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**THE ATTENTIONAL STYLE AND COMPETITIVE ANXIETY
IN TAE KWON DO PRACTITIONERS**

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Sung-Il Cho
December 1994

DEDICATION

This study is dedicated to my whole family, especially to my mother and father, for their total support in the years it took to complete this project.

ACKNOWLEDGEMENTS

The writer wishes to express appreciation to those persons who have participated in the completion of this research. Special thanks to Dr. Pat Beitel, whose knowledge, constant support, and guidance made this seemingly unattainable project become a reality; Ralph Jones, who have given me pleasurable discussions and encouraged me to finish this study; and Dr. Dennie Kelley, who offered support and insight to the fulfillment of this thesis.

I would also like to thank Mrs. Glenda Dills, Mrs. Jennifer Combs, Mrs. Jo Allen, and June Oakley, secretaries in the Department of Human Performance and Sport Study, for their kindness and sweet heart.

ABSTRACT

The purpose of this study was to determine whether attentional and/or anxiety characteristics are related to performance of Tae Kwon Do forms among the beginning and intermediate practitioners in Tae Kwon Do, and to examine the relationship between the sport competitive anxiety and Tae Kwon Do performance.

The subjects ($N = 37$) for this study were 17 beginning, 10 intermediate, and 10 advanced Tae Kwon Do practitioners, and all were at least 18 years old. To investigate the research hypotheses, TAIS, SCAT, CSAI-2, and behavioral measurement were used as the assessment instruments. One-way ANOVA, correlation, t -test, and simple statistical analyses were conducted to analyze the data.

The results of this study indicated that, first, advanced Tae Kwon Do practitioners scored significantly higher on the Broad Internal subscale (BIT) of the TAIS than the beginning practitioners. However, the intermediate level practitioners were not significantly different from either the beginning or advanced level performers. Second, high scoring practitioners on the INFP (Information Processing) scale scored much higher than normal-ranged scoring practitioners and made much fewer mistakes on the belt improving test. Finally, the low mistakes group scored much lower than high mistake group in cognitive state

anxiety subscale of the CSAI-2. Those conclusions supported the theory and research of Nideffer (1976b, 1981, 1990) and Martens et al. (1977, 1983). However, the results of this field are still controversial.

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CHAPTER I

INTRODUCTION

Recently, sport psychology has become a popular sub-area in the field of psychology in Korea, as well as in western Europe and North America. Singer (1976) defined sport psychology as "the science of psychology applied to athletes and athletic situations." Since Korean coaches and psychologists have applied sport psychology to improve sport performance, especially with the Olympic teams, Korean teams have demonstrated improvement in the Olympic games and other international sport competition. As mentioned by Watt, a hockey coach in 1979, most coaches want information from sport psychology that takes much of the guess work out of training, skill development, and the creation of competitive attitudes. Nideffer (1981) insisted that a major goal for the sport psychologist is to be able to measure the base level of an athlete's abilities, and then to identify those situational factors that facilitate improvement of the athlete's abilities.

Predictive ability, based on psychometrics, and the shaping of future performance of athletes through the utilization of various motivational and coaching techniques are important components of sport psychology (Klavora & Daniel, 1978). By presenting more accurate psychological

information psychologists have contributed to helping athletes and coaches perform effectively in the sport setting, especially in competition, It is believed that sport psychologists have examined the mental aspects of sport performance. Among the mental aspects in sport performance, attentional focus and anxiety factors have been examined to define the relevance of mental factors to complex physical activities (Albrecht & Feltz, 1987; Aronson, 1981; Depalma & Nideffer, 1977; Hendricks, 1992; Maynard & Howe, 1989; McGowan, Telton, & Tobacyk, 1990; Nougier, Ripoll, & Jena-Francois, 1989; Summers & Maddocks, 1986; Summer, Miller, & Ford, 1991; Reis & Bird, 1982; Van Schoyck & Grasha, 1981; Wilson & Kerr, 1991).

In sport psychology texts (e.g., Eysenck, 1982; Schmidt, 1980; Silva & Weinberg, 1984; and Singer, 1993), authors have covered the psychology of attention and anxiety. There is no doubt that attention to the most appropriate cue, and the optimal anxiety levels are critical variables for performing in a sport setting. Although the importance of attentional factors and anxiety in sport performance has been recognized by athletes and coaches, the nature of the attention-performance relationship and the anxiety-performance relationship have not been clear, and studies of the attention-performance relationship and the anxiety-performance relationship have not resulted in consistent results.

Nideffer (1976) proposed that all individuals have their own attentional style as they have a certain personality, and that an individual's thoughts and feelings can be described by width and direction. He maintains that the demands of the sport, and/or particular position played, dictate the particular attentional style that will produce the best performance. As part of his work, Nideffer (1976) developed the Test of Attentional and Interpersonal Style (TAIS) to describe the level of attentional styles and the information processing abilities of athletes.

After Nideffer's (1976) work regarding attentional styles and measurement techniques in sport, Landers (1981, 1985) emphasized the need for greater use of behavioral measures and physiological indicators instead of only using questionnaires in studies of attention and sport behavior. Therefore, this study will use both the TAIS (paper-pencil test) and behavioral measures in examining the relationship of attention and performance.

Martens (1977) proposed that individuals' tendencies to become anxious and worried about failure in sport competition are obvious, and anxiety does not affect all individuals in the same way. As the result of the study of the relationship of competitive trait anxiety on perceived state anxiety, Martens (1977) developed the Sport Competition Anxiety Test (SCAT) to investigate what effect trait anxiety has on sport performance. Martens, Burton,

Rivkin, and Smith (1980) developed a version of the Competitive State Anxiety Inventory (CSAI) which measured competitive state anxiety. Afterwards, the research on the CSAI (Martens, Burton, Vealey, Bump, & Smith, 1983) led to a revision and development of the CSAI-2 (Competitive State Anxiety Inventory-2).

The SCAT, CSAI-2, and the TAIS have been used in many of the studies using athletic populations. These include: gymnastics (Aronson, 1982); swimming (Nideffer, 1974); tennis (Van Schoysk & Graska, 1981); riflery (Nideffer, 1977; Etzel, 1979); baseball (Albrecht & Feltz, 1987); basketball (Summers & Ford, 1990; Summers, Miller, and Ford, 1991; Wilson & Kerr, 1991); soccer (Fisher & Tayer, 1980); rugby (Maynard & Howe, 1989); gymnastics (Aronson, 1982); and volleyball (Hendricks, 1992). However, none of these studies have focused on Tae Kwon Do.

Tae Kwon Do is a sport that originally was a martial art. Tae Kwon Do was an official event of the Asian Games in Seoul, Korea, in 1986, and was a demonstration event during the 1988 Seoul Olympics. Currently, more than 20 million people are practicing Tae Kwon Do in over 140 countries as well as in the United states (Park, Park, & Gerrard, 1989). However, little systematic and scientific study has been conducted in Tae Kwon Do.

In practicing Tae Kwon Do, rhythm and timing are very important elements, and the focus of attention is a major

factor for success in Tae Kwon Do (Kim & Kim, 1986).

Attention in Tae Kwon Do refers to the total concentration to kick and punch at an exact point with maximum power (Chun, 1976).

Tae Kwon Do skills mainly consist of three techniques:

(a) basic techniques, i.e., stances, blocks, strikes, and kicks; (b) forms, poomse in Korean, and (c) sparring techniques (Kim & Kim, 1986). In Tae Kwon Do sparring, there is more than one way to deal with the same situation. Effective fighters should be flexible and use variation of techniques in their sparring. A fighter will never defeat an opponent with memorized combinations of techniques. Only by remaining alert and adaptable can he/she succeed in the sparring.

In Tae Kwon Do sparring, the attentional sequence that is involved consists of a narrow-external focus as the athlete feints. Then, immediately after the move, the athlete needs to broaden attention, still keeping it externally directed so that he/she will see how his/her opponent reacts. Next, the athlete needs to shift his/her thoughts to an internal focus as he/she quickly analyzes and selects an attack.

During an exchange of punches and kicks, or when countering an opponent's move, there is no time to analyze and prepare for the opponent's behaviors and to prepare an attack. Thus, the elite Tae Kwon Do competitor would focus

his/her attention externally in order to detect and analyze the opponent's move, and attention would shift primarily along the width dimension. In another words, the elite Tae Kwon Do practitioners should be externally broadly focused in the competition, and should quickly shift their attention internally as they analyze their opponent's behaviors.

Out of my teaching experience of Tae Kwon Do, I have found that there are individual differences in practicing the forms among the beginning and intermediate practitioners under stressful situations. Although I have taught a group of students Tae Kwon Do forms within a limited time frame, some individuals memorized the sequence of the movements faster than the others and performed the forms better than the others. Also, some individuals made mistakes much more under highly stressful situations of competition, even though they did not make mistakes during practice sessions.

Forms (poomse in Korean) in Tae Kwon Do are a series of defending attacking movements performed in sets of patterns against imaginary opponents. The practice of forms is the most important element in the development of proper Tae Kwon Do technique. Required for advancement at every level from beginner through master, forms serve a multidimensional role, aiding in the development and refinement of coordination, balance, timing, breath control, and rhythm (Chun, 1976). All of these are essential skills to the Tae Kwon Do practitioner. In order to perform the poomse (Tae

Kwon Do forms) successfully, practitioners need to memorize and execute about twenty movements of blocking, striking, punching, and kicking properly into a set of patterns. It is interesting to apply Nideffer's theory to this situation. According to Nideffer's (1981) Test of Attentional and Interpersonal Style, TAIS, several key points were made.

First, athletes who score high on the broad-internal attentional focus see themselves as able to effectively integrate ideas and information from several different areas (Nideffer, 1976b). From this notion, we can hypothesize that advanced practitioners in executing Tae Kwon Do forms would need a broad internal focus because they are more capable of analyzing and rehearsing their performance better.

Second, people who score high on the overload scales tend to make more mistakes because they become confused and overloaded with external or internal stimuli (1976b). From this assertion, a hypothesis can be extracted that attentional style of the low level performer in executing Tae Kwon Do forms would tend to be overloaded with external and/or internal stimuli and would tend to make more mistakes than higher level performer.

Third, the TAIS (Nideffer, 1976b) measures three major areas: (a) attentional area, (b) control area, and (c) interpersonal area. The control area contains two scales

which concern the amount of information an individual can effectively process and the amount of control they have over their own behavior (Nideffer, 1976b). According to Nideffer's theory, individuals with high scores on the INFP (Information Processing) scale of the TAIS think a lot and process a great deal of information. From this theory, a third hypothesis can be generated, that high scoring practitioners in the INFP scale tend to memorize the whole sequence of the Tae Kwon Do forms better and think about the cues better than normal-ranged scoring practitioners in the same practice period. In another words, high scoring Tae Kwon Do practitioners in the INFP scale would make fewer mistakes than normal-ranged scoring practitioners in the belt promoting test.

Kim (1986) stated that Tae Kwon Do, a means of self-expression and the control of attack, is a good practice for calming down from high anxiety. In fact, Tae Kwon Do masters emphasize the polite manner when teaching the martial arts because, if the technique is misused, then, it may result in misery. Here, the polite manner means that they should keep calming down in stimulating situations and they should not get excited easily (Kim, 1986). According to sport psychologists (Marten & Gill, 1976; Scanlan, 1977; Scanlan & passer, 1979), Successful performers tend to have lower in state anxiety, and unsuccessful performers typically have higher in state anxiety. Therefore, it is

possible to hypothesize that Tae Kwon Do practitioners who score higher and have fewer mistakes on the belt improving test should score lower in trait and/or state anxiety.

Purpose of the Study

This study has two purposes: (a) to determine whether attentional characteristics are related to performance of Tae Kwon Do forms among the beginning and intermediate practitioner in Tae Kwon Do, and (b) to examine the relationship between sport competitive trait and/or state anxiety and Tae Kwon Do performance.

Research Hypotheses

The following hypotheses will be tested :

1. Advanced Tae Kwon Do practitioners in performing Tae Kwon Do forms tend to have higher scores on broad internal focus (BIT) in the Test of Attentional and Interpersonal Style (TAIS) than lower level (beginning and intermediate) practitioners.
2. Tae Kwon Do practitioners who score high on the overload scales (External Overload, OET; Internal Overload, OIT) in the TAIS tend to make more mistakes in performing Tae Kwon Do forms than practitioners who score lower on the overload scales.

3. High scoring individuals on the INFP (Information processing) scale of the TAIS tend to memorize the whole sequence of the Tae Kwon Do forms better and tend to show higher scores on the belt improving test and fewer mistakes than low INFP scoring individuals.

4. Practitioners who have fewer mistakes in performing Tae Kwon Do forms on the belt improving test would be lower than practitioners who have more mistakes in trait anxiety and/or in the state anxiety factors, i.e., cognitive and somatic anxiety.

Definition of Terms

In the following section, the terms are defined according to how they are used in this study. When appropriate, both theoretical and operational definitions are stated.

Anxiety. An internal state of alertness or excitement.

1. State anxiety. An immediate or "right now" emotional response that can change from one moment or situation to the next, measured in this study by The Competitive Sport Anxiety Inventory-2 (CSAI-2). CSAI-2 produces scores on 2 state anxiety components, cognitive anxiety and somatic anxiety.

2. Trait anxiety. A general tendency to be anxious or stressed that is characteristic of a particular individual,

measured in this study by The Sport Competitive Anxiety Test (SCAT) .

Attention. The ability to concentrate on an object or a situation. Attentional dimensions include width and direction of attentional processes (Nideffer, 1976a) . Direction of attention refers to the amount of cues an individual can process (Nideffer, 1976b) .

Attentional characteristics (Attentional style) . The predisposition of an athlete to concentrate on an event in a particular manner utilizing the dimensions of width and direction (Nideffer, 1976a) , measured in this study by the Test of Attentional and Interpersonal Style (TAIS) (Nideffer, 1976b) .

In this study, attentional characteristic of importance are as follows;

1. Overload attentional scales.

* OET (External Overload): The higher score, the more mistakes due to being confused and overloaded by environmental information.

* OIT (Internal Overload): The higher score, the more mistakes individuals make because they think about too many things at once.

(In this study, performers were categorized by Z scores above 1.0 = High; below -1.0 = Low; and between +1 and -1 = Normal)

2. Broad Internal Focus (BIT). Individuals with this

attentional style see themselves as effectively integrating ideas and information from several different areas, as being analytical (Nideffer,1981).

3. Information Processing (INFP). High scorers think a lot and process a great deal of information.

Width of Attention. The amount of information an individual can attend to at any given moment. This can range from a broad focus incorporating many stimuli to a narrow focus incorporating very few stimuli (Nideffer, 1981).

Inconsistent performance. If a student tries a form several times, sometimes the performance will be good and sometimes it will not. In this study, investigator will record each individual's performance level once a week during the scheduled observation period.

Belt test score. The score which a student earns in the test for progress forward an improvement certificate.

Mistake. A movement out of correct sequence in a form or a movement executed incorrectly. In this study, the investigator will record how many mistakes each individual makes while he/she is performing Tae Kwon Do forms.

Good body coordination. In this study, earning higher score in the belt test indicates better body coordination.

Number of mistakes. The number of mistakes which a student made during the belt test, i.e., this number indicates how many times the student skipped the order and

executed an incorrect movement.

Overall evaluation grade. The grade which was evaluated through the semester by the instructor.

Memorizing Tae Kwon Do form sequence. Tae Kwon Do form is composed of about 20 movements of punching, kicking, and blocking. The performer should memorize those punches, kicks, and blocks in order and execute them in a set of pattern.

Performing. Executing Tae Kwon Do techniques.

Skill Levels.

1. Beginning practitioner; A new student, a white belt level in Tae Kwon Do.
2. Intermediate practitioner; Individuals with skill level between highly skilled practitioner and beginner. Yellow, green, and blue belt will be in this group in this study.
3. Advanced practitioner; Red and black belt people in Tae Kwon Do. A student who has precise movements and does not forget the sequence of the forms. They execute the right punching and kicking movements in the right direction with consistency.
4. Low level performer; A student who shows inconsistent performance. These students will sometimes forget the sequence of the forms and will execute kicks and punches incorrectly.

Poomse (Tae Kwon Do forms). A series of defending and attacking movements performed against imaginary opponents in

a set pattern (Park, Park, & Gerrard, 1989). Forms teach Tae Kwon Do students the proper way in which each technique (i.e., punches, kicks, blocks, etc.) is executed (Kim & Kim, 1986).

Assumptions

1. The Test of Attentional and Interpersonal Style (TAIS), the Sport Competitive Anxiety Test (SCAT), and the Competitive Sport Anxiety Inventory-2 (CSAI-2) are valid and reliable measures of athletes' characteristics.
2. Subjects did understand directions.
3. Subjects gave honest answers to all questions.

Limitations

The following limitations must be considered :

1. Subjects were selected from Tennessee Tae-Kwon-Do Judo College (TTJC), and credit and non-credit Tae Kwon Do classes at The University of Tennessee, Knoxville.
2. Advanced Tae Kwon Do athletes have earned a red or black belt or have won championship(s) in the contest.

Significance of the Study

The test of attentional style and competitive anxiety on Tae Kwon Do practitioners may provide a better understanding of the traits needed for better performance at each level.

This information can be helpful to instructors and practitioners alike. The result can be used to help practitioners improve while executing Tae Kwon Do Poomse during the early stages of learning. The results may stand as a reference to measure strengths and weaknesses, and to outline training procedures that will help practitioners develop into advanced level performers.

CHAPTER II

REVIEW OF THE LITERATURE

This review of literature will be discussed in 4 parts:

1. Attention and Sport Performance
2. TAIS and Athletic Research
3. Controversy of TAIS
4. Anxiety and Sport Performance

Attention and Sport Performance

Attention has been one of the most important aspects of analyzing athletic performance. The following quotation from William James in 1890 describes the attention well: "It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence, it implies withdrawal from some things in order to deal effectively with others, and is a condition which has a real opposite in the confused, dazed, scatter brained state" (Bakan, 1966, p. 5).

Sport psychologists believe that attentional processes are critical both when athletes compete and when they learn

their skills because orienting of attention allows the subject to focus to a cued location in the athletic situations (Dickensen, 1977; Lawther, 1972; Nougier, Ripoll, and Stein, 1989; Keele and Hawkins, 1982; Cratty, 1989). However, the expanding field of sport psychology is characterized by differing views regarding the relationship between attentional style and athletic performance.

Since James defined the attention in 1890, modern psychologists (Nideffer, 1976b; Wachtel, 1967) conceptualized the attention with two dimensions; breadth of focus and direction. Wachtel (1967) reported that overly-narrowed attention may result in poor orientation with resulting confusion and disorganization. Attention levels seem to go in waves, up and down, therefore, one cannot hold attention at peak effectiveness for very long. Nideffer (1976b) stated that attention can vary from very narrow focus to very broad, and attention can also vary from external to internal stimuli. According to Nideffer's theory (1976b), attention can be described on the basis of its width and direction at any time, and individuals have a characteristic style of attending to stimuli. Therefore, attentional style can be measured as a different individual variable, similar to personality traits.

Van Schoyck and Grasha (1981) raised a question about Nideffer's two-dimensional model of attention while demonstrating the superiority of sport-specific measures of

attentional style (tennis version of the TAIS, T-TAIS) in reliability and validity. Van Schoyck and Grasha's factor analysis supported the width (narrow-broad) dimension proposed by Nideffer, but not the directional (internal-external) dimension with two components, scanning and focusing.

In contrast, differential psychologist (Klein, 1976) proposed that "attention is said to be the process that actively selects the input to, operations in, and responses from the central operating space, thereby determining the direction of behavior." According to this theory, if attention has some kind of capacity limit, and if a primary task requires large amounts of that capacity, then little attentional capacity can be allocated to the secondary task. If this is true, then interference in performance of the secondary task should occur (Klein, 1976). Then, this type of interference can be measured by performance differences between conditions when a task is performed alone and when performed at the same time with another task (Klein, 1976).

TAIS and Athletic Research

The Test of Attentional and Interpersonal Style (TAIS) was developed in 1976 by Robert M. Nideffer in response to professional criticism of previously existing personality instruments. Nideffer (1976b) conceptualized the theory of

Attentional and Interpersonal Style on the theoretical constructs of Shakow (1962), Cromwell (1968), and Nideffer (1974); as well as the clinical observations of Mackinnon and Michels (1971), Frank (1961), and Nideffer (1976a). In developing the measurement, Nideffer assumed that: (a) there are two attentional dimensions, including width and direction that effect performance; (b) each individual has their own preferred attentional style; (c) attentional processes can be linked to both state and trait components; and (4) individuals' arousal level affects their attentional focus (Nideffer, 1981).

The TAIS (Nideffer, 1976b) is a 144 question, paper and pencil inventory witch measures individuals' attentional, control, and interpersonal styles which have been related to performance. Scores from the behaviorally based items provide component information for the 17 subscales.

The TAIS has become a very popular measurement tool in the field of sport psychology. However, some researchers have questioned the claims of TAIS in the areas of test-retest reliability, construct validity, and the predictive validity, and the results of research have been controversial. The following review of literature provides examples of the research that dispute and support Nideffer's TAIS.

Controversy of TAIS

Nideffer (1974) and associates used the test to determine attentional focus of swimmers ($N = 10$) at the University of Rochester. Statistically significant correlations between .50 and .90 suggested different performance scales regarding consistency of performers. These data indicated there may be a relationship between attention, anxiety, and performance (Nideffer, 1974)

In another study, Nideffer (1976b) related TAIS scores to actual behavior measures to examine the predictive validity of the TAIS. The results revealed that competitive college male swimmers ($N = 10$) scoring high on the Overloaded Scales of the TAIS had a tendency to choke under pressure ($r = .75$ for OET), or fall apart if they made early performance errors ($r = .59$ for OIT). Scores of swimmers rated by coaches as inconsistent correlated with the subscales of the TAIS in the area of external overload ($r = .60$) internal overload ($r = .67$), integrating thoughts ($r = .63$) and being unable to effectively narrow attention ($r = .63$)

Richards and Landers (1980) studied ($N = 159$) elite and non-elite shooters and examined the relationships between scores on the TAIS scale and several other variables: (a) level of experience, (b) shooting disciplines, (c) gender, and (d) competitive scores. Results showed that less

experienced shooters were shown to be overloaded with external stimuli. Males, in contrast to females, were more impulsive, had a more effective broad internal focus, and had higher self-esteem.

Van Schoyck and Grasha (1981) reasoned that a sport-specific measure of attentional style might be more reliable and valid than the general TAIS for specific sport events and developed a tennis version of the TAIS (T-TAIS). The T-TAIS produced higher test-retest reliability and internal consistency than the TAIS ($p < .01$). Also, Van Schoyck and Grasha (1981) questioned about Nideffer's two-dimensional model of attention. Van Schoyck and Grasha's research (1981) supported the width (narrow-broad) dimension proposed by Nideffer, but not the direction (internal-external) dimension. They described a bandwidth dimension with two components, scanning and focusing.

In a study of 78 college students, Reis and Bird (1982) hypothesized that broad attenders (high BIT) would be superior to narrow attenders in reaction time. The results revealed that broad attenders had faster reaction times ($M = 585$ msec) to a peripheral probe as compared to narrow attenders ($M = 730$ msec). Therefore, this study provided evidence supporting the predictivity of the RED and BET subscales of the TAIS.

Vallerand (1983) used 59 basketball players to discriminate among the skill levels on the TAIS, and

decision making abilities. He hypothesized that good, relative to average, and poor, decision makers would display a more positive "scan" factor (higher BET, BIT, and INFP scales) and a more adequate "focus" factor (low OET, but higher NAR scales). Results revealed no significant differences among the three groups. The only significant difference found ($p < .02$) was the fact that good decision makers were less overloaded by internal cues (OIT), but more overloaded by external stimuli (OET). Therefore, Vallerand (1983) supported Van Schoyk and Grasha's (1981) conclusion that the TAIS did not seem to be sensitive enough to pick up differences in attentional styles between performers of different skill levels.

Albrecht and Feltz (1989) conducted a study ($N = 29$): (a) to construct a baseball/softball batting (B-TAIS) version of each TAIS attentional subscale, (b) to compare TAIS and B-TAIS reliability, and (c) to compare TAIS and B-TAIS validity. The results of this study indicated that the B-TAIS demonstrated slightly higher test-retest reliability on five of the six attentional subscales, and was higher than the TAIS in internal consistency on all subscales. Second, internal consistency of the B-TAIS was higher than the TAIS on every attentional and information processing subscale, but none of the internal consistency coefficient differences between the B-TAIS and TAIS reached .05 level of statistical significance. Thus, the hypothesis was only

partially supported. Third, batting performance was positively related to all B-TAIS subscales assessing effective attentional deployment and negatively related to all subscales assessing ineffective attention. However, these relationships were not found with the general TAIS (Albrecht & Feltz, 1989).

Maynard and Howe (1989) examined ($N = 29$) the relationship between scores on the attentional subscales of TAIS and playing standard, age and position played within the sport of rugby. This study concluded that the halfbacks, who are the decision makers, reflected most closely Nideffer's concept of an effective attentional style and the attentional subscales discriminated minimally between rugby players of different ages and playing position.

Dewey, Brawley, and Allard (1989) conducted a study to determine the predictive validity of the TAIS in a controlled setting to investigate if attentional style was related to how visual information is processed. The results revealed when the TAIS attentional style scales were correlated with visual search rate for attention demanding target, no significant relationships were observed. Also, Dewey et al. (1989) concluded that the attentional style subscales were not valid in predicting how attention related visual information processed. Overall the results showed similar findings to that of Van Schoyck and Grasha (1981)

and Vallerand (1983).

McGowan, Talton, and Tobacyk (1990) hypothesized that successful powerlifters would score higher on measures of narrowing and internalization of attentional focus than less successful lifters. Scores analyzed with a discriminant analysis in the study showed that group differed significantly (Wilks Lambda = .94, chi square = 6.22 (N = 96), $p = .01$). The results of this study supported the predictive validity of Nideffer's TAIS.

Summers, Miller, and Ford (1991) evaluated the utility of a sport specific TAIS and examined the relationship between attentional style and competitive trait anxiety. In the study, the TAIS and a basketball-specific version (BB-TAIS) were administered to 110 basketball players classified into three skill level groups. Test-retest reliabilities of both attentional measures were significant and generally high (a range of $r = .58$ to $.91$ for TAIS and a range of $r = .69$ to $.83$ for the BB-TAIS). The internal consistency of BB-TAIS ($r = .66$ to $.84$) was higher than the original TAIS ($r = .24$ to $.76$) on all subscales. The validity of the direction dimension, however, remained inconclusive. Neither instrument was able to reliably discriminate between basketball players of different skill levels. There was no significant skill level effect for the SCAN and FOCUS scale scores on the TAIS. In contrast, a significant main effect of skill level was evident for the

SCAN and FOCUS scales on the BB-TAIS (Wilks' $\lambda = .89$, $F(4, 212) = 3.34$, $p < .05$). This study concluded that the use of the TAIS as a research instrument for examining attentional styles in sport was questioned.

Wilson and Kerr (1991) tested whether the attentional scales of the TAIS were correlated with the percentage of field goals and free throws made during a season by 12 male, varsity basketball players. The results supported Nideffer's prediction of a significant correlation ($r = .62$) between players' ability to narrow their focus of attention and their ability to shoot field goals during actual competition.

Ford and Summers (1992) examined ($N = 210$) the factor validity of these scales and to cross-validate the results. The analysis of the study failed to support the model and revealed that many of the subscales have insufficient factorial validity. Analysis of item content revealed some explanation for the poor discriminant validity of the TAIS.

Anxiety and Sport Performance

Since Psychological states have been considered to be the special consideration in sport, researchers have investigated the relationship between anxiety and sport performance (Hanin, 1979; Hall & Purvis, 1980; Gould, Petlichkoff, & Weinberg, 1984; Gould, Petlichkoff, Simons, &

Vevera, 1987; Hanson & Gould, 1988; Bird & Horn, 1990; Martin & Gill, 1991; Papavessis, Grove, McNair, & Cable, 1992; Swain & Jones, 1992; Krane, 1993)

In 1966, Spielberger delineated the conceptualization and measurement of anxiety by dividing anxiety into two types, state and trait anxiety. State anxiety (A-state) denoted an individual's situational reaction to some perceived threat, while trait anxiety (A-trait) indicated a somewhat stable characteristic of anxiety that is exhibited across many situations (Hall & Purvis, 1980).

According to drive theory, task complexity is a critical variable. On simple tasks, correct responses are dominant and a high A-state enhances performance on complex tasks, however, error tendencies are dominant with high A-state coming from performance (Silva & Weinberg, 1984).

As a differential view, Martens (1977) considered the competitive process was a situation as threatening to self-esteem or ego, and subsequently, individuals react with elevated state anxiety. Martens (1977) developed the sport competitive anxiety test (SCAT) to measure competitive trait anxiety. Six years later, Martens, Burton, Vealey, Bump, and Smith (1983) developed the competitive state Anxiety Inventory-2 (CSAI-2) to measure competitive state anxiety. The following review of literature provides examples of the research that investigate the relationship between trait/state Anxiety and sport performance.

Hall and Purvis (1980) investigated ($N = 30$) the effects of both trait anxiety and state anxiety on competitive bowling. Spielberger's Trait Anxiety Inventory and Spielberger's state Anxiety Inventory were administered to college students. One-way ANOVAs released that bowlers exhibiting high A-state prior to competition did not perform as well during the tournament. High A-trait bowlers also scored significantly higher on A-state before competition.

Gould, Petlichkoff, & Weinberg (1984) conducted a study with 40 intercollegiate wrestlers to examine antecedents of the relationship between, and temporal changes in cognitive, anxiety, somatic anxiety, and self-confidence components of the CAIS-2. Results of the analyses examining the predicted relationships between CAIS-2 levels and performance were contradictory. On one hand, no support was found for the predictions when Match 1 performance was examined. On the other hand, the prediction that cognitive anxiety would be a more powerful predictor of performance than somatic anxiety received some support in that match outcome and cognitive anxiety were found to contribute most to this marginally significant ($p < .08$) relationship.

Gould, Petlichkoff, Simons, and Vevera (1987) examined whether linear or curvilinear (inverted-U) relationships existed between CSAI-2 subscales and pistol shooting performance. As subjects, 38 police officers participated in this study. It was predicted that cognitive state

anxiety would be more related to performance than would somatic state anxiety. However, results using the intra individual analysis showed cognitive anxiety was not related to performance, but somatic anxiety was related to performance in a curvilinear (inverted-U) fashion.

Bird and Horn (1990) tested the relationship between level of cognitive anxiety and degree of mental errors in a sport of high school female softball game ($M = 202$). MANOVA revealed that the mean of the lower mental error group ($M = 19.72$) differed significantly from the mean of the higher mental error group ($M = 22.35$) in the cognitive anxiety subscale ($p < .01$)

In another study, Krane (1993) proposed the zone of optimal functioning hypothesis (ZOF), suggesting that each athlete has a specific hand width, or zone, of anxiety in which best performances will most likely be observed. Participants in this study were 16 members of college women's varsity soccer team. Unique cognitive anxiety and somatic anxiety zones were identified and it was hypothesized that athletes whose anxiety levels fell within these zones would be more successful than athletes whose anxiety levels were outside these zones. ANOVAs revealed that poorest performances were observed when athletes' cognitive and somatic anxiety were above their zones; performance, when anxiety was within or below cognitive and somatic anxiety zones, did not differ.

CHAPTER III

PROCEDURE

A specific description of procedures to be used was presented within the following sections : (a) selection of subjects; (b) selection of assessment instruments; (c) selection of skill tasks; and (d) data collection schedule. Each area was discussed separately.

Selection of Subjects

The subjects for this study were 17 beginning level, 10 intermediate, and 10 advanced Tae Kwon Do practitioners, and all were at least 18 years old. The students were learning Tae Kwon Do through the non-credit instructional program and through the credit program at The University of Tennessee, Knoxville. According to the rule of the World Tae Kwon Do Federation, unless specified, the order of belt classes is as follows: white, yellow, green, blue, red, and black. Advanced Tae Kwon Do practitioners wear red and black belt, beginning level Tae Kwon Do practitioners wear white belt, and intermediate level wear yellow, green, and blue belt. Selection of subjects was based on the following two prerequisites: (a) permission to be included in the treatment group from the master, and (b) adequate practice

time during the session to provide the necessary data for performance analysis. The master requested that advanced Tae Kwon Do practitioners were not placed in the performance group. The classes consisted of 17 beginning level and 10 intermediate level performers in Tae Kwon Do. None of the subjects were paid for participating in the study. Each subject was given a letter of explanation and asked to sign an informed consent statement (Appendix A) before participating in the study. One copy of the letter and informed consent was kept by the subject and one copy was kept by the investigator.

Selection of Assessment Instruments

The behavioral measurement scales used in this study have a history of use by sport psychology researchers. Even though the reliability and validity of the tests continue to be evaluated it was considered that each instrument may appropriately be used for adult groups in a sport environment. The measurement scales used in this study included: (a) the Test of Attentional and Interpersonal Style, TAIS (Nideffer, 1976b); (b) the Competitive State Anxiety Inventory-2, CSAI-2 (Martens, Burton, Vealey, Bump, & Smith, 1983); (c) demographic questionnaire; and (d) the Sport Competition Anxiety Test, SCAT (Martens, 1977).

Test of Attentional and Interpersonal Style (TAIS) (Nideffer, 1976b)

The Test of Attentional and Interpersonal Style (TAIS) was developed by Nideffer (1976b) to determine a person's attentional strengths and weaknesses using college students as subjects. It is a 144 question, paper and pencil inventory which measures individual's attentional, control, and interpersonal styles which have been related to performance (Appendix B). Scores from the 144 self-rating items provide component information for the 17 subscales (Figure 1). From these subscales only BIT, OET, OIT, and INFP were used to test the research hypotheses (Chapter I, pp. 9-10). Higher scores on BIT and INFP are more desirable, while lower scores on OET and OIT are more desirable.

The three of the attentional scales (BIT, OET, OIT) and INFP were the main focus of this study because of the information they provide that relates to performance. Nideffer (1976a) developed a four quadrant design that incorporates combinations of attentional abilities; broad external, narrow external, broad internal and narrow internal (Figure 2).

The Competitive State Anxiety Inventory-2 (CSAI-2)

The CSAI-2 (Martens et al., 1983) is a 27 question, paper and pencil inventory which measures an individual's

BET (Broad external attention): High scores on this scale are obtained by individuals who describe themselves as being able to effectively integrate many environmental stimuli at one time.

OET (External overload): The higher the score the more mistakes due to being confused and overloaded by environmental information.

BIT (Broad internal attentional focus): High scorers see themselves as effectively integrating ideas and information from several different areas, as being analytical.

OIT (Internal overload): The higher the score, the more mistakes individuals make because they think about too many things at once.

NAR (Narrow attention): The higher the score, the more effective individuals describe themselves in terms of ability to narrow attention (e.g. to study or read a book).

RED (Reduced attention): A high score indicates individuals make mistakes because they narrow attention too much, failing to include all of the task-relevant information.

INFP (Information processing): High scorers think a lot and process a great deal of information.

BCON (Behavior control): A high score indicates a tendency to be impulsive and/or to engage in behavior that could be considered anti-social.

CON (Control): A high score indicates the individuals sees self as being in, and needing, control over most interpersonal situations.

SES (Self-esteem): The higher the score, the more positive the self image.

P/O (Physical orientation): High scores indicate the person participated in, and enjoys, competitive athletics and physical activity.

OBS (Obsessive): High scores indicate a tendency to ruminate and worry about one particular thing without any resolution or movement.

EXT (Extroversion): Individuals who score high are warm, outgoing, need to be with other people, and tend to be the life of the party.

INT (Introversion): High scores indicate the person enjoys being alone with thoughts and ideas.

IEX (Intellectual expression): A high score indicates the person expresses thoughts and ideas to other people.

ANE (Negative affect expression): High scores are associated with a tendency to express anger and negative feelings to others.

PAE (Positive affect expression): A high score indicates the person expresses feelings of affection to others in both physical and verbal ways.

Figure 1

The Test of Attentional and Interpersonal Style Scales

Nideffer, R. M. (1981). The ethics and practice of applied sport psychology. Ithaca, New York: Movement Publications. pp. 78-79.

External	
Broad-External	Narrow-External
Optimal for reading complex sport situations. For assessing the environment. Used in team sports. Athletes with this ability have great anticipation.	This type of attention is required at the moment a response is given. Attention is narrowed and focused externally in order to hit a ball, react to an individual opponent
Broad-Internal	Narrow-Internal
Optimal for analyzing sport. Coaches use it to make game Plans, to anticipate the future and to recall past information. Quick learners have this ability.	Optimal for learning to become sensitive to your own body. Type of attention required in order to center and calm oneself, to rehearse a particular skill or move mentally.
Internal	

Figure 2

The four quadrants of attention in athletics.

Nideffer, R. M. (1981). The ethics and practice of applied sport psychology. Ithica, New York: Mouvement Publications. p. 25.

competitive state anxiety (Appendix C). The test items measured cognitive and somatic anxiety as well as self-confidence. Each of the subscales, cognitive anxiety, somatic anxiety, and self-confidence, consist of nine items each. The CSAI-2 is scored by determining a separate total for each of the subscales. Only scores for the cognitive and somatic state anxiety factors were used to test the research hypotheses (Chapter I, pp. 10-11). Lower scores in cognitive and somatic anxiety factors indicate lower state anxiety.

The Sport Competitive Anxiety Test (SCAT).

The SCAT (Martens, 1977) is a 15 item, paper and pencil inventory which measures an athlete's competitive trait anxiety (Appendix D). A lower score on the SCAT indicates lower trait anxiety.

Selection of Skill Tasks

The skill selected for this study was the Tae Kwon Do forms. The Tae Kwon Do forms composed of about 20 movements of kicks, punches, blocks, and strikes. Performing Tae Kwon Do forms is similar to gymnastics. These forms are a series of defending and attacking movements performed against imaginary opponents in a set pattern (Park, Park, & Gerrard, 1989). Different Tae Kwon Do forms were given to students

according to their belt color, for example, Tae-Kuk form 1 was for white belt, Tae-Kkk form 3 was for yellow belt, Tae-Kuk form 4 was for green belt, and Tae-Kuk form 5 was for blue belt. Scores for the task included a performance score and the number of mistakes during the belt test. The course grade was used as an additional performance score.

Data collection schedule

Data were collected during spring semester, 1994. The TAIS, SCAT, and demographic questionnaire (Appendix E) were administered to each beginning and intermediate, and advanced level Tae Kwon Do practitioners on one day during observation period of semester. The CSAI-2 was given to students about 30 minutes before the belt promoting test in the gymnasium which placed the students under a very stressful situation.

The period of data collection was 8 weeks for each group. After 4 weeks of teaching basic punches and kicks, and general Tae Kwon Do techniques, the investigator taught students the Tae Kwon Do forms. Students were then asked to perform the forms after receiving the instructions and practicing 10 times. The investigator recorded performance scores and the number of mistakes individually on the check list.

After 8 weeks of instruction the investigator tested

students for promoting belt level and recorded in the check list how many mistakes were made for each subject under a highly stressful situation. The instructor graded the performance of each subject through the semester and scored the performance of each subject in the belt promoting test.

CHAPTER IV

RESULTS

The data were collected and analyzed in order to determine if differences exist in the attentional style and control factors and in competitive state and/or trait anxiety among the beginning, intermediate, and advanced practitioners in Tae Kwon Do. Although 37 Tae Kwon Do practitioners chose to take part in the study, 3 subjects were eliminated because their answer forms contained incomplete data. The results are presented in relation to the hypotheses (Chapter I, pp. 9-10).

Research Question 1: BIT by skill level

First, it was hypothesized that advanced Tae Kwon Do practitioners in performing poomse tend to have higher scores on Broad Internal focus (BIT) in the TAIS than lower level practitioners. The one-way ANOVA calculated on BIT, Broad Internal focus of Attention, demonstrated a significant skill-level effect ($F = 4.67, p = .02$). Expectedly, advanced Tae Kwon Do practitioners ($M = 20.20, SD = 3.85$) scored significantly higher on the Broad Internal subscale than the beginning practitioners ($M = 16.21, SD = 2.45$). However the intermediate level practitioners ($M = 18.10, SD = 3.28$) were not significantly different from either the beginning or advanced level performers (Figure 3).

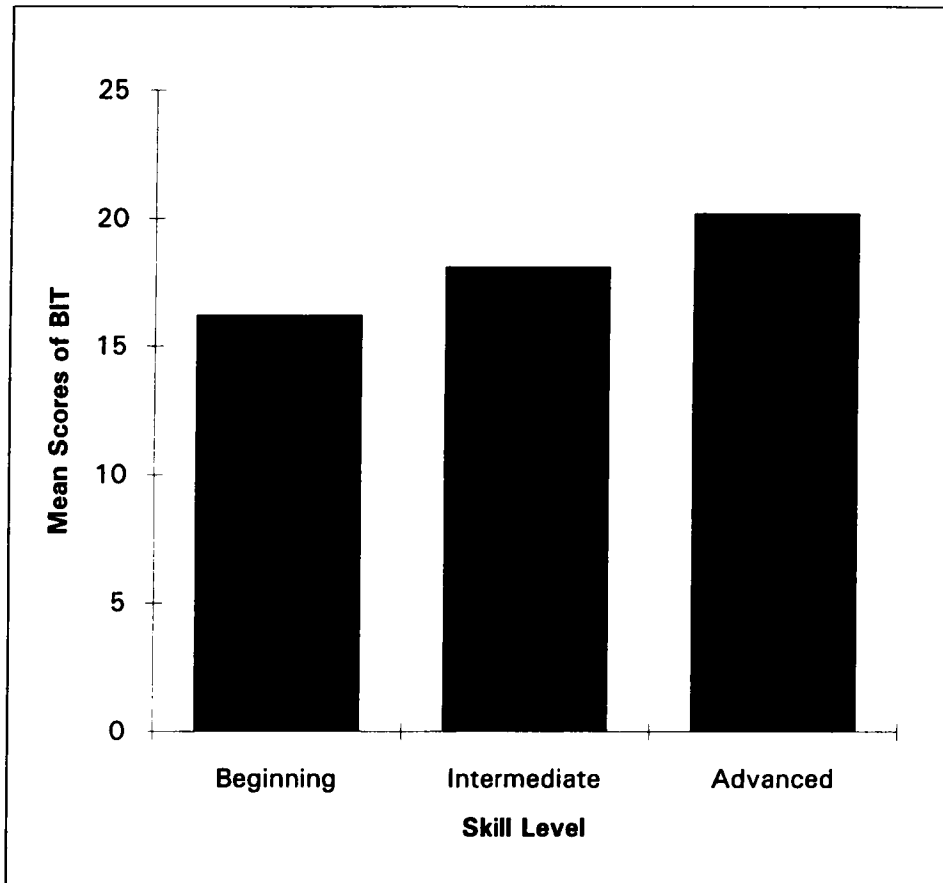


Figure 3
Significant Skill Level Difference for BIT

The post hoc test, student Newman-Kuels test, for the BIT variable grouped differently over skill levels (Table 1). Even though no difference was found between the advanced and intermediate levels, or between the intermediate and beginning levels, there was a significant difference between the advanced and beginning levels on the BIT subscale. Thus, the first hypothesis was partially supported (Chapter I, p. 9).

Table 1
Student-Newman-Kuels Test for Variable: BIT

SNK Grouping		Mean	N	Skill level
A		20.200	10	Advanced
A				
B	A	18.100	10	Intermediate
B				
B		16.214	14	beginning

*p < .05

Research Question 2: Relationship of Mistakes with Overload Scales

Based on the Pearson product-moment correlation analysis, the results did not indicate a significant relationship between OET and the number of mistakes ($r = .09$, $p = .6817$), or between OIT and the number of mistakes ($r = .06$, $p = .7703$). To examine the second hypothesis that Tae Kwon Do practitioners who score high on the overload scales (OET, OIT) in the TAIS tend to have more mistakes than normal-ranged scoring practitioners in performing Tae Kwon Do forms, a subsequent student t -test was also performed on the performance scores of the high OET score and high OIT score groups.

Practitioners within + or - one standard deviation of the mean were considered to be in the normal range for each factor. The range of more than + one in the standard deviation were considered to be high on overload scales. The results of t -test revealed that practitioners with high scores on OET and OIT made more mistakes in the belt improving test than practitioners with normal range of standard deviation (Table 2). However, the OET groups were not statistically different ($t = .95$, $p > .05$), nor were the OIT groups ($t = 1.35$, $p > .05$). Thus, the second hypothesis was not supported (Chapter I, p. 9).

Table 2

Simple Statistical Analysis:
High and Normal ranged practitioners
on Overload scales in the TAIS

Source of variance	High OET	Normal OET	High OIT	Normal OIT
Mean Number of Mistakes	3.0	2.0	3.6	2.2
Standard Deviation	2.32	1.71	2.28	1.83

Research Question 3: Relationship of Performance Scores with Information Processing Scores

Third, a correlational analysis on INFP and performance scores was conducted in order to determine if high scoring practitioners on the INFP (information processing) scale of the TAIS tend to memorize the whole sequence of Tae Kwon Do forms better and tend to show higher scores on the belt improving test and/or fewer mistakes than normal ranged INFP scoring practitioners. The correlation analysis of INFP with the number of mistakes and belt test scores across the whole group revealed no significant relationship effect among the variables ($r = .08$, $p = .6956$ for test score, $r = -0.13$, $p = .55$ for mistakes).

Subsequently, the practitioners were grouped into high ($z > 1.0$) or normal ($1.0 > z > -1.0$) INFP groups and a student's t-test was calculated on both performance scores, i.e., test score and number of mistakes (Table 3). Results of the two t-tests indicated that the High INFP practitioners had significantly higher test scores ($t = 5.039$, $p < .01$) and fewer mistakes ($t = 4.3626$, $p < .01$) than the Normal INFP group (Table 3). Thus, the third hypothesis was supported.

Research Question 4: Number of Mistakes by Anxiety Level

It was hypothesized that Tae Kwon Do practitioners exhibiting higher state and/or trait anxiety have more

Table 3
Analysis of Simple Statistics for INFP

Source of variance	Normal range INFP	High INFP
Mean of test score	77.8	91.3
Standard Deviation	2.89	4.51
Mean Number of Mistakes	2.61	0.3
Standard Deviation	1.88	0.58

mistakes on the belt improving test. Based on the pearson product-moment correlation analysis, the results indicated a significant positive relationship only between cognitive state anxiety and the number of mistakes ($r = .47$, $p = .0131$). State somatic anxiety and trait anxiety were not significantly related to the number of mistakes ($p > .05$). Thus, the fourth hypothesis was partially supported.

CHAPTER V

DISCUSSION

Nideffer (1981) insisted that a major goal for the sport psychologist is to be able to measure the base level of an athlete's abilities, and then to identify those situational factors that act to improve the abilities. For these reasons, Nideffer (1976b) developed an instrument, Test of Attentional and Interpersonal Style (TAIS), and Martens et al. developed SCAT (1977), and CSAI-2 (1983). Since the development of TAIS, SCAT, and CSAI-2, researchers examined the relationship between these instruments and sport performance. However, the results have been controversial. In this study, it was assumed that TAIS, SCAT, and CSAI-2 are valid and reliable tools.

The results of this study, first, indicated that there were interrelationships between skill level and Broad Internal subscale of the TAIS ($p = .02$). Advanced Tae Kwon Do practitioners scored significantly higher on the Broad Internal subscale of the TAIS than the beginning practitioners. However, the intermediate level practitioners were not significantly different from either the beginning or advanced level performers. This finding is consistent with those from previous studies using sport-specific versions of the TAIS. Albrecht and Feltz (1987) found that

the BIT subscales from their baseball/softball batting-specific measure of attentional style (B-TAIS) had a significant, positive correlation with batting performance. Similarly, Van Schoyck and Grasha (1981) found that the BIT subscale of tennis-specific version of the TAIS (T-TAIS) positively differentiated among the tennis skill levels. In contrast, McGowan, Talton, and Tobacyk (1990) found that less successful lifters (powerlifting) scored higher on BIT than the successful lifters. Summers, Miller, and Ford (1991) also failed to demonstrate a significant skill level effect on BIT.

Second, even though the correlation analysis failed to demonstrate a significant relationship between overload subscales (OET, OIT) of the TAIS and the number of mistakes, the subsequent statistical analysis revealed that high scoring practitioners on OET, and OIT subscales had more mistakes than the practitioners within normal range of standard deviation, but the difference was not statistically significant. Thus, this result is similar to Albrecht and Feltz's (1987) study. In this study, it was found that a significant negative relationship existed between the batting-specific OIT subscale and performance. On the other hand, Maynard and Howe (1989) found that rugby players of different playing standards did not differ on the attentional subscales of the instrument, including BIT. Another study by Vallerand (1983) revealed that good,

relative to poor, decision makers reported being less overloaded by internal stimuli (OIT), but more overloaded by external cues (OET).

Third, the results of this study indicated good performers and practitioners who have fewer mistakes on the belt improving test scored high on the Information Processing Scale (INFP). Subscale INFP was designed to indicate how complex an individual saw the environment. High scorers on this scale think a lot and process a great deal of information. Van Schoyck and Grasha (1981) found a high positive correlation among subscales BET, BIT, and INFP. The ability to handle lots of information would be consistent with the "broad" aspect of scales BET and BIT. From the findings, it can be suggested that high scorers on the INFP show better decision making and perform better in sport settings because they have larger capacity to handle information.

The findings of this study supported the predictive potential of the TAIS since the relationship between behavioral measures and the scores of the TAIS were positive. Researchers using Nideffer's TAIS have produced inconsistent results. However, an obvious direction for future research is to attempt to replicate the present findings in other sports. As Nideffer (1990) noted, when using the TAIS, researchers can be shown to have had methodological flaws and to have drawn inappropriate

conclusions from their analyses.

Finally, the results of this study supported the prediction that elevations in cognitive anxiety are directly related ($p = .01$), in a linear fashion, to performance errors that occur during sport performance. Thus, the findings were in agreement with the theoretically based predictions about the relationship between cognitive anxiety and attentional disruption.

In addition, the findings provided some further evidence relative to the construct validity of the CSAI-2. More specifically, if mistakes in performing Tae Kwon Do forms were a true reflection of the performance/cognitive anxiety dysfunction, and such dysfunctions were indeed related with elevations in cognitive anxiety, then differential scores on cognitive anxiety of the CS-2 should reflect those performance differences. Therefore, this study demonstrated some construct validity for the assessment instrument, CSAI-2.

Recently, aspects of anxiety testing and performance interventions are major interests for sport psychologists. There is no argument that effects do occur, but it is critical that we need to understand more about exactly how elevated anxiety affects sport performance. This study provided some insight into one aspect of cognitive anxiety on Tae Kwon Do sport performance. In terms of applying this finding to sport setting, cognitively based strategies would

help Tae Kwon Do athletes reduce performance errors in sport.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

The purpose of this study was to determine whether attentional and/or anxiety characteristics are related to performance of Tae Kwon Do forms among the beginning and intermediate practitioners in Tae Kwon Do, and to examine the relationship between the sport competitive anxiety and Tae Kwon Do performance.

The subjects ($n = 37$) for this study were 17 beginning, 10 intermediate, and 10 advanced Tae Kwon Do practitioners, and all were above 18 years old. To investigate the research hypotheses, TAIS, SCAT, CSAI-2, and behavioral measurement were used as the assessment instruments.

The results of this study indicated that: (a) advanced Tae Kwon Do practitioners scored significantly higher on the Broad Internal subscale than the beginning practitioners, (b) high scoring practitioners on the INFP scale scored much higher than normal-ranged scoring practitioners and made much fewer mistakes on the belt improving test than normal INFP practitioners, and (c) the number of mistakes was related to level of cognitive state anxiety subscale of the CSAI-2. The results of this study supported the theory and

research of Nideffer (1976b, 1981, 1990) and Martens et al. (1977, 1983), insisting that the TAIS, SCAT, and CSAI-2 are the instruments to be used with individuals in relation to developing training and counseling programs.

Conclusions

The purpose of this study was to determine whether attentional characteristics are related to performance of Tae Kwon Do forms among the beginning and intermediate practitioners in Tae Kwon Do, and to examine the relationship between the sport competitive anxiety and Tae Kwon Do performance. The following conclusions were made:

1. A TAIS and CSAI-2 profile will provide specific information that is unique for the specific person and skill level.
2. By using the information provided by TAIS and CSAI-2 profile, a training and counselling program could be designed to facilitate and enhance performance levels on athletic tasks.
3. The TAIS profile partially indicated specific traits needed to be successful in performing Tae Kwon Do forms.
4. The CSAI-2 profile indicated specific cognitive state needed to be successful in highly stressful sport settings.

Implications for Further Research

In consideration of the importance in broadening the possibilities of finding patterns needed for success in performing Tae Kwon Do forms, the following implications for further research have been suggested:

1. Design an attentional intervention program for Tae Kwon Do practitioners and record performance of Tae Kwon Do forms to determine if there are effects from mental training techniques and skill level.

2. Refore a study, including the TAIS and CSAI-2, to larger sample sizes. This may provide specific commonalities and the traits needed to be most successful.

3. Design a highly stressful sport setting and distribute the CSAI-2. Then, observe the performance of practitioners in detail, for examples, the number of mistakes, performance level, direction of eye sight, and etc. Compare the observation with the CSAI-2 scores regularly every month, this may provide the relationship between the competitive anxiety and performance of Tae Kwon Do forms.

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APPENDIX

APPENDIX A

Dear

The purposes of this study are to investigate how attentional and control factors and anxiety are used by participants in the individual sport of TaeKwonDo, and to examine the attention-performance and anxiety relationships in this sport. Results of this study will be used as the thesis requirement for Sung-Il Cho.

Your instructor/master has been contacted and has given permission for us to ask you for your assistance.

Attached are the TAIS form and two questionnaires that will take approximately 30 minutes to complete. You should answer according to the directions on each form. You may ask questions at any time about the study or the nature of the questions on the survey.

Your choice to participate or not to participate in the study will have no effect on you participation in you event(s) or in you club standing, and you may withdraw from participation at any time.

Your identity will remain confidential, as no names will ever be associated with your answers, and within/between group results will be used in evaluating and reporting the results, the numbers on your questionnaires are merely to keep all of each person's answer sheets together in case the pages should come apart.

Risks are minimal and potential benefits include the possibility of your using own future TaeKwonDo play. You can gain and understanding of you attentional, informational processing, anxiety and performance strengths.

Since all of the information is your report about yourself and your behaviors, no signature is necessary for consent. Your completion of the forms serves as your informed consent and indicates your awareness of the purpose of the study and what is expected of you.

You should keep this page incase you have questions and need to contact either of us. Thank you very much for your assistance with this project.

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APPENDIX B

TAIS

Robert M. Nideffer, Ph. D.

INSTRUCTIONS

USE PENCIL - DO NOT WRITE ON TEST BOOKLET

Read each item carefully and then answer according to the frequency with which it describes you or your behavior. For example, item 1 is "When people talk to me, I find myself distracted by the sights and sounds around me."

N = NEVER
R = RARELY
S = SOMETIMES
F = FREQUENTLY
A = ALWAYS

If your answer to the first item is SOMETIMES, you would mark an X in the box under S for item number 1. The same key is used for every item, thus each time you mark an N you are indicating NEVER, etc.

1. When people talk to me I find myself distracted by the sights and sounds around me.
2. When people talk to me I find myself distracted by my own thoughts and ideas.
3. All I need is a little information and I can come up with a large number of ideas.
4. My thoughts are limited to the objects and people in my intermediate surroundings.
5. I need to have all the information before I say or do anything.
6. The work I do is focused and narrow, proceeding in a logical fashion.
7. I run back and forth from task to task.
8. I seem to work in "fits and starts" or "bits and pieces".
9. The work I do involves wide variety of seemingly unrelated material and ideas.
10. My thoughts and associations come so rapidly I can't keep up with them.
11. The world seems to be a booming buzzing brilliant flash of color and confusion.
12. When I make a mistake it is because I did not wait to get all of the information.
13. When I make a mistake it is because I waited too long and got too much information.
14. When I read it is easy to block out everything but the book.
15. I focus on one small part of what a person says and miss the total message.
16. In school I failed to wait for the teachers' instructions.
17. I have difficulty clearing my mind of a single thought or idea.
18. I think about one thing at a time.
19. I get caught up in my thoughts and become oblivious to what is going on around me.
20. I theorize and philosophize.
21. I enjoy quiet, thoughtful times.
22. I would rather be feeling and experiencing the world than my own thoughts.
23. My environment is exciting and keeps me involved.
24. My interests are broader than most people's.
25. My interests are narrower than most people's.
26. It is easy for me to direct my attention and focus narrowly on something.
27. It is easy for me to focus on a number of things at the same time.
28. It is easy for me to keep thoughts from interfering with something I am watching or listening to.
29. It is easy for me to keep sights and sounds from interfering with my thoughts.

30. Happenings or objects grab my attention.
31. It is easy for me to keep my mind on a single thought or idea.
32. I am good at picking a voice or instrument out a piece of music that I am listening to.
33. With so much going on around me, It's difficult for me to think about anything for any length of time.
34. I am good at quickly analyzing complex situations around me, such as how a play is developing in football or which of four or five kids started a fight.
35. At stores I am faced with so many choices I can't make up my mind.
36. I spend a great deal of my time thinking about all kinds of ideas I have.
37. I figure out how to respond to others by imagining myself in their situation.
38. In school I would become distracted and didn't stick to the subject.
39. When I get anxious or nervous my attention becomes narrow and I fail to see important things that are going on around me.
40. Even though I am not hungry, if something I like is placed in front of me, I'll eat it.
41. I am more of a doing kind of person than a thinking one.
42. In a room filled with children or out on a playing field, I know what everyone is doing.
43. It is easy for me to keep my mind on a single sight or sound.
44. I am good at rapidly scanning crowds and picking out a particular person or face.
45. I have difficulty shifting back and forth from one conversation to another.
46. I get confused trying to watch activities such as a football game or circus where a number of things are happening at the same time.
47. I have so many things on my mind that I become confused and forgetful.
48. On essay tests my answers are(were) too narrow and don't cover the topic.
49. It is easy for me to forget about problems by watching a good movie or by listening to music.
50. I can't resist the temptation when it is right in front of me.
51. In games I make mistakes because I am watching what one person does and forget about the others.
52. I can plan several moves ahead in complicated games like bridge and chess.
53. In school I was not a " thinker".
54. In a roomful of people I can keep track of several conversations at the same time.
55. I have difficulty telling how others feel by watching

- them and listening to them talk.
56. People have to repeat things to me because I become distracted by irrelevant sights or sounds around me.
 57. I make mistakes because I try to do too many things at once.
 58. I am good at analyzing situations and predicting in advance what others will do.
 59. On essay tests my answers are(were) too broad, bringing in irrelevant information.
 60. People foot me because I don't bother to analyze the things that they say, I take them at face value.
 61. I would much rather be doing something than just sitting around thinking.
 62. I make mistakes because my thoughts get stuck on one idea or feeling.
 63. I am constantly analyzing people and situations.
 64. I get confused at busy intersections.
 65. I am good at glancing at a large area and quickly picking out several objects, such as in those hidden figure drawings in children's magazines.
 66. I get anxious and block out everything on tests.
 67. Even when I am involved in a game or sport, my mind is going a mile a minute.
 68. I can figure out how to respond to others just by looking at them.
 69. I have a tendency to get involved in a conversation and forget important things like a pot on the stove, or like leaving the motor running on the car.
 70. It is easy for me to bring together ideas from a number of different areas.
 71. Sometimes lights and sounds come at me so rapidly they make me lightheaded or dizzy.
 72. People have to repeat things because I get distracted by my own irrelevant thoughts.
 73. People pull the wool over my eyes because I fail to see when they are obviously kidding by looking at the way they are smiling or listening to their joking tone.
 74. I can spend a lot of time just looking at things with my mind almost a complete blank except for reflecting the things that I see.
 75. I sometimes confuse others because I tell them too many things at once.
 76. I engage in physical activity.
 77. People describe me as serious.
 78. I sit alone listening to music.
 79. People take advantage of me.
 80. I keep my thoughts to myself.
 81. I keep my feelings to myself.
 82. I am good at getting my own way.
 83. I like to argue.
 84. Others see me as a loner.
 85. I talked a lot in class when I was in school.

86. I enjoy intellectual competition with others.
87. I enjoy individual athletic competition.
88. I compete(d) athletically.
89. I physically express my feelings of affection.
90. I compete with myself intellectually.
91. I compete with myself physically.
92. I enjoy activities with danger or an element of the unknown in them.
93. I express my opinions on issues.
94. I can keep a secret.
95. When I believe deeply in something I find I am a poor loser and unable to compromise.
96. I am socially self-confident when interacting with those who are like myself.
97. I am socially self-confident when interacting with authority figures.
98. I am socially self-confident when talking in front of large groups.
99. I am socially self-confident when talking with the opposite sex.
100. I express my anger.
101. I dated in high school.
102. People think I am a clown.
103. I get mad and express it.
104. I get down on myself.
105. I was one of the smartest kids in school.
106. I am a good person.
107. My feelings are intense.
108. I need to help others.
109. I need to be liked.
110. I enjoy planning for the future.
111. I wish I lived in a different time.
112. I feel guilty.
113. I feel ashamed.
114. I am seen as a cold person by others.
115. I am a good mixer.
116. I am socially outgoing.
117. I have difficulty waiting for good things to happen.
118. I peeked at Christmas time.
119. When I am angry I lose control and say things that sometimes hurt others.
120. I have been angry enough that I physically hurt someone.
121. At dances or parties I find a corner and avoid the limelight
122. I acted in dramatic productions in high school and/or college.
123. In school the kids I hung around with were athletes.
124. In school the kids I hung around with were intellectuals.
125. In school the kids I hung around with were popular.
126. In school the kids I hung around with were outcasts or loners.

- 127. People trust me with their secrets.
- 128. I am in control of interpersonal situations.
- 129. I fought in school.
- 130. I have used illegal drugs.
- 131. In groups I am one of the leaders.
- 132. People admire me for my intellect.
- 133. People admire me for my physical ability.
- 134. People admire me for my concern for others.
- 135. People admire me for my social status.
- 136. I ran for class offices in school.
- 137. I feel as though I am a burden to others.
- 138. People see me as an angry person.
- 139. I see myself as an angry person.
- 140. I have a lot of energy for my age.
- 141. I am always on the
- 142. I cut school in high school.
- 143. I have engaged in activities that could get me in trouble with the police.
- 144. I guess you could call me a poor loser.

APPENDIX C

COMPETITIVE STATE ANXIETY INVENTORY - 2

Name: _____ Sex : M F Date: _____

DIRECTIONS : A number of statements which athletes have used to describe their feelings before competition are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now-at this moment. There are no right or wrong answers. Do not spend too much time on any one statement, but choose the answer which describes your feelings right now.

	Not At All	Moderately so	Somewhat	Very Much so
(c) 1. I am concerned about this competition	1	2	3	4
(s) 2. I feel nervous	1	2	3	4
(sc) 3. I feel at ease	1	2	3	4
(c) 4. I have self-doubts	1	2	3	4
(s) 5. I feel jittery	1	2	3	4
(sc) 6. I feel comfortable	1	2	3	4
(c) 7. I am concerned that I may not do as well in this competition as I could	1	2	3	4
(s) 8. My body feels tense	1	2	3	4
(sc) 9. I feel self-confident	1	2	3	4
(c) 10. I am concerned about losing	1	2	3	4
(s) 11. I feel tense in my stomach	1	2	3	4
(sc) 12. I feel secure	1	2	3	4
(C) 13. I am concerned about choking under pressure	1	2	3	4

(s) 14. My body feels relaxed (reverse scoring)	1	2	3	4
(sc)15. I'm confident I can meet the challenge	1	2	3	4
(c) 16. I'm concerned about performing poorly	1	2	3	4
(s) 17. My heart is racing	1	2	3	4
(sc)18. I'm confident about performing well	1	2	3	4
(c) 19. I'm worried about reaching my goal	1	2	3	4
(s) 20. I feel my stomach sinking	1	2	3	4
(sc)21. I feel mentally relaxed	1	2	3	4
(c) 22. I'm concerned that others will be disappointed with my performance	1	2	3	4
(s) 23. My hands are clammy	1	2	3	4
(sc)24. I'm confident because I mentally picture myself reaching my goal	1	2	3	4
(c) 25. I'm concerned I won't be able to concentrate	1	2	3	4
(s) 26. My body feels tight	1	2	3	4
(sc)27. I'm confident of coming through under pressure	1	2	3	4

APPENDIX D

Sport Competition Anxiety Test for Adults

Directions: Below are some statements about how persons feel when they compete in sports and games. Read each statement and decide if you HARDLY-EVER, or SOMETIMES, or OFTEN feel this way when you compete in sports and games. If your choice is HARDLY-EVER, blacken the square labeled A, if your choice is SOMETIMES, blacken the square labeled B, and if your choice is OFTEN, blacken the square labeled C. There are no right or wrong answers. Do not spend too much time on any one statement. Remember to choose the word that describes how you usually feel when competing in sports and games.

	Hardly-Ever	Sometimes	Often
1. Competing against others is socially enjoyable.	A	B	C
2. Before I compete I feel uneasy.	A	B	C
3. Before I compete I worry about not performing well.	A	B	C
4. I am a good sportsman when I compete.	A	B	C
5. When I compete I worry about making mistakes.	A	B	C
6. Before I compete I am calm.	A	B	C
7. Setting a goal is important when competing.	A	B	C
8. Before I compete I get a queasy feeling in my stomach.	A	B	C
9. Just before competing I notice my heart beats faster than usual.	A	B	C
10. I like to compete in games that demand considerable physical energy.	A	B	C
11. Before I compete I feel relaxed.	A	B	C
12. Before I compete I am nervous.	A	B	C
13. Team sports are more exciting than individual sports.	A	B	C
14. I get nervous wanting to start the game.	A	B	C
15. Before I compete I usually get up tight.	A	B	C

APPENDIX E

No. _____

Demographic Questionnaires

Age _____

Height _____

Weight _____

Sex (check one)

1. _____ Female

2. _____ Male

Total number of years you have practiced TaeKwonDo

_____ Belt color (check or write)

1. _____ black

5. _____ green

2. _____ red

6. _____ yellow

3. _____ brown

7. _____ white

4. _____ blue

8. _____ others

Please, list other sports/martial art you have competitively practiced in and indicate periods.

	<u>SPORT</u>	<u>YEARS PLAYED</u>	<u>AGE WHEN PLAYED</u>
Example :	<u>basketball</u>	<u>2 years</u>	<u>6&7 years old</u>
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

For ONLY above RED and BLACK belt

Do you think your self-confidence has been improved after learning TaeKwonDo?

VITA

Sung-Il Cho was born in Kyung-Ki Do, Korea, on April 12, 1961, to Soon-Hyung Cho and Young-Soon Chung. He attended Dapsipri Elementary School, Jeonnong Junior High School in Seoul, Korea and graduated from the attached High School of Seoul National University in February of 1980. The next March he entered the Yonsei University, in Seoul, Korea, and in February of 1985 he received his Bachelor of Science degree in Physical Education. He entered the Korean Army in January of 1988 and served until July of 1990. In the fall of 1991 he was accepted from the University of Tennessee, Knoxville, as a graduate student. He has been studying toward a Master of Science Degree with emphasis in sport psychology and has been teaching Tae Kwon Do and Women's self-defense at the University of Tennessee, Knoxville. He expects to receive the Master of Science degree in December, 1994.