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Two questionnaires were administered to 94 intercollegiate women athletes to determine whether or not source of reinforcement could be considered to be a factor in women's sport involvement. Athletes were investigated as a total group and also in three subgroup categories: (a) individual sport participants; (b) team sport participants; and (c) those participating in both team and individual sports.

Rotter's (1966) I-E Scale and a modification of that scale, the Sport I-E Scale, were the instruments used to generate data for this research. The investigator administered the questionnaires to the athletes who were from institutions having bona fide membership in SIAW. Differences in scores were determined by calculating critical ratios and one-way analyses of variance.

Results of the study indicated that: (a) women athletes do not differ from other college women in their expectancy for source of reinforcement in a general situation; and (b) women athletes demonstrate a significantly greater degree of belief in internal control of reinforcement within the sport situation than in the general situation. These findings were consistent for the total group of athletes as well as for the three subgroups. There were no significant differences among the subgroups on either of the two instruments utilized in the study. It was concluded that intercollegiate women athletes could not be differentiated from other college females in relation to source of reinforcement.

SOURCE OF REINFORCEMENT AS A POTENTIAL
FACTOR IN WOMEN'S SPORT INVOLVEMENT

by

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CHAPTER I

INTRODUCTION

The current interest in and explosion of women's competitive sport have stimulated a variety of explanations for female sport behavior. A relatively recent narrative of the topic points out that, "A female who persists in her athletic interests, despite the handicaps and discouragements, is not likely to be congratulated on her sporting desire or grit. She is more apt to be subjected to social and psychological pressures...(Gilbert & Williamson, 1973, p. 88)." The authors of the above quotation further state that, "The role of girls in sport is determined by society, and until now that role has been an inferior one (1973, p. 98)." These quotations suggest that the athletic role is not one which is endorsed for women. Such an attitude exists today in our society and it is not likely that there will be a change in the near future. Why then, do women subject themselves to not only the strenuous training and self-discipline of athletics, but also to the aforementioned social and psychological pressures?

According to Epuran and Horghidan (1970), participation in sports is prompted and encouraged by motivational factors. Motivation can be attributed to types of behavior that are persistent, involve the use of considerable energy and may be accompanied by feelings of desire. Motivated behavior that is goal directed involves the individual being committed to a task. It is controlled by a conscious intention to achieve selected aims. The individual is stimulated by his own successful

performance to continue in the activity (Vernon, 1969). This may be interpreted to indicate that the individual is reinforced in some manner.

Reinforcement explains the phenomenon that an individual is likely to repeat or acquire a behavior that is positively reinforced and to discard a behavior that is negatively reinforced. Psychological theorists also maintain that the anticipation or expectancy for such reinforcements is an important determiner of behavior (Rotter, Seeman & Liverant, 1962).

According to Crowne and Marlowe (1964), behavior is a function of learned goals and subjective probabilities regarding goal attainment which are required in the course of social interaction. The basic concepts of this theory specify that the probability of the occurrence of a given behavior is a joint function of the expectancy that certain reinforcing events will result from the behavior, and the individual's value for those reinforcements. In other words, the potential for any behavior to occur in a given situation is a function of the person's expectancy that the given behavior will secure the available reinforcement and the value of the available reinforcements for that person.

Rotter's approach to the analysis of reinforcement is concerned with the source of reinforcement, which is designated as internal or external. Source of reinforcement is also referred to as control of reinforcement. An internal source of reinforcement refers to a belief by an individual that events are a consequence of his own skill and/or actions. An external source of reinforcement refers, conversely, to a belief by an individual that events are unrelated to one's actions and instead are attributed to luck, fate or chance (Rotter et al., 1962). Complete

attribution of control either to the self or to outside factors is probably the exception rather than the rule. In many situations an individual might consider that his success is dependent on both internal and external sources in varying degrees (Feather, 1967). Research using the internal-external control construct developed by Rotter indicates that the individual may develop a generalized expectancy for control which relates to whether or not he believes that he possesses the power or control over what happens to him (Lefcourt, 1966, 1972; Joe, 1971).

One characteristic that has been adhered to within the internal-external concept is that individuals who believe in an internal source of reinforcement prefer to select activities which require skill (Rotter & Mulry, 1965). Involvement in sports is a condition which invariably requires the execution of skilled responses by the participants. However, to some extent, sportspersons generally acknowledge the existence of factors of chance in sports competition; one needs only to view the many superstitious behaviors of numerous sport competitors. To date, only one known study concerned with sport behavior (Reese, 1975) has addressed itself to the issue of source of reinforcement. Sport, with its demands for skill, provides a unique setting for the testing of Rotter's ideas. It is not unreasonable to speculate that individuals participating in competitive sports tend to see themselves as internally reinforced. This study was undertaken with the hope of gaining some new insights into athletic motivation theory particularly as it may explain female collegiate involvement in sports competition.

Statement of the Problem

The purpose of this study was to determine in general whether or not a specific source of reinforcement, internal or external, could be considered to be a factor in the motivation of women to be involved in competitive sports. A further purpose was to design a set of statements which purportedly assessed source of reinforcement specific to the sport situation.

Responses to the following questions were sought by this investigation:

1. How do women intercollegiate athletes compare with other college women with respect to source of reinforcement as assessed by the Rotter I-E Scale?
2. How do women intercollegiate athletes perceive source of reinforcement as assessed by the Sport I-E Scale?
3. What are the differences between scores obtained on the Rotter I-E Scale and the Sport I-E Scale?

Definition of Terms

The following definitions were accepted by the investigator for the purpose of this study.

Expectancy or Subjective Probability. A concept representing the individual's estimate of the likelihood of occurrence of a given event (Scott, 1962).

Internal-External Control of Reinforcement. A measurable concept indicating to what degree the individual perceives the consequences of his actions as being under his control (Rotter et al., 1962).

Motivation. "... some kind of internal force which arouses, regulates, and sustains all our important actions (Vernon, 1969, p. 1)."

Reinforcement. A consequence following a given instance of behavior which subsequently determines the recurrence of that behavior. An individual is likely to repeat or acquire a behavior that is positively reinforced and to discard a behavior that is negatively reinforced (Rotter et al., 1962).

Southern Region II of the Association of Intercollegiate Athletic Women (SIAW). Accredited junior and senior colleges or universities in Kentucky, North Carolina, South Carolina, Tennessee and Virginia having intercollegiate programs for women and complying to the policies and standards established by the Association of Intercollegiate Athletic Women (AIAW) (Adams & Soladay, 1972).

Women Sport Competitors. College women who train in a sport or sports for the purpose of competition at the intercollegiate level.

Assumptions Underlying the Research

In developing this study the investigator acknowledged the following basic assumptions.

1. Participation in intercollegiate athletics is the result of goal directed behavior.
2. Skill required for sports competition conveys the same general meaning as Rotter's use of the word skill in the development of the internal-external construct.
3. The Sport I-E Scale has content validity.
4. Athletes' responses were accepted as honestly given.

Scope of the Study

Subjects of the research were intercollegiate female athletes who were bona fide members of basketball, golf and tennis teams representing institutions holding active membership in Southern Region II of the Association of Intercollegiate Athletic Women (SIAW).

The investigation was limited by the time period, method of data gathering, self report instrumentation, and geographic area. Specifically, 94 subjects participated in the study during the spring of 1974.

Thus, the results of the investigation were biased by geographic region, by the nature of the paper and pencil measure used, by the testing conditions, and in the selection of subjects. No attempts were made therefore to generalize the results of the study to all women athletes.

Significance of the Study

Recent emphasis on the study of women in athletics has initiated research which reveals some distinct personality traits describing individuals who are affiliated with specific sport groups. Williams, Hoepner, Moody and Ogilvie (1970) administered the Cattell Sixteen Personality Factor Test and the Edwards Personal Preference Schedule to national female fencers. Several departures from the normative population were found in the characteristics of a strong desire to achieve, high imagination, a need to be independent, self-sufficient, and autonomous. Female fencers were below average on the need to affiliate. Further, they demonstrated a desire to accomplish difficult tasks requiring skill and effort. A definite fencers personality was identified by the researchers.

Bird (1970) also utilized the Cattell Sixteen Personality Factor Test and the Edwards Personal Preference Schedule. She reported that Canadian intercollegiate women ice hockey players were also above average on characteristics such as independence, creativity, self-sufficiency, autonomy, and also scored low on the need for affiliation.

Because an interest in sports is negatively associated with the female role, Landers (1970) tested the hypothesis that women who exhibit a high interest in sports involving physical skills differ from other women in certain personality dispositions. Compared on the masculinity-femininity scales of the Minnesota Multiphasic Personality Inventory and the Gough Scale of Psychological Femininity, women physical education majors were found to have significantly lower, less feminine scores. Landers interpreted his results in terms of Roberts and Sutton-Smith's enculturation hypothesis. He concluded that games of physical skill may attract and/or develop those who are less reliant upon mystical or benevolent powers and more reliant on their own initiative.

Given the criticisms (Bott, 1970) of the Gough Scale and tendencies to regard the terms masculine and feminine as value-biased terms, the writer regards the work cited above as superficial and incapable of yielding insights into the understanding of female athletic participation. The present study applies a generally accepted behavior theory to the specific sport situation and is considered capable of contributing "new" information to the growing body of knowledge about sportswomen.

CHAPTER II
REVIEW OF RELATED LITERATURE

Several areas of the literature provided background for the study of source of reinforcement and the woman athlete. Literature about the internal-external personality construct and investigations of women athletes' personalities related specifically to this inquiry.

Internal-External Personality Construct

Rotter developed, from social learning theory, a concept of internal-external control of reinforcement which describes the degree to which an individual believes that reinforcements are contingent upon his own behavior. Internal control refers to an individual's belief that reinforcements are contingent upon his own behavior, capacities or attributes. External control refers to an individual's belief that reinforcements are not under his control but rather are under the control of powerful others, luck, chance, or fate. Rotter believes that a person develops a consistent attitude tending toward either an internal or external locus as the source of reinforcement, depending upon past reinforcement experiences.

To measure the construct, Rotter developed a scale consisting of 29 pairs of statements. The scale is described as a forced choice questionnaire with respondents indicating which statement in each pair they believe more strongly to be true. All items deal with either societal/political control or personal control, thus lending a general

content to the items rather than dealing with specifics. A comprehensive review of the work on the development, validity and reliability of the scale was reported by Rotter (1966).

I-E Scale

Reliability measures reported for the Internal-External (I-E) Scale were consistent. The test-retest reliability measures reported by Rotter (1966) for varying samples and for intervening time periods varying from one to two months ranged between .49 and .83. Hersch and Scheibe (1967) also found test-retest reliability coefficients that ranged from .48 to .84 for a two month period.

Internal consistency estimates of reliability were within the range of acceptability. Such estimates were between .65 and .79 with the majority of correlations in the .70's (Rotter, 1966).

Rotter (1966) reported good discriminant validity for the I-E Scale indicated by low correlations with such variables as intelligence, social desirability, and political affiliation. Similarly, Hersch and Scheibe (1967) found nonsignificant correlations between I-E scores and three different measures of intelligence. Minton (1967) reported that the internal-external scores of 69 males were unrelated to political liberalism or conservatism of attitudes on international relations. On the other hand, for 67 females low significant correlations between external control and both conservatism ($r = .26$) and an attitude of exaggerated patriotism regarding relations ($r = .28$) were noted.

Recent findings about the relationship between internal-external control and social desirability have been contradictory. Strickland (1965)

found a nonsignificant correlation between the I-E Scale and the Marlowe-Crowne Social Desirability Scale (MC-SDS) while Feather (1967) reported a significant relationship between I-E scores and MC-SDS scores. Similarly, Berzins, Ross and Cohen (1970) reported a significant correlation of $-.23$ between the I-E Scale and the Edwards Social Desirability Scale. These findings suggested that the I-E Scale is not totally free of the social desirability set as claimed by Rotter.

Although Rotter (1966) stated that sex differences on the I-E Scale among college students appeared to be minimal, recent studies by Feather at the University of England (1967, 1968) showed that females earned significantly higher external scores than males. This finding was consistent with the one case in which sex differences on the I-E Scale were noted by Rotter (1966). Rotter suggested that the sex differences were related to geographical differences as well as sex-role identification.

Recently some researchers remarked on inherent limitations in the I-E Scale. Coan (cf. Dies, 1968) argued that the I-E Scale favored items dealing with social and political events as opposed to items regarding personal habits, traits, goals, or other interpersonal and intrapersonal concerns. Coan suggested that the I-E items may not tap all major aspects of personal control.

Similarly, Gurin, Gurin, Lao and Beattie (1969) argued for distinctions within the concept of internal-external control in studies of Negro youth. Gurin et al. (1969) factor analyzed responses made by 1695 Negro students to an extended I-E scale and found several independent factors. The first two independent factors were Control Ideology, which

referred to how much control one believes most people in society possess, and Personal Control, which referred to how much control one believes he personally possessed. The third factor, System Modifiability, measured the degree to which an individual believed racial discrimination, war, and world affairs could be modified. A fourth factor, Race Ideology, contained most of the race-related items which, when subjected to a second factor analysis, produced a factor known as Individual System Blame. This latter factor dealt with the attribution of blame either to oneself or to a faulty social system.

Another study which attempted to clarify the factor structure of the I-E Scale was carried out by Mirels (1970). Administration of the I-E Scale to 316 college students and utilization of varimax identified two factors. Factor I concerned the amount of control one believed he personally possessed while Factor II concerned the extent to which one believed a citizen could exert control over political and world affairs.

Similarly, Sanger and Alker (1972) factor analyzed the I-E items with female subjects. Two dimensions emerged from the I-E Scale; personal control and protestant ethic ideology. The protestant ethic ideology was similar to Gurin et al's (1969) control ideology. Sanger and Alker's findings along with Mirels, and Gurin et al., strongly support the notion that the locus of control variable should be studied at a multidimensional rather than a unidimensional level. Consistent with these latter findings was a study by Thomas (1970) who demonstrated that the "internal" items on the I-E Scale were more congenial to individuals holding conservative political views than to those holding liberal views.

In summary, the findings of Gurin et al. (1969), Mirels (1970), Sanger and Alker (1972), and Thomas (1970), suggested that to be a valid instrument the I-E Scale must be modified to distinguish those aspects of a person's world view which indicate a personality trait and those which reflect societal norms.

I-E and Personality

Several investigations were concerned with the relation of internal-external scores to personality characteristics. Hersch and Scheibe (1967) correlated the I-E Scale with the California Psychological Inventory (CPI) and the Adjective Check List (ACL). They found that internally oriented individuals were higher than externally oriented individuals on the Dominance, Tolerance, Good Impression, Sociability, Intellectual Efficiency, Achievement via Conformance, and Well-Being scales of the CPI. On the ACL the internally oriented persons were more likely to describe themselves as assertive, achieving, powerful, independent, effective, and industrious. No consistent sex differences were apparent in the means or standard deviations of the I-E scores. In no case did important sex differences appear in the correlations of the I-E Scale with CPI and ACL.

In another study by DiGiuseppe (1971), I-E scores were correlated with four items of the Edwards Personal Preference Schedule (EPPS). Of the four items tested, Dominance, Achievement, Endurance, and Autonomy, a significant correlation was obtained only with Dominance. The higher the dominance, the more internally oriented the individual. This study utilized only male subjects and therefore no conclusions were drawn

relative to females. Also a small sample, 30 subjects, causes the cautious reader to be conservative in interpreting the results.

Clouser and Hjelle (1970) investigated the relationship between the I-E Scale and the Rokeach Dogmatism Scale (Form E) with 116 college men and 125 college women. A significant correlation between I-E and Dogmatism was revealed indicating that externally oriented individuals possess a more closed system of beliefs-disbeliefs. This finding was reported for the combined group of subjects; no sex comparisons were made. Hamsher, Geller and Rotter (1968) reported a significant correlation between the I-E Scale and an interpersonal trust scale for males and females combined.

Internally and externally designated subjects were placed in either equal or subordinate roles by Miller and Minton (1969). Externals violated experimental instructions significantly more frequently than did internals. This research indicated then, that externally oriented individuals tend to have an attitude of interpersonal suspiciousness or mistrust.

In summary, these findings tend to form an orderly cluster which is logically and theoretically consistent with the construct of internal-external control. The findings depicted externals, in contrast to internals, as being relatively dogmatic, less trustful and more suspicious of others, lacking in self-confidence and insight, having low needs for social approval, and having a greater tendency to use sensitizing modes of defense. However, not all studies utilized female subjects. Furthermore, not all studies differentiated between sex when both males and

females were included. Therefore, the personality correlates discussed above could not be generalized for women.

I-E and Field Dependence

Wilkin and his colleagues (cf. Lefcourt, 1972) expanded upon their earlier research about perceptual field dependence which described a concept referred to as psychological differentiation. Some relationship between I-E and psychological differentiation, or at least a similar pattern of relationships, was anticipated on the basis of the apparent similarities between the locus of control and the differentiation concepts. Rotter (1966) reported no empirical relationship between the I-E Scale and the Gottschalk Figures Test which is one measure of differentiation.

Willoughby (1967) likewise found an insignificant relationship between the Hidden Figures Test (HFT) and the Adult Locus of Evaluation and Control Scale (ALOE-C), which is a measure of internal-external control. The ALOE-C contains two subscales: evaluation deals with the extent to which an individual relies on others; control is concerned with the extent to which an individual sees himself as being in control of environmental events rather than at their mercy. Willoughby (1967) found that the evaluation subscale of the ALOE-C correlated significantly with the HFT, but the control subscale did not. Although both males and females served as subjects, no sex comparisons were made.

Deever (1968) measured college women on the Embedded Figures Test (EFT) and the Social Reaction Inventory which is a type of internal-external control scale. While there was a lack of correlation between

the locus of control and the EFT, there was a tendency for both the field independent and internally oriented individuals to use personal reinforcement history as an index to future performance goals more than the field dependent and externally oriented individuals.

Lefcourt and Telegdi (1971) hypothesized that internals were more cognitively and perceptually alert than externals. In a rather complex study they administered the I-E Scale, Remote Associates Test, Barrons Human Movement Threshold Inkblot Test, and Rotter's incomplete sentences blank test to college men. No relationship was found between the I-E Scale and field dependence; but the internal-field independent person did seem to be the most cognitively alert.

From the studies above there appeared to be no relationship between locus of control and field dependence. Nevertheless, the constructs bear theoretical similarity in predicting assertiveness, the experiencing of oneself as a distinct source of causation, and the tendency to be self-reliant rather than acquiescent and conforming. As Lefcourt (1972) suggested, these variables might prove complimentary to each other. The lack of relationship appears to be true for both men and women.

I-E and Risk-Taking

Some work was directed toward the relation between internal-external control and risk-taking behavior. Liverant and Scodel (1960) maintained that internals were more cautious and conservative than externals in risk-taking situations in an attempt to control events. This notion was supported when internals chose significantly fewer lower probability bets than externals in a dice-throwing situation. Internals also wagered more money on safe bets than on risky bets.

Consistent with the above study was one by Julian, Lichtman and Ryckman (1968) who observed that female college internals preferred choices with high probabilities of success while externals preferred choices with low probabilities of success in a dart-throwing game. The task involved was clearly one of skill. In a second study, the authors used a modified dart-throwing task with the subjects blindfolded. Thus, they created a chance situation. It was predicted that internals would become more frustrated. Results revealed, however, that the externals became more frustrated. This is in keeping with the notion that externals are generally more concerned with their performance on chance tasks (Julian et al., 1968).

Contrary findings were reported by Strickland, Lewicki and Katz (1966). They studied high school males. These researchers indicated that internals took greater risks than externals under a normal betting sequence.

Minton and Miller (1970) investigated I-E and group risk-taking behavior. They hypothesized that groups composed of external individuals would manifest a greater magnitude of risky shift than groups composed of internals. A secondary hypothesis offered by these investigators was that internals would take longer to reach a consensus than externals. Utilizing college men and women and analyzing their findings in a 2 x 3 factorial design, they found no relationship between I-E and group risk-taking. The only significant finding was that the female groups required less time to reach a consensus than the male groups. I-E was not a factor.

Research about I-E and risk-taking behavior was rather meager, but reported evidence did appear to favor the hypothesis that internals were more cautious and conservative in risk-taking situations than externals. This seems to be in keeping with the idea that internals prefer situations in which they have control. No known studies investigated the possibilities of I-E and preference for risk-taking versus non-risk-taking situations. It seems that research is needed in this subject similar to that which was reported for skill versus chance preferences. However, whether or not a risk-taking situation and a chance situation are synonymous has not been answered. This would need some prior consideration.

I-E and Anxiety

Several recent studies showed a significant relationship between various measures of anxiety and I-E. Butterfield (1964), with a sample of 47, found that external control was positively related to intra-punitive responses to frustration and negatively related to constructive reactions to frustration. In this study, external control was also positively related to debilitating anxiety and negatively related to facilitating anxiety. No sex differences were found.

In two studies utilizing students from the University of England, Feather (1967) found that external control was positively related to debilitating anxiety for males but not for females in one study. However, in the second study, the relationship was significant for both sexes. Test anxiety was positively related to external control for both males and

females. These same external subjects also exhibited a positive correlation with neuroticism.

For 648 college men and women, Watson (1967) found significant correlations between the I-E Scale and the Manifest Anxiety Scale and also between external control and debilitating anxiety. This relationship was significant for men, women and both combined. Hersch and Scheibe (1967) found significant, positive correlations between I-E scores and anxiety as measured by the Pt scale of the Minnesota Multiphasic Personality Inventory for both males and females.

To ascertain the possibility of an anxiety factor within the I-E Scale, Ray and Katahn (1968) utilized the I-E Scale, the Manifest Anxiety Scale (MAS) and the Mandler Test Anxiety Scale (TAS) which measures fear of failure in achievement situations. These scales were administered to two samples of college students (N1 = 323, N2 = 303). The number of males and females was not reported. The findings revealed that the I-E Scale and MAS were significantly correlated in both samples and that the I-E Scale and the TAS were significantly related in both samples, though in a limited way. After a factor analysis and employing varimax rotation, Ray and Katahn (1968) concluded that the anxiety scales and the I-E Scale were assessing conceptually different variables which correlated with each other and that the correlation obtained was not due to a hidden anxiety factor within the I-E Scale.

All of the scales employed in the above studies were self-report measures. The research suggests that externals described themselves as

anxious, less able to show constructive responses in overcoming frustration, and more concerned with fear of failure than with achievement per se. Internals, on the other hand, depicted themselves as more concerned with achievement, more constructive in overcoming frustration, and less anxious. These generally described findings for men and women alike.

I-E and Conformity and Influence Attempts

From a common sense point of view, locus of control seemed to be strongly related to the ability to resist coercion. Persons who view themselves as responsible for their own fate should be more cautious about what they accept from others than should those who do not perceive themselves to be in active control of their fate. Odell (cf. Lefcourt, 1972), found a significant relationship between Rotter's I-E Scale and Baron's Independence of Judgment Scale. Subjects high in externality showed a greater likelihood of conformity.

Crowne and Liverant (1963) found, in a complex study, that externals in a betting situation conformed significantly more than did internals in a betting situation. Because I-E scores were comparable for males and females, no sex comparisons were made. In the betting situation, externals were also less confident in their own judgment abilities. The externals wagered less money than internals on the correctness of their judgments when making independent rather than conforming judgments. The authors also found a slight but nonsignificant trend for externals to conform when a control group and expectancy group were combined. Crowne

and Liverant (1963) suggested that the introduction of betting served to increase the credibility of the investigation.

More recently, Ritchie and Phares (1969) investigated attitude change as a function of internal-external control and communicator status. Subjects, college women, were divided as to internal or external orientation and placed in either a high or low prestige situation. Communications which were identical but which were attributed to either high or low prestige sources were presented in order to influence subjects' attitudes. Internals in the high-prestige group changed significantly less than externals in the high-prestige group. Externals also showed more change under high-prestige than under low-prestige. Externals were not uniformly susceptible to influence attempts in all situations.

Biondo and MacDonald (1971) hypothesized that externals would conform when subjected to overt influence attempts while internals would move in the opposite direction. They also proposed that internals would react against subtle influence and externals would continue to manifest conformity behavior. Male and female subjects were used. No sex differences were found. When subjected to the overt influence attempts externals significantly moved in a conforming direction while internals significantly manifested reactance. Externals conformed under both levels of influence. Internals only reacted under high influence attempts.

Two studies investigated internal-external control and conformity. While the studies supported the view that externals tend to conform more than internals, no generalizations were made. In view of the research, the hypothesized relationship between the I-E Scale and

resistance to manipulation and conformity appears to be only partially confirmed. More attention should be given to exploring the hypothesis that internals conform only if they perceive conforming to be to their advantage (Joe, 1971).

The reported findings on conformity and resistance to influence did not suggest differences between males and females. However, further research is needed before such a generalization may be made.

I-E and Self-Esteem

That high self-esteem indicated a higher potential for self-reinforcement was the hypothesis investigated by Platt, Eisenman and Darbes (1970). They administered the I-E Scale and another instrument (Ziller et al.) of self-esteem to three separate groups of college men and women. No significant relationships were found between the two measures for any of the groups. They suggested that either the self-esteem measure was poor or else there was a very small correlation between the two variables. The sample sizes used by Platt et al. (1970) were very small. This may have affected the results.

Fitch (1970) found a low but significant positive rank-order correlation between I-E and self-esteem. No sex data were reported.

Male college students were investigated by Fish and Karabenick (1971) to determine a possible relationship between self-esteem and locus of control. A small but significant correlation was obtained between I-E and the Janis and Field Feelings of Inadequacy Scale. These findings somewhat supported the contention that people with a high self-esteem have a greater potential for self-reinforcement.

Research about self-esteem and I-E was very meager. While the studies presented somewhat supported a possible relationship between the two constructs, no generalizations could be made with any confidence. Also, the only reported investigation in which sex was a variable turned up no relationship between internal-external control and self-esteem for women. I-E may seem relevant to the self-esteem concept but I-E did not account for a sufficiently high proportion of variance to allow for solid behavior prediction (Lefcourt, 1972).

I-E and Aggression

In the only known study in this area, Williams and Vantress (1969) administered the I-E Scale and the Buss Durkee Hostility Inventory (BDHI) to 114 male and 121 female college students. A small but positive relationship between the two scales was reported. Breaking the BDHI down into its eight subscales, externals scored significantly higher than internals on Resentment, Verbal, Suspicion, Indirect, and Irritability. No differences were found on the subscales of Negativism, Guilt and/or Assault (Williams & Vantress, 1969). No sex comparisons were made.

From this one study it appeared that externals tend to be more aggressive than internals; aggressive as determined by the BDHI. However, it is not the writer's intent to generalize from the findings of a single study. It is possible that the low correlations were obtained because of the sex factor. Sex comparisons, therefore, need to be made. Also, the type of aggression studied, e.g. instrumental aggression, needs to be defined and more clearly delineated.

I-E and Strategy Preferences

The effect of skill and chance directions upon the expectancies of subjects designated as internals or externals was investigated to a great extent. Phares (1957) found that a chance situation produced smaller expectancy changes than a skill situation. He also found that the frequency of expectancy shifts was greater in the skill situation.

Rotter and Mulry (1965) found that individuals characterized as internal took longer to make decisions in a matching task when the task was defined as skill controlled than when the task was defined as chance controlled. The opposite of these findings was revealed for externals in this study.

Watson and Baumal (1967) proposed an incongruence hypothesis which suggested internals performed better than externals in skilled situations, while externals performed better than internals in chance situations. The authors proposed that the perception of no control in a particular situation would increase anxiety for persons who viewed themselves as controlling the significant reinforcers. Furthermore, these researchers proposed that the perception of no control in a particular situation would increase the anxiety of individuals who viewed reinforcement as beyond their personal control. Their explanation was supported when internals made more errors on a learning task and wanted more practice in the chance condition than in the skill condition. In contrast, externals made more errors and wanted more practice in the skill condition. However, those subjects placed in incongruent situations wanted more practice trials. The authors maintained that internals and

externals in the incongruent conditions were more motivated than subjects in the congruent conditions. This latter finding conflicted with Rotter and Mulry's (1965) suggestion that, because of greater reinforcement value, internals and externals were more motivated in congruent conditions and less motivated in incongruent conditions. Watson and Baumal (1967) used only female subjects. This factor might in part explain the results.

In an attempt to clarify the above conflict, Petzel and Gynther (1970) conducted a study in which externals solved more anagrams under skill instructions while internals solved more under chance instructions. However, the internals made significantly more "typical" expectancy changes than did externals. Several explanations were possible: (a) only male subjects were involved; (b) reinforcements were not dependent on the examiner's verbal report as they were in other studies; and, (c) there may have been a subtle interpersonal factor. Gore (cf. Petzel & Gynther, 1970) found that internals responded differently than externals in interpersonal situations. The fact that internals made significantly more "typical" changes in expectancies than externals is especially informative because in this study the patterns of expectancies were consistent across skill or chance situations. This lends credence to the I-E construct. I-E dispositions as measured by the I-E Scale are generalized in that they have a salient effect regardless of specific situations. This was so at least in determining changes in expectancies (Petzel & Gynther, 1970).

Julian and Katz (1968) investigated internal versus external control and the value of reinforcement in two studies; one a skill condition and the other a chance condition. They hypothesized that internals valued self-determined rewards more than externals under skill conditions. Specifically, internals avoided relying on their opponent in a competitive game situation even though such reliance yielded more points. In a synonym-antonym task internals showed a significant preference for making their own judgments in the skill situation. Also, internals responded more quickly to easy items and took relatively longer for difficult pairs in the task. In a chance task requiring the choosing of the next number in a series for which there was no apparent answer, internals also preferred to rely on themselves more than their opponent. This second finding was the opposite of what was hypothesized. The authors suggested that it was possible that an internal orientation involves as a motivational aspect a need to predict one's outcomes (Julian & Katz, 1968). Both females and males were subjects in this study. However, because there were no sex differences on I-E scores, no sex comparisons were made relative to chance and skill conditions.

An auto-trainer device was used by McDonald, Tempone and Simons (1968) to investigate I-E and future performance estimates. Control was experimentally induced and manipulated as was feedback regarding the number of errors. Internals tended to change their estimates of future performance by predicting better performance when they had a high degree of control and poorer performance when they had a lower degree of control. Externals did not follow this pattern. But the difference between

internals and externals was not significant. This finding somewhat disagreed with other studies. The authors suggested that the experimentally induced variable of control may have been too powerful. Not to respond to it would have been to defy reality. They also suggested that all of the subjects may have interpreted their performance as a function of their own skill or lack thereof. The study did not report the sex of the subjects.

Ryckman and Rodda (1971) researched locus of control and initial task experience as determinants of confidence changes in a chance situation. Utilizing 365 college students as subjects, the findings supported their hypothesis. Those who experienced initial success were more confident than those who experienced initial failure. Since this study utilized a chance condition, the authors suggested that the task generalizability of the I-E function was increased; previous research obtained similar results under skill conditions.

Although there was some evidence that internally reinforced individuals perform more efficiently under skill conditions, the evidence was not conclusive. The research was not systematic. Conditions varied considerably from study to study. This could be solved by a systematic exploration of tasks and instructional sets. Also, sex differences need to be considered in all studies regardless of comparability of I-E scores for males and females. Failure to test for such differences in relation to tasks constitutes incomplete usage of the data.

I-E and Achievement Motivation

As a logical extension of the concept of internal-external control, Rotter (1966) hypothesized that internals would show more overt striving for achievement than externals who feel they have little control over their rewards and punishments.

Butterfield (1964), using grades as the achievement variable, found that contrary to his hypothesis, college students designated as external received higher grades than those designated as internal. Butterfield suggested that because internals are more inner directed they study things they are interested in, while externals study what they are told to study.

Gold (1968) found no apparent relationship between I-E and need to achieve success or motive to avoid failure for college men and women. Gold utilized the French Test of Insight and Test Anxiety Questionnaire to measure the two variables.

Similarly, Eisenman and Platt (1968) also found that there was no relationship between I-E and achievement as measured by grades. The authors suggested that college students feel grades are more a way of obtaining social recognition rather than being representative of achievement. In this study females had higher grades which may be indicative of a conforming dependency (Eisenman & Platt, 1968).

In a study cited earlier, Gurin et al. (1969) noted that students who had a high sense of personal control had higher achievement test scores and grades, higher academic confidence, and higher educational

expectations and aspirations than did students who held a belief in control ideology. Their results suggested that it is the sense of personal control rather than control ideology that differentiates motivation and performance. This added further support to utilizing the I-E Scale on a multidimensional rather than a unidimensional basis.

The hypothesis that individuals who were high in resultant achievement motivation, i.e. need to achieve minus fear of failure, were more likely to attribute success in achievement oriented situations to themselves than were those low in resultant achievement motivation was investigated by Weiner and Kukla (1970). Subjects were male and female grade school students. The Thematic Apperception Test, Test Anxiety Questionnaire, Mehrabian test of resultant achievement motivation, and the Intellectual Achievement Responsibility Scale, which is a measure of internal-external control, were used in the study. Findings revealed a significant relationship in the hypothesized direction; those high in resultant achievement motivation also attributed success to themselves. Those low in resultant achievement motivation tended to attribute success to external determinants. There was, however, a relatively less significant finding for females. Weiner and Kukla (1970) concluded that one high in achievement saw a task outcome as primarily determined by skill and was therefore likely to believe that success was internally controlled.

Hjelle (1970) investigated locus of control as a determinant of academic achievement. Using the I-E Scale and quality point averages of college men and women, Hjelle found only marginal support for the hypothesis that internals obtain higher grades. Sex data in the study was

combined because quality point averages for males and females were the same. The number of female subjects, however, was quite small ($N = 32$) in comparison with male subjects ($N = 107$). This could have influenced the outcome of the inquiry.

Two studies by Wolk and Ducette (1971) examined the relationship of source of control and achievement motivation. In one study, subjects were college men and women; high school females comprised the sample in the second study. The I-E Scale, Thematic Apperception Test (TAT) and Mehrabian Scales were used. Generally, a low, nonsignificant correlation between source of control and achievement motivation was found. However, a significant correlation was found between I-E and the TAT for college females. This correlation was not found with high school females even when intelligence was partialled out. The difference in findings could be attributed to sampling errors. A small sample of college females was used in the study.

Sixty-one college men participated in a study by Karabenick (1972) to investigate the valence of success and failure as a function of achievement motives and locus of control. Karabenick found a significant positive correlation between I-E and valence of success, and a negative correlation between I-E and valence of failure. The valence of success was higher for internals at extremely difficult tasks and higher for externals on easy tasks. Conversely, valence of failure was higher for internals on easy tasks and higher for externals on difficult tasks. These results were obtained for male subjects only and therefore were not applied to women.

Gozali, Cleary, Walster and Gozali (1973) also examined the relationship between I-E and achievement. Twenty-eight college females and 35 college males served as subjects. The task used was one of verbal achievement. Gozali et al. (1973) hypothesized that internals used time more appropriately to the task than externals; that is, internals spent less time on easy items and more time on difficult items. They further hypothesized that externals were more variable in the amount of time spent at all levels of task difficulty. The findings revealed that the more internal the orientation of their subjects, the stronger the linear relationship between latency and task difficulty. This held for both males and females. Internals used time in a more appropriate manner to the task. In post hoc analysis, this relationship was stronger for females than for males. Again, however, this sample was relatively small. Caution is suggested in attempting to generalize. The second hypothesis of Gozali et al. (1973) was not confirmed. Internals, not externals, appeared more variable in the amount of time spent on items.

In summary, there was evidence indicating that internals tend to manifest greater interest and effort in achievement related activities than do externals. This was more prevalent at the college level than with grade and/or high school students. Yet, it should be acknowledged that the bias of using college students may confound the results. Findings should not be generalized to total populations. More data on sex differences is needed. Also, research concerned with more prolonged achievement activity, indicated by types of careers and adult pursuits which require persistence and willingness to defer gratification, is needed.

I-E and Activity Preference

Only a few studies were reported relative to activity preference and I-E. Brown and Strickland (1972) investigated I-E and participation in college campus activities. Grade point averages, college entrance exams, I-E scores and campus activity information obtained through yearbook information were utilized. In a four year study of college men and women it was found that internals were more likely than externals to participate in campus academic activities. These findings, however, were not significant at conventional levels. Results did suggest that I-E is not predictive for female achievement behavior. The method of information gathering in this study seemed to contaminate some of the results. For example, one may have run for an office and lost the election. Such information would not have been listed in a yearbook.

Schneider (1968) investigated skill versus chance activity preference and I-E. He suggested that skill activities permit an individual to test the effectiveness of his behavior, since success or failure on these tasks is usually seen as being contingent upon the adequacy of his performance. Chance activities do not permit this evaluation because success or failure is usually seen as being unrelated to any behavior in the individual's response repertoire (Schneider, 1968). It was hypothesized that internals preferred skill activities and externals preferred chance activities. A forced-choice skill versus chance activity test was developed and administered along with the I-E Scale to college men and women. Significant correlations were obtained for men but not for women. Schneider proposed that the findings for

females may be explained by the fact that both the skill and chance activities on the test were ones in which females do not generally participate, e.g., football, handball and roulette. Therefore, preference may not have related at all to I-E source but possibly to their preference for a more or less masculine, passive or novel type of activity.

A second study was undertaken by Schneider (1970) in an attempt to solve the problem. In the second study, Schneider found that when there was congruence between sex of the subject and sexual identity associated with a given activity, internals preferred skill alternatives over chance alternatives. However, when there was incongruity, no such relationship was found. These results held for both females and males.

Lynn, Phelan and Kiker (1969) investigated I-E and sports participation. They found that group sport participants were significantly more internally oriented than either individual sport participants or nonparticipants. The subjects studied were 12 to 15 year old males matched for age and I.Q. The authors did not account for possible cross sport participation. Also, it could be that there was more congruence between sex and sexual identity of the team sport (basketball) and that these findings may not hold for girls and/or women.

Reese (1975) administered the I-E Scale to 80 female intercollegiate athletes and 50 female college non-athletes. Factor analysis revealed no significant differences among team sport participants, individual and/or dual sport participants, and the female nonparticipants.

Summary

During the past decade, Rotter's concept of internal-external control of reinforcement has stimulated a considerable amount of research which has, on the whole, substantiated the concept's usefulness in the study of human behavior. The most significant evidence for the construct validity of the internal-external control variable is in personality functioning. While findings were not remarkably consistent, generally, data tended to support Rotter's contention that the concept is a generalized expectancy operating across many situations (Joe, 1971).

Contrary to Rotter's claim, sex differences appeared to influence an individual's belief regarding locus of control. Such differences may be related to the cultural roles assigned to each sex, to social class, and to regional effects (Joe, 1971). Also contrary to Rotter's claim was evidence that the I-E Scale may not be independent of a social desirability response set and a potential or ideological bias (Feather, 1967; Thomas, 1970; Sanger & Alker, 1972).

From the reported studies, it might be summarized that externally reinforced persons in contrast to those who derive reinforcement internally, are depicted as being relatively dogmatic, less trustful and more suspicious of others, lacking in self-confidence, having low needs for approval, and having a greater tendency to use sensitizing modes of defense. There appeared to be no relationship between field-dependence and external control. Internals seemed to be less risk-taking than externals. Externals described themselves as more anxious, less able to show constructive responses to frustration and more concerned with fear

of failure than with achieving. Research also seemed to indicate that externals tend toward conforming and were more susceptible to influence attempts. Studies relating I-E and self-esteem were quite scanty and while there was some evidence of a positive relationship between internals and high self-esteem, this relationship was not found for women. The one study concerned with aggression indicated that externals were more aggressive than internals. This research, however, did not consider types of aggression, instrumental as compared to reactive.

There was some evidence that internals perform more efficiently under skill conditions, but the evidence was not conclusive. Also in many of the studies concerned with skill, sex differences were not investigated. In general, research tended to support the idea that among college women, internals have higher achievement motivation than externals. In regard to preferences, it appeared that internals preferred to participate in skill activities. However, this finding was only true when the activity and the sex of the subject were congruent.

Many of the reported studies failed to report or consider possible sex differences. Further, only a few studies differentiated internals and externals at extreme ends. Most investigators divided internals and externals at the mean and therefore included those subjects who could have been designated as neutral. Because the I-E Scale is a continuum measuring degree of belief, this aspect needs to be considered when attempts at correlating the I-E variable with other personality variables are being made. Finally, in summarizing the literature about I-E, the almost complete absence of research relating the construct to the behavior

of athletes was striking. As the writer has previously suggested, the sport setting with its demands for skill provides a unique situation for the testing of Rotter's ideas.

Personality of Women Athletes

Much of the reported research relative to the personality of athletes involved men as subjects. Presently, these studies offer little in the way of understanding the personality of the woman athlete. Nevertheless, studies concerned with four aspects of sportswomen's personalities were reviewed: (a) women with different sport affiliations, (b) women athletes of different ability levels, (c) comparison of men and women athletes' personalities, and (d) trait differences between athletes and non-athletes.

Women With Different Sport Affiliations

Several recent investigations dealt with the personalities of women athletes with different sport affiliations. Peterson, Weber and Trousdale (1967) investigated differences in personality between women in team and in individual sports. Form A of the Cattell Sixteen Personality Factor Test was administered to female athletes affiliated with the Amateur Athletic Union (AAU) and the 1964 United States Olympic Team. The results indicated those women engaged in individual sports were significantly more dominant and aggressive, adventurous, sensitive, imaginative, radical, self-sufficient, and resourceful than those engaged in team sports.

Ogilvie (1968), who has vast experience in studying the athletic personality, combined results from several tests and came to some conclusions about women athletes. Much of his information, however, dealt with swimmers affiliated with the famous Santa Clara Swim Club. Ogilvie's information described the woman swimmer as friendly, bold, and low in anxiety. Ogilvie's list of traits considered to be necessary for successful women athletes included stability, self-control, courtesy, self-assurance, trust, affiliation, aggression, and extraversion (Ogilvie, 1968).

Data about college women investigated by Malumphy (1968) were organized according to participation in team sports, individual sports, subjectively-judged sports (gymnastics and synchronized swimming), combined team and individual sports, and non-participants. Administration of the Cattell Sixteen Personality Factor Test revealed several differences in personality characteristics among the groups. The individual sport group was less anxious than the team sport group; more venturesome and extraverted than the team and team/individual groups; more tough-minded and tough-poised than the non-participants; and exhibited more leadership than the team, team/individual and non-participant groups. The subjectively-judged group differed significantly from the other groups by being less anxious than the team group; more conscientious than the team/individual and non-participant groups; more tough-minded and tough-poised than the non-participants; more venturesome and extraverted than the team and team/individual groups; and they exhibited more leadership than the other sport participant groups

investigated. The team sport group was less venturesome and less extraverted than the individual, subjectively-judged, and non-participant groups; demonstrated less leadership and more anxiety than the individual and subjectively-judged groups; and was more reserved than the team/individual and non-participant groups. The team/individual sport group differed significantly as follows: less conscientious than the subjectively-judged group; less venturesome and less extraverted than the individual, subjectively-judged and non-participant groups; demonstrated less leadership than the individual and subjectively-judged groups; less imaginative than the non-participant group; and more outgoing than the team sport group. While these several differences were noted, no consistent patterns were revealed.

Utilizing the California Psychological Inventory, Johnson (1972) investigated 190 basketball players, field hockey players, bowlers and golfers. Significant differences were found on 12 of the 18 variables among the four groups. Basketball players scored lower on the following variables: (a) dominance, (b) capacity for status, (c) sociability, (d) social presence, (e) self-acceptance, (f) responsibility, (g) self-control, (h) tolerance, (i) achievement via conformity, (j) achievement via independence, (k) intellectual efficiency, and (l) psychological-mindedness. Further, the basketball group was more inhibited, shy and awkward, and intellectually and socially immature. The differences noted in this research were not between individual and team sport groups; rather, the two team sport groups were significantly different from each other.

Shafor (cf. Klafs & Lyon, 1973) administered the Cattell Sixteen Personality Factor Test to high school girls engaged in interscholastic competition. She reported significant differences between team and individual sport participants. The team sport group was found to be more trusting, practical and group dependent than the individual sports group.

Griffin (1974) investigated anxiety levels of women competitors across three age groups and eight sport groups. Spielberger's State-Trait Anxiety Inventory was used. Results indicated that the 12 to 13 year old group had the highest state anxiety score while the 19 above group scored lowest in state anxiety. Significant differences in state anxiety among sport groups were found as follows: gymnasts demonstrated the highest score followed in order by track and field, swimming, tennis, softball, volleyball, basketball, and field hockey. Individual sport groups as a whole exhibited higher state anxiety scores than the team sport group. Significant differences by age and sport were also found for trait anxiety. Sixteen year old girls were the most anxious. Among the sport groups, gymnasts scored the highest followed by swimming, volleyball, track and field, softball, tennis, field hockey, and basketball. Although Griffin found that state and trait levels differed significantly among age groups and among sport groups, such differences were not consistent across ages and sports.

Results of the above studies suggested that there were personality differences among sport groups. However, although three of the studies cited (Peterson et al., 1967; Malumphy, 1968; and Shafor [cf. Klafs &

Lyon, 1973) utilized the same measure of personality characteristics, i.e., the Cattell Sixteen Personality Factor Test, no consistent pattern of trait differences across studies could be identified. When considering sport groups the question of multiple sport involvement might contaminate findings. The notion that athletes' level of ability might be another factor that confounds personality test results led to further literature review.

Women Athletes With Different Ability Levels

Relatively few studies were concerned with the woman athlete's personality at different levels of ability. Hisey (1957) utilized the Guilford-Zimmerman Temperament Survey to investigate personality traits of college women basketball players at skill levels. Subjects had either played interscholastic basketball for four years or played with interscholastic teams and had been selected to participate in district competition. Players selected for district competition scored higher on the two traits of general activity and ascendance, but lower on the two traits of emotional stability and personal relations than did the other players. None of these differences, however, reached statistical significance.

Ramsey (1962) compared high school varsity basketball players from Iowa and Texas with a high school intramural group from Illinois. She used the Edwards Personal Preference Schedule (EPPS) and the Mercer Physical Education Attitude Inventory. Significant differences were found among players representing all levels on five of the fifteen EPPS variables as follows: (a) deference, (b) exhibition, (c) dominance,

(d) nurturance, and (e) affiliation. Varsity players scored higher on deference, nurturance and affiliation. Intramural players scored higher on exhibition and dominance. The differences between the two varsity groups from Iowa and Texas were the greatest. This finding suggested that geographical location may have a stronger influence on personality than the actual level of athletes' playing ability.

As a secondary inquiry of her research, Bird (1970) compared the winning women's ice hockey team to the losing teams with respect to personality characteristics. Her data were obtained from the Cattell Sixteen Personality Factor Test, Jackson's Personality Research Form B, Edwards Personal Preference Schedule, and Osgood's Semantic Differential. Bird found the winning team to be more conscientious, anxious, dependent, introverted, and conservative. Whether or not these differences reached statistical significance was not reported.

Kane (1970) studied British specialist physical education students and women general students. He reported that personality was congruent with physical ability when women of superior physical expertise were compared with those of average physical gifts. In other words, his findings indicated that those of higher physical ability level were differentiated from those of a general physical ability level (Kane, 1970). Kane noted a significant correlation between sports participation and combined personality for the total group of women in his study. The most important contributing variables were group dependence, dominance, and low ergic tension.

Williams et al. (1970) administered the Cattell Sixteen Personality Factor Test and the Edwards Personal Preference Schedule to thirty national level female fencers. They compared low and high level ability fencers with respect to personality characteristics. Ability level was determined by who had lost in the first round of a tournament. The only significant difference between the low and high ability level fencers was that the high level ability athletes exhibited more dominance.

This group of studies also noted several differences in the personality of women athletes at different levels of athletic ability. However, as found in the study of women athletes with different sport affiliations, there was no consistent pattern that could be discerned. In the studies considered above, several different methods of determining level of ability were used. This tended to confound results and caused confusion in attempting to identify clear-cut patterns. Obviously, there is a need to more clearly define and delineate ability levels. Winning and losing are not necessarily indicative of an athlete's ability, especially in relation to team sports. Until a more precise classification system is introduced to such studies, one cannot hope to gain insight into athletic personality with respect to ability level.

Comparison of Men and Women

There were a limited number of studies which attempted to compare personalities of men and women athletes. Cooper (1969) reviewed the literature about athletes and personality. In studies of men he noted increased motivation, emotional and social adjustment, less anxiety, lower feminine images, and a tendency toward aggression. In his limited

review of women's studies, Cooper found similar trends regarding low anxiety levels and a high need to achieve (Cooper, 1969).

Kane (1970), following a review of findings about athletic personalities, proposed that aggression, dominance, drive, tough-mindedness, confidence, emotional stability, and low anxiety levels could be considered as athletes' traits. His own investigation of British specialist physical education students and women general students utilized the Cattell Sixteen Personality Factor Test and 16 physical measures (Kane, 1970). Among his findings was that physically gifted men and women students differed in personality from the general student population, and that physically gifted men and women students did not differ significantly from each other in total personality. That is, men and women specialist students in Kane's (1970) study had very similar personality profiles.

Ogilvie (1967) and later Ogilvie and Tutko (1970) reviewed the research about the personalities of athletes. They considered the traits of hundreds of athletes and found them to be organized, dominant, trustworthy, achievement oriented, low in anxiety, and high in endurance (Ogilvie & Tutko, 1970). Ogilvie expressed the opinion that male and female data were similar. He described women as less extraverted, tough-minded, stable, and able to handle stress than their male counterparts. Females, according to Ogilvie, were low in neuroticism, highly dependent, and less creative. They were also impulsive, less aggressive and less dominant than men. Based on his

observations, Ogilvie reported women swimmers to be more outgoing, emotionally stable, less aggressive, more tough-minded, less anxious, and more competitive (Ogilvie, 1967).

In summary, from the few reported studies concerned with the comparison of men and women athletes' personalities, there seemed to be more similarities than differences. As pointed out by the writer previously, there seemed to be no consistent pattern of differences. Therefore, no generalizations may be made.

Differences Between Athletes and Non-Athletes

Numerous studies were primarily or secondarily concerned with personality differences between women athletes and women non-athletes. In one of the earliest reported investigations of the female athletic personality, Flemming (1934) examined the question of harm of athletics to the female personality. High school women involved in hockey, basketball, swimming, and tennis participated in the research. The study also suggested some general personality descriptions. Utilizing teachers' ratings and subjects' ratings, Flemming found that the only differences between the woman athlete and the woman non-athlete concerned the athletes' enjoyment of sports. Collectively, the women athletes in his study had pleasant personalities and leadership traits. They were described as honest, helpful, interesting, beautiful, and good sports.

More than thirty years later, Ibrahim (1967) administered the Guilford-Martin Inventory of Factors to college men and women athletes, physical education majors and dance students. Men athletes and majors scored low in leadership, average in activity and high in masculinity.

As a whole, the women athletes scored above average on all factors except ascendancy-submission. On this factor, their score was average but was higher than the scores for the women physical education majors and the dancers. These women athletes scored lower on nervousness than either the women physical education majors or the dancers. It was not clear whether or not some athletes were also physical education majors. If such overlapping occurred, then the results could yield little information on the subject. No sex comparisons were made.

The study by Peterson et al. (1967), cited previously, noted that female athletes affiliated with the AAU and the 1964 U. S. Olympic Team tended to be intellectually brighter, more conscientious, aggressive, and persevering than others of equivalent age and education as measured by the Cattell Sixteen Personality Factor Test. However, as the authors pointed out, with the Cattell Sixteen Personality Factor Test, only sten scores above six and below four are considered to be departures from the average or norm. While there was a tendency for the athletes mentioned in this study to differ from the norm, only the team sport group actually departed from the normal population. This was found on one trait -- toughness. Thus, these female athletes could not be significantly differentiated from their non-athletic peers.

Malumphy's study (1968) involved a non-participant group. As measured by the Cattell Sixteen Personality Factor Test, the non-participants were found to be significantly different from the athletes as follows: less conscientious than the individual and subjectively-judged groups; less tough-minded, tough-poised, and lower in leadership

than the individual and subjectively-judged groups; more outgoing than the team sport group; and more imaginative, extraverted, and venturesome than the team/individual group. While several differences were noted, no consistent pattern was revealed. On only one of the 16 traits did the non-participants differ significantly from all of the sport groups. Each of the sport groups were more tough-minded than the non-participants.

More recently, the investigation of Canadian women ice hockey players by Bird (1970) revealed that on only two traits did subjects differ from the norm on the Cattell Sixteen Personality Factor Test. On the traits of general ability and creativity they scored significantly above the norm. Scores on the Jackson Personality Research Form B (JPRF) revealed that the women ice hockey players studied by Bird were above the 50th percentile on the following traits: autonomy, endurance, abasement, aggression, dominance, and achievement. These same athletes scored below the 50th percentile on avoidance, social approval and affiliation. Scores on the Edwards Personal Preference Schedule (EPPS) showed these women athletes were highest in autonomy and lowest on dominance. They were above the 50th percentile on heterosexuality, abasement, nurturance, aggression, and achievement. At first glance, some clear-cut differences and also some similarities between these athletes' scores on the JPRF and the EPPS are noted. However, efforts to describe the similarities semantically brings to fore the problems that exist when attempting to make comparisons from tests utilizing the same terminology but built from different theoretical frameworks. With regard to the differences between these women ice hockey players and the

normal population Bird states, "Most of the hockey players' mean scores on personality characteristics, identified by Ogilvie as being closely related to outstanding athletic achievement, fall within the normal range... (Bird, 1970, p.156)." They were above the normal range on only one factor identified by Ogilvie -- intelligence.

Dayries and Grimm (1970) administered the Edwards Personal Preference Schedule to 21 women intercollegiate athletes. The results were compared to a normative group of 49 college women enrolled in day or night liberal arts classes. The athletes scored higher than the normative group on achievement, exhibition, autonomy, affiliation, intraception, dominance, nurturance, heterosexuality, and aggression. They scored lower on deference, order, succorance, abasement, change, and endurance. On only two of the above variables was statistical significance obtained. The athletes were significantly lower on order and significantly higher only on intraception. In summary, these results indicated that the college woman athlete was not well differentiated from other college women regarding personality traits.

Malumphy's 1970 study assessed the personality of national intercollegiate women tennis players and golfers with the Cattell Sixteen Personality Factor Test. The research was conducted over a two year period. Two separate groups of tennis players and golfers were subjects. The athletes were compared to each other and to college women in general. Malumphy found that the tennis players and golfers appeared to be more intelligent and tough-minded than other college women. They also appeared to be more reserved, assertive, stable, happy-go-lucky,

suspicious, casual, and placid. Further, they did not seem to suffer anxiety over a possible lack of acceptance associated with the role of "woman athlete". While these athletes differed from each other and from their peers, the differences were not similar for each of the two years over which the study was conducted, 1967 and 1968. Nothing that could be considered to be a "golf personality" or a "tennis personality" was identifiable.

The primary purpose of the investigation previously cited by Williams et al. (1970) was to determine distinct personality characteristics of national level female fencers. The Cattell Sixteen Personality Factor Test and the Edwards Personal Preference Schedule yielded several departures from the normative population. The fencers were found to be more reserved and scored higher than the norm on abstract intelligence, dominance, imagination, experimenting, self-sufficiency, independence, and creativity. They were also well above the mean on achievement, exhibition, autonomy, and aggression, and were below the mean on deference, affiliation and nurturance.

Lareau (cf. Klafs & Lyon, 1973) investigated the relationship between athletic competition and personal and social adjustment in junior high school girls. The University of California Interest Inventory, a test of personal and social adjustment, was administered to 255 junior high school girls categorized in three groups: (a) those selected to varsity teams, (b) those interested but not selected, and (c) those not interested. Results indicated that those selected to the varsity teams were better adjusted. They were the most popular and were

considered to be leaders. They exhibited such traits as dominance, emotional stability and were more extraverted. They also expressed high achievement and affiliative social attitudes. Whether or not these results were statistically significant was not reported.

Mushier (cf. Gerber et al., 1974) used the High School Personality Questionnaire and the Cattell Sixteen Personality Factor Test to investigate 308 lacrosse players representing various ages. At all levels, the women lacrosse players were more reserved, intelligent, assertive, happy-go-lucky, tough-minded, and experimenting than the normative population.

While much of the reported research concerned with women athletes and women considered to be non-athletes suggested differences in personality traits, careful consideration of the studies revealed that many of these differences did not reach statistical significance. Further, where significant differences were found, they did not lend to description from one study to the next. This could be due to the use of a variety of personality tests. It may also be related to the number of subjects involved in each investigation and be associated with sampling error. Comparisons of results of investigations utilizing the same measure of personality failed to reveal consistency in their findings.

Summary

The information derived from the studies discussed in this chapter permits the following summary. There was a possibility that women athletes

have certain distinguishing personality traits. However, it was exceedingly difficult to identify these at this point in time. Several reasons are proposed for this difficulty. First, different measuring techniques were used. Even though the same or similar descriptive terminology was involved, each instrument assessed personality from a different theoretical framework. Thus, one did not obtain the same picture or profile of personality and comparison of the results was impossible. Secondly, problems with the interpretation of these studies arose from the comparison of athletes of different sport types. It is conceivable that athletes serving as subjects had multiple sport involvement which was not accounted for in the research. Third, comparisons of athletes at different ability levels was quite unsophisticated. Too often, ability level was determined by a win-loss record. Also, from the studies reported, the exact classification within the team, high or low level, was not clear. If team profiles were compared, the results were confounded. Finally, and perhaps more importantly, the separation of personality into separate traits and the identification of these differences from norms on some traits but not others yielded clouded evidence rather than distinct insights. Thus, conclusions about the personality of the woman athlete can only be offered as highly tentative speculations and not facts.

CHAPTER III

PROCEDURES

The strategy devised for systematically investigating source of reinforcement as a possible element in women's sport involvement depended upon the Rotter I-E Scale (See Appendix A). Rotter (1966) suggested that the belief in internal or external source of reinforcement operated across many situations. Joe (1971) supported this contention.

Whether or not the sport situation per se could be considered a general situation or whether some particular characteristics operate which warrant sport as a unique experience was also an important issue in this study.

Questions framing the inquiry were specified following the literature review. Thereafter, specific steps were taken in conducting the investigation.

Data Gathering

Although the I-E Scale developed by Rotter has been widely used in many different types of studies, no investigation attempted to test the same subjects under different situations. It was therefore felt by this investigator that a difference might occur when internal-external statements reflected situations other than those dealing with general societal/political and personal control.

Formulation of the Sport I-E Scale

To investigate the possibility that a difference might occur when internal-external statements reflected a specific situation, the investigator devised a set of internal-external statements dealing specifically with the sport situation (See Appendix B). These statements were devised in such a way that they were comparable to Rotter's but wording was revised so that the content focused on sport or sport-related phenomena. For example, Rotter's idea, expressed in his statement 2.a., "Many of the unhappy things in people's lives are partly due to bad luck.", appears in the Sport I-E Scale as, "Many of the misfortunes and/or poor performances that occur during play are due partly to bad luck."

Compatibility of the Sport I-E Scale with Rotter's I-E Scale was established by judges' ratings. The two scales were sent to seven selected judges who were requested to comment upon the compatibility of the items in both scales item by item (See Appendix D). Modifications were then made to the Sport I-E Scale in accordance with the judges' comments. Such refinements were made, however, only on items where three or more judges felt there was not compatibility. An effort was made in devising the Sport I-E Scale to generalize the sport experience so that the instrument would be appropriate to sportswomen involved in varied types of activities.

Preparation of Materials for Distribution to Subjects

The Rotter I-E Scale and the Sport I-E Scale were photocopied for data collection. Envelopes, stamps, postcards, and pencils were purchased. Questionnaires were pre-numbered and collated prior to administration.

Sample Selection

In keeping with the limitations of the study, it was determined that only athletes affiliated with member institutions of SIAW would serve as subjects. Coaches associated with member institutions of the SIAW were contacted by letter explaining the nature of the study and the content of the questionnaires. They were requested to establish meeting times and places for the investigator to meet with athletes if the coaches were able to assist. Pre-stamped postcards were provided them for return of the requested information (See Appendix E). Because of the untimely gasoline shortage, only coaches within a close radius were initially contacted (See Appendix F). Those coaches contacted were also requested to indicate whether or not they desired results of the study.

The investigator received an insufficient response from coaches through mailings to obtain the predetermined desired sample size of 100. Additional subjects were obtained at the NCAIAW Tennis Tournament held at the University of North Carolina at Chapel Hill, and at the Invitational Golf Tournament held at the University of North Carolina at Greensboro. Institutions represented at both of these tournaments fulfilled the requirements of membership in the SIAW. At the tournaments, verbal permission was requested and obtained from coaches to administer the questionnaires to athletes when they were available.

A total of ninety-four subjects responded to the questionnaires. Subjects remained anonymous throughout the investigation.

Administration of the Questionnaires

Because of the nature of the questionnaires and also to assure consistency in data collection, it was decided that the investigator administer the forms to the subjects rather than having coaches administer them. Every effort was made to discourage subjects from anticipating what might be a desired response and their answering accordingly. Consistency in administration and instructions was therefore of extreme importance.

To further control for possible experimental bias, the order in which the subjects responded to the questionnaires was alternated. Approximately one half of the subjects first responded to the I-E Scale and then to the Sport I-E Scale. The other half responded first to the Sport I-E Scale and then to the I-E Scale.

A third form requesting information relative to type of sport involvement was also devised and administered (See Appendix C). Some of the published research reported personality differences between individual and team women sport competitors. Often, however, these studies failed to consider the possibility of an individual's participation in more than one sport and/or more than one type of sport, i.e., team sport, individual sport, or both. Investigation of possible differences on this aspect was seen as secondary to the study.

The investigator met with the subjects and distributed pencils and the previously numbered forms. All subjects responded first to the participation form, Questionnaire C. Instructions were then given

for completing the I-E Scale and the Sport I-E Scale. Instructions for completing the two scales were combined and therefore only given once for each group of subjects (See Appendix G). Subjects were informed that the questionnaires dealt with their beliefs regarding events in society and in sports. They were further instructed to respond to the sport statements as individuals, disregarding the actual sport(s) and type (individual or team) in which they were involved.

The set of instructions given for answering the questionnaires was almost identical to that used by Rotter. Modifications were made to accommodate the sport statements and the manner in which the forms were completed. Rotter had used an IBM type answer sheet; subjects in this study answered directly on the questionnaire, circling the letter of the statement with which they agreed on their form. Upon completing the forms the subjects returned them to the investigator.

Data Analysis

Scoring of the I-E Scale and the Sport I-E Scale

The I-E Scale and the Sport I-E Scale were scored by the method established by Rotter (1966). The I-E Scale consists of 29 items, six of which are filler items. The scale was scored in the external direction; the higher the score the more externally oriented was the individual. One point was scored for each external item chosen in each pair of statements.

The Sport I-E Scale consists of 31 items, eight of which are filler items. The eight filler items of the Sport I-E Scale, however, were

included for purposes of other research which had no connection with the present study. Therefore, the filler items on the two scales, Rotter's and the Sport I-E, were not intended to be compatible.

The Sport I-E Scale was scored the same as the I-E Scale, assigning one point for each external statement chosen. The highest obtainable score for each of the two scales was 23. Letters of the statements underlined are those that are external items (See Appendices A & B). Items without any underline are filler items. Scores obtained by the subjects in this study on each of the two scales are presented in Appendix H.

Determination of Internal Consistency

Rotter previously determined internal consistency for 50 and 200 female subjects employing the Kuder-Richardson method. Sufficient data were reported by Rotter for the investigator to compute a Kuder-Richardson coefficient for Rotter's sample of 605 college females. The Kuder-Richardson method of internal consistency was also applied to the subjects' scores in this sample for both the I-E Scale and the Sport I-E Scale.

Determination of Reliability

Rotter (1966) applied the split-half method of reliability stepped up with the Spearman Brown Prophecy Formula for 50 of his female college subjects. This same method was also applied to scores obtained for the 94 females in this study on both the I-E Scale and the Sport I-E Scale. Further, Kendall's rank order coefficient of correlation was obtained between the two scales from the scores in this study.

Source of Athletes Reinforcement Utilizing the I-E Scale

A key was established by the investigator for purposes of scoring the I-E Scale. When forms were returned to the writer they were scored and the score noted for each subject. When all subjects had completed the questionnaires, the mean and standard deviation were computed. To determine significant differences between the women athletes and Rotter's sample of 605 college females, t ratios were calculated. Means and standard deviations were also computed for the subgroups of participants in team sports, individual sports or combined team/individual sports. These subgroups were obtained on the basis of subjects' responses to the participation questionnaire. One way analysis of variance was performed to determine possible significant differences among the three subgroups.

Source of Athletes Reinforcement Utilizing the Sport I-E Scale

The same procedures established for the I-E Scale were used. A key was made and the scores noted for each subject. Means and standard deviations were computed for the total group and each of the subgroups. One way analysis of variance was performed to determine possible differences among the three subgroups.

Comparison of I-E Scale and Sport I-E Scale

To determine significant differences between scores obtained by the subjects in this investigation on the I-E Scale and the Sport I-E Scale, t ratios were calculated. Further, one way analysis of variance was

performed among the subgroups of individual sport participants, team sport participants, and those participating in both team and individual sports, for both the I-E and Sport I-E Scales.

Summary

To investigate source of reinforcement as a possible element in women's sport involvement the Rotter I-E Scale was administered to 94 subjects. Further, to determine whether or not the sport situation might be a specific one in which locus of control could be identified, a Sport I-E Scale formulated for purposes of this study was also used. Data were gathered by the investigator from female subjects who were members of institutions with active membership in SIAW. Upon completion of the data gathering, internal consistency and reliability of the I-E and Sport I-E scales was computed. The possibility of differences between Rotter's sample and this sample on the I-E Scale, and between the I-E Scale and Sport I-E Scale scores from this sample were determined via calculation of t ratios. Additional analyses were undertaken with the hope of adding further insights into I-E responses of female athletes.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

The internal-external concept was formulated on a continuum which measures the degree to which one believes his source of reinforcement is internally or externally controlled. It was not intended to be interpreted as a dichotomy. While the mid score on the scale is 11.5, Rotter (1966) did not propose that those scoring above were externally oriented and those scoring below were internally oriented. Studies of the I-E concept have generally reported means and standard deviations for the subjects and compared I-E scores with personality tests such as the Cattell Sixteen Personality Factor Test and the Edwards Personal Preference Schedule. This was done, it appears, in an effort to lend support to the theoretical framework of the I-E dimension and to further validate the I-D Scale devised by Rotter. Generally, the statistic utilized was the t to determine significant differences.

Any interpretation of the findings of this study depend upon one's willingness to consider the instruments as valid and reliable. Acceptance of the validity of the Sport I-E Scale rests upon, (a) acceptance of Rotter's scale as a measure of source of reinforcement, and (b) acceptance of the rating of judges who declared I-E Scale statements and Sport I-E statements as compatible. The reader is cautioned that at best, such consideration represents only face validity.

Internal Consistency of the I-E and Sport I-E Scales

Rotter (1966) provided internal consistency scores for several populations employing the Kuder-Richardson method. In the present study, comparisons were made with Rotter's (1966) reported scores for 605 college female students. This Rotter population was chosen because of its respectable size and because it used only college female subjects as did this investigation.

Internal consistency determined by the Kuder-Richardson method yielded a coefficient of .76 for 50 college female subjects in Rotter's group and a coefficient of .70 for 200 other college females in his variety of samples. Sufficient data were reported by Rotter for the writer to compute a Kuder-Richardson coefficient for the total sample of 605 college females from his samples. The obtained coefficient was .71.

Kuder-Richardson coefficients obtained from the subjects in this study were .66 for the I-E Scale and .40 for the Sport I-E Scale. While the .66 for the I-E Scale is lower than Rotter's value, it was significant. The .40 coefficient for the Sport I-E Scale appears relatively low but was significant at the .01 level of confidence (Edwards, 1973).

Rotter (1966) also determined reliability utilizing the split-half method stepped up by the Spearman Brown Prophecy Formula. His obtained r for 50 females was .79. Split-half and Spearman Brown applied to subjects in the present study on the I-E Scale was .90 and for the Sport I-E Scale was .85. Table 1 presents the internal consistency coefficients for Rotter's subjects and the subjects utilized in this investigation.

TABLE 1
Internal Consistency Coefficients

Sample	N	Method	r
Rotter Females	50	Kuder-Richardson	.76 *
Rotter Females	200	Kuder-Richardson	.70 *
Rotter Females	605	Kuder-Richardson	.71 *
Athletes I-E ⁺	94	Kuder-Richardson	.66 *
Athletes Sport I-E ⁺	94	Kuder-Richardson	.40 *
Rotter Females	50	Split-half Spearman Brown	.79 *
Athletes I-E	94	Split-half Spearman Brown	.90 *
Athletes Sport I-E	94	Split-half Spearman Brown	.85 *

* Significant at the .01 level of confidence

Relationship Between the I-E and Sport I-E Scales

Kendall's rank order correlation, tau, was calculated between women athletes' scores on the I-E Scale and the Sport I-E Scale. This was computed to determine the relationship between source of reinforcement as a general societal/political/personal measure and as a situation specific measure. The nonparametric statistic was chosen because it was

⁺ Throughout this chapter Athletes I-E refers to subjects' scores in this study on the I-E Scale, and Athletes Sport I-E refers to the same subjects' scores on the Sport I-E Scale.

considered by the researcher to be appropriate to the nature of the phenomenon under investigation. Also, the use of only women athletes presented a sample that was biased and therefore could not be assumed to represent normality as required for traditional statistical analyses.

The correlation between athletes' I-E scores and their own Sport I-E scores was .55. This value lends to interpretation two ways. It may be stated that there is considerable agreement between the two measures. Or, the .55 also allows one to suggest decided disagreement -- at one and the same time.

Source of Athletes Reinforcement Utilizing the I-E Scale

The mean and standard deviation on the I-E Scale were computed for the athletes who participated in this study. Table 2 presents the results of these calculations and also reports the same statistics for Rotter's sample of 605 female college students.

TABLE 2
Means and Standard Deviations on the I-E Scale

Sample	N	Mean	S.D.
Rotter Females	605	8.42	4.06
Athletes I-E	94	8.55	3.84

A t value was computed between women athletes and Rotter's 605 female college students. The obtained value was .3023. While the mean on the I-E Scale for the women athletes was slightly higher, no

significant difference was found between the two groups at conventional levels ($p < 1.645$ at the .05 level of confidence). This indicated that there was no difference in source of reinforcement between the women athletes in this study and a general college female population as investigated by Rotter utilizing the I-E Scale.

Source of Athletes Reinforcement Utilizing the Sport I-E Scale

The mean and standard deviation were computed for women athletes on the Sport I-E Scale. The obtained mean for the 94 subjects was 6.77; the standard deviation was 2.78. To determine significant differences between women athletes' scores on the I-E Scale and the Sport I-E Scale, a t was calculated. The results are presented in Table 3.

TABLE 3

t ratio for Athletes I-E and Athletes Sport I-E

Sample	N	Mean	t
Athletes I-E	94	8.55	
Athletes Sport I-E	94	6.77	3.63 *

* Significant at the .0025 level of confidence

Subjects scored significantly more toward the internal direction on the Sport I-E Scale than they did on Rotter's I-E Scale. This finding may be interpreted as indicating that when confronted with situations pertaining to sport-specific conditions, one with which the athletes were

familiar and involved, they believe they have more control over the situation than they do when confronted with more general situations. This appears to be a logical explanation for the women athletes used in this study when considering their internal responses. The finding also suggests that Rotter's I-E Scale may not be the generalized expectancy he contended it to be.

The I-E Scale as Multidimensional

In the review of literature, several studies (Mirels, 1970; Gurin et al., 1969; and Sanger & Alker, 1972) reported evidence to support two subscales within the I-E Scale. One subscale was found to deal with items of a personal nature, while the other was found to deal with items of a societal/political nature. Mirels' (1970) factor analysis revealed the following items representative of personal control which he labeled Factor I: 5, 6, 9, 11, 13, 15, 16, 18, 23, 25, and 28. Items 12, 17, 22, 26, and 29 were found to be representative of societal/political control or Factor II (See Appendix A, pages 90,91,92, & 93). These two subscales were obtained by Mirels (1970) for 157 females.

In order to follow-up Mirels' findings, obtained means and standard deviations for the Factor I and Factor II items on both the I-E Scale and the Sport I-E Scale were calculated. Because of the compatibility of the Sport I-E Scale with Rotter's scale, it was reasoned, for purposes of further analysis, that the same items on both scales fall into the categories of personal control (Factor I) and societal/political control (Factor II). Obtained means and standard deviations are presented in Table 4.

TABLE 4
Means and Standard Deviations for
Mirels' Factor I and Factor II

Sample	N	Personal Factor I		Societal/Political Factor II	
		Mean	S.D.	Mean	S.D.
Athletes I-E	94	3.78	2.33	1.72	1.40
Athletes Sport I-E	94	3.27	1.69	0.83	0.85

Critical ratios between the I-E Scale and the Sport I-E Scale for Factors I and II were calculated. These are presented in Table 5.

TABLE 5
t Ratios Between Athletes I-E and Athletes Sport I-E
Mirels' Factor I and Factor II

Sample	Athletes I-E Personal Factor I	Athletes I-E Societal/Political Factor II
Athletes Sport I-E Factor I	1.72 *	-
Athletes Sport I-E Factor II	-	5.28 **

* Significant at the .05 level of confidence

** Significant at the .0005 level of confidence

Women athletes demonstrated a significantly greater belief in internal control within the sport situation on both Factor I and Factor

II then they did when confronted with a situation dealing with general personal and societal/political control.

I-E Among Sport Types

Some of the published research on the woman athlete's personality reported personality differences between individual and team women sport competitors. As pointed out in a previous chapter, many of these studies have failed, however, to consider the possibility of multiple sport participation. Data relative to the type of subjects' sport involvement was obtained in the present study as secondary information (See Appendix C). Investigation by sport type, although difficult, was investigated. It is acknowledged, for example, that subjects participate in sports competition at various levels, e.g., intramural level. Also, some may have tried out for but not been selected to participate on other intercollegiate teams. The obtained data did, however, account for all intercollegiate activities in which these subjects were involved at the time of the study. Analysis was limited to consideration of such participation.

It was found that of the 94 subjects involved, 43 participated only in individual sports, 22 participated only in team sports, and 29 participated in both team and individual sports at the intercollegiate level of competition. The means and standard deviations were obtained for each of the groups on both the I-E Scale and the Sport I-E Scale. These are presented in Table 6.

TABLE 6

Means and Standard Deviations for Sport Groups
on the I-E and Sport I-E Scales

Sample	N	Mean	S.D.
Individual Group Athletes I-E	43	7.79	3.34
Team Group Athletes I-E	22	9.72	4.10
Combined Group Athletes I-E	29	8.79	4.09
Individual Group Athletes Sport I-E	43	6.395	2.95
Team Group Athletes Sport I-E	22	7.18	2.76
Combined Group Athletes Sport I-E	29	7.00	2.44

A fixed model one-way analysis of variance was calculated to determine significant differences among the specific sport groups on the I-E Scale. Table 7 presents the results of this computation (See page 68).

Table 7 indicates no significant differences were found among the sport groups on the I-E Scale ($F < 3.07$ at the .05 level of confidence). Observable differences in the mean scores of the groups do exist; however, they are not significant. All of the groups scored similarly on the I-E Scale.

One-way analysis of variance was also computed among the sport groups on the Sport I-E Scale. The results of this computation are presented in Table 8 (See page 68).

One-way analysis of variance among sport groups on the Sport I-E Scale also revealed that none of the differences were significant ($F < 3.07$ at the .05 level of confidence). Again, all of the groups scored similarly on the Sport I-E Scale. In summary, no differences of significance were found among sport groups on either of the two scales.

In order to determine whether the Sport I-E Scale and/or the I-E Scale could possibly distinguish source of reinforcement within female athletic groups, obtained scores were further examined. Table 9 presents critical ratios obtained between scores on the I-E and Sport I-E Scales within each sport affiliation category (See page 69).

TABLE 7
F Ratio Among Sport Groups on the I-E Scale

Variance	Scores Squared	d.f.	Mean Square	F
Between	56.9954	2	28.4977	1.9436
Within	1334.2387	91	14.66196	
Total	1391.2341	93		

TABLE 8
F Ratio Among Sport Groups on the Sport I-E Scale

Variance	Scores Squared	d.f.	Mean Square	F
Between	11.2992	2	5.6496	0.7205
Within	713.5519	91	7.8412	
Total	724.8511	93		

TABLE 9

t Ratios Between I-E and Sport I-E Scales
Within Each Sport Affiliation Category

Sample	Individual Group Athletes I-E	Team Group Athletes I-E	Combined Group Athletes I-E
Individual Group Athletes Sport I-E	2.31 *	-	-
Team Group Athletes Sport I-E	-	2.34 *	-
Combined Group Athletes Sport I-E	-	-	1.99 *

* Significant at the .05 level of confidence

Table 9 indicates that each sport group demonstrated significantly greater internal beliefs of source of reinforcement on the Sport I-E Scale than on the I-E Scale. This lends further justification for the consideration of source of reinforcement as a situational measure rather than a generalized measure.

Evidence previously presented relative to the use of the I-E Scale as a multidimensional measure suggested that data be further analyzed for each of the sport affiliation groups on Factors I and II of both the I-E and Sport I-E Scales. The obtained means and standard deviations for each of the subgroups on both factors of each scale are presented in Table 10.

TABLE 10
Means and Standard Deviations for Sport Groups on
Factor I and Factor II for Each Scale +

Sample	Individual Group		Team Group		Combined Group	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Athletes I-E Factor I Personal	3.49	2.10	4.09	2.58	3.97	2.46
Athletes I-E Factor II Societal/Political	1.49	1.32	2.09	1.60	1.79	1.35
Athletes Sport I-E Factor I Personal	3.05	1.90	3.27	1.47	3.59	1.45
Athletes Sport I-E Factor II Societal/Political	0.88	0.85	1.09	0.075	0.76	0.74

A cursory glance of the obtained means for each sport group shows some differences for each of the two factors on both scales. Because of these differences in the mean scores among the groups for each factor, one-way analysis of variance was calculated among the groups on both factors of each scale. Table 11 presents the resultant F ratios.

+ The differences in mean scores between Factors I and II were because of the number of items within each Factor. Factor I contains 11 items whereas Factor II contains only five items.

TABLE 11

F Ratios Among Sport Groups on Factors I and II
of the I-E and Sport I-E Scales

Sample	F
Athletes I-E Factor I (Personal)	0.0625
Athletes I-E Factor II (Societal/Political)	1.4081
Athletes Sport I-E Factor I (Personal)	0.8525
Athletes Sport I-E Factor II (Societal/Political)	1.1378

Results of the fixed one-way analysis of variance among groups on Factors I and II of both scales indicated no significant differences among groups on either scale for either Factor I and/or Factor II ($F < 3.07$ at the .05 level of confidence). It may be said, then, that regardless of athletes' sport affiliation, belief in source of reinforcement was consistent across sport types. The women athletes who took part in this research could not be differentiated by sport involvement with respect to their belief in source of reinforcement.

Summary

Reliability coefficients for both the I-E and Sport I-E Scales were calculated. It was found that reliability coefficients for the Sport I-E Scale with the subjects in this investigation were significant. The Kuder-Richardson method of internal consistency yielded a .40

correlation for the Sport I-E Scale. The split-half method stepped up by the Spearman Brown Prophecy Formula yielded a .85 coefficient of correlation.

No significant differences on the I-E Scale were found between the women athletes who took part in this study and Rotter's population of 605 college females. There was, however, a significantly greater belief in an internal source of reinforcement in the specific sport situation, as measured by the Sport I-E Scale, than in a general situation as measured by the I-E Scale. This finding causes one to doubt Rotter's (1966) contention that internal-external control operates across situations. At least for the female athletes in this study, the sport situation appears to have some influence on the individual's belief about source of reinforcement. This may be indicative of certain factors that exist in the sport situation which make it a unique environment.

Additional analysis was undertaken for two subscales of the I-E Scale identified by Mirels (1970). This was based on the assumption that the same items on the Sport I-E Scale constituted the same two factors that Mirels found on the I-E Scale. Women athletes demonstrated significantly more internality on both factors of the Sport I-E Scale than they did on the I-E Scale. Unfortunately, no data were available with which to compare the athletes in this study on the two subscales indicated by Mirels (1970).

Next, one-way analysis of variance was performed among sport groups, i.e., team sport participants, individual sport participants, and those

participating in both team and individual sports. No significant differences were found among groups on either the I-E Scale or the Sport I-E Scale.

Finally, the data were analyzed according to sport affiliation for each of Mirels' two subscales. Results indicated no differences of significance among sport groups on either Factor I (personal control) or Factor II (societal/political control) for either the I-E or Sport I-E Scales. This suggested three interpretations: (a) there are no differences according to sport type relative to belief in source of reinforcement; (b) further credence is given to the study of source of reinforcement as situation specific; and (c) women athletes as a whole and within subgroups determined by sport affiliation consistently hold a more internal belief of source of reinforcement within the sport situation than they do with respect to a general situation.

CHAPTER V

DISCUSSION, CONCLUSIONS, RECOMMENDATIONS

Two questionnaires were administered to ninety-four intercollegiate women athletes to determine whether or not source of reinforcement could be considered a factor in women's sport involvement. Athletes were investigated as a total group and also in three subgroup categories:

- (a) individual sport participants; (b) team sport participants; and
- (c) those participating in both team and individual sports.

Rotter's (1966) I-E Scale and a modification of that scale, the Sport I-E Scale, were the instruments utilized to generate data for this research. The Sport I-E Scale was devised by the investigator specifically for use with this study. It was judged by seven persons to be compatible, in terms of content, with the I-E Scale. The two questionnaires were administered to the subjects by the investigator; administration of forms was alternated.

The Kuder-Richardson measure of internal consistency and the split-half method stepped up by the Spearman Brown Prophecy Formula were applied to both sets of responses. The reliability measures obtained for the I-E Scale were acceptable but lower than those obtained by Rotter (1966). The obtained coefficient from the Kuder-Richardson applied to the Sport I-E Scale was low, .40, but nevertheless was significant.

Kendall's rank order coefficient of correlation was determined between the I-E Scale and the Sport I-E Scale. The resultant coefficient, .55, indicated considerable agreement and at the same time decided disagreement.

Discussion

Analysis of the data revealed that women athletes as a group did not differ significantly from a general population of female college students as measured by the I-E Scale. Further analysis revealed no significant differences among the three subgroups. There was some anticipation on the part of the researcher that women athletes as a group would have significantly different beliefs about source of reinforcement than Rotter's sample as measured by the I-E Scale. Two explanations are offered relative to the similarity among groups. First, Rotter (1966) suggested that the college population in general may tend to be more internally oriented than other populations. A second explanation is provided by several studies (Mirels, 1970; Gurin et al., 1969; and Sanger & Alker, 1972) which found evidence for two subscales within the I-E Scale affecting its results. The findings of the investigation are somewhat consistent with such an idea. Furthermore, results of the present investigation may be likened to other studies. For example, Bird (1970) found that on traits identified by Ogilvie as being related to athletic achievement, her ice hockey players fell within the normal range, i.e., they were not different. Dayries and Grimm (1970) using the Edwards Personal Preference Schedule found that their athletes could not be well differentiated from other college women. Although Malumphy (1970) identified some differences between golfers, tennis players and their non-athletic peers over a two year period of time with different subjects no consistent pattern of such differences was found. Peterson et al. (1967), Malumphy (1968) and Shafor (cf. Klafs

& Lyon, 1973) all utilized the same measure of personality to test for differences between sport groups; there was no consistent pattern of differences among their studies. The differences which were noted may have been the result of certain biases within the studies such as small sample sizes. Further, the writer's previous comments with regard to multiple sport involvement offers still another explanation for the imprecise results.

Analysis of subjects' scores on the I-E Scale and the Sport I-E Scale revealed that women athletes scored significantly lower on the Sport I-E Scale than on the I-E Scale. Further calculations revealed that this was the case for each of the subgroups. Also, no differences were found among the groups on the Sport I-E Scale. This result tends to support the contention by some sport scholars that there are not really differences among sport groups based on type of sport involvement. These individuals argue that an athlete is an athlete is an athlete. In other words, being an athlete is a general classification that need not be further specified. Further, and more importantly, the result indicates that, for these female athletes, the I-E Scale may not be the generalized expectancy as contended by Rotter (1966). Instead, the results of this study support Feather's (1967) idea that in different situations one may view expectancy for reinforcements and their source in different degrees. In other words, these female athletes seem to believe that reinforcements for their sport behavior are more contingent upon their ability and skill than they are upon external sources or forces such as powerful others, chance, fate, and/or luck.

Mirels (1970) provided sufficient information for the investigator to examine the two subscales that he identified by means of factor analysis. The two subscales deal with a belief in personal control, Factor I, and a belief in societal/political control, Factor II. For each of the two subscales, subjects as a total group of women athletes and also when considered according to subgroup classification, consistently demonstrated a greater belief in internal control on the Sport I-E Scale than they had on the I-E Scale. Unfortunately, no scores from the two subscales offered by Mirels (1970) were provided which could permit comparison between the women athletes in this investigation and others. The comment is made simply for possible future research concerned with source of reinforcement. Analysis revealed no significant differences among groups on either Factor I or II for either the I-E or Sport I-E Scales. This again tends to support the idea of sport as situation specific. Women athletes as a whole and as subgroups consistently scored more toward the internal direction on both factors of the Sport I-E Scale. Sport theorists would hardly be surprised at such a finding. It surely adds strength to the argument that one of the many factors that motivate women to pursue competitive sport may be the belief athletes have in their ability to control the sport context and the behavior, events, and factors in the sport situation.

Conclusions

In answer to the questions posed at the outset of this study, and in accord with the design and specific instrumentation utilized to obtain

and analyze data, the following conclusions are offered:

1. How do women intercollegiate athletes compare with other college women with respect to source of reinforcement as assessed by the Rotter I-E Scale?

Collegiate women athletes are quite comparable to other women students. The women athletes do not differ from other college women in their expectancy for internal versus external control of reinforcement. This finding was consistent for the total group as well as for the three subgroups of team sport participants, individual sport participants and those participating in both team and individual sports. While these findings may be subject to question because of the relatively small sample size of the subgroups, they are in accord with the findings of Reese (1975).

2. How do women intercollegiate athletes perceive source of reinforcement as assessed by the Sport I-E Scale?

Collegiate women athletes' responses lead one to conclude that they demonstrate internal sources of reinforcement on the Sport I-E Scale. This was found for each of the three subgroups as well as the total group of women athletes.

3. What are the differences between scores obtained on the Rotter I-E Scale and the Sport I-E Scale?

Collegiate women athletes demonstrated a significantly greater degree of belief in internal control within the sport situation than in the general situation. That is, within the sport situation, they seem to believe that reinforcements are contingent more upon their own skill and ability than upon external sources such as powerful others, chance, fate, and/or luck.

Recommendations for Further Research

The Sport I-E Scale fulfilled its purpose in the present study. However, further work on validating it is in order. There is some question that its statements may be slanted too heavily toward the team sport situation rather than personal belief about athletics. Also, it is presently appropriate only for women athletes. It might be revealing to use a similar scale without sexual identity in order to compare women athletes' source of reinforcement with that of men athletes.

One of the notions which has evolved from investigating the internal-external construct is the idea that internally oriented individuals appear to prefer activities of skill rather than chance. However, as Schneider (1970) found, this may be true only when the sexual identity of the activity is congruent with the sex of the individual. There was insufficient data obtained by this investigator to examine this point of view. It raises a question, though, that warrants consideration.

The two subgroups of team sport participants and combined team/individual participants in the present study contained only 22 and 29 subjects respectively. The investigator considers these two subgroups to be small sample sizes. Research into I-E control, then, should be extended to large numbers of athletes. In addition, consideration of level of competition might add to knowledge about sport motivation. Given the hierarchical structure within women's competitive sports, subjects could be compared at various competitive levels, e.g., state, regional and national.

Locus of control could also be investigated with respect to various sponsoring sport agencies, such as public recreation leagues, college/university athletics, and/or amateur and professional groups. Finally, longitudinal studies carried on over an extended time period offer further possibility for understanding I-E control of reinforcement as a behavioral phenomenon of sportspersons.

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- QUESTIONS A
1. Children get into trouble because their parents prefer the path.
 2. The trouble with most children nowadays is that their parents are too easy with them.
 3. Most of the wrong things in people's lives are partly due to bad luck.
 4. People's misfortunes result from the mistakes they make.
 5. One of the major reasons why we have wars is because people don't take enough interest in politics.
 6. There will always be wars, no matter how hard people try to prevent them.
 7. In the long run people get the reward they deserve in this world.
 8. Unfortunately, an individual's worth often passes unrecognized as either he or she has had no talent.
 9. The idea that teachers are unfair to students is nonsense.
 10. Most students don't realize the extent to which their grades are influenced by accidental happenings.
 11. Without the right breaks one cannot be an effective leader.
 12. Capable people who fail to become leaders have not taken advantage of their opportunities.

* I refers to Mirvis' Factor I items: personal control.
 II refers to Mirvis' Factor II items: societal/political control.

APPENDIX A
 ROTTER'S I-E SCALE

QUESTIONNAIRE A

CODE NO. _____

- 1.a. Children get into trouble because their parents punish them too much.
- b. The trouble with most children nowadays is that their parents are too easy with them.
- 2.a. Many of the unhappy things in people's lives are partly due to bad luck.
- b. People's misfortunes result from the mistakes they make.
- 3.a. One of the major reasons why we have wars is because people don't take enough interest in politics.
- b. There will always be wars, no matter how hard people try to prevent them.
- 4.a. In the long run people get the respect they deserve in this world.
- b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
- I⁺ 5.a. The idea that teachers are unfair to students is nonsense.
- b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
- I 6.a. Without the right breaks one cannot be an effective leader.
- b. Capable people who fail to become leaders have not taken advantage of their opportunities.

⁺ I refers to Mirels' Factor I items; personal control.
 II refers to Mirels' Factor II items; societal/political control.

QA-2

CODE NO. _____

- 7.a. No matter how hard you try some people just don't like you.
- b. People who can't get others to like them don't understand how to get along with others.
- 8.a. Heredity plays the major role in determining one's personality.
- b. It is one's experiences in life which determine what they're like.
- I 9.a. I have often found that what is going to happen will happen.
- b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
- 10.a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
- b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
- I 11.a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
- b. Getting a good job depends mainly on being in the right place at the right time.
- II 12.a. The average citizen can have an influence in government decisions.
- b. This world is run by the few people in power, and there is not much the little guy can do about it.
- I 13.a. When I make plans, I am almost certain that I can make them work.
- b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
- 14.a. There are certain people who are just no good.
- b. There is some good in everybody.
- I 15.a. In my case getting what I want has little or nothing to do with luck.
- b. Many times we might just as well decide what to do by flipping a coin.

QA-3

CODE NO. _____

- I 16.a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
- b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
- II 17.a. As far as world affairs are concerned, most of us are the victim of forces we can neither understand, nor control.
- b. By taking an active part in political and social affairs the people can control world events.
- I 18.a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
- b. There really is no such thing as luck.
- 19.a. One should always be willing to admit mistakes.
- b. It is usually best to cover up one's mistakes.
- 20.a. It is hard to know whether or not a person really likes you.
- b. How many friends you have depends upon how nice a person you are.
- 21.a. In the long run the bad things that happen to us are balanced by the good ones.
- b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
- II 22.a. With enough effort we can wipe out political corruption.
- b. It is difficult for people to have much control over the things politicians do in office.
- I 23.a. Sometimes I can't understand how teachers arrive at the grades they give.
- b. There is a direct connection between how hard I study and the grades I get.
- 24.a. A good leader expects people to decide for themselves what they should do.
- b. A good leader makes it clear to everybody what their jobs are.

QA-4

CODE NO. _____

- I 25.a. Many times I feel that I have little influence over the things that happen to me.
- b. It is impossible for me to believe that chance or luck plays an important role in my life.
- II 26.a. People are lonely because they don't try to be friendly.
- b. There's not much use in trying too hard to please people, if they like you, they like you.
- 27.a. There is too much emphasis on athletics in high school.
- b. Team sports are an excellent way to build character.
- I 28.a. What happens to me is my own doing.
- b. Sometimes I feel that I don't have enough control over the direction my life is taking.
- II 29.a. Most of the time I can't understand why politicians behave the way they do.
- b. In the long run the people are responsible for bad government on a national as well as on a local level.

Source of the I-E Scale: Rotter, J.B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80:4, 1-28, 1966.

APPENDIX B

SPORT I-E SCALE

QUESTIONNAIRE B

CODE NO. _____

- 1.a. I like the self-discipline associated with training because of the type of person I am.
- b. I endure the discipline of training because it is part of the sport scene.
- 2.a. Many of the misfortunes and/or poor performances that occur during play are due partly to bad luck.
- b. Misfortunes and/or poor performances that occur during play result from mistakes that have been made.
- 3.a. One of the major reasons why we have disagreements in sports is because players and coaches don't take enough interest in officiating.
- b. There will always be disagreements in sports no matter how hard one tries to prevent them.
- 4.a. Each athlete gets the respect she deserves in the long run.
- b. Unfortunately, an athlete's worth often passes unrecognized no matter how hard she tries.
- I⁺ 5.a. The idea that coaches are unfair to athletes is nonsense.
- b. Most athletes don't realize the extent to which their performance in sports is influenced by accidental happenings.
- I 6.a. Without the right breaks one cannot be an effective leader in athletics.
- b. Capable athletes who fail to become leaders in athletics have not taken advantage of their opportunities.

⁺ I refers to personal control items; II refers to societal/political control items.

QB-2

CODE NO. _____

- 7.a. No matter how hard you try, some fellow athletes just don't like you.
- b. Fellow athletes who can't get others to like them don't understand how to get along with others.
- 8.a. I strive to be the best because of the things I believe in and because of me.
- b. I strive to be the best because competitive sport makes me that way.
- I 9.a. I have often found that what is going to happen in a contest will happen.
- b. Trusting to fate has never turned out as well for me in a contest as making a decision to take a definite course of action.
- 10.a. I am aware of and responsive to my own demands to give more when needed.
- b. Often I am not aware of how much is demanded of me by the sport situation.
- I 11.a. Becoming a successful athlete is a matter of hard work; luck has little or nothing to do with it.
- b. Becoming a successful athlete depends mainly on being in the right place at the right time.
- II 12.a. The average athlete can have an influence on the coach's strategy during the contest.
- b. There is not much the average athlete can do to influence the coach's strategy during a contest.
- I 13.a. When I make plans in athletics I am almost certain that I can make them work.
- b. It is not always wise to plan too far ahead in athletics because many things turn out to be a matter of good or bad fortune anyhow.
- 14.a. There are certain players who are just no good.
- b. There is some good in every player.
- I 15.a. In my case, getting to play has little or nothing to do with luck.
- b. Many times we might just as well decide who is going to play by flipping a coin.

QB-3

CODE NO. _____

- I 16.a. Who gets to be captain often depends on who was lucky enough to be in the right place first.
- b. Being a good captain depends upon ability; luck has little or nothing to do with it.
- II 17.a. As far as governance in competitive sports is concerned, most athletes are victims of forces they can neither control nor understand.
- b. By taking an active part in all aspects of competitive sports, athletes can control its governance.
- I 18.a. Most people don't realize the extent to which the competitive situation is controlled by accidental happenings.
- b. There is really no such thing as luck during the competitive situation.
- 19.a. To cope with my anxieties is hard on me.
- b. Involvement in practice or play is most effective in coping with my anxieties.
- 20.a. It is hard to know whether or not fellow athletes really like you.
- b. How many friends you have among fellow athletes depends on how nice a person you are.
- 21.a. In the long run, the bad things that happen to us in a contest are balanced by good ones.
- b. Most misfortunes that occur in a contest are the result of lack of ability, ignorance, laziness, or all three.
- II 22.a. With enough effort athletes can lessen corruption in sports.
- b. It is difficult for athletes to lessen corruption in sports.
- I 23.a. Sometimes I can't understand how the coach arrives at who makes the team.
- b. There is a direct connection between how hard I practice and whether or not I make the team.
- 24.a. I am able to control my own nervousness.
- b. Once a contest gets under way, I am too involved to even be aware of my own nervousness.

QB-4

CODE NO. _____

- I 25.a. Many times I feel that I have little influence over the things that happen to me during a contest.
- b. It is impossible for me to believe that chance or luck plays an important role during a contest.
- II 26.a. Some players are lonely because they don't try to be friendly.
- b. There is not much use in trying too hard to please players; if they like you, they like you.
- 27.a. Time is a factor that is very much with me.
- b. In the closing moments of a game, time often becomes another element to be conquered.
- I 28.a. What happens to me as an athlete is my own doing.
- b. Sometimes I feel that I don't have enough control over the direction I am going as an athlete.
- II 29.a. Most of the time I can't understand why leaders in sport make some of the decisions they do.
- b. In the long run, athletes and coaches are responsible for the leadership in sports on a national as well as a local level.
- 30.a. I tend to think of myself as being able to control all situations in which I am involved.
- b. Just before a big event, I think of the "chance things" that might happen that I cannot control.
- 31.a. I do not often think about losing.
- b. The idea of losing hangs over me all season.

APPENDIX C
PARTICIPATION FORM

QUESTIONNAIRE C

CODE NO. _____

1. Do you participate in intercollegiate sports other than the one in which you are currently involved? YES _____ NO _____ (Check one).
2. If the answer to the above question is "YES", in what other intercollegiate sports do you participate? _____

LETTER TO JUDGES

APPENDIX D

INFORMATION TO JUDGES

JUDGES

Questionnaires were sent to the following individuals who served as judges for determining content validity of the Sport I-E Scale:

L. Estes, M. Lay, R. Martens, R. McGee, C. Oglesby, B. Rushall, and J. Thorpe.

I am currently working on my master's thesis at the University of
 your location at University. I would like you to judge the compatibility of my statements with Rotter's.
 Judge's directions are on the following page.

Letters of each item that are underlined indicate those that are
 original statements. Filler items cited on Rotter's statements (1, 5,
 6, 12, 20, and 27) will be replaced on my statements with those that
 are part of other research not connected with my study. I will include
 my additional statements, 30 and 31, that are also relevant to the
 other research.

Please return your answers in the stamped, self-addressed
 envelope that I have provided.

Thank you very much for your time and interest. If you have any
 questions I will be most happy to answer them. Also, if you are
 interested in obtaining the results of the study, please so indicate.

Sincerely,

LETTER TO JUDGES

(Date)

Dear (Judges name),

I am currently working on my master's thesis at the University of North Carolina at Greensboro. My thesis topic is "Source of Reinforcement As A Factor In Women's Sport Involvement".

I plan to administer J.B.Rotter's I-E Scale to assess internal-external control of reinforcement as well as my own statements to assess source of reinforcement specific to the sport situation.

Enclosed you will find Rotter's statements and my own. I would like you to judge the compatibility of my statements with Rotter's. Judges' directions are on the following page.

Letters of each item that are underlined indicate those that are external statements. Filler items noted on Rotter's statements (1, 8, 10, 19, 24, and 27) will be replaced on my statements with those that are part of other research not connected with my study. I will include two additional statements, 30 and 31, that are also relevant to the other research.

Please return your comments in the stamped, self-addressed envelope that I have provided.

Thank you very much for your time and interest. If you have any questions I will be most happy to answer them. Also, if you are interested in obtaining the results of the study, please so indicate.

Sincerely,

DIRECTIONS TO JUDGES

Please compare each item of the Sport I-E with the corresponding item on the Rotter Scale. If you feel the Sport I-E statement is incompatible with the Rotter statement, please place an "x" in the left hand column next to the item in question. A mark is not necessary if you feel the statements are compatible.

I am trying to deal only with the individual athlete, whether she be participating in a team sport or an individual sport. Do you feel that there is an emphasis placed on team sports in the Sport I-E statements? _____ (Yes/No)

Any comments or suggestions you have are welcome.

APPENDIX E

MAILINGS TO COACHES

LETTER TO COACHES

(Date)

Dear (Coach),

As part of my program of studies for the master's degree in physical education at the University of North Carolina at Greensboro, I am investigating source of reinforcement as a possible factor in women's sport involvement. Two questionnaires will provide data for the research. The time required for administering and completing both questionnaires is approximately 30 minutes.

As an institution located in Region II of the AIAW, your school is in my selected sample. The purpose of this letter is to determine if you are willing and able to aid me in my data collection. Your assistance would involve establishing and setting up a time and a place for me to administer the questionnaires to the athletes that you are currently coaching. All subjects will remain anonymous.

Because of the nature of the study, it is extremely important that subjects not be made aware of the actual purpose of the investigation prior to its completion. The subjects would be able to "read into" the statements and would more than likely indicate what they thought was "right" rather than what they believe (see attached sample statements). Subjects participating should be informed that the questionnaires are for determining the manner in which important events in society and in sports influence certain people. Subjects will be informed of the true nature of the study upon its completion.

Please return the enclosed postcard as soon as possible indicating whether or not you will be able to assist me in this study. If you will be able to, please indicate a time and place when I may meet with your athletes and the approximate number that will be involved. Your cooperation is greatly appreciated. If you have any questions please feel free to contact me. Results of the completed study will be made available to you upon request.

Sincerely,

SAMPLE STATEMENTS SENT TO COACHES

For each item subjects are to choose which of the statements, a or b, they believe to be most true.

- 1.a. Each athlete gets the respect she deserves in the long run.
 - b. Unfortunately, an athlete's worth often passes unrecognized no matter how hard she tries.
- 2.a. When I make plans in athletics, I am almost certain that I can make them work.
 - b. It is not always wise to plan too far ahead in athletics because many things turn out to be a matter of good or bad fortune anyhow.
- 3.a. Many of the unhappy things in people's lives are partly due to bad luck.
 - b. People's misfortunes result from the mistakes they make.
- 4.a. The idea that teachers are unfair to students is nonsense.
 - b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

SAMPLE POST CARD MAILED TO COACHES

NAME _____ TELE. NO. _____

I WILL ___ WILL NOT ___ BE ABLE TO ASSIST.

MEETING TIME _____
Date and TimeMEETING PLACE _____
Bldg., Room No., etc.

APPROXIMATE NO. OF ATHLETES INVOLVED _____

I DO ___ DO NOT ___ WISH RESULTS OF THE STUDY.

COMMENTS:

APPENDIX F

LIST OF SCHOOLS TO WHOM LETTERS WERE SENT

Basketball Coaches

Appalachian State University

East Carolina University

Elon College

High Point College

U. of N. C. at Chapel Hill

U. of N. C. at Greensboro

Wake Forest University

Golf Coaches

Appalachian State University

U. of N. C. at Chapel Hill

U. of N. C. at Greensboro

Wake Forest University

Tennis Coaches

Appalachian State University

Elon College

Guilford College

High Point College

Meredith College

N. C. State University

U. of N. C. at Chapel Hill

U. of N. C. at Greensboro

Wake Forest University

APPENDIX G

INSTRUCTIONS FOR I-E AND SPORT I-E SCALES

These are two questionnaires to find out the way in which certain events in our society and in sports affect different athletes. Each item consists of a pair of alternatives, letter 'a' or 'b'. Please circle the letter of the one statement of each pair (and only one) which you more strongly believe to be the case as far as you are concerned. Be sure to select the one you actually believe rather than the one you think you should choose. This is a measure of personal belief so there are no right or wrong answers.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every item.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you are concerned. Also, try to respond to each item independently when making your choice; do not be influenced by your previous choices. Answer all statements in order; do not go back and change your answers once you have given them.

As you answer each item dealing with sports, try to disregard the type of sport in which you are participating. Your answers should be made only on the basis of your own personal beliefs as an individual athlete.

APPENDIX H

RAW DATA

Subject	I-E Scores			Sport I-E Scores			Sports Participation
	Total	F-I	F-II	Total	F-I	F-II	
1	3	0	1	2	0	1	Team
2	12	7	1	8	5	1	Team
3	12	5	3	7	3	1	Team
4	2	0	0	2	2	0	Team
5	10	4	2	6	4	0	Combined
6	11	6	1	11	6	1	Team
7	4	1	1	3	1	0	Team
8	8	3	2	8	4	1	Team
9	9	3	1	6	4	0	Combined
10	12	4	5	8	3	2	Team
11	11	5	1	12	5	2	Team
12	15	6	5	6	3	0	Team
13	11	4	3	9	4	0	Team
14	6	1	1	5	2	1	Team
15	6	1	1	9	4	3	Team
16	16	7	5	7	3	1	Team
17	9	4	2	7	4	0	Combined
18	10	4	1	7	1	1	Team
19	16	9	2	10	5	1	Combined
20	9	5	2	7	4	1	Combined

Subject	I-E Scores			Sport I-E Scores			Sports Participation
	Total	F-I	F-II	Total	F-I	F-II	
21	15	9	1	10	5	1	Team
22	9	3	2	5	3	0	Team
23	16	7	4	12	6	2	Team
24	8	2	4	6	3	1	Team
25	4	2	0	5	1	1	Team
26	13	7	2	8	3	1	Team
27	14	8	1	11	6	2	Combined
28	11	6	2	7	5	0	Combined
29	7	2	2	5	2	1	Individual
30	5	2	1	7	3	1	Combined
31	9	1	3	6	3	1	Individual
32	12	5	4	9	5	2	Individual
33	10	3	4	4	2	0	Combined
34	7	2	2	6	4	1	Individual
35	4	1	1	3	2	1	Combined
36	12	2	4	11	4	2	Combined
37	4	2	0	5	4	0	Combined
38	2	1	0	5	2	0	Combined
39	6	4	0	8	4	1	Individual
40	11	7	1	9	6	1	Individual
41	3	1	0	6	4	0	Individual
42	10	4	1	10	5	2	Individual
43	12	4	3	6	1	1	Individual
44	13	7	2	8	4	1	Combined

Subject	I-E Scores			Sport I-E Scores			Sports Participation
	Total	F-I	F-II	Total	F-I	F-II	
45	8	2	2	11	3	3	Individual
46	14	8	2	11	6	2	Individual
47	4	2	0	4	2	0	Individual
48	1	0	0	2	1	0	Combined
49	12	6	3	10	4	2	Combined
50	9	2	4	7	3	1	Individual
51	9	5	2	3	1	0	Individual
52	5	1	1	4	0	2	Individual
53	6	3	1	5	3	1	Individual
54	4	3	0	5	3	0	Individual
55	5	1	3	3	0	1	Individual
56	13	6	4	8	5	1	Individual
57	9	1	4	7	3	1	Combined
58	4	2	0	7	4	1	Combined
59	6	3	0	7	4	0	Individual
60	9	3	3	9	3	1	Individual
61	7	3	3	4	2	1	Individual
62	5	3	0	2	1	0	Individual
63	8	5	1	9	4	1	Individual
64	7	3	0	5	3	0	Individual
65	13	8	3	6	1	1	Combined
66	10	6	2	8	5	1	Team
67	10	3	2	7	4	1	Individual
68	7	3	2	5	2	0	Individual

Subject	I-E Scores			Sport I-E Scores			Sports Participation
	Total	F-I	F-II	Total	F-I	F-II	
69	10	5	2	7	5	1	Combined
70	2	1	0	4	2	0	Combined
71	8	4	2	7	3	2	Individual
72	4	1	0	4	1	0	Individual
73	5	2	0	7	3	2	Combined
74	8	4	1	7	3	1	Combined
75	0	0	0	0	0	0	Individual
76	11	6	0	8	3	1	Individual
77	9	7	1	5	3	0	Individual
78	11	5	2	11	8	1	Individual
79	8	3	3	4	2	0	Individual
80	9	3	2	7	3	1	Individual
81	11	6	2	5	2	2	Combined
82	10	7	0	12	6	2	Individual
83	15	7	3	7	4	1	Individual
84	7	3	2	6	4	0	Combined
85	1	1	0	1	0	0	Individual
86	8	4	2	6	3	0	Combined
87	13	7	3	13	6	3	Individual
88	9	5	0	7	4	1	Individual
89	7	3	1	9	3	2	Combined
90	6	3	1	9	4	1	Individual
91	15	7	4	11	7	0	Combined
92	3	0	1	2	0	0	Individual

Subject	I-E Scores			Sport I-E Scores			Sports Participation
	Total	F-I	F-II	Total	F-I	F-II	
93	15	6	4	12	6	1	Combined
94	5	2	0	4	1	0	Individual