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UNIVERSITY OF ALBERTA

DEVELOPMENT AND ANALYSIS OF A WRESTLING TAIS AT TWO EXPERIENCE LEVELS

BY

© MICHAEL PAYETTE

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled DEVELOPMENT AND ANALYSIS OF A WRESTLING TAIS AT TWO EXPERIENCE LEVELS submitted by MICHAEL PAYETTE in partial fulfillment of the requirements for the degree of Master of Arts in Physical Education and Sport Studies.

R B Alderman

Supervisor

Date May 30/90

DEDICATION

This work is dedicated to my parents, Loretta and Clifford, who believed in me and encouraged me to perform to the best of my abilities in all of my endeavors.

ABSTRACT

The purpose of this study was to compare the attentional style of athletes as measured by both a sport specific instrument and a general instrument. Nideffer's Test of Attentional and Interpersonal Style (TAIS) was compared to a wrestling specific version (W-TAIS). High School wrestlers (64) were used as subjects and divided into two groups: 1 to 2 years of experience and 3 or more years of experience. This was performed in order to determine if differences would exist in the attentional style of wrestlers as measured by the two tests and if either of the tests could discriminate between the two levels of experience. Comparisons were made between the 7 attentional subscales of the TAIS and the corresponding subscales on the W-TAIS and between the relationships of the various subscales. The comparisons revealed a high degree of similarity between the two tests. These results suggest that both tests measure the same attentional constructs and deliver similar information concerning the wrestlers. However, the W-TAIS was able to distinguish between levels of experience, while the TAIS did not. In addition the W-TAIS exhibited higher internal reliability than the TAIS. These results indicate that differences do exist between the information derived from the sport-specific test and the information derived from the general test.

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STATEMENT OF THE PROBLEM

I. INTRODUCTION

The ability to control thought processes or to concentrate on a task is almost universally recognized as the most important key to effective performance in sports (Nideffer, 1985). A lack of concentration for a moment can directly result in defeat for a trapshooter or a basketball team. Despite the importance of concentration to performance, little time is normally spent by coaches and athletes identifying attentional strengths and weaknesses and providing treatment programs to improve upon mental control.

To assist coaches and athletes in assessing attentional style, Nideffer in 1973, designed the Test for Attentional and Interpersonal Style (Nideffer, 1976). Drawing from the work of Watchel (1967) and Silverman (1964), Nideffer identified two dimensions of attentional style. The first, "attentional width", refers to the number of elements one can attend to in a stimulus field; the second, "attentional

direction" refers to whether an individual's attentional focus is directed to either external (environmental) or internal (within the individual) stimuli. Nideffer (1976) proposed that individuals differ in attentional style (i.e., the normal or customary manner in which a person attends to the people, objects or events in their environment). He developed the TAIS to measure an individuals attentional style. Generally, three effective attentional styles are described: a broad and externally directed focus which refers to attention to a number of external stimuli, a broad internal focus which refers to the attention to a number of internal stimuli, and a narrow external and internal focus which refers to the attention of only one or two external or internal stimuli.

Nideffer views attentional style as a trait that differentiates not only athletes, but anyone who is faced with a performance situation. He says "Just as we are willing to concede that there are physiological and biological differences among athletes, we should be willing to concede that there are attentional differences" (Nideffer, 1985). He also makes the assertion that each sport has different and specific attentional demands in that certain situations require a fairly broad focus of attention because the athlete must be sensitive to several different cues, and other situations which require a narrowing of performance cues.

In addition there is a requirement that athletes must be able to shift from one focus to another depending on the attentional demands of the situation. For example, in football, a quarterback must develop a broad external focus to be aware of everything that is happening on the field. Once he identifies an open receiver, he must shift his concentration to a narrower focus to block out all of the alternate cues in the environment and focus in on the receiver. The types of attention and the demands on each type change from sport to sport and they change from one situation to another. The nature of this thesis is to design and examine the predictive utility of a wrestling specific version (W-TAIS) of the TAIS to identify whether or not sport-specific information about an athlete's attentional style is more useful in enhancing his performance.

STATEMENT OF THE PROBLEM

The purpose of this study was threefold. First is the construction of a wrestling specific version of Nideffer's Test of Attentional and Interpersonal Style. The questions associated with the cognitive attentional processes will be structured to include relevant environmental variables in

the sport of wrestling. The second aspect of the study consists of a comparison between the attentional processes as measured in the general test (TAIS) and those attentional processes as measured in the wrestling specific test (W-TAIS). Finally, a comparison will be made between wrestlers with two levels of experience to determine if either the W-TAIS or the TAIS identifies attentional differences as a function of their years of experience in the sport.

JUSTIFICATION OF THE STUDY

Psychological testing instruments are utilized so that accurate decisions may be made about an individual or number of individuals . As Griffiths (1982, p. 29) informs us, "The TAIS was constructed in an attempt to develop a rational and valid instrument for determining an individual's attentional style". In order to arrive at the best possible decision, information derived from such psychological tests should possess a high validity and reliability, as well as practical utility. Van Schoyck and Grasha (1981, p. 150) question the utility of general tests as opposed to situation-specific tests when they suggest that, "the TAIS items are of a general nature and refer to

common everyday situations. The items lacks reference to any sport." Without taking into consideration environmental variables, they claim that it is difficult to understand the interaction between the athletes and their environments. By designing a wrestling specific test, at least within the cognitive subscales, it was predicted that the utility and validity would be improved.

The content or face validity of the test would be improved since the athletes writing the test would be better able to identify with the situations outlined and are more likely to perceive the benefit of the questionnaire. The wrestling specific version of the TAIS will be composed of items that reflect specific wrestling experiences. Athletes and coaches from this environment should discern the test as being relevant to their milieu.

Predictive validity has been shown to improve when transferring the results of the instrument to a wrestling environment if a more specific test is used. Rushall (1978, p. 101) states, "In order to be able to diagnose and predict personality/response capabilities, one needs to be able to include ingredients of situation specifics, individual differences, and modes of response in a measurement technique". It is assumed that the information derived from a wrestling specific test would be more

accurate when applied to an actual wrestling environment than information derived from a general-life situation test.

A secondary rationale for this study was to examine the utility of a W-TAIS for counselling, and the development of training programs for wrestlers. Rushall (1978, p. 103) supports this notion when he states that, "The practitioners (coaches and clinical psychologists) could use the generated diagnostics (of environment-specific behavior inventories) to embark upon actual programs of behavior modification". Yousif (1985) also supports using the TAIS in assisting coaches in developing performance skills. The W-TAIS test would be useful in identifying the specific attentional demands which are a normal part of amateur wrestling and it should be useful in identifying the attentional styles of wrestlers. This should improve our knowledge of the conflicts that invariably occur between the attentional style of an athlete and the attentional demands of the situation.

HYPOTHESES

The general hypothesis of the study was to investigate whether or not a general instrument such as Nideffer's TAIS

was more effective in determining the attentional styles of a group of wrestlers than was a wrestling specific version. The hypothesis to be tested here was stated as follows: There would be differences in the attentional style of wrestlers as measured by the TAIS and the wrestling-specific version of it. Specific differences would consist of:

1. An interscale correlation of the seven subscales, on both tests, would reveal that the W-TAIS has a greater number of significant relationships than the TAIS. This analysis would also give an indication of the similarity in the subscales' relationships in each of the tests.

2. An analysis of variance on the mean scores between the two tests would identify different means on a number of the subscales. This analysis would reveal whether or not the W-TAIS subscales identified a different attentional profile than did the TAIS subscales.

3. Mean scores, plotted on profile sheets, would identify different relationships between the effective and ineffective subscales on the two tests.

4. The W-TAIS would exhibit a higher internal consistency than would the TAIS.

Of secondary interest was whether or not either of these instruments would be more effective than the other in identifying the experience levels of two groups of wrestlers (1 to 2 years of experience and 3 or more years of experience). Here the hypothesis was stated as follows: The wrestling TAIS would be a more effective instrument in discriminating between the two levels of experience than the general TAIS. Specific differences would consist of:

1. An analysis of variance conducted on the mean scores would indicate that the TAIS would be unable to differentiate between the two groups of wrestlers, while the W-TAIS could differentiate.

2. Mean scores, plotted on profile sheets, would identify different effective/ineffective relationships between the two experience levels on the W-TAIS, but not on the TAIS.

LIMITATIONS

The major limitations of this study were:

1. The sample would not be representative of all wrestlers and neither would it be a random selection.

DELIMITATIONS

The scope of the study was delimited as follows:

1. The subject sample included would be restricted to a sixty-four Senior High School wrestlers in province of Alberta, Canada.

2. Only the first seven scales on the TAIS and the W-TAIS would be examined (BET, OET, BIT, OIT, HAR, RED and INFP).

3. The results would be limited to the conceptual content of Nideffer's view of attentional focus.

DEFINITION OF TERMS

Attention - is a process whereby the person preferentially responds to stimuli. Attention is conceptualised on two dimensions: width - the amount of information one attends to; direction - whether the focus of attention is directed internally or externally.

Attentional Style - refers to how one habitually attends to internal and external stimuli in one's environment (Nideffer, 1976).

Broad External Focus of Attention (BET) - an effective type of attention in which individuals focus upon a number of stimuli in their external environments.

Overloaded External Focus of Attention (OET) - an ineffective type of attention in which individuals focus upon too many external stimuli.

Broad Internal Focus of Attention (BIT) - an effective type of attention in which individuals focus upon a number of internal stimuli.

Overloaded Internal Focus of Attention (OIT) - an ineffective type of attention in which individuals focus upon too many internal stimuli.

Narrow Focus of Attention (NAR) - an effective type of attention in which individuals focus upon only one or two external or internal stimuli.

Reduced Attentional Focus (RED) - an ineffective type of attention in which individuals' focus of attention is under inclusive.

Information Processing (INFP) - is the extent to which individuals "process" the information to which they're exposed.

CHAPTER II

REVIEW OF LITERATURE

INTRODUCTION

The purpose of this review is to: 1) provide an understanding of the value of a sport-specific testing instrument as opposed to a more general instrument, 2) present the literature on the predictive ability of the TAIS and 3) explore previous attempts at designing a sport-specific TAIS.

SPORT-SPECIFIC VERSUS GENERAL TESTS

Throughout much of this century, general psychological tests have been prepared by experts in order to assess total personality. Traits, enduring and cross-situational behavioral dispositions, usually comprised these tests. The intent was to determine how a person might be expected to react to and behave in various situations (Singer, 1988). For example, some researchers arrived at the conclusion that general trait measures are

capable of discriminating between athletes, non-athletes, athletes of differing ability levels, and athletes from divergent sport groups (Kane, 1970, 1978; Morgan, 1972, 1978, 1979; Williams,1978).

Morgan (1980b) supports the more global multi-dimensional tests as a means to 'get a bigger picture' of athletes. Using the Profile of Mood States Test, he found that this multi-dimensional test could support the prediction rate of success for runners, wrestlers and rowers (Morgan, 1980a). LaPlace (1954) supported the value of general instruments. He administered the Minnesota Multiphasic Personality Inventory (MMPI) to 49 major league and 64 minor league baseball players. In this study, the MMPI was able to identify that successful players possessed better adjustment (scored significantly lower on the schizophrenia and psychopathic deviate scales) than unsuccessful players.

In its discussion of the problems of psychological tests in sports, the Scientific Committee of the European Society of Sport Psychology (FEPSAC) expressed mixed feelings about the advantages and disadvantages of sport-specific versus non-sport-specific personality tests. Some psychologists thought that if a non-sport-specific test is applied in sport and it shows highly significant

differences between athletes and non-athletes, then athletes can be assessed using this instrument (Blaser and Schilling, 1976). The implication here is why should a sport-specific test be developed when a general test reveals the same thing. This is probably the main argument against sport-specific testing. Designing sport-specific testing inventories takes a great deal of time and effort on the part of sport psychologists. If the specific test fails to reveal results different from the general test, then valuable resources are wasted on this endeavor.

Contrary to this point, many of the psychologists on the FEPSAC doubted the relevance of general personality tests in sport. They not only wanted specific sport personality tests but personality tests for specific sport branches. The feeling was that specific tests can reveal different information than the general tests and that this information may be more valuable for coaches and athletes (Blaser and Schilling, 1976).

Wing and Wallach (1971) looked at areas where behavioral consistencies could be sought. They suggest that environments which require similar capacities and skills and have similar motivational/incentive properties will effect relatively consistent behavioral repertoires in individuals. The implication is an inventory may identify consistent behavior across similar environments such as

certain sports which possess similar demands. Thus, there may not be a need for a separate test for each sport.

From an interactionist perspective, any instrument developed to assess personality-behavioral relationships should not ignore the specific situational context in which these behaviors occur (Endler, 1973, 1975) . To do so would be to address only half of the issue since behavior of any type is a product of the complex interaction between situation-specific variables and the unique personality traits the performer brings with him/her to that situation. Albrecht and Feltz (1985) give an example of how this could be applied to the TAIS when they state that an athlete may tend to become overloaded by external stimuli in common everyday situations, but as a result of training or some other intervening variable, may not respond in the same way within the specific context of a sport environment. Mischel (1971) and Endler (1975) thought that personality assessment instruments need to include situational determinants and therefore to view personality as a person-environment interaction.

Klein, Barr and Wolitsky (1967) in summarising the status of personality theory and research to that time, supported the notion of considering situational-personal characteristics as personality descriptors as opposed to trait or general theory interpretations.

Fisher (1984) favors an interaction model of behavior which stresses understanding the person's reaction to a particular situation. In an athletic environment, this requires an interpretation of the demands of each sport setting and how individuals react. Here the plea is for the development of sport-specific psychological tests rather than the use of general trait tests in order to study personality factors in a more systematic and meaningful way.

Rushall (1978) supports the concept of an environment-specific inventory. He contends that it should be possible to assess personality and predict specific behavior capacities within defined sporting environments (activities). These environment specific inventories should possess high validity because of the specification of definite circumstances and behaviors. He goes on to suggest that environment (activity) specific assessments be developed as an alternative approach to sport personality assessment of the trait nature as seen in the Athletic Motivation Inventory (Lyon, 1972). Rushall (1978) felt that the utility of an environmental specific instrument in the athletic domain would be more beneficial to coaches and clinical psychologists than would a general instrument.

Many individuals have pointed out the importance of situational characteristics in an athlete's focusing

abilities (Wine, 1971; Ahart, 1973; Cratty, 1973; Gallwey, 1976; Landers, 1978). In the field of achievement motivation, Birrel (1978) states that tests specifically designed for use in sport contests are more sensitive to differences. She feels that a situation-specific measure is required to measure motivation in this context.

Singer (1988) states that the trend in psychological testing in recent years has been toward more of a conceptual base for determining which psychological characteristic should be assessed, how and in what contexts. "This process has led to the development of personality tests designed to assess psychological behaviors uniquely associated with sport and athletic competition, and even with specific sports and events" (1988, p. 102). Sport psychologists and psychologists in general have tended to support the concept of sport-specific (both sport as a whole and individual sport) tests. Many tests have now been designed as instruments to be used specifically within the sport environment.

Rainer Martens (1977) developed the Sport Competition Anxiety Test (SCAT) as a psychological tool specifically for sports. This test, which proved to be a superior predictor of state anxiety than general trait anxiety inventories, prompted Martens (1977, p. iv) to state that, "The results have strengthened my conviction that sport

psychologists need to develop sport-specific constructs and instruments to measure these constructs to better understand human behavior in sports contexts". Martens was one of the first individuals to develop a psychological test that was directed solely at the sport environment.

Willis (1982) developed sport-specific motive scales for power, achievement and fear of failure. Although Willis cautioned that the use of these scales should only be justified when confined to the study of groups and for research purposes only, he did present evidence of content, criterion-related and construct validity. Reichman and Grasha (1974) in their study of assessment of reliability and validity pointed out the increased construct validity in tests which are more specific (they developed the Grasha-Reichmann Student Learning Style Scales to assess learning styles in the classroom).

Vealy (1986) developed and validated three instruments; the Trait Sport-Confidence Inventory, the State Sport-Confidence Inventory and the Competitive Orientation Inventory in an effort to conceptualise self-confidence as specific and unique to sport. Through these instruments, Vealy attempted to operationalise a situation-specific theoretical framework that would help sport psychologists understand and predict behavior in sport.

Nideffer (1976, 1987) when designing the TAIS was well aware of the importance of specific environmental variables. He thought that assessment devices should be as situation-specific as possible, feeling that a requirement for a test's predictive utility is that the variables it presumes to measure be directly and unambiguously translatable to particular interpersonal or environmental situations. Nideffer states that the knowledge of attentional abilities and environmental demands should increase the accuracy of prediction of task success or failure.

In summary, then, the arguments in favor of sport-specific instruments would be:

1. They are specific to the demands of that particular environment and take situational determinants into consideration.

2. They may possess higher validity and reliability.

3. They have a greater predictive utility for coaches and athletes.

4. They yield different results than general tests. Athletes may respond differently in the specific sport

context than they would in a general everyday situation (e.g., due to training or some other intervening variable).

5. They are more sensitive to differences in the athlete.

Criticisms of sport-specific tests, however, revolve around their:

1. Lack of versatility; they lack the ability to transfer to general situations; they fail to indicate the 'big picture'.

2. Failure to reveal anything different than the general test.

3. Expense in time and effort to develop them.

4. Failure to describe the general personality or style that individuals "bring" to the sporting situations that may or may not influence their perceptions of the situations and the way they perform.

PREDICTIVE VALIDITY OF THE TAIS

The first studies which examined the predictive ability of the TAIS, found that the TAIS could differentiate between groups. Nideffer (1976), in an attempt to show that the test discriminates between groups, found that there were differences between male and female students. With respect to the attentional differences found, it was postulated that the need to be in control and to be competitive causes men to make use of focused (narrow) and more analytical (broad-internal) attentional processes. Such an explanation assumes that attentional processes can be modified through learning. Similar sex differences were reported in studies by La Motte (1981), Schmelzer (1981), and Boney (1982).

In other contexts, the predictive validity of the TAIS was supported by discriminant function analysis to distinguish between; i) business executives on the ability to be attentive to many things at once (BET, BIT), ii) Eastman School of Music students with authority conflicts, depression and performance anxiety and iii) applicants for police training in decision-making skills (Nideffer, 1977).

Nideffer (1976) also reported that the TAIS was a successful predictor of differences between good and poor

college level competitive swimmers. He reported that poor swimmers were more overloaded by external and internal stimuli in comparison to good swimmers.

Studies by other researchers supported Nideffer's findings. Zaichowsky (1980) reported that the TAIS is an effective tool in predicting successful performance in elite track athletes. Jackson (1980), who conducted a similiar study on female collegiate swimmers and divers and Aronson (1981), who studied elite gymnasts, also found that the TAIS was a strong predictor of successful performance. All three of these studies showed that the TAIS accounted for a greater percentage of the performance variance than the more traditonal instruments surveyed by Morgan (1980). These traditional instruments did not take into account the many situational variables that influence behavior (Zaichkowsky, Jackson, and Aronson, 1982).

For example, Landers, Furst and Daniels (1981) looked at the relationship between anxiety and the TAIS attentional scales. They found that better shooters (rifle, pistol, skeet and trap) were less likely to be overloaded with external stimuli and were less likely to make mistakes because they narrowed attention too much. However, the TAIS was unable to distinguish between attentional abilities of shooters in different shooting events or the gender of the shooters.

Martin (1983) studied the utility of MAR and CET for predicting the basketball free-throw shooting accuracy of high school players. He found that compared to high CET players, high MAR performers had better free-throw percentages. This was an indicator that the MAR scale had greater predictive validity than the CET scale; a contrast to the Landers, et al., (1981) study. He felt that this information would assist coaches in identifying and assisting athletes with their ability to perform free-throws.

Reis and Bird (1982) also attempted to look at the predictive validity of psychological instruments in sport. They performed a two part investigation on whether or not a self report measure of broad or narrow attentional style could predict cue processing ability on a task that required the processing of peripheral cues. In Experiment 1, it was hypothesized that broad attenders would be superior to narrow attenders. Two separate probe techniques were used to measure peripheral cue processing. Results indicated marginal support for prediction on the first probe and strong support on the second probe. These results supported the predictive ability for the RED and BET scales of the TAIS. In experiment 2, in an attempt by the experimenters to manipulate the level of anxiety and to observe the subsequent effects on the cue processing

ability of broad and narrow attenders, subjects received either positive or negative false feedback. Broad attenders who received positive feedback processed peripheral cues faster than all other subjects. However, Reis and Bird concluded that the interaction between the width of attention, broad or narrow, and the feedback condition, positive or negative, suggested that the attention/performance relationship was quite complex and required more study.

In more recent years, studies have provided contradictory information on the predictive ability of the TAIS. Kirschenbaum and Bale (1980), in their study of golfers, suggested that the TAIS measure of attention in daily life might not be sufficiently specific to performance on the golf course. They suggested that a golf specific TAIS might help more in identifying the attentional style of golfers.

Vallerand (1983) studied the TAIS's ability to distinguish between good, average and poor decision-makers in basketball. His findings supported Van Schoyck and Grasha's (1981) results in indicating that the TAIS was not sensitive enough to identify differences in attentional style between performers at different levels. Furthermore, a discriminant analysis performed on decision-making skills

(the ability to select the best option out of several alternatives) revealed that the TAIS was unable to predict good and poor decision makers.

However, Wilson, Ainsworth and Bird (1985) did find that the TAIS was able to differentiate between good and poor concentrators. Eleven male university volleyball players completed the TAIS. The good concentrators exhibited significantly lower scores for BET and BIT than did the poor concentrators. The good concentrators also appeared to have a more narrow focus of attention than did the poor concentrators.

And finally, Maynard (1986) in his study of rugby players found that although the TAIS was unable to differentiate between two ability groups, the test was able to differentiate attentional styles between experienced and less experienced players.

In summary, it appears that there is a contradiction in the research on the TAIS's predictive validity. While some studies indicate that the TAIS can differentiate between groups, other studies were unable to achieve similar results. These conflicting results question the TAIS's sensitivity to attentional differences between groups.

SPORT SPECIFIC TAIS

Van Schoyck and Grasha (1981) examined the ability of a tennis-specific version of the TAIS (T-TAIS) to indicate attentional style and predict match play. In their comparison of the TAIS to the T-TAIS, they found that based upon a higher test-retest and internal consistency, the T-TAIS was a more accurate indicator of attentional style. Further, the T-TAIS was shown to have a more consistent relationship to tennis ability than the TAIS and was more valid and accurate in distinguishing between players of different skill levels. The results of this study pointed out the ability of sport specific tests of attention to indicate a more precise estimate of attentional processes than general tests.

Albrecht and Feltz (1987) developed a baseball/softball batting (B-TAIS) version of each TAIS attentional subscale. They compared the reliability and validity of the B-TAIS to the TAIS. The B-TAIS demonstrated a higher test-retest reliability on five of the six subscales and higher internal consistency on all of the subscales. Batting performance was positively related to all the B-TAIS subscales assessing effective attentional deployment and negatively related to all subscales assessing ineffective

attention. In addition, significant positive correlations also existed between the B-TAIS ineffective attentional subscale scores and competition trait anxiety. These relationships were not found with the general TAIS.

A study by Taylor (1980) also supported the utility of the sport-specific TAIS instruments to discriminate performance levels in sport. He found that a soccer specific TAIS was better able to distinguish between groups than was the original TAIS. This was particularily true in the BET and BIT subscales.

Van Schoyck and Grasha (1981) suggest that situation specific measures of attention are capable of producing somewhat more stable results than are general assessment instruments. Albrecht and Feltz (1987) present a logical explanation for increased stability associated with situation-specific measures of attention. The questions associated with a situation-specific test describe an identical attentional context in each item across all testing sessions. The ambiguity of the general TAIS leads to different interpretations of the same item. For example, the NAR question, "It is easy for me to direct my attention and focus narrowly on something" may conjure up in the subject's mind, the ability to narrow attention when reading a book or driving a car. In the B-TAIS the

corresponding question, "It is easy for me to direct my attention and focus narrowly while I bat", is more likely to be interpreted in regard to the same behavior. Nideffer (1985) states that content validity decreases the likelihood that two different people (interpreters) will infer two (or more) different things on the basis of the same score. By structuring questions to be as specific as possible, it reduces the likelihood of different interpretations of the same question.

It would appear, based on the foregoing review, that:

1. Sport-specific TAIS tests have a higher reliability and validity than the general TAIS test.

2. Sport-specific TAIS tests are more accurate than the general TAIS instrument in distinguishing between players of different skill levels.

3. Sport-specific TAIS tests are more sensitive to the athlete's attentional style.

CHAPTER III

METHODS AND PROCEDURES

SUBJECTS

The subjects chosen for this study consisted of sixty-four (64) amateur wrestlers in the province of Alberta, Canada. They were divided into two main groups: thirty-two (32) Senior High School wrestlers with one to two years of wrestling experience and thirty-two (32) with three or more years of wrestling experience.

THE INSTRUMENT

The instrument was an adapted version of the Test of Attentional and Interpersonal Style (the TAIS) designed by Nideffer (1976a). In particular, the section dealing with attentional abilities was adapted from its original form. Questions describing general attentional situations were

reworded to describe wrestling specific situations. Items dealing with specific wrestling situations were modified from the original TAIS items with an attempt to maintain as much as possible the original content structure and wording of the test. This version was labeled as the Wrestling-TAIS (W-TAIS). The content validity of each item was verified by two independent reviewers who possess extensive backgounds in both sport psychology and amateur wrestling. When necessary, the items were re-written to incorporate both the wrestling specific situation and the original TAIS design to the satisfaction of the verification reviewers.

COLLECTION OF DATA

1. The tests were administered to the athletes by the author at the Alberta Amateur Wrestling Association Provincial Camp in Jasper, Alberta held between July 30 and August 5, 1989. Subjects were asked to complete the forms at their convenience under the supervision of the author.

2. Athletes were asked to sign a consent form before participating in the study.

3. The athletes were then asked to complete the two

paper and pencil measures of attentional style (e.g., the general form (TAIS) and the wrestling specific version (W-TAIS)). The order of the tests was counterbalanced with one half of the test booklets being W-TAIS/TAIS and the other half TAIS/W-TAIS.

ANALYSIS OF THE DATA

This study involved exploring the attentional style of amateur wrestlers. Attentional style according to Nideffer is determined by the seven attentional scales (BET, BIT, NAR, OET, OIT, RED, and INFP). Therefore, in order to assess if differences would occur between the attentional style of wrestlers as determined by the TAIS and the W-TAIS, the following statistical analysis was conducted:

1. An interscale correlation was conducted for the TAIS and the W-TAIS. This was performed to compare the relationships within the subscale scores of the TAIS and the W-TAIS. This would determine if both tests were measuring similar attentional constructs.

2. An analysis of variance (ANOVA) was conducted

between the seven scales of the TAIS and the corresponding seven subscales of the W-TAIS to determine if there were significant differences between the two tests as determined by the scale scores. The scale scores were also plotted on profile sheets to identify the relationships between the effective and the ineffective subscales.

3. An analysis of variance was also conducted to determine if the two groups of wrestlers (1 to 2 years of experience and 3 or more years of experience) differed on the seven subscales of the TAIS and the W-TAIS. The scale scores were also plotted on a profile sheet to identify the relationships between the effective and the ineffective subscales.

4. Finally, the reliabilities of the TAIS and the W-TAIS were investigated using the Kuder-Richardson alpha coefficient. The internal consistency for each of the seven subscales, was calculated by relating each individual's responses on all of the questions that load on each of the subscales.

The $p < .05$ level, was set as the criterion level for statistical significance for all of the tests in this study.

CHAPTER IV

RESULTS AND DISCUSSION

INTRODUCTION

The major purpose of this study was to examine the similarity of the interscale correlations of the two tests and to identify whether or not the two tests generate similar attentional profiles. These results would then answer the question of whether there are any differences which exist in the attentional style of high school wrestlers as measured by the TAIS (designed by Nideffer, 1976) and the wrestling specific version of the TAIS (W-TAIS). The second purpose of the study was to identify if one test was more discriminative in identifying experience levels. Finally, both tests were analyzed to determine the reliability of their results.

The results were organized as follows:

1. A comparison of the interscale correlational data for the TAIS and the W-TAIS.

2. A comparison of scale scores on the W-TAIS and the TAIS using the ANOVA procedure. In addition, a

profile of the scale scores of each test is presented.

3. A comparison of scale scores on the W-TAIS and the TAIS as a function of experience using the ANOVA procedure. In addition, a profile of the scale scores on each of the tests as a function of experience is presented.

4. The reliability coefficients of each scale in each test as measured by the Kuder-Richardson alpha coefficient measuring internal consistency.

INTERSCALE CORRELATION

An interscale correlation of the seven subscales was conducted on both the TAIS and the W-TAIS (see Table 1). The results for the two tests were quite similar. However, the TAIS had a greater number of significant correlations (18) than the W-TAIS (14). Of particular note was the MAR/RED correlation. In the W-TAIS the MAR/RED correlation had a very low correlation (r = .02), while the TAIS revealed a significant correlation (r = .28).

In contradiction to the results obtained by Van Schoyck

Table 1

W-TAIS/TAIS Intercscale Correlations

	W-TAIS						
	BET	OET	BIT	OIT	NAR	RED	INFP
BET	-						
OET	-.37*	-					
BIT	.49*	-.21	-				
OIT	-.32*	.60*	-.32*	-			
NAR	.32*	-.38*	.19	-.46*	-		
RED	-.24	.36*	-.46*	.36*	.02	-	
INFP	.27*	-.17	.77*	-.24	.18	-.47*	-

	TAIS						
	BET	OET	BIT	OIT	NAR	RED	INFP
BET	-						
OET	-.40*	-					
BIT	.60*	-.37*	-				
OIT	-.35*	.58*	-.32*	-			
NAR	.51*	-.37*	.31*	-.48*	-		
RED	-.22	.34*	-.39*	.26*	.28*	-	
INFP	.45*	-.23	.75*	-.27*	.13	-.41*	-

* $p < .05$
N = 64

and Grasha (1981) in their study, the TAIS and the W-TAIS exhibited similar interscale correlations, with the TAIS having a greater number of significant correlations (TAIS = 18; W-TAIS = 14). Van Schoyck and Grasha (1981) found that the tennis TAIS revealed a greater number of significant correlations than did the general TAIS (T-TAIS = 19; TAIS = 13). They suggested that the specific frame of reference may have made the item content on the tennis TAIS less ambiguous and thus reduced the amount of error variance in the responses. Their suggestion was not supported by this study. The differences between the results obtained in the two studies, may be indicative of the differences between the attentional style of wrestlers and the attentional style of tennis players. Another explanation for these differences, may be a function of a writing artifact. It may indicate that the tennis items are simply more specific to tennis than the wrestling items are to wrestling or that either set of items are better written than the other.

The individual correlations were quite similar to the results achieved by both Van Schoyck and Grasha (1981) and Vallerand (1983). However, the significant positive correlation achieved in the NAR/RED correlation in the TAIS (.28) is somewhat surprising. Previous interscale correlations on other studies have revealed very low

positive NAR/RED correlations in the TAIS (Van Schoyck and Grasha, NAR/RED = .03; Vallerand, NAR/RED = .06). The tennis TAIS showed a low negative relationship (NAR/RED = -.13). Although not significant, this relationship is more in line with Nideffer's theoretical construct of the relationship between effective and ineffective narrow focus of attention. One would expect to see a significant negative relationship between an effective and an ineffective subscale. In the case of the BET/OET and BIT/OIT, this negative correlation holds true. However, there appears to be very little relationship between the subscales of NAR and RED.

The effective/ineffective relationships of BET/OET and BIT/OIT revealed very similar significant relationships on both tests. The BET/OET for the W-TAIS indicated a correlation of r = -.37, while the TAIS indicated a correlation of r = -.40. The BIT/OIT showed a correlation of r = -.32 for both the TAIS and the W-TAIS. These significant negative correlations better reflect Nideffer's theoretical construct of the relationship between the effective and ineffective scales, than with NAR/RED. The similar results indicate that both of the tests are revealing similar relationships.

SCALE SCORES AND ANOVAS

Scale scores and analyses of variance, shown in Table 2, were performed to determine if the means for the subscales of the TAIS were different than the corresponding scores for the W-TAIS. BET, OIT and INFP were significantly higher on the TAIS than W-TAIS, while the MAR and RED were significantly higher on the W-TAIS than the TAIS.

There doesn't appear to be any immediate explanation for why BET, OIT and INFP were significantly higher on the TAIS and the MAR and RED were significantly higher on the W-TAIS. However, these results did show that the two tests generate different attentional profiles.

One explanation why the INFP is significantly higher on the TAIS than the W-TAIS may be a function of a more controlled environment in a wrestling specific context. In the general test, questions were asked to determine how much information individuals must process in society as a whole. While the activity in the respondent's world may seem very busy and overloading, the confined environment of the sport of wrestling may seem less demanding.

Table 2

Scale Scores and ANOVA Results for Wrestlers on the W-TAIS and the TAIS

	W-TAIS (n = 64)		TAIS (n = 64)		ANOVA F
	M	SD	M	SD	
BET	13.44	2.66	14.73	2.85	9.48 *
OET	16.84	5.23	17.95	2.66	0.62
BIT	18.70	3.91	19.03	3.90	0.41
OIT	11.70	4.02	12.83	4.02	4.07 *
MAR	30.63	5.50	27.63	5.42	11.17 *
RED	27.88	4.97	25.58	4.87	7.75 *
INFP	42.13	7.37	44.45	7.27	5.73 *

Note: Degrees of Freedom for the ANOVAS are 1 and 62.

* $p < .05$

Figure 1 indicates that although the scale scores generate different attentional profiles, the effective/ ineffective attentional subscales appear to vary together in a similar profile for both tests. The subjects presented the same effective/ineffectice relationship when responding to either of the tests.

SCALE SCORES AND ANOVAS: EXPERIENCE LEVELS

Scale scores and ANOVA results were performed to determine if the means for the subscales of the TAIS were different than the corresponding scores for the W-TAIS as a function of years of experience. This was conducted to determine if either of the tests could discriminate between wrestlers with 1 to 2 years experience and those with three or more years of experience in the sport of wrestling. The W-TAIS and TAIS scale scores and ANOVAs are shown in Table 3 and Table 4.

There were no significant differences in the TAIS scores between the 1 to 2 years of experience and the 3 or more years of experience groups. However, on the W-TAIS there was a significant difference on the BET subscale. Subjects with three or more years of experience scored significantly higher than those who had 1 to 2 years of experience.

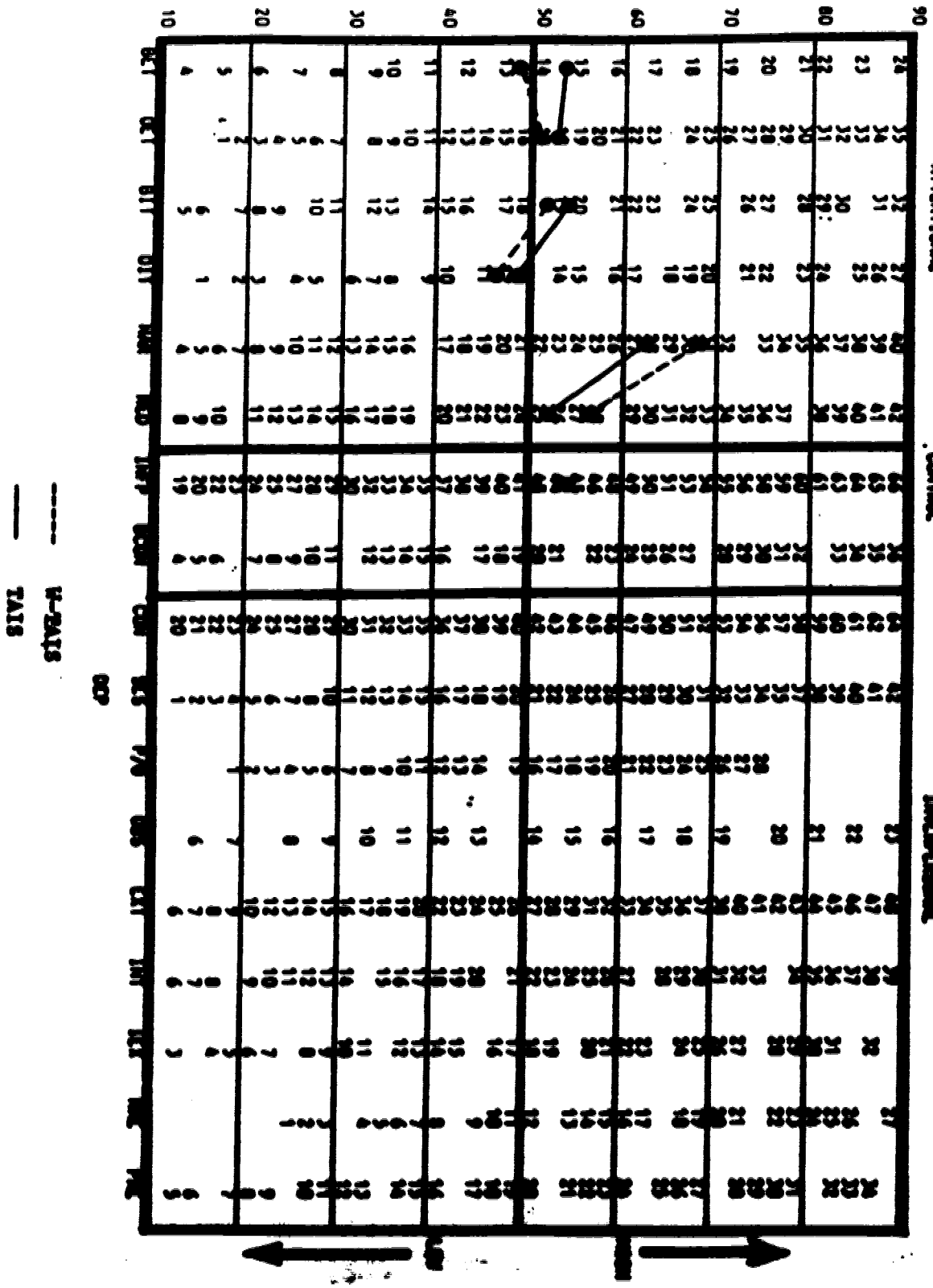

Figure 1. Profiles of TAIS and M-TAIS Scores (N=64)

Table 3

W-TAIS Scale Scores and ANOVA Results of Wrestlers as a Function of Years of Experience

	1 to 2 YEARS (n = 32)		3 or MORE YEARS (n = 32)		ANOVA F
	M	SD	M	SD	
BET	12.72	2.48	14.16	2.68	4.97 *
OET	17.42	4.02	16.22	6.21	0.91
BIT	18.03	4.22	19.38	3.50	1.92
OIT	11.63	3.94	11.78	4.16	0.02
NAR	30.47	5.48	30.78	5.63	0.05
RED	28.41	5.20	27.34	4.75	0.73
INFP	41.34	8.58	42.91	5.97	0.72

Note: Degrees of Freedom for the ANOVAS are 1 and 62.

* $p < .05$

Table 4

TAIS Scale Scores and ANOVA Results of Wrestlers as a Function of Years of Experience

	1 to 2 YEARS (n = 32)		3 or MORE YEARS (n = 32)		ANOVA F
	M	SD	M	SD	
BET	14.53	3.20	14.94	2.47	0.32
OET	18.19	4.62	17.72	5.17	0.15
BIT	18.88	4.44	19.19	3.33	0.10
OIT	13.47	4.18	12.19	4.28	1.47
MAR	26.69	5.24	28.56	5.51	1.94
RED	24.81	4.21	26.34	5.42	1.60
INFP	45.03	7.83	43.88	6.65	0.41

Note: Degrees of Freedom for the ANOVAS are 1 and 31.

* $p < .05$

The results of the scale scores and ANOVAs of both the TAIS and the W-TAIS as a function of years of experience, reveal that the W-TAIS has the ability to discriminate between the two levels of experience on the BET subscale. The W-TAIS BET of wrestlers appears to improve with experience. The higher BET may be indicative of the need for wrestlers to externally scan their opponent for offensive openings while simultaneously being aware of their opponent's offensive maneuvers. Wrestlers who do not possess this cognitive skill may either drop out of wrestling early or develop the skill as a result of experience. The results of this study fail to support the findings of Maynard (1986) that the TAIS is able to distinguish between experienced and less experienced athletes. However, this study does, to a small degree, support the findings of Van Schoyck and Grasha (1981) and Albrecht and Feltz (1987) that a sport specific TAIS may be more sensitive in distinguishing between different groups than the general test.

Figure 2, which gives a profile of W-TAIS scale scores as a function of years of experience, indicates that wrestlers with 1 to 2 years of experience have an ineffective BET/OET relationship, while wrestlers with 3 or more years of experience possess an effective BET/OET relationship. It appears that this relationship either

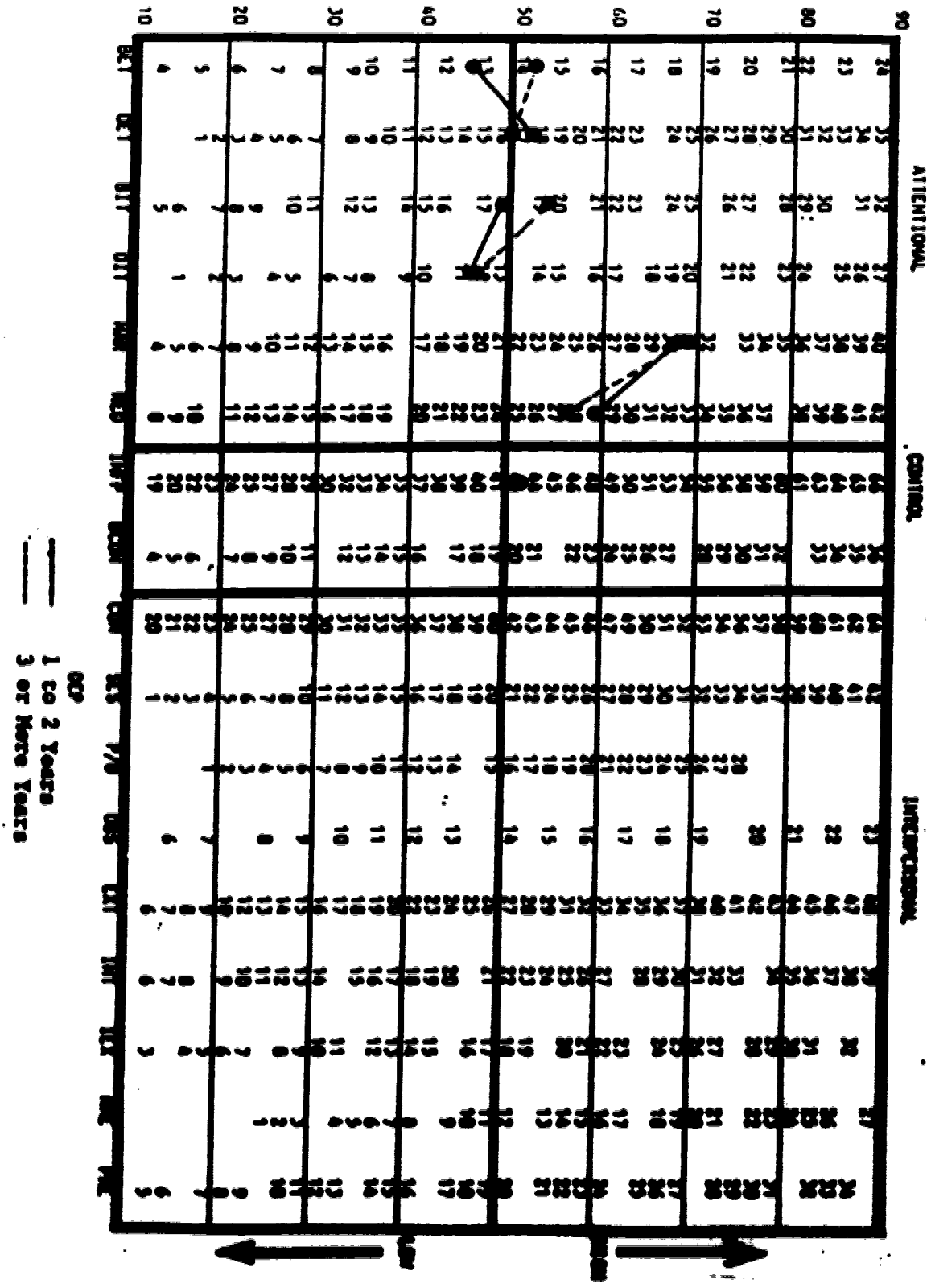

Figure 2. V-TAIS Scores as a Function of Experience (N=32)

improves with experience or over time eliminates wrestlers who do not have an effective BET/OET relationship.

At this particular level, where technical ability, physical skills and additional mental skills all contribute to an effective performance, an ineffective BET/OET relationship is probably not the deciding factor in whether or not a wrestler drops out of the sport. Inexperienced wrestlers, who are overwhelmed by all of the defensive and offensive techniques and strategies required of them, probably indicate they have difficulty dealing with all of this information. With experience, the techniques and strategies would become more familiar. Wrestlers would become more efficient at identifying cues indicating which technique his opponent was about to utilize, which strategies his opponent was using and which openings were available for offensive maneuvers. Thus, an initially ineffective attentional focus, would, through learning, become more effective.

The TAIS profile, as a function of experience, shown in Figure 3, gives a similar profile of the effective/ ineffective relationships as appeared in the W-TAIS profile. However, the relationships of BET/OET and BIT/OIT appear to be more neutral in the TAIS profile than in the W-TAIS profile. The W-TAIS may be more sensitive to and

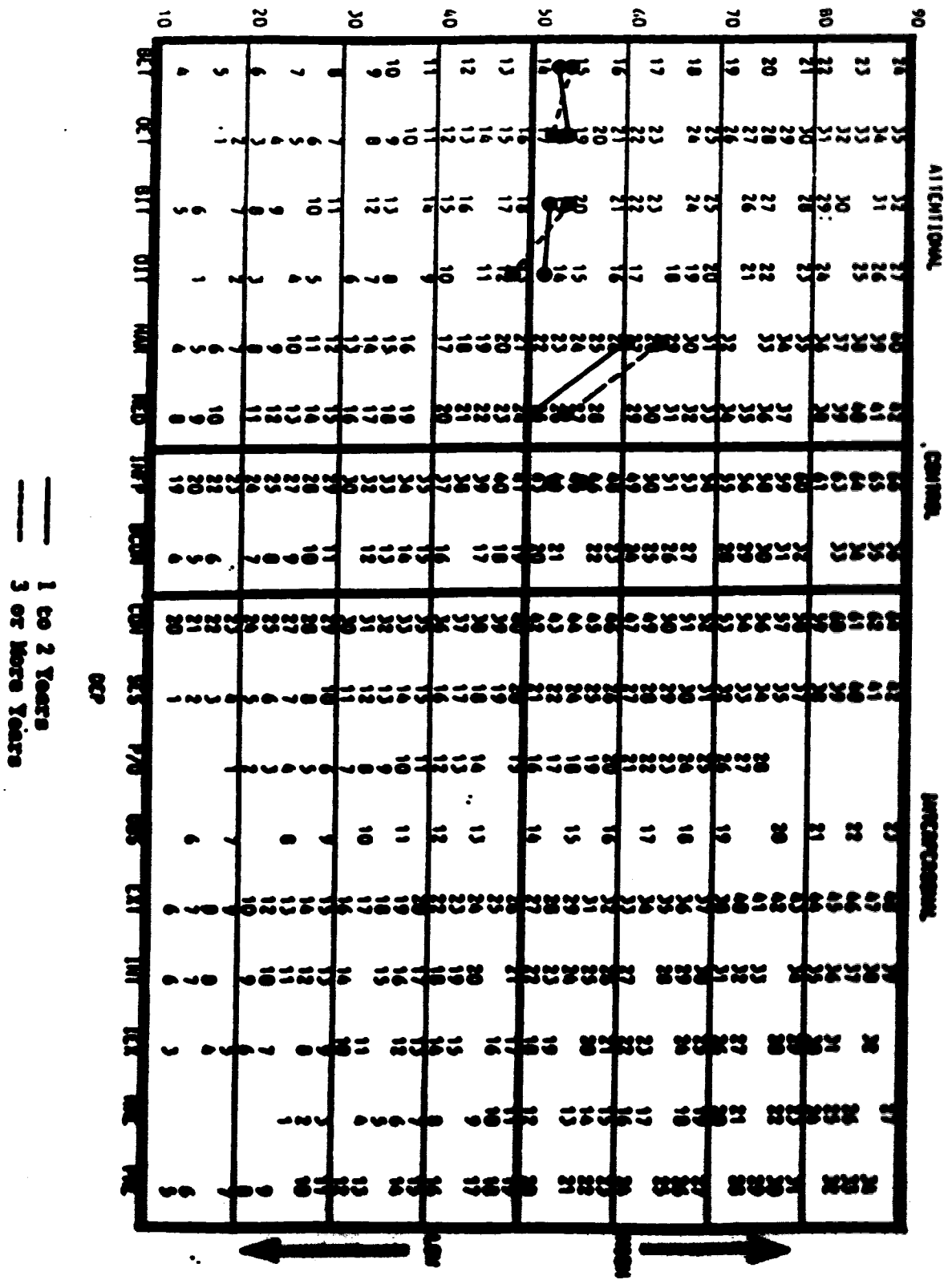

Figure 3. Profile of TAIS Scores as a Function of Experience (N=32)

give a stronger indication of these effective/ineffective relationships than the TAIS would.

RELIABILITY

The Kuder-Richardson Formula for internal consistency was utilized to establish the reliability of the seven attentional scales on both the TAIS and the W-TAIS. The alpha coefficients are presented in Table 5. For the TAIS attentional scales, the coefficients ranged from a high of r = 0.688 for the NAR scale to a low of r = .253 for BET. For the W-TAIS attentional scales, the coefficients ranged from a high of r = .762 for the INFP scale to a low of r = .450 for RED. All of the correlations were significant at the .05 level. With the exception of the NAR scale, the alpha coefficients were all higher for the W-TAIS than the coefficients for the TAIS.

Based on the results of both the study done by Van Schoyck and Grasha (1981) on a tennis TAIS and the study performed by Albrecht and Feltz (1987) on a baseball/ softball batting TAIS, it was expected that the W-TAIS would possess a higher internal reliability than the TAIS. In the Van Schoyck and Grasha study, all of the T-TAIS subscales, with the exception of the RED (TAIS = .16;

Table 5

Reliability of the W-TAIS and the TAIS

	Internal Consistency Kuder-Richardson alpha	
Scale	TAIS (n=64)	W-TAIS (n=64)
BET	.253	.528
OET	.531	.729
BIT	.524	.714
OIT	.599	.661
NAR	.688	.621
RED	.426	.450
INFP	.521	.762

* $p < .05$

T-TAIS = .44), showed higher internal reliability than the TAIS. In this study, the TAIS exhibited quite a low reliability.

In the Albrecht and Feltz study, all of the B-TAIS subscales displayed higher internal reliability than the TAIS subscales. In this study, the W-TAIS revealed higher internal reliability than the TAIS on all of the subscales with the exception of the NAR subscale. In the NAR subscale the TAIS possessed a correlation coefficient of r = .688, while the W-TAIS revealed a correlation coefficient of r = .621. Therefore, the W-TAIS reinforced previous literature supporting the ability of the sport-specific tests to achieve a higher internal reliability than the general test. This suggests that the W-TAIS is a more reliable assessment of attentional style for wrestling than the TAIS.

However, the internal reliability coefficients in this study for both the TAIS and the W-TAIS were generally lower than previous studies reported by Griffiths (1982), Nideffer (1985) and Van Schoyck and Grasha (1981). The coefficients were more comparable to the Albrecht and Feltz study (1987) but, were still on the whole lower. These low scores may be attributed to the age group of the subjects. In the previous studies, the age group of the subjects was

significantly older than the High School subjects analyzed in this study (ie. mean age of the Van Schoyck and Grasha study was 29; SD = 9.8). The normative group chosen by Wideffer when he was originally designing the questionnaire, consisted of 300 college and graduate students (Wideffer, 1985). Duran et al. (1987), Gipps et al. (1983) and Reynolds (1982) all discuss the importance of taking into consideration the reading comprehension level of subjects when designing and administering a test. Responses on the questions for both the TAIS and the W-TAIS may become more consistent as a function of age.

It should be noted that, since the reliability of the individual differences on this study are quite low, caution should be used when interpreting the results of this study. Wideffer (1985) suggests that for psychological tests, correlations ranging from .60 to .90 are considered to be good. If this level was used as the criterion for an acceptable standard of reliability, five attentional subscales on the W-TAIS (CET, BIT, OIT, NAR, and INFP) and one on the TAIS (NAR) would be considered acceptable for displaying internal reliability.

One interpretation for the low reliability of the TAIS, may be the nature of the TAIS's questions. Since the general TAIS questions tend to be more ambiguous than the

environment-specific W-TAIS, the various questions that load on each scale may be interpreted differently. Therefore, individuals answering these questions may deliver different responses, which result in a low internal consistency.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY AND CONCLUSIONS

The first purpose of this study was to construct a wrestling specific version of Nideffer's Test of Attentional and Interpersonal Style (Nideffer, 1976). With the assistance of two verification experts, a wrestling specific TAIS was developed. Although the W-TAIS displayed higher internal reliability scores than did the TAIS, the reliability scores were low for both tests. These results indicate that the questions on both of the tests may have to be rewritten to take into consideration the reading comprehension of the subjects.

The second purpose of this study consisted of comparing the attentional processes as measured in the TAIS and those attentional processes as measured in the W-TAIS. In the first method of comparison, an interscale correlation, both tests exhibited similar correlations. The conclusion here is that the relationships between the various subscales was similar for the TAIS and the W-TAIS.

The second method of comparison was achieved by comparing scores on the seven selected scales and performing ANOVAs on the TAIS and W-TAIS. Although there were a number of scale scores significantly higher on both tests, when the effective/ineffective relationships were examined using profile sheets, each of the tests revealed similar relationships. Therefore, despite significant differences in a number of the comparable sub-scales of the TAIS and the W-TAIS the group profiles of each test were quite similar.

The final purpose of the study consisted of a comparison of wrestlers at two levels of experience to determine if the TAIS and/or W-TAIS would identify attentional differences as a function of their years of experience in the sport. The method of analysis for this purpose was achieved by comparing mean scale scores and performing analysis of variance on both the TAIS and the W-TAIS as a function of years of experience. The W-TAIS was able to distinguish between the levels of experience in only the BET subscale, while the TAIS was unable to distinguish between the levels of experience. The two experience levels were further analysed using a profile of the scale scores in the W-TAIS. This revealed that the group with 3 or more years of experience possessed an effective attentional focus in the BET/OET relationship,

while the group with 1 to 2 years of experience, possessed an ineffective focus in this relationship. These results were not as evident in the analysis of the TAIS.

RECOMMENDATIONS

The following recommendations for further study are made after the completion of this study;

1. The W-TAIS should be put through an item analysis procedure to refine the scales. As with the original design of the TAIS, this would involve correlating each item contained in a subscale with the subjects total score for the subscale after correcting for the item's inclusion in the total subscale score (Nideffer, 1985). Items would have to correlate more highly with the scale for which they were designed, than they did with any of the other scales. This would help improve the internal consistency of the test.

2. A longitudinal study should be conducted comparing the TAIS and the W-TAIS profiles of athletes entering the sport to their profiles after 5 to 10 years of experience. This would give an indication of whether

present data identifying a different profile as a function of experience is just indicative of a selection mechanism. This would also help determine whether or not a sport-specific TAIS is more sensitive to changes with experience than the general TAIS.

3. Internal reliability of the TAIS should be studied comparing different age groups or cognitive levels. This should give an indication of whether or not the low internal consistency achieved in this study was a function of cognitive ability and/or age.

BIBLIOGRAPHY

Ahart, F.C. "The effect of score differential on basketball freethrow shooting efficiency." Masters thesis, University of Alberta, 1965.

Albrecht, R.R. and Feltz, D.L. "Generality and specificity of attention related to competitive anxiety and sport performance". Journal of Sport Psychology, 9, 231-248, 1987.

Aronson, R.M. Attentional and interpersonal factors as discriminators of elite and non-elite gymnasts. Unpublished doctoral dissertation, Boston University, Boston, 1981.

Blaser, P. and Schilling, G. "Personality tests in sport". International Journal of Sport Psychology. 7, 22-35, 1976

Birrel, S. "The need for achievement". Donnelly, P. and Birrel, S., Motivation and sport involvement: The needs for stimulation and achievement. CAPHER Sociology of Sport Monograph Series, Ottawa, 1978.

Boney, R. The role of attentional processes, subjects sex and stress in the decoding of non-verbal information, Unpublished doctoral dissertation, California School of Professional Psychology, 1982.

Cratty, B.J. Psychology in contemporary sport: Guidelines for coaches and athletes. Englewood Cliffs, N.J.: Prentice-Hall, 1973.

Endler, N.S. "The person versus the situation: A pseudo issue?" A response to Alker. Journal of Personality, 41, 287-303, 1973.

Endler, N.S. The role of person by situation interaction in personality theory. In C.D. Spielberger and I.G. Sarason (Eds.), Stress and Anxiety, 1, 145-164, 1975.

Fisher, A.C. New direction in sport personality research. In J.M. Silva III and R.S. Weinberg (Eds.), Psychological foundations of sport (pp.70-80), Champaign, IL: Human Kinetics, 1984.

Gallwey, T.W. Inner tennis: Playing the game. New York: Random House, 1976.

Griffiths, G. Focus of attention and free-throw shooting performance. Unpublished masters thesis, University of Alberta, Edmonton, Alberta, 1982.

Jackson, C.W. The relationship of swimming performance to measures of attentional and interpersonal style. Unpublished doctoral dissertation. University of Boston, Boston, 1980.

Kane, J.E. Psychological correlates of physique and physical abilities. In G.S. Kenyon (Ed.), Contemporary psychology of sport. Chicago: Athletic Institute, 1970.

Kane, J.E. Personality research: The current controversy and implications for sport studies. In W.F. Straub (Ed.), Sport psychology: An analysis of athlete behavior. Ithaca: Mouvement Publications, 228-240, 1978.

Kirschbaum, D. and Bale, R. "Cognitive-behavioral skills in golf: Brain power". Suinn, R.M. (Ed.), Psychology in Sport, Burgess Publishing Co., Minneapolis, Minnesota, 1980.

Klien, G.S., Barr, H.L. and Wolitzky, D.L. Personality. Annual Review of Psychology, 18, 467-580, 1967.

Lamotte, S. Attentional and interpersonal style in marital relationship. Unpublished doctoral dissertation, California School of Professional Psychology, 1981.

LaPlace, J.P. Personality and it's relationship to success in professional baseball. Research Quarterly, 25, 313-319, 1954.

Landers, D.M. "Motivation and performance: The role of arousal and attentional factors." In W.F. Straub (Ed.). Sport psychology: An analysis of athletic behavior. Ithaca, New York: Mouvement Publications, 1978.

Landers, D., Furst and Daniels, F.S. Anxiety/attention and ability level in open and closed shooting activities. Paper presented at a meeting of the North American Society of Psychology of Sport and Physical Activity, Boulder, Colorado, 1981.

Lyon, L.P. A method for assessing personality characteristics in athletics: The athletic motivation inventory. M.A. thesis, California State University, San Jose, 1972.

Martens, R. Sport Competition Anxiety Test. Human Kinetics Publisher, Champaign, Illinois, 1977.

Martin, R.M. Effective of attentional focus and basketball free-throw percentages: An attempt at prediction. Unpublished masters thesis. California State University, Fullerton, California, 1983.

Maynard, I.W. Attentional styles in rugby players. Unpublished masters thesis. University of Victoria, Victoria, B.C., 1986.

Mischel, W. Toward a cognitive social learning reconceptualization of personality. Psychological Review, 34, 397-404, 1971.

Morgan, W.P. Sport personology: The credulous-skeptical argument in perspective. In W.F. Straub (Ed.), Sport psychology: An analysis of athlete behavior. Ithaca: Mouvement Publications, 218-227, 1978.

Morgan, W.P. and Castill, D.L. Psychological characteristics of the marathon runner. Journal of Sport Medicine and Physical Fitness, 12, 42-46, 1972.

Morgan, W.P. Prediction of performance in athletics. In P. Klavora and J.V. Daniel (Eds.), Coach, athlete and the sport psychologist. Champaign: Human Kinetics Publishers, 173-186, 1979.

Morgan, W.P. Test of champions: The iceberg profile. Psychology Today, 14, 92-94, 1980.

Morgan, W.P. The trait psychology controversy, Research Quarterly for Exercises and Sport, 51, 50-76, 1980.

Nideffer, R.M. Test of attentional and interpersonal style. Journal of Personality and Social Psychology. 34, 394-404, 1976.

Nideffer, R.M. Predicting human behavior. A theory and Test of attentional and interpersonal style. Enhanced Performance Associates, 1985.

Nideffer, R.M. An interpreter's manual for the test of attentional and interpersonal style. Rochester, N.Y.: Behavioral Research Applications Group, 1977.

Nideffer, R.M. Issues in the use of psychological tests in applied settings. The Sport Psychologist, 1, 18-28, 1987.

Reis, J. and Bird, A. "Cue processing as a function of breadth or attention. Journal of Sport Psychology, 4, 64-72, 1982.

Reichmann, S.W., and Grasha, A.F. A rational approach to developing and assessing the construct validity of a student learning style scales instrument. Journal of Psychology, 87, 213-223, 1974.

Rostad, F. The effects of attention control training on performance in specific basketball game situations. Unpublished masters thesis. University of Alberta, Edmonton, Alberta, 1982.

Rushall, B.S. Environment specific inventories: Developmental procedures. International Journal of Sport Psychology, 9, 97-110, 1978.

Schmalzer, R.W. Comparisons of attentional and interpersonal style across two cultures, West Germany and the United States. Unpublished doctoral dissertation, California School of Professional Psychology, 1981.

Silverman, J. The problem of attention in research and theory in schizophrenia. Psychological Review, 71, 352-379, 1964.

Singer, R.N. Psychological testing: What value to coaches and athletes. International Journal of Sport Psychology, 19, 87-106, 1988.

Taylor, A.H. The attentional style of soccer players. In Burwitz L. (Ed.) British Proceedings of Sport Psychology, XI, BASP Conference, Sheffield City Polytechnic, 1980.

Vallerand, R.J. Attention and decision making: A test of the predictive validity of the Test of Attentional and Interpersonal Style (TAIS) in a sport setting. Journal of Sport Psychology, 5, 449-459, 1983.

Van Schoyck, S.R. and Grasha, A.F. Attentional style variations and athletic ability: The advantages of a sport specific test. Journal of Sport Psychology, 3, 149-165, 1981.

Vealy, R.S. Conceptualization of sport confidence and competitive orientation: Preliminary investigation and instrument development. Journal of Sport Psychology, 8, 221-246, 1986.

Watchel, P. Conceptions of broad and narrow attention. Psychological Bulletin, 68, 417-429, 1967.

Williams, J.M. Personality characteristics of the successful female athlete. In W.F. Straub (Ed.), Sport psychology: An analysis of athlete behavior. Ithaca: Mouvement Publications, 249-255, 1978.

Willis, J. Three scales to measure competition related motives in sport. Journal of Sport Psychology, 4, 338-352, 1982.

Wilson, V.E., Ainsworth, M. and Bird, E.I. Assessment of attentional abilities in male volleyball athletes, International Journal of Sport Psychology, 16: 4, 296-306, 1985.

Wine, J. "Test of anxiety and direction of attention." Psychological Bulletin, 76, 92-104, 1971.

Wing, C.W. and Wallach M.A. College admissions and the psychology of talent. New York: Holt, Rinehart and Winston, 1971.

Yousif, S.F. Relationship between achievement motivation and focus of attention in sport. Unpublished doctoral dissertation, University of Alberta , Edmonton, Alberta, 1985.

Zaichowsky, L. Attentional and interpersonal profiles of world-class track athletes. Unpublished study, Boston University, Boston, 1980.

Zaichowsky, L., Jackson, C., and Aronson, R. "Attentional and interpersonal factors as predictors of elite athletic performance. Orlic, T. et al., (Eds.), Mental training for coaches and athletes, Ottawa, 1982.

Appendix A, pages 64 to 68 contain R.M. Nideffer's "Test of Attentional and Interpersonal Style" (Journal of Personality and Social Psychology, 34, 394-404, 1976). This section was removed due to an inability to attain copyright permission from the author.

APPENDIX B

WRESTLING TEST OF ATTENTIONAL AND INTERPERSONAL STYLE

WRESTLING TEST OF ATTENTIONAL AND INTERPERSONAL STYLE

1. When my coach speaks to me prior to the match I find myself distracted by the sights and sounds of the tournament.

2. When my coach talks to me I find myself distracted by my own thoughts and ideas.

3. When scouting an opponent, all I need is a little information about his strengths and weaknesses and I can come up with a large number of strategies and tactics to combat him with.

4. When competing, my thoughts are limited to my opponent and what is presently occurring on the mat.

5. I need tp have all the information about an opponent before I can develop a strategy to wrestle him.

6. When I wrestle, I focus on a specific technique or tactic and work logically towards the completion of this.

7. When wrestling on the ground I move from technique to technique sometimes attempting 3 or 4 techniques before the official stands us up.

8. When I wrestle I seem to work hard for a while, lay off for a while, work hard again and wrestle the whole match in these fits and starts.

9. I use a wide variety of seemingly unrelated techniques when I wrestle.

10. When I'm wrestling, thoughts of various techniques and sequences come at me so rapidly that I can't keep up with them.

11. Wrestling tournaments seem to be a noisey, bright, crowded world of confusion.

12. When I wrestle, it is easy to block out everything but my opponent.

13. In the corner between rounds, I focus on one suggestion my coach makes and miss the majority of his comments.

14. After losing an easy point or after a poor call by the officials, I have a difficulty forgetting the situation and concentrating on the rest of the match.

15. I think about one technique at a time.

16. When I'm wrestling I get caught up in my thoughts and become unaware of what my opponent is doing.

17. I often think about new techniques and strategies that I can develop to improve my wrestling.

18. The wrestling environment is exciting and keeps me involved.

19. The range of techniques I use are broader than most wrestlers.

20. My technique selection is more limited than other wrestlers.

21. It is easy for me to direct my attention and focus narrowly on attacking or defending my opponent.

22. It is easy for me to focus on attacking my opponent and defending myself at the same time.

23. It is easy for me to concentrate on wrestling and ignore everything else that is happening around the mat.

24. It is easy for me to keep all the additional sights and sounds of the tournament from interfering with my concentration on the match.

25. When watching a wrestling tournament an exciting throw on another mat will grab my attention.

26. It is easy for me to concentrate on a single technique.

27. When watching a match, I am good at identifying one or two significant flaws in my opponent's wrestling.

28. With all of the things going on around a wrestling tournament, It's difficult for me to think about anything for any length of time.

29. I am good at quickly analyzing complex situations around me, such as identifying which movements are meant to distract me and which are legitimate techniques.

30. When I'm wrestling I'm faced with so many choices of techniques to use that I can't make up my mind.

31. When I get anxious or nervous during a match my attention becomes narrowed and I focus on one or two techniques and fail to see openings for other moves.

32. When I am wrestling, I am aware of everything that is happening in the match, such as the score, the cautions, the time remaining, changes in strategy, etc..

33. It is easy for me to keep my mind on one strategy for the entire match.

34. I am good at rapidly scanning an opponent's defense and identifying openings or weaknesses.

35. I get confused trying to watch a wrestling tournament where there are a number of matches going on at the same time.

36. When wrestling, I have so many techniques and variations of techniques on my mind that I become confused and forgetful about which to use in which situation.

37. In easy matches I only use one or two techniques and fail to use the wide variety of movements that are available.

38. Between matches it is easy for me to forget about the stress of the tournament by listening to some music or talking to friends.

39. In matches I get caught because I am watching out for one technique and get caught in an another.

40. When wrestling I can plan several moves ahead.

41. Watching a wrestling tournament, I can keep track of what is happening on several different mats at the same time.

42. I have difficulty telling which techniques or strategies my opponent is attempting to use on me.

43. When my coach talks to me at a wrestling tournament, he has to repeat himself because I get distracted by irrelevent sights sounds around me.

44. When going over with my coach what went wrong and what went right in a match, my interpretations are too broad bringing in irrelevent information.

45. I get scared on when wrestling because my thoughts get stuck on the move I'm attempting to set up and I fail to see my opponent's moves coming.

46. I get confused at busy tournaments

47. I am good at glancing at a wrestler and quickly picking out several of his habits, such as always reaching with his right arm.

48. In tournaments I get so anxious that when I get on the mat I forget to use the techniques I know.

49. When I'm in the middle of a wrestling match my mind is going a mile a minute.

50. I can figure out how to attack an opponent just by looking at his stance and how he moves.

51. When drilling, I have a tendancy to get caught up working on one technique and forget about working on other areas of more importance.

52. It is easy for me to select the best techniques for me, from all of the techniques my coach and other people have taught me.

53. Sometimes when I'm wrestling my opponents movements come at me so rapidly they make me lightheaded or dizzy.

54. When I am being taught a new technique, the coach has to repeat things because I get distracted by my own irrelevant thoughts.

55. Sometimes I can not tell if my coach or teammates are serious or kidding because I fail to look at the way they are smiling or hear their joking tone.

56. At a tournament, I can watch other matches going on with my mind a complete blank except for reflecting the things I see.

57. On my team I am considered socially outgoing.

58. As a wrestler I have a lot of energy.

59. With my involvement in wrestling it seems I am always on the go.

APPENDIX C

LETTER TO PARENTS

May 28, 1989

To: Parents

From: Department of Athletics

Re: Psychological Testing of High School Wrestlers

It is now well recognized in the sport world that the psychological, mental or cognitive dimension of athletic performance, sooner or later, is as important for athletic success as the physical skill aspect. High performance athletes in all sports recognize this and are now spending more of their time in mental preparation and mental training programs. Implementing such a program with young athletes has two important objectives:

1. It makes them aware of the importance of the psychological side of athletic performance.

2. It provides them, their parents and their coaches with some insight into the structure and dynamics of certain, highly relevant psychological *"skills"* which underly performance.

Here at the University of Alberta, a psychological skills training program for intercollegiate athletes has been in effect for several years. The program revolves around a psychological *"profile"* of each athlete, which is used to identify mental or cognitive strengths and weaknesses which are directly related to performance. The profile is then used to construct individual mental training programs for each athlete based upon their own individual or personal attributes, skills, or abilities.

The basic psychological test which is used for *"profiling"* each athlete is the Test of Attentional and Interpersonal Style (TAIS) by Robert M. Nideffer, a San Diego sport psychologist. The test indicates how an individual customarily attends (i.e. concentrates) to the objects, people, and events in his or her daily life (i.e. one's attentional style). This identification of how a person focuses their attention is directly relevant to helping them concentrate more effectively in the execution of their athletic tasks.

In my capacity as Head Coach of the University of Alberta Wrestling Team I have a great deal of interest in identifying attentional strengths and weaknesses in wrestlers. As a graduate student completing my master's degree at the university in sport psychology, I have an interest in the development of tests to identify attentional styles. Combining both of these roles, I am presently developing a wrestling specific TAIS (W-TAIS) which will include the environmental variables present in the sport of wrestling

I am administering the W-TAIS and the TAIS to see which test is a more accurate indication of attentional style for wrestlers. The tests take approximately 15 minutes each to complete. They will not be used as a *"personality"* test but rather as an analysis of how a person focuses his attention in different wrestling situations. In order to gather the information required I need the support of High School wrestlers and felt that parental consent should be attained before testing should take place. If you wish your child tested for attentional style please sign below and have your son bring the form to the provincial camp in Jasper.

I approve: _____

Thank-you for your cooperation and interest.

Sincerely,

Michael Payette
Head Coach
University of Alberta Wrestling Team