives to continuation, may in fact have moderated the degree of persistence exhibited. In addition, whether or not the task required

the use of the whole body as opposed to eye-hand manipulation appeared to be important. The fact that vision was occluded on the gross physical balance task may also have influenced persistence.

These speculations in relation to the findings have implications for the teaching of motor skills. Questions were raised as to the effect of a required versus an elective program on learners. The study of persistence within an interactional paradigm taking into consideration characteristics of the situation as well as the learner was suggested (Martens, 1975; Nygård, 1977).

Research Recommendations

The complexity of the construct of persistence was further supported in the present study (Feather, 1962; Nygård, 1977). Some of the variables analyzed added to the understanding of the concept; others did not. The multivariate approach proved to be an appropriate strategy for studying the relationships among the variables measured and physical persistence on the psychomotor tasks. The following suggestions for research are based on the belief that persistence is a critical component of physical performance and maintenance of physical activity over time, and therefore worthy of continued investigation.

1. Combine the most explanatory psychological and sociological variables in order to predict physical persistence.

2. Identify and analyze variables believed to be moderating the degree of persistence exhibited by subjects (e.g. perceived difficulty of task, perception of ability on the task, value of the goal, alternatives to continuation).

3. Measure physical task persistence on a variety of psychomotor tasks subsequent to identifying the specific task requirements. Control for such factors as the degree of body involvement required to perform each task, and the role of vision in performance.

4. Use of techniques such as focused interview, taped recordings of responses to the task, and self-report measures to add an introspective dimension to the problem. Insights could be gained with regard to a subject's reasons for discontinuation and attribution of success or failure according to the paradigm proposed by Weiner et al., 1972.

5. Examine the physical task persistence of smaller age groupings of women reentry students, for example, subjects aged 25-30 as opposed to 45-50. Relate such findings to past experiences in physical education and present level of involvement in physical activity.

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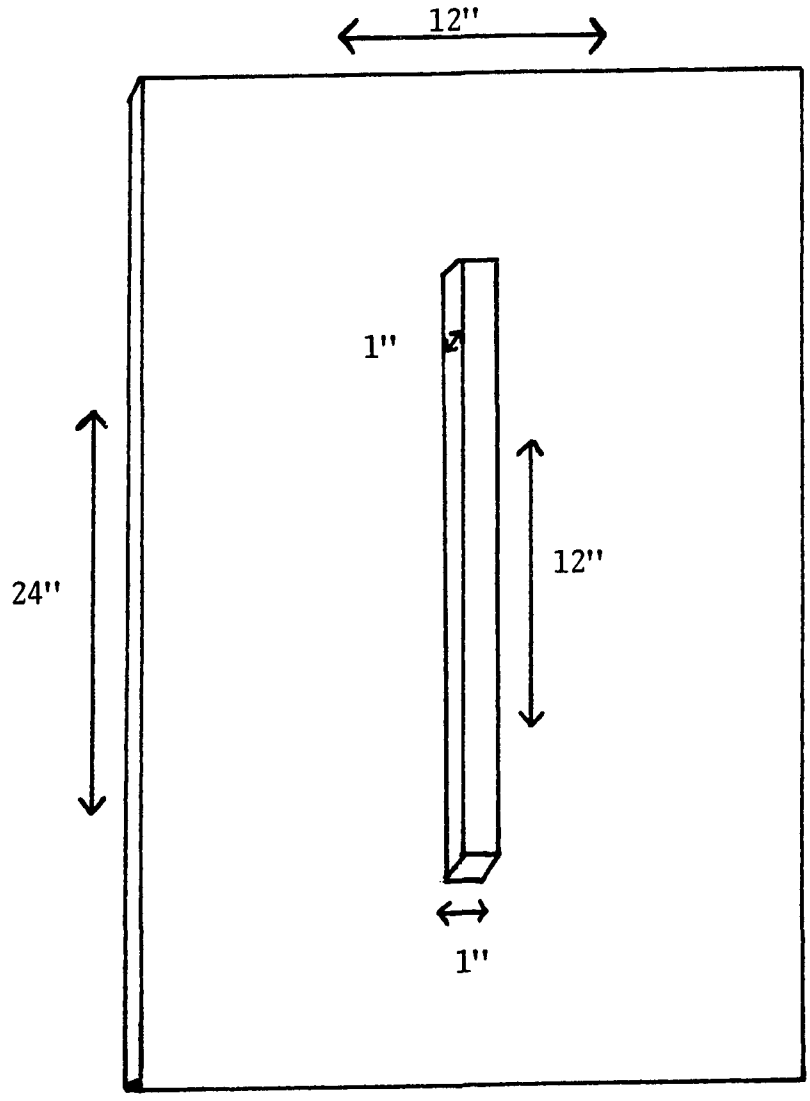
APPENDIX A

PSYCHOMOTOR TASKS, PSYCHOLOGICAL INSTRUMENTATION, AND PERSONAL DATA QUESTIONNAIRE

Schematic of the

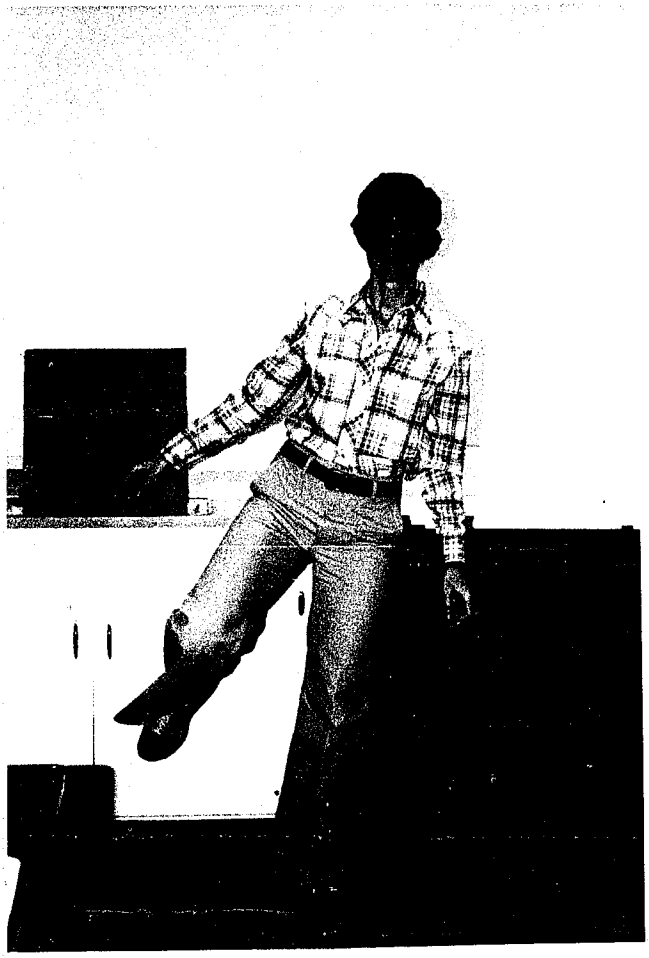
Gross Physical Balance Task



Top View

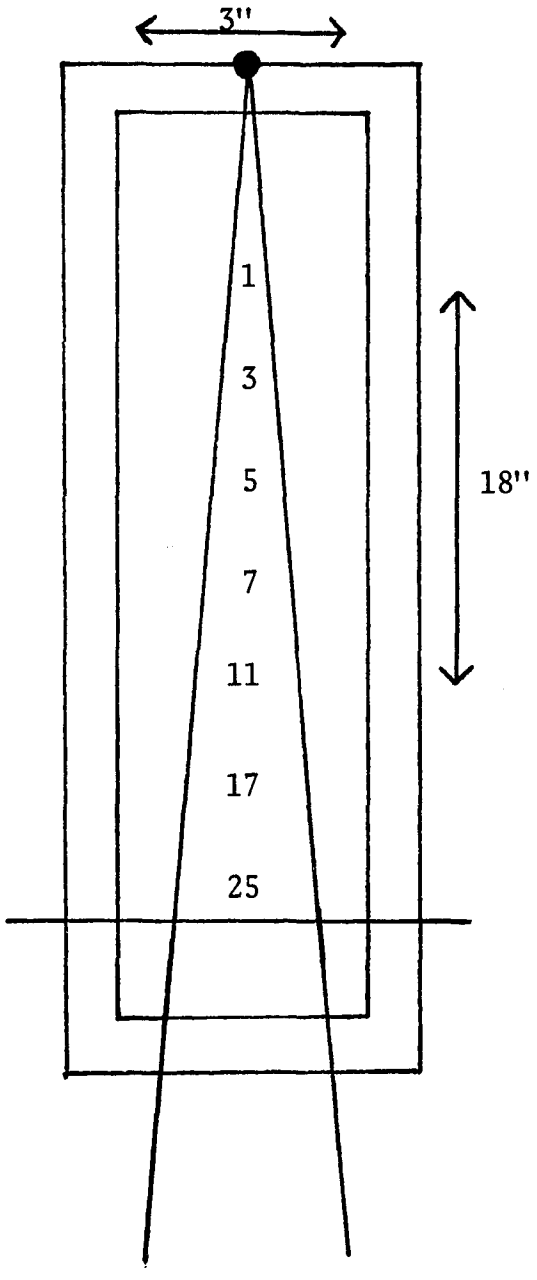
Photo of the

Gross Physical Balance Task



Schematic of the

Eye-hand Manipulative Task



Top View

Photo of the

Eye-hand Manipulative Task

Levenson I-E Control Scales

1. Whether or not I get to be leader depends mostly on my ability.
2. To a great extent my life is controlled by accidental happenings.
3. I feel like what happens in my life is most determined by powerful people.
4. Whether or not I get into a car accident depends on how good a driver I am.
5. When I make plans, I am almost certain to make them work.
6. Often there is no chance of protecting my personal interest from bad luck happenings.
7. When I get what I want, it's usually because I am lucky.
8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power.
9. How many friends I have depends on how nice a person I am.
10. I have often found that what is going to happen will happen.
11. My life is chiefly controlled by powerful others.
12. Whether or not I get into a car accident is mostly a matter of luck.
13. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.
15. Getting what I want requires pleasing those people above me.
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.
17. If important people were to decide they didn't like me, I probably wouldn't make many friends.
18. I can pretty much determine what will happen in my life.
19. I am usually able to protect my personal interests.

20. Whether or not I get into a car accident depends mostly on the other driver.

21. When I get what I want, it's usually because I worked hard for it.

22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.

23. My life is determined by my own actions.

24. It's chiefly a matter of fate whether or not I have a few friends or many friends.

Scoring 5, 4, 3, 2, 1, and 0 according to Levenson's directions. See Levenson, H. Activism and powerful others: Distinctions within the concept of internal-external control. Journal of Personality Assessment, 1974, 38, 377-383.

Personal Data Questionnaire

Below you will find a series of questions pertaining to your personal life history. Please place an "X" in the appropriate box for each question that applies to you. Answer each question honestly and completely. Thank you.

1. What is your marital status?

☐ single

☐ married

☐ divorced

☐ widowed

☐ separated

☐ other _____

(If married answer questions 2-4, otherwise proceed to question 5)

2. At what age did you marry?

_____

3. How much education does your husband have?

☐ less than 7 years

☐ 7-9 years, junior high school

☐ 10-11 years, but not high school

☐ high school graduate

☐ some college

☐ college graduate

☐ additional graduate study

☐ graduate degree

4. What is your husband's occupation? (Be very specific)

_____

5. Do you have any children?

☐ Yes ☐ No

6. If "yes," what are their ages (youngest to oldest) and sex?

   Age ____ ____ ____ ____ ____

   Sex ____ ____ ____ ____ ____

7. What is your age?

   _____

8. At the present time are you employed outside the home?

   ☐ Yes ☐ No

   (If answer is "yes," complete question 9, otherwise proceed to question 10)

9. How many hours per week do you work?

   ☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31 or more

10. What is your present occupation? (Be very specific)

    _____

11. If "homemaker" is your occupation, how many hours per week are you engaged in household duties?

    _____

12. What was your occupation immediately prior to enrolling at the University?

    _____

13. How many hours per week are you involved in volunteer activities in the community?

    _____

    (Please answer questions 14-16 even if parent is deceased or retired)

14. How much education does your father have?

    ☐ less than 7 years

    ☐ 7-9 years, junior high school

    ☐ 10-11 years, but not high school graduate

    ☐ high school graduate

    ☐ some college

    ☐ college graduate

    ☐ additional graduate study

    ☐ graduate degree

15. What is your father's occupation? (Be very specific)

_____

16. How much education does your mother have?

- ☐ less than 7 years
- ☐ 7-9 years, junior high school
- ☐ 10-11 years, but not high school graduate
- ☐ high school graduate
- ☐ some college
- ☐ college graduate
- ☐ additional graduate study
- ☐ graduate degree

17. What is your mother's occupation? (Be very specific)

_____

18. What is your present student classification?

- ☐ freshman
- ☐ sophomore
- ☐ junior
- ☐ senior
- ☐ other _____

19. How many official credit hours are you taking this semester?

- ☐ 1-4
- ☐ 5-8
- ☐ 9 or more

20. If you are a reentry student (aged 25-50), how many years transpired between your last high school or college course and your enrollment at UNC-G?

_____

21. Are you presently enrolled in a physical activity course at UNC-G?

☐ Yes ☐ No

22. If "no," do you plan to enroll in one sometime in the future?

☐ Yes ☐ No

23. If you are involved in either of the following physical activity programs at UNC-G check the appropriate box (es).

☐ Intramurals ☐ Intercollegiate Sports

24. What is your present level of involvement in physical activity?

☐ daily

☐ 5-6 times per week

☐ 2-4 times per week

☐ once per week

☐ monthly

☐ less often

☐ nonactive

25. What was your level of involvement in physical activity during your teen years?

☐ daily

☐ 5-6 times per week

☐ 2-4 times per week

☐ once per week

☐ monthly

☐ less often

☐ nonactive

26. What is your major at UNC-G?

_____

27. What is your race?

_____

APPENDIX B

INFORMED CONSENT FORM, ORIENTATION MATERIALS, AND RECORDING SHEET

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO
SCHOOL OF HEALTH, PHYSICAL EDUCATION & RECREATION

SCHOOL REVIEW COMMITTEE

INFORMED CONSENT FORM *

I understand that the purpose of this study/project is

to investigate performance on two psychomotor tasks and collect information about the psychological characteristics of women students via paper and pencil measures.

I confirm that my participation is entirely voluntary. No coercion of any kind has been used to obtain my cooperation.

I understand that I may withdraw my consent and terminate my participation at any time during the project.

I have been informed of the procedures that will be used in the project and understand what will be required of me as a subject.

I understand that all of my responses, written/oral/task, will remain completely anonymous.

I understand that a summary of the results of the project will be made available to me at the completion of the study if I so request.

I wish to give my voluntary cooperation as a participant.

_____
Signature

_____
Address

_____

_____
Date

*Adopted from L.F. Locke and W.W. Spirduso. Proposals that work. New York: Teachers College, Columbia University, 1976, p. 237.

Approved 3/78

General Orientation Day 1

"Good morning (afternoon, evening). I would like to begin by telling you a little more about this project and the procedures we will follow on each of the testing days. The purpose of the study is to collect information concerning the psychological characteristics and psychomotor task performances of two groups, traditional women undergraduate students and reentry women undergraduate students. Hopefully the information obtained will lead to greater knowledge about women in higher education and help educators to better meet the needs of you as students.

Today you will perform two psychomotor tasks; one a gross physical balance task, the other a fine eye-hand manipulative task. They will be randomly administered, and prior to each task I will give you specific directions to be followed.

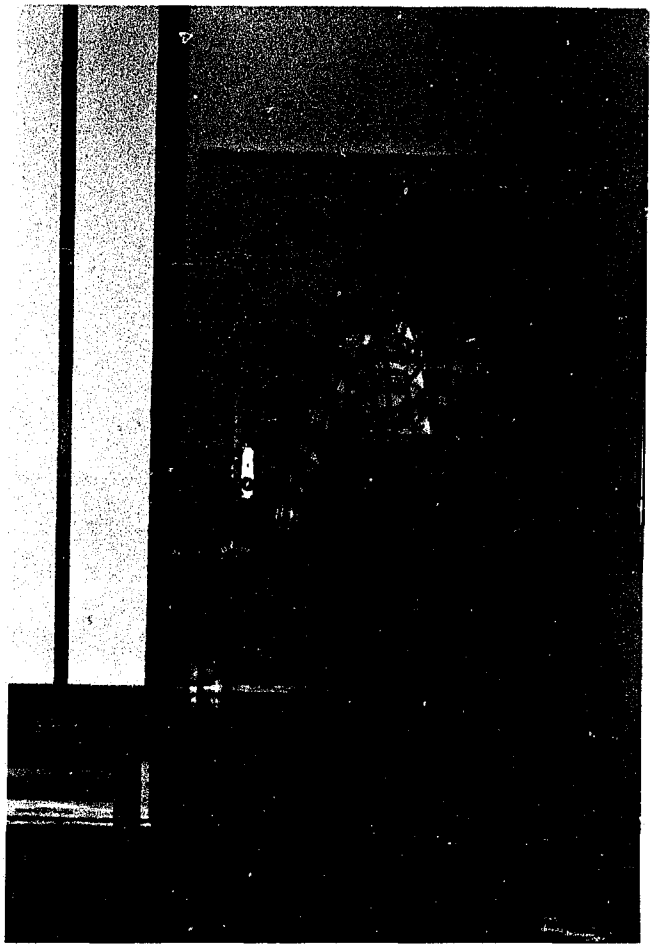
Before leaving today we will arrange a second testing day, at which time you will complete three paper-and-pencil measures and a questionnaire. The completion of all measures will take approximately 45 minutes. Testing will be done in small groups if possible, but you will complete each form individually. When you have finished I will answer any questions you have regarding the study. At that time you may request that results of the study be sent to you.

Let me remind you that all information is confidential and that only group comparisons will be made. At no time will your individual scores be revealed or your data examined by anyone but me.

Do you have any questions?"

Photo of Kicking Task to

Determine Foot Preference



Data Recording Sheet

Subject	Nonpreferred Foot	Order of GPBT	Eye-hand Reps	Eye-hand Time	Gross Physical Reps	Gross Physical Time
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
16						
17						
18						
19						
.						
.						
.						
70						

General Orientation Day 2

"Good morning (afternoon, evening). Today you will complete three psychological measures and a questionnaire. Please answer them in the order they appear in your packet. Directions appear at the beginning of the measures.

There are no right or wrong answers. Remember that all data collected will be treated with utmost respect and confidentiality. The code numbers you see at the top of the forms are to identify you as a member of a large group, not as an individual.

Please respond to each question as honestly and accurately as possible. When you are finished, return the forms to me. Do you have any questions?"

APPENDIX C

RAW DATA

Raw Data For All Measures

ID	TIME EH[a]	TIME GP	Q-ACH	EXT	INT LOCUS
01	298.74	95.36	54	04	23
02	1174.09	727.93	56	06	24
03	102.68	59.04	50	18	24
04	1056.21	347.41	59	16	33
05	925.48	115.26	63	11	32
06	248.29	132.83	52	14	28
07	2407.13	239.00	57	18	29
08	341.08	224.49	53	18	24
11	190.88	159.59	34	14	21
12	2061.69	354.13	42	16	34
13	484.32	350.60	58	11	32
14	482.71	465.59	53	15	29
15	104.67	197.73	57	12	21
16	2237.97	324.21	61	12	24
17	871.58	146.02	57	12	29
18	277.11	215.80	66	14	28
19	2700.00	735.36	53	04	22
20	168.47	109.04	55	06	27
21	89.69	31.92	48	10	22
22	713.29	301.22	50	15	18
23	206.53	147.05	54	13	32
24	488.90	245.73	48	14	31
25	417.69	33.09	48	20	22

Raw Data For All Measures (Cont'd)

ID	TIME EH [a]	TIME GP	Q-ACH	EXT	INT LOCUS
26	269.53	71.22	55	02	23
27	900.39	387.16	50	13	24
28	565.67	286.08	49	09	25
29	109.93	86.43	53	19	26
30	168.49	165.37	54	16	23
31	174.87	217.66	48	17	32
32	172.68	107.39	63	08	29
33	564.90	89.49	52	13	32
34	514.34	239.93	48	17	20
35	1192.84	453.66	54	16	25
36	167.27	134.58	56	11	21
37	217.88	79.64	54	12	26
38	590.21	70.45	52	13	28
39	2700.00	490.84	51	14	26
40	2078.18	664.67	52	09	30
41	261.56	42.94	59	14	22
42	262.14	91.84	48	09	23
43	613.29	250.16	59	11	19
44	311.82	442.47	60	12	28
45	516.38	161.04	48	19	26
46	138.82	76.09	41	12	24
47	114.14	109.38	54	08	26
48	229.02	98.84	52	12	25

Raw Data For All Measures (Cont'd)

ID	TIME EH[a]	TIME GP	Q-ACH	EXT	INT LOCUS
50	213.33	574.11	49	16	32
51	1277.38	230.97	53	12	22
52	556.75	124.00	50	15	29
53	137.74	378.99	50	12	26
54	126.22	27.10	48	12	26
55	308.47	119.35	52	05	23
56	335.12	129.70	46	10	33
58	1411.70	104.25	48	09	26
59	757.28	313.15	46	10	21
60	289.48	122.67	52	20	22
61	484.39	195.61	48	07	31
62	347.20	37.64	49	13	24
63	555.38	72.79	50	12	24
64	521.76	51.68	53	20	39
65	1873.33	61.68	50	11	28
66	537.14	105.79	50	14	23
67	216.45	130.70	41	19	25
68	335.07	117.51	56	18	23
69	994.79	456.44	49	18	31
70	422.71	65.75	58	10	26

Note. Subjects numbered 1-35 are traditional students, 36-70 reentry students.

[a]Time on the eye-hand manipulative task and the gross physical balance task is recorded in seconds.

APPENDIX D

DESCRIPTIVE STATISTICS OF THE FIVE VARIABLES STUDIED

Measurement Variable Descriptive Data

Traditional Group[a]

Variable	$\bar{X}$	SD	M	Minimum	Maximum
TIME GP	238.266	173.227	215.799	31.920	735.360
TIME EH	687.358	708.077	482.709	89.690	2700.000
Q-ACH	53.151	6.159	53.000	34.000	66.000
EXT	13.030	4.824	14.000	2.000	21.000
INT LOCUS	26.090	4.772	25.000	14.000	34.000

Reentry Group[b]

Variable	$\bar{X}$	SD	M	Minimum	Maximum
TIME GP	185.843	167.557	119.349	27.100	664.670
TIME EH	603.105	610.638	347.279	114.140	2700.000
Q-ACH	51.030	4.510	50.000	41.000	60.000
EXT	12.696	3.762	12.000	5.000	20.000
INT LOCUS	26.000	4.100	26.000	19.000	39.000

Note. Possible range on Q-ACH = 15-75, EXT = 0-24, INT LOCUS = 0-40.

[a] n = 33.

[b] n = 33.

APPENDIX E

CLASSIFICATION OF "LOW" AND "HIGH" PERSISTERS BASED ON "TIME ON TASK" SCORES

Persistence Scores on the Gross Physical Balance Task for All Subjects

	TIME GP	FREQUENCY
Low Persisters Group I n = 38	27.10	1
	31.92	1
	33.09	1
	37.64	1
	42.94	1
	51.68	1
	59.04	1
	61.68	1
	65.75	1
	70.45	1
	71.22	1
	72.79	1
	76.09	1
	79.64	1
	86.43	1
	89.49	1
	91.84	1
	95.36	1
	98.84	1
	104.25	1
	105.79	1
	107.39	1
	109.04	1
	109.38	1
	115.26	1
	117.51	1
	119.35	1
	122.67	1
	124.00	1
	129.70	1
	130.70	1
	132.83	1
	134.58	1
	146.02	1
	147.05	1
	159.59	1
	161.04	1
	165.37	1

	TIME GP	FREQUENCY
Excluded n = 11	195.61	1
	197.73	1
	215.80	1
	217.66	1
	224.49	1
	230.97	1
	239.00	1
	239.93	1
	245.73	1
	250.16	1
	286.08	1
High Persisters Group II n = 17	301.22	1
	313.15	1
	324.21	1
	347.41	1
	350.60	1
	354.13	1
	378.99	1
	387.16	1
	442.47	1
	453.66	1
	456.44	1
	465.59	1
	490.84	1
	574.11	1
	664.67	1
	727.93	1
	735.36	1

N = 66

Persistence Scores on the Gross Physical Balance Task for Traditional Students

	TIME GP	FREQUENCY
Low Persisters Group I n = 14	31.92	1
	33.09	1
	59.04	1
	71.22	1
	86.43	1
	89.49	1
	95.36	1
	107.39	1
	109.04	1
	115.26	1
	132.83	1
	146.02	1
	147.05	1
	159.59	1
Excluded n = 8	165.37	1
	197.73	1
	215.80	1
	217.66	1
	224.49	1
	239.00	1
	245.73	1
High Persisters Group II n = 11	286.08	1
	301.22	1
	324.21	1
	347.41	1
	350.60	1
	354.13	1
	387.16	1
	453.66	1
	465.59	1
	727.93	1
	735.36	1
		N = 33

Persistence Scores on the Gross Physical Balance Task for Reentry Students

	TIME GP	FREQUENCY
Low Persisters Group I n = 23	27.10	1
	37.64	1
	42.94	1
	51.68	1
	61.68	1
	65.75	1
	70.45	1
	72.79	1
	76.09	1
	79.64	1
	91.84	1
	98.84	1
	104.25	1
	105.79	1
	109.38	1
	117.51	1
	119.35	1
	122.67	1
	124.00	1
	129.70	1
	130.70	1
	134.58	1
	161.04	1
Excluded n = 3	195.61	1
	230.97	1
	250.16	1
High Persisters Group II n = 7	313.15	1
	378.99	1
	442.47	1
	456.44	1
	490.84	1
	574.11	1
	664.67	1
		N = 33

Persistence Scores on the Eye-hand Manipulative Task for All Subjects

	TIME EH	FREQUENCY
Low Persisters Group I n = 31	89.69	1
	102.68	1
	104.67	1
	109.93	1
	114.14	1
	126.22	1
	137.74	1
	138.82	1
	167.27	1
	168.47	1
	168.49	1
	172.68	1
	174.87	1
	190.88	1
	206.53	1
	213.33	1
	216.45	1
	217.88	1
	229.02	1
	248.29	1
	261.56	1
	262.14	1
	269.53	1
	277.11	1
	289.74	1
	298.74	1
	308.47	1
	311.82	1
	335.07	1
	335.12	1
	341.08	1
High Persisters Group II n = 18	514.34	1
	516.38	1
	521.76	1
	537.14	1
	555.75	1
	556.75	1
	564.90	1
	565.67	1
	590.21	1
	613.29	1
	713.29	1
	757.28	1
	871.58	1
	900.39	1
	925.48	1
	994.79	1
	1056.21	1
	1174.09	1
	1192.84	1
	1277.38	1
	1411.70	1
	1873.33	1
	2061.69	1
	2078.18	1
	2237.97	1
	2407.13	1
	2700.00	2
		N = 66
Excluded n = 17	347.28	1
	417.69	1
	422.71	1
	482.71	1
	484.32	1
	484.39	1
	488.90	1

Persistence Scores on the Eye-hand

Manipulative Task for Traditional Students

	TIME EH	FREQUENCY
Low Persisters Group I n = 15	89.69	1
	102.68	1
	104.67	1
	109.93	1
	168.47	1
	172.68	1
	174.87	1
	190.88	1
	206.53	1
	248.29	1
	269.53	1
	277.11	1
	298.74	1
	341.08	1
Excluded n = 7	417.69	1
	482.71	1
	484.32	1
	488.90	1
	514.34	1
	564.90	1
	565.67	1
High Persisters Group II n = 11	713.29	1
	871.58	1
	900.39	1
	925.48	1
	1056.21	1
	1174.09	1
	1192.84	1
	2061.69	1
	2237.97	1
	2407.13	1
	2700.00	1
		N = 33

Persistence Scores on the Eye-hand

Manipulative Task for Reentry Students

	TIME EH	FREQUENCY
Low Persisters Group I n = 16	114.14	1
	126.22	1
	137.74	1
	138.82	1
	167.27	1
	213.33	1
	216.45	1
	217.88	1
	229.02	1
	261.56	1
	262.14	1
	289.48	1
	308.47	1
	311.82	1
	335.07	1
	335.12	1
Excluded n = 10	347.28	1
	422.71	1
	484.39	1
	516.38	1
	521.76	1
	537.14	1
	555.38	1
	556.75	1
	590.21	1
	613.29	1
High Persisters Group II n = 7	757.28	1
	994.79	1
	1277.38	1
	1411.70	1
	1873.33	1
	2078.18	1
	2700.00	1
		N = 33