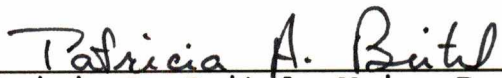


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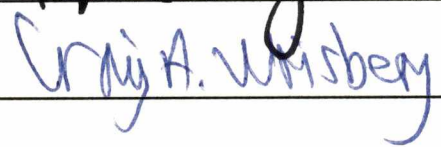
I am submitting herewith a thesis written by Steven Alan Hendricks entitled "The Attentional and Control Styles of Adult Female Volleyball Players." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Physical Education.



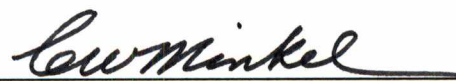
Patricia A. Beitel, Major Professor

We have read this thesis
and recommend its acceptance:





Accepted for the Council:



Associate Vice Chancellor
and Dean of the Graduate School

THE ATTENTIONAL AND CONTROL STYLES OF ADULT
FEMALE VOLLEYBALL PLAYERS

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

Steven Alan Hendricks

May 1992

DEDICATION

I dedicate the hours and effort contained within this cover to my Mom and Dad, who, through much emotional, spiritual, and monetary support kept me going and helped me complete this project. I thank God every day for blessing me with two of the greatest people who continually have an impact on my life.

ACKNOWLEDGEMENTS

To three very significant professionals who served on my committee: Dr. Pat Beitel, whose knowledge, constant support and guidance made this seemingly unattainable project become a reality; Dr. Ralph Jones, who continually offered support and insight to the fulfillment of this thesis; and Dr. Craig Wrisberg, whose knowledge of this field made me question techniques and explore information to further my overall understanding.

To Julie Hermann who helped me collect the data and facilitated the time needed to complete this research.

ABSTRACT

The role of attention in athletics has been known to be a determining factor to successful performance and outcome. In the sport of volleyball, athletes are required to shift their attentional focus constantly because of the ever changing environment. To be successful, an athlete must be able to broaden and narrow their focus to concentrate on the most relevant cues that will give them an advantage over their opponent. By determining the attentional abilities of athletes and how they effect level of performance, one could provide the information that coaches and consultants could use to train individuals to become elite performers.

The purpose of this study was to describe the interrelationships among task demands of position played, level of performance, and attentional focus and control factors for elite female volleyball players in the outside hitting, middle blocking, and setting positions.

The participants for this study, (N = 30), were highly skilled Division I female volleyball athletes. All participants were members of a conference regulated by the National Collegiate Athletic Association, (NCAA). The top ten outside hitters, middle blockers and setters were chosen through statistical performance measures related to each specific position. The participants were asked to complete the Test of Attentional and Interpersonal Style (Nideffer, 1976a) questionnaire which was administered to them by a

member of their coaching staff. Following the return of the data, a case study file was made for each athlete which included: (a) the position played, (b) TAIS profile, and (c) game statistics.

The results of this study indicated that each athlete's attentional and control profile had unique characteristics that differentiated it from the others within the respective positions. There were no specific group patterns among the outside hitters, middle blockers, or setters in the TAIS profiles. Also, because of physical characteristics and individual strengths and weaknesses, each athlete's overall performance measures were different. Combining the uniqueness of each athlete's TAIS profile with their individual statistics, suggested no consistent interrelationships among athletes playing the same position.

These conclusions supported the position of Nideffer (1990, 1981, 1976a), that the TAIS is an instrument to be used with individuals to develop specific training and counseling programs. Thus, a coach or consultant must do research on each specific athlete and then along with the TAIS profile determine reasons for performance strengths and weaknesses. Once these reasons have been established, a training and counseling program can be developed to show an athlete how and why they may be performing a certain way and what is needed to strengthen their abilities so that they may achieve a higher level of performance.

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CHAPTER ONE

INTRODUCTION

The attentional abilities of elite volleyball players, in relation to the task demands of position, are determining factors to overall success. Volleyball is a sport consisting of powerful and physically demanding dynamics that is played in an ever changing environment. Because of this nature and the relevance of attention to performance outcome, it is crucial that elite players learn to master attentional abilities. To be successful they must be able to broaden and narrow their focus to concentrate on relevant cues that will give them an advantage over their opponent.

Volleyball requires individuals to attend to many stimuli in the initial stages of play and then narrow to specific cues. Each player has defined roles that incorporate different stimuli to which they must attend that interrelate with the roles of their teammates. Nideffer (1981) suggested the attention an individual has consists of two dimensions, width and direction. Width refers to the amount of information to which one can attend. It can range from a broad focus, incorporating many stimuli, to a narrow focus incorporating only one stimuli. Direction of attention refers to the individual's focus on internal cues such as thoughts and feelings, or on external cues such as stimuli in the environment. Thus, in an ongoing task,

athletes must continuously shift their attentional focus to process the most relevant data.

There are three main positions in volleyball, outside hitters, middle blockers, and setters. Each position has specific task demands that require different amounts of attention. It is crucial that the individuals who specialize in these positions be very knowledgeable and efficient in shifting their attention to the most beneficial stimuli. This specific attentional focus for each position, relative to the individual task demands that affect the overall team outcome, is very important. Therefore, it would be very beneficial to know the characteristics of attention that are present in elite players relative to their position.

Purpose of the Study

The purpose of this study was to use a case study approach to describe the interrelationships among task demands of position played, level of performance, and attentional focus and control factors for elite female volleyball players in the outside hitting, middle blocking, and setting positions.

Definition of Terms

The theoretical and operational definitions of relevant terms are listed to provide a better understanding of the information contained in this study.

Attentional Focus

Attentional focus is composed of two components; one which attributes to good focus and one which detracts from good focus. The first factor is made up of the ability of an individual to maintain concentration on specific stimuli across two dimension of attention; width, broad to narrow; and direction, internal to external (Nideffer, 1981). These two dimension are measured by the TAIS in the following scales: (a) Broad External Focus, BET, (b) Broad Internal Focus, BIT, and Narrow Attention Focus, NAR (Figure 1).

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).

Direction of Attention. The focusing of attention to either internal stimuli consisting of thoughts and feelings or external stimuli consisting of information in the environment (Nideffer, 1981).

The second factor is made up of an individuals inability to maintain a good focus. These individuals have difficulty concentrating on relevant stimuli and experience

an overwhelming amounts of relevant and non-relevant information. This factor is measured by the TAIS in the following scales: (a) Overloaded by External Stimuli, OET, (b) Overloaded by Internal Stimuli, OIT, and (c) Reduced Attentional Focus, RED (Figure 1).

Control Factors

The perception of an individual's environmental complexity and the nature of their self control (Nideffer, 1981). These two components of control; how busy an individual perceives their environment and how an individual relates to others are measured by the two TAIS scales: (a) Information Processing, INFP, and (b) Behavior Control, BCON (Figure 1).

Elite Athlete

One having the ability to compete at a Division I level in the National Collegiate Athletic Association (NCAA) and be a top performer statistically in their individual position.

Level of Performance

The physical performances of the athletes are measured statistically for each position. For the outside hitting position attack percentage and digs per game are calculated. In the middle blocking position, attack percentage and blocks per game are used. Finally, in the setting position, assists per game are computed.

-
- 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.
- OET (External Overload): The higher the score the more mistakes due to being confused and overloaded by environmental information.
- BIT (Broad Internal Attentional): High scores 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 scores 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 antisocial.
-

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

Figure 1. The attention and control scales of the Test of Attentional and Interpersonal Style.

Attack Percentage. The percentage of total attacks an athlete attempts that are not returnable by the opponent. The percentage is calculated by taking the number of kills minus errors, and dividing that number by the total number of attempts. This statistical category is very important to the outside hitter and middle blocking positions.

Digs per game. A dig is recorded when a player successfully passes a ball after it has been attacked by the opposing team. The total number of digs divided by the number of games played determines digs per game. This skill is a critical component for the outside hitting position.

Blocks per game. A block is recorded when a player successfully blocks a ball back to the opponents court for a point or sideout. Blocks per game are calculated by taking the total number of blocks and dividing that by the number of games played. This statistic is very important to the middle blocking position.

Assists per game. A player receives an assist whenever she passes or sets a ball to a teammate that leads directly to a kill. The total number of assist divided by the number of games played determines assists per game. This skill is a critical component for the setting position.

Limitations

The following limitation existed in this study:

The subjects were derived from females in Division I of one of the conferences of the National Collegiate Athletic Association.

Delimitations

The following delimitations existed in this study:

1. The sample included only female athletes.
2. The female athletes in this study were representative of elite players in the sport of volleyball.

Significance of the Study

The Test of Attentional and Interpersonal Style on elite volleyball players may provide a better understanding of the traits needed for optimal performance at each position. This information can be helpful to coaches and players alike. The data can be used to help develop players in their specific positions 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 develop athletes into elite level performers.

CHAPTER TWO

REVIEW OF LITERATURE

The Test of Attentional and Interpersonal Style was designed to investigate the theoretical relationships between attentional abilities and performance, (Nideffer, 1987). It was established as a research tool: (a) to provide feedback to individuals and consultants allowing them to create training programs that will enhance their performance, and (b) to combat the criticisms of many instruments that became widely used in the early 1970's. These previous instruments were either too general in nature encompassing everything, or were very specific considering only isolated incidents with little or no generalizability. Because of the wide use of these instruments, many results were published and research was being cited that did not have valid underlying testing measures or procedures (Nideffer, 1976a). Nideffer (1976a, 1981) wanted the TAIS to incorporate behaviorally based human characteristics that could be generalized to a variety of life situations. He also wanted this instrument to measure situational factors that effect performance, have it validated statistically between theoretical constructs and behaviors, and finally have it possess good predictive utility.

Nideffer (1976a) based 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). From this research Nideffer (1976a) developed 17 aspects of attentional and interpersonal behavior consisting of behaviorally anchored items. The TAIS relies on the following assumptions: (a) there are several attentional dimensions, including width and direction that effect performance; (b) each individual has their own preferred attentional style, including strengths and weaknesses; (c) attentional processes can be linked to both state and trait components; and (d) an individual's arousal level affects their ability to control and shift attentional focus (Nideffer, 1981).

The TAIS has become a very popular measurement tool in the field of sport psychology. The theoretical constructs and the information it may provide make it very appealing to researchers, consultants, and athletes. However, some research has questioned the claims of the TAIS; the test-retest reliability, construct validity and the predictive validity. The following review of literature will provide examples of the research that dispute Nideffer's projected ability of the TAIS. Articles written by Nideffer follow that question the findings of these studies and reaffirm, through documented evidence, the ability of the TAIS to be an effective and productive instrument.

Research Disputing the TAIS

Stephen Van Schoyck and Anthony Grasha (1981) designed a study to determine if there were varying attentional processes in athletes at different skill levels. They used the six attentional scales and one control scale in administering a sport specific TAIS and a general TAIS. They investigated the reliability of each scale to measure the direction and width of attention. Van Schoyck and Grasha (1981) expected to find negative correlations between scales measuring the same components, for example, broad internal and broad external. However, they found positive correlations and concluded that attentional width must dominate the subjects' interpretation of skills. In other words, both width and direction components were present in the same items on the TAIS, but the width dimension had more influence on the subject's answer (Van Schoyck and Grasha, 1981).

A factor analysis was performed on the scales to determine if there was clustering occurring within the scales. Results showed two factors accounted for most of the variance, (T-TAIS, 79.2%; TAIS, 70.1%). The first and second factors were both related to width and were labeled "scan" and "focus". Van Schoyck and Grasha (1981) suggested that their results indicated that width was not bi-polar incorporating only a broad and narrow focus as Nideffer suggested, but multidimensional incorporating all stimuli broad, narrow, internal and external.

Scan, the first factor found by Van Schoyck and Grasha (1981), related to the scales of BET, BIT, and INFP and was in relation to the total amount of information an individual processes. The second factor, focus, was linked to the scales OET, OIT, and NAR. The items in these scales reflected concentration and the possibility of becoming overloaded. Thus, the six attentional scales could be reduced to two scales. Van Schoyck and Grasha (1981) related their results to the Wachtel (1967) findings and the term "scan," which was defined as giving attention to many internal and external stimuli simultaneously, while incorporating a narrow or broad focus (Van Schoyck and Grasha, 1981).

When examining the T-TAIS and TAIS Van Schyock and Grasha (1981) expected the T-TAIS scores to vary between skill level and the TAIS to remain relatively constant. The results showed little change in the TAIS scores, but pronounced differences in the scan factor of the T-TAIS were found. Also, the sport specific test differentiated among skill level better than the original, but not across all scales. Thus, Van Schoyck and Grasha (1981) suggested from their results the six attentional scales could be reduced to two, labeled scan and focus. Also, the width dimension could be called multidimensional, because it consisted of both scanning and focusing components, incorporating Nideffer's (1976a) internal and external directional

dimensions. Finally, Van Schoyck and Grasha (1981) concluded that Nideffer's TAIS is not sensitive enough to detect differences between skill levels.

Robert Vallerand (1983) used three levels of basketball players, ($N = 59$), the TAIS, and decision making abilities to try to discriminate among skill levels. More specifically he wanted to see if good relative to average and poor decision makers in basketball would score differently in attentional style. He hypothesized that good decision makers would score higher on the scan factor (BET, BIT, and INFP) and more adequately on the focus factor (OET, OIT, and NAR) than the average or poor decision maker.

One-way ANOVAs were performed on the results to see if the three decision making groups differed in scores on the TAIS. No significant differences were found. ANOVAs were also performed on the total scores of the scan factor (BET + BIT + INFP) and focus factor (OIT + OET - NAR), but again no significant differences were found between groups. Finally, a discriminant analysis was performed to see if the TAIS distinguished between good and poor decision makers. The only significant difference found ($p < .02$) was an ambiguous one that showed good decision makers being less overloaded by internal cues (OIT), but more overloaded by external stimuli (OET). Therefore, Vallerand (1983) suggested that his findings supported those of Van Schoyck and Grasha (1981). He stated that the TAIS is not sensitive enough to

distinguish between performers attentional styles and their skill level (Vallerand, 1983).

Dewey, Brawley, and Allard (1989) conducted a study on the TAIS predictive validity in a controlled setting to see if attentional style was related to how visual information is processed. This study addressed the statement that suggested "the TAIS has construct and predictive validity and assumes a one-to-one relationship between aspects of the TAIS attentional style and attention related performance" (Dewey et al., 1989, p. 172). Thus, the processing of information is influenced by a particular style of attentional focusing (Dewey et al., 1989).

Using the Treisman and Gelade (1980) integration theory of attention and the Primary Visual Detection Task, Dewey et al. (1989) had subjects complete two trials. Each trial consisted of searching for a single or conjoining target (red or round, red and round) in sets of 1, 5, 15, and 30 objects. The targets appeared at one of four distances from the center of the screen and were present on 50 percent of the trials. The varying distances were used to determine if subjects who were broad external or who were narrow attenders would score differently. Seven scales were used, four (BET, BIT, INFP, and NAR) to measure attentional abilities, and three (OET, OIT, and RED) to measure attentional deficiencies (Dewey et al., 1989).

Results revealed that subjects maintained a significant

success rate when identifying single feature items ($p < .001$), but were slow when searching for conjoining targets. Linear progressions were performed to determine if attentional style measured by the TAIS related to attention as measured by the visual search performance. Slope values that measured the time incurred in searching for items were used as a focus and were correlated to attentional styles. It was hypothesized that subjects scoring high on NAR and RED (narrow attenders) would record steeper slopes for both single and conjoining tasks, and high scorers on BET and BIT (broad attenders) would show flatter or more time consuming slopes. When these data were correlated, no significant differences were found. Dewey et al. (1989) also tested the extreme scorers on the TAIS scales, (10 fastest, 10 slowest), to the task results to see if these scores would correlate with the attention measured by the visual search performance, but again no significant differences were found.

Thus, the data showed no relationship between attentional dimension as measured by the TAIS or as measured by the visual search task. Dewey et al. (1989) also questioned the factorial validity of the TAIS scales. Factor analysis results from this study were compared to those of Nideffer's 1976a original study. Analysis revealed inconsistencies in factor loading of the scales. Overall the results showed similar findings to that of Van Schoyck

and Grasha (1981) and Vallerand (1983).

Summers and Ford (1990) summarized three of their studies that addressed the relationship of the TAIS attentional scales to its ability to predict skill level. In each of their studies they investigated the relationship between scales and Nideffers' theoretical dimensions by completing interscale correlation factor analysis. The first factor consisted of positive loading of BET, BIT, INFP, and a negative loading of RED. This factor facilitates subjects processing and integrating information without underinclusion. The second factor had positive loading for OET, OIT, and RED and was described as a factor creating poor focus. A final factor differed for each sample, but appeared to indicate the level of ability to narrow attention. Summers and Ford (1990) concluded from their results that width was present, but consisted of a scan and focusing multidimension. Their results also showed that the internal and external dimension was not very well measured. They attributed this to width dominating the subjects interpretation of the items as suggested by Van Schoyck and Grasha (1981).

Summers and Ford (1990) continued to explore the factor validity of the attentional scales. By performing multidimensional and unidimensional factor analysis on seven scales they concluded that on six of the seven scales, 25-40% of the items on each scale did not load sufficiently

with that scale. These results modeled the findings of Albrecht and Feltz (1987) that suggested 50% of the items correlate better with other scales than to their specified scale.

To assess how well the TAIS distinguished between skill level, Summers and Ford (1990) used 68 male cricket players, 48 male and 36 female fencing athletes, and 61 male and 49 female basketball players. The results did not show many differences between skill levels in any of the three sports. In the fencing study, differences were only found between the BET and OET subscales. However, among the three levels: (a) advanced fencers scored higher on BET than novice, but not intermediate; and (b) novice fencers scored higher in OET than advanced but not intermediate. In the cricket study, Summers and Ford (1990) found there were more attentionally effective profiles in the advanced skilled group than lower skilled, but not to a significant proportion. Finally, the basketball study did not indicate any significant difference between skill levels (Summers and Ford, 1990).

Summers and Ford (1990) concluded that the TAIS attentional scales did not adequately or reliably differentiate between skill level. They also found evidence that questioned the factorial validity of each scale in Nideffer's TAIS.

McGowan, Talton, & Tobacyk (1990) used athletes in the

sport of powerlifting to test the statement that suggested the TAIS could predict performance if the attentional demands of a task and the attentional abilities of an athlete are known, Nideffer (1981). Powerlifting requires few internal or external cues and very little cognitive thought, plus the attentional state of the athletes has been indicated as highly aroused (McGowan, Talton, & Henschen 1988). Due to the nature of the sport, it was hypothesized that the most successful lifters would score higher on narrowing and internal focusing measures than less successful lifters.

Data collection was conducted during the National Collegiate Powerlifting Championships and involved 78 males and 31 females. Immediately following the subjects final lift, they completed an abbreviated form of the TAIS. This form consisted of 12 items and had been reported to have clinical indicators of attentional style (Nideffer, 1976; Nideffer & Sharpe, 1978; Pratt & Nideffer, 1985). Subjects were then grouped according to their finish in their respective weight classes. The top four finishers in each division were placed in Group 1 and the lower finishers were placed in Group 2.

Analysis of the test results revealed that the two groups scored differently on two of the six scales. Unexpectedly, the lower finishers scored higher, or better than the highest finishers on both the Narrowing ($p = .01$)

and Broad Internal ($p = .02$) scales. McGowan et al. (1990) suggested that this could be linked to the lower finishers being over aroused and thus narrowing their attention. However, if this was the case, the lower finishers should have scored high on the overload internal scale. An alternative explanation given was the abbreviated scale did not have factorial validity and should not have been used to determine attentional dimensions.

McGowan et al. (1990) found that their results did not support the TAIS or abbreviated TAIS in: (a) adequately assessing the dimension of attention, or (b) being able to predict performance. They related their findings to those of Van Schoyck and Grasha (1981) and Dewey et al. (1989).

Research Supporting the TAIS

Nideffer (1987) developed the TAIS to serve as a research instrument that would help determine the theoretical relationship between attentional abilities and performance. He suggested individuals could learn to control their cognitive processes better and could develop training programs to enhance their ability to perform. To increase predictive validity, Nideffer stressed the importance of having a specific response set for subjects, an ability level to compare themselves too. This response set would allow for more structure for the subjects and is the main reason why sport specific versions of the TAIS are

better predictors of performance outcomes.

Van Schoyck and Grasha (1981) and Vallerand (1983) conducted studies and concluded that the TAIS did not provide the means to: (a) discriminate between skill level or (b) predict ability. Nideffer attacks their procedures and the results they published. He suggested they received these results because of the lack of instructions given to the subjects. Neither of the studies screened for uncooperative subjects, nor provided a response set or specific instruction to which individuals were to compare themselves. Even though Van Schoyck and Grasha (1981) used a sport specific version that could enhance the subject's decisions on the questions, they did not instruct the subjects with whom to compare themselves.

The purpose of this study (Nideffer, 1987) was to examine how two different versions of the TAIS would predict performance. A sport specific version and the general TAIS were used. It was hypothesized that the sport specific version would increase the ability to predict the level of performance, but would not provide information on the subject's feelings and attitudes that would eventually contribute to success or failure.

The subjects in this study (Nideffer, 1987) were 15 top springboard and tower divers in the United States, all of whom had competed nationally and internationally. There were 8 males and 7 females, ranging in age from 15 to 25.

These subjects were chosen because they constituted an elite population and the researcher had worked with the entire group for several months and had established a good rapport with each one of them.

The divers were asked to complete the TAIS two times. In the first administration, they read the instructions and answered the 144 questions. In the second administration the subjects related each question to diving and answered questions by comparing themselves to other elite divers. They were told the average diver they faced would answer "sometimes" to each question. Both test scores were then compared to performance ratings the divers received from their coach at the culmination of the entire season.

A series of Pearson product-moment correlations were computed on the coaches ratings to find the extent which the TAIS was able to predict results. Nideffer (1987) found that significant correlations occurred between the rating and the scores under both conditions. As expected, the higher correlations came under the sport specific test. Nideffer (1987) stated several reasons why the results were not simply due to chance. First, the variance accounted for from the correlations that are significant are very high. Second, the correlations were very compatible to the expected results of elite divers. Finally, Nideffer (1987) found that the scale correlations of OET and NAR were similar to those found by Van Schoyck and Grasha (1981).

Nideffer (1987) also compared the effects of the response set version to the general TAIS. The instructional set provided a very profound example of an athlete that is very confident and attentionally effective. However, when examining the general TAIS, that same diver showed feelings of being attentionally ineffective, overloaded, and distractable. Therefore, Nideffer (1987) concluded that increasing an instruments ability to predict performance will come at the expense of its ability to explain behavioral processes. Thus, the instrument loses its effectiveness as a counseling and training tool. Since athletes are human and need to be in tune with their surroundings, receive positive feedback, and be comfortable to perform, Nideffer (1987) suggested that the general TAIS provides the behavioral information that will help a coach instruct their athletes and prepare them to perform to their potential.

Finally, Nideffer (1987) addressed why researchers cannot get the TAIS to predict performance between different levels of ability. He states that without the use of a specific response set, subjects compare themselves to others at their same level. To overcome this, researchers must instruct the subjects to compare themselves to the entire population or a specified group. If subjects respond honestly to these response sets, gaps will appear that will separate them by skill level.

Nideffer (1990) responded to the questions raised about the validity of the six attentional scales and the suggestion of collapsing them into two scales, one reflecting scan, (BET, BIT, and INFP) and the other reflecting focus, (OET, OIT, and NAR). He cited several references that reinforce the TAIS as an instrument with good test-retest reliability, construct validity and predictive validity. Nideffer's original study (1976a) provided evidence for test-retest reliability. For construct validity he cited Antonelli, Caldarone, & Gatti, 1982; DePalma & Nideffer, 1977; Feifel, Strack, & Nagy, 1987; Salmela & Ndoeye, 1986; Weins, Harper, & Matarazzo, 1980; and Whitney & Pratt, 1987. For predictive validity, he referenced; Zuckerman, Larrance, Hall, DeFrank, and Rosenthal, 1979; Kerschenbaum and Bale, 1980; Landers and Richards, 1981; Reis and Bird, 1982; and Nideffer 1987. All of these studies provide documented evidence that supports the claims of the Test of Attentional and Interpersonal Style.

Nideffer (1990) reemphasizes that the conclusions drawn by Vallerand, 1983; Van Schoyck and Grasha, 1981; and Dewey et al., 1989 are inappropriate for several reasons. Nideffer (1990) suggested "they failed to recognize that statistical independence is a relative construct" (p 288). Because these researchers found some variance they could not explain they assumed it did not exist. Methodologically,

Dewey et al., (1989) assumed their findings from the factor analysis of the seven scales would mirror the same structure on all 17 scales. Dewey et al. (1989) also based all their data from only 40 subjects, where Nideffer (1990) suggested that to have confidence in data at least 10 subjects are needed for each variable, ($N = 70$). Finally, Nideffer (1990) questioned the three researchers full understanding of the underlying theory of the TAIS. Van Schoyck and Grasha (1981) made this statement "If direction of attention was adequately assessed by the TAIS...one would have expected the scales possessing this dimension to have been negatively correlated. Scales combination BET and BIT as well as scales OET and OIT should have been negatively correlated" (Van Schoyck and Grasha, 1981, p 156). Nideffer argued that individuals must be good at assessing the entire environment. For example, people who are good at assessing situations are also good at analyzing them. Scales measuring the same dimensions must have positive correlations to incorporate all the available information (Nideffer, 1990).

Summary

The research presented that disputed the TAIS provided data that questioned the ability of the TAIS: (a) to adequately measure the dimensions of attention as Nideffer (1976a) proposed them, and (b) to distinguish among skill levels. It also provided data that supported the hypothesis

that the reliability and validity of the individual TAIS scales were less than sport specific measures. Nideffer, in defense of the TAIS as a very useful instrument, cited research that established the reliability and validity of the TAIS as an effective measurement tool within the sport setting. He then questioned the methods and logic that the disputing researchers had used on which they based their conclusions. He proposed these researchers were not clear on the proper administration of the TAIS or its underlying constructs. Finally, he provided evidence that reinforced the original conceptualization and constructions of the TAIS, stating it should be used on an individual basis as an effective counseling and training tool.

CHAPTER THREE

PROCEDURES

The objective of this study was to describe the attentional and control styles of adult female volleyball players with regard to differences in the task demands of positions, level of performance responsibilities during a game, and degree of attentional and control factors. The procedures used in this study included the following areas: (a) selection of subjects, (b) testing procedures, (c) testing instrument, and (d) task analysis.

Selection of Subjects

The participants for this study (N =30) were highly skilled Division I female volleyball athletes. All participants were members of NCAA institutions in a Division I Conference. The top ten outside hitters, middle blockers, and setters were selected based on their statistical performance during one regular season. Each athlete was ranked in their position according to their statistical performance and the top ten performers were then selected to participate in this study. The statistical categories of hitting percentage and digs per game were used to determine the top ten outside hitters. Hitting percentage and blocks per game were used to determine the top ten middle blockers. Finally, assists per game were used to select the top ten

setters.

For permission to use the athletes in this study, contact was made with a member of each institutions' coaching staff. Following approval, packets of the information were mailed to each coach and distributed to the designated athletes. Each coach received a consent letter explaining the study and its purpose (Appendix A). Each player received a letter of informed consent (Appendix B), a demographic questionnaire (Appendix C), and the Test of Attentional and Interpersonal Style (Nideffer, 1976a).

Testing Procedures

The subjects were instructed by their coach to read and complete the informed consent letter, the demographic questionnaire, and the TAIS in an area where few distractions would occur. Specific instructions, (Appendix D), for the TAIS were attached to the test booklet. Each subject was to answer the questions as it described her behavior when playing volleyball. Once the player completed the data she returned it to her coach and it was mailed back to the researcher.

Testing Instrument

The Test of Attentional and Interpersonal Style (Nideffer, 1976a) is a 144 question, paper and pencil

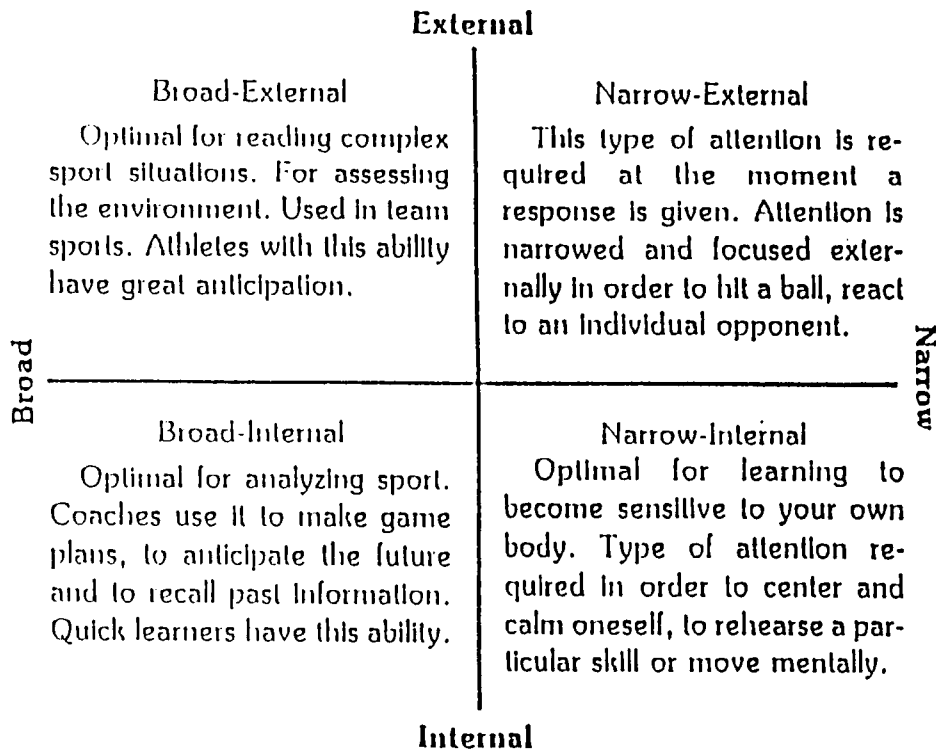
inventory which measures attentional, control, and interpersonal factors. The factors measured have been found to be related to an individual's ability to effectively perform in a variety of situations, i.e., competitive athletics, crisis or emergency situations, as well as business and sales. The TAIS takes approximately 25 minutes to complete. It was developed to: (a) provide a conceptual base for determining the abilities necessary to be effective in a specific job or situation; (b) allow predictions based on those abilities to be made concerning a respondent's expected behavior; and (c) provide information that can be used to develop a training program to enhance an individual's ability to control mental and physical processes (Nideffer, 1976a, 1981).

Each item in the TAIS is "behaviorally anchored" (Nideffer, 1976a). This type of construction allows individuals more capability to assess their own abilities objectively. The 144 items are divided into 17 scales which are categorized into three major areas: (a) attentional, (b) control, and (c) interpersonal style. The attentional area consists of six scales associated with the width and direction of attention as well as the ability to shift attentional focus. The control area consists of two scales measuring the amount of information an individual can effectively process and the amount of control he/she has over their own behavior. The third area, interpersonal

factors, consists of nine scales that provide information about the individual and how he/she interacts with others (Nideffer, 1976a). The information from this third area, interpersonal factors, was not used in this study.

The six attentional scales 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).

From the results of the TAIS an individual can be placed somewhere in the diagram. Using this data, task demands can then be compared/contrasted to determine the types of performance an individual is likely to have. Before complete conclusions are drawn though, one must use the final two scales of attention, narrowing and reduced attention, to determine how well an individual can shift to another attentional focus (Nideffer, 1981). This ability is crucial and the scores provide understanding of why individuals are or are not successful in ongoing, always changing tasks. Combining these scales provides a solid picture of an athlete's abilities to compete in a demanding environment.



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

Figure 2. The four quadrants of attention in athletics.

Task Demands

The task demands for volleyball players sometimes include common requirements or an overlapping of responsibilities. Each position at some time may need to fulfill the roles of other positions to aid in the overall team outcome; e.g. if the setter would dig the attack, another player would have to set the ball. However, dealing with the three specific positions in this study, i.e., outside hitters, middle blockers and setters, each have specific roles. Listed in Figures 3, 4 and 5 are the task demands that are essential to each position (Hendricks, 1991). Players spend hours perfecting these skills and are expected to perform them well in the eyes of their teammates, their coaches, and themselves.

In the outside hitting position there are two main tasks that help players and teams excel; attacking and digging (Hendricks, 1991). Performance measures, attack percentage, and digs per game, are calculated to determine how well an athlete is performing. The sequence of events required in these two skills and attentional factors that are associated with them are listed in Figure 3.

In the middle blocking position, the two main task demands are attacking and blocking (Hendricks, 1991). Performance measures for these two skills are attack percentage and blocks per game. Listed in Figure 4 are the sequence of events in these two skills, followed by the

Outside Hitters

Attacking

<u>Task Demands</u>	<u>TAIS Factors</u>
1. Viewing the height of the pass.	1. Broad External
2. Seeing the position of the blocker.	2. Broad External, Narrowing
3. Viewing the height of the set.	3. Broad External, Narrowing
4. Selecting the time to begin the approach and accelerating.	4. Broad External, Narrow Internal
5. Keeping the ball out in front of the body.	5. Broad External, Narrowing
6. Narrowing in on the ball, peripherally seeing the block.	6. Narrowing, Broad External
7. Snapping the wrist over the ball and following through.	7. Narrow Internal
8. Viewing the path of the ball and the outcome.	8. Broad External

Digging

<u>Task Demands</u>	<u>TAIS Factors</u>
1. Viewing the developing play.	1. Broad External
2. Seeing the approach angle of the attacker.	2. Broad External, Narrowing
3. Moving to a position to dig the attack (in line with the ball, low position, platform to target).	3. Broad External, Narrowing, Broad Internal
4. Watching the attacker contact the ball in relation to the block.	4. Broad External, Narrowing
5. Focusing on the path of the ball in relation to the arms.	5. Narrowing
6. Feeling it rebound off the forearms and watch it go toward the setter.	6. Narrowing, Broad Internal, Broad External
7. Reacting to the next developing play.	7. Broad External

Figure 3. The task demands and corresponding TAIS factors for successful attacking and digging in the outside hitting position (Hendricks, 1991; Nideffer, 1976a).

Middle Blockers

Attacking

Task Demands	TAIS Factors
1. Viewing the height of the pass.	1. Broad External
2. Seeing the position of the blocker.	2. Broad External, Narrowing
3. Viewing the height of the set.	3. Broad External, Narrow Internal
4. Selecting the time to begin the approach and accelerating.	4. Broad External, Narrowing
5. Keeping the ball out in front of the body.	5. Broad External, Narrowing
6. Narrowing in on the ball, peripherally seeing the block.	6. Narrowing, Broad External
7. Snapping the wrist over the ball and following through.	7. Narrow Internal
8. Viewing the path of the ball and the outcome.	8. Broad External

Blocking

Task Demands	TAIS Factors
1. Determine the eligible attackers.	1. Broad External
2. View the height of the pass.	2. Broad External
3. See the set and move to position to block the attack.	3. Broad External, Broad Internal
4. See the approach angle of the attacker.	4. Narrowing
5. Select the time to jump and intercept the attack.	5. Broad External, Broad Internal
6. See the angle of the attackers shoulders, peripherally see the ball.	6. Narrowing, Broad External
7. Surround hands around the ball.	7. Narrowing, Broad External
8. Turn the outside hand in toward the court.	8. Narrow internal, Broad External
9. Pull arms back over the net, land under control, and view the outcome.	9. Broad Internal, Broad External

Figure 4. The task demands and corresponding TAIS factors for successful attacking and blocking in the middle blocking position (Hendricks, 1991; Nideffer, 1976a).

Setters

Setting

<u>Task Demands</u>	<u>TAIS Factors</u>
1. View the developing play of the opponent.	1. Broad External
2. Release to the setting position along the net.	2. Broad Internal, Broad External
3. See the height and angle of the pass.	3. Broad External, Narrowing
4. Move into position to set the ball (hands high, knees flexed).	4. Broad Internal
5. Listen for the sets the hitters call for.	5. Broad Internal
6. Quickly check the position of the opponents blockers.	6. Broad External, Narrowing
7. Deliver the ball to the most beneficial position for the team.	7. Broad Internal, Broad External
8. Cover the hitter and be ready for the developing play.	8. Narrowing, Broad External

Figure 5. The Task demands and corresponding TAIS factors for setting in the setter position (Hendricks, 1991; Nideffer, 1976a).

attentional factors.

In the setting position there is one main task, setting the ball to the best position for the team (Hendricks, 1991). This task, however, requires much more cognitive processing than any other skill in volleyball. The performance measure for setting is assists per game. The process a setter goes through and the attentional factors needed to successfully perform these task are listed in Figure 5.

These task demands were submitted to a judge who knew the game of volleyball and the Nideffer (1976a) attentional terms and approach. The logical validity of the task analysis and respective attentional emphasis were established following discussion by the researcher and the judge.

CHAPTER FOUR

RESULTS

A case study file was made for each player including: (a) the position played, (b) the TAIS profile, and (c) game statistics. By describing the TAIS profile and the performance measures of each athlete in their respective position the results of this study were determined. The scores on the TAIS factors, i. e., attentional and control scales, were compared to the performance measures of each athlete. Athlete's within + or - one standard deviation of the mean were considered to be in the normal range for each factor. Each athlete's performance scores and their TAIS attentional and control profile are included. Explanations within each case study describe the specific TAIS scores and what they imply about the performance of each athlete.

Outside Hitters

In the outside hitting position there are two main tasks; attacking and digging (Chapter 3, Figure 3, p 31). Attack percentage is used to rate outside hitters and can be easily compared to baseball's batting percentage. The higher the percentage, the better the athlete is performing. A percentage between 275 and 330 is a very good percentage for an outside hitter (DeBoer, 1992). The task of digging has the same relationship as attacking. The larger the average number of digs per game, the better the athlete is

performing. An average above 2.0 is considered very good (DeBoer, 1992).

Combined, these two tasks indicate how well an outside hitter is performing. Elite volleyball outside hitters tend to perform these two skills very well. Overall, outside hitters should consistently be at the top of both categories on the team. In Figure 6, the TAIS attention and control profiles are shown for each of the athletes in the outside hitting position. A specific athlete's TAIS profile is identified by their specified number which is written at the top of each individual figure.

Athlete 018

Based on the information processing score, INFP, this athlete perceives her environment to be very busy, 1.5 standard deviations above the mean. Her broad external focus, BET, and broad internal focus, BIT, are nearly 1 standard deviation above the average. The overload external scale, OET, is 1.5 standard deviations below the norm, and the overload internal scale, OIT, is 2 standard deviations below the mean. This indicates this athlete does not get overloaded very easily. Her narrowing ability, NAR, is very high, almost 2 standard deviations above the norm. The reduced attention scale, RED, indicates she does not exclude important information when making decisions. Finally, her behavior control scale, BCON, is 1.5 standard deviations below the mean. This indicates she does not feel she needs

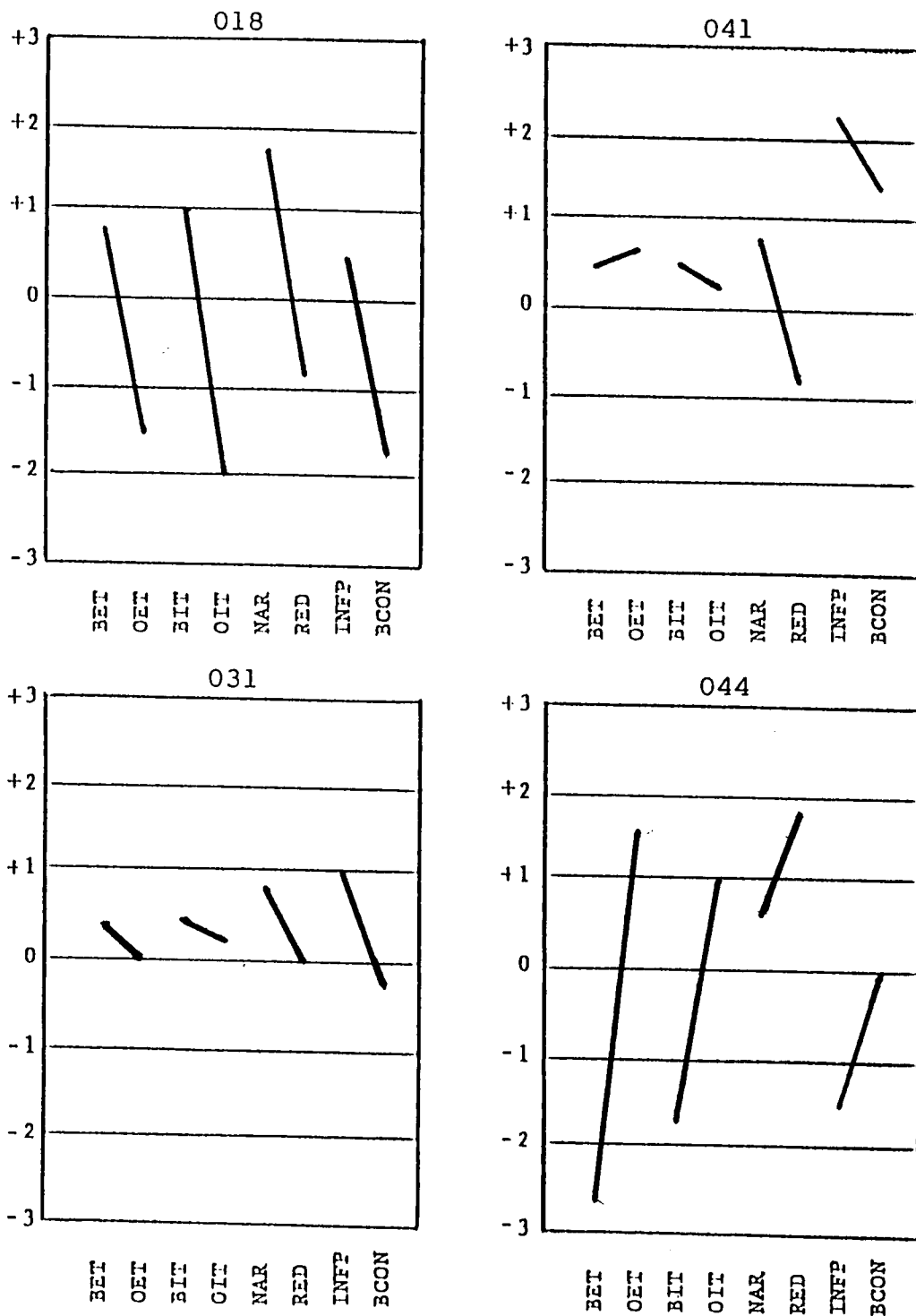


Figure 6. The attention and control TAIS profiles for outside hitters, based on the standardized scores, (Z scores), for university students (Nideffer, 1976a).

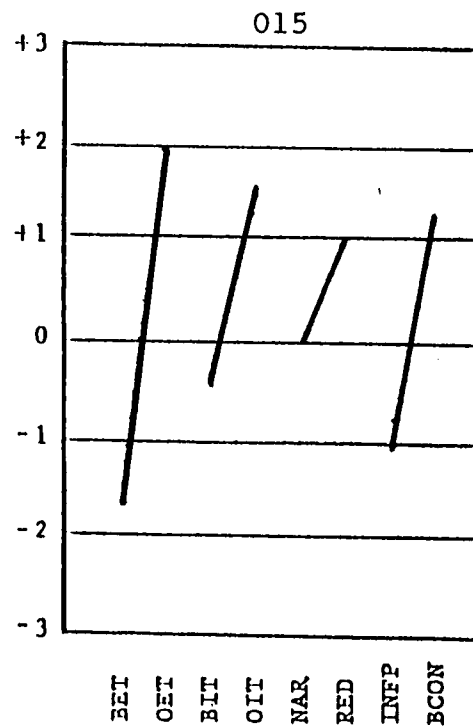
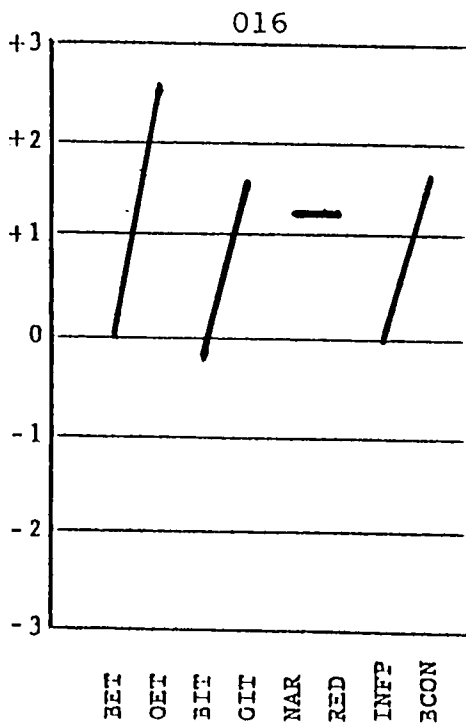
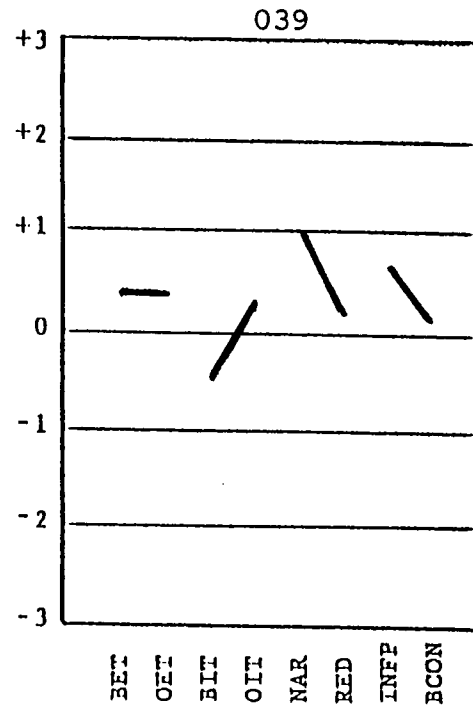
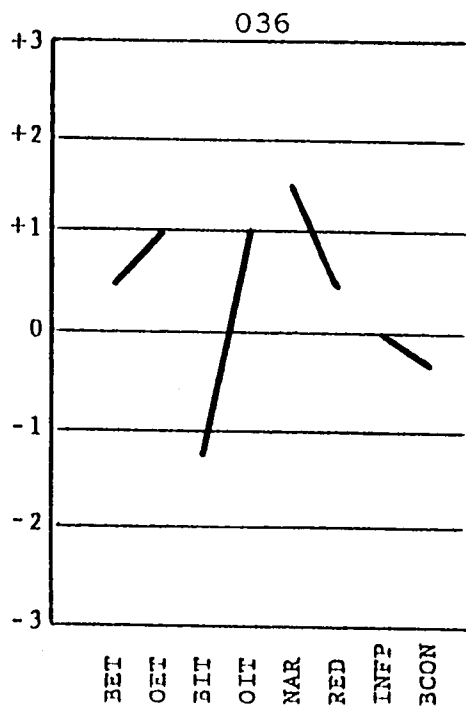


Figure 6: (Cont.)

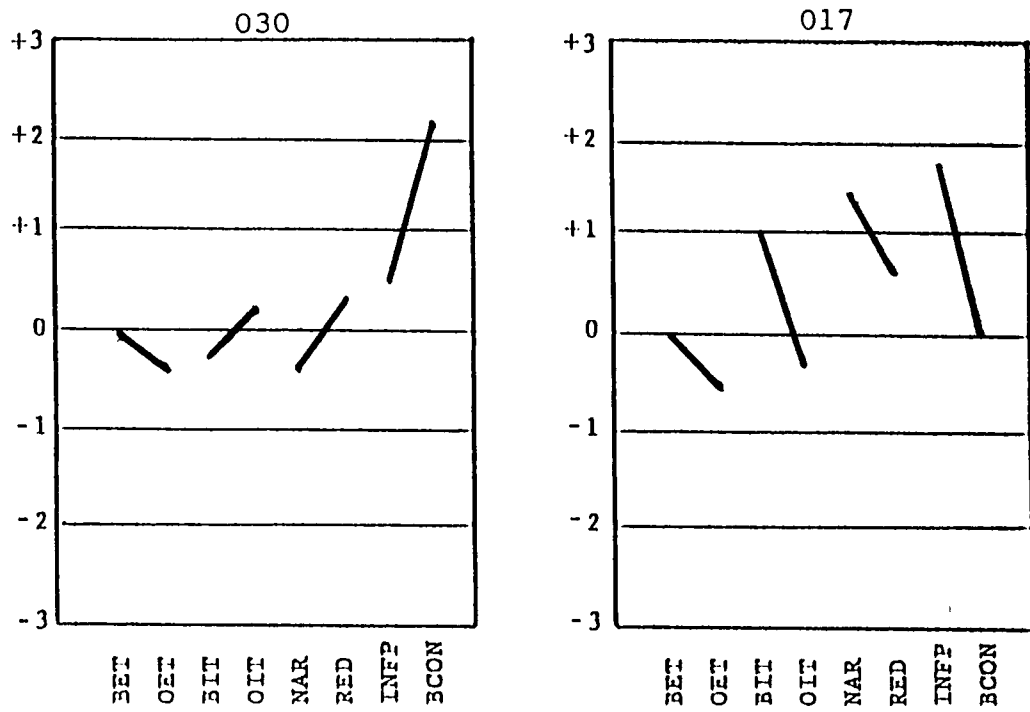


Figure 6: (Cont.)

control over the behaviors of her teammates and rarely acts impulsively.

This athlete's attack percentage, 335, and dig average, 2.9, are very high. Her TAIS profile reinforces her success because it indicates she has good focus and narrowing abilities allowing her to be a very consistent player.

Athlete 041

Based on the informational processing scale, INFP, this athlete perceives her environment as being very busy, 2 standard deviation above the mean. Her attentional scales; broad external, BET, broad internal, BIT, overload external, OET, overload internal, OIT are all within the normal range, indicating she has good attentional abilities. This athlete's ability to narrow, NAR, is close to being one standard deviation above the mean and her reduced attentional scale, RED, is located at the other end of the normal range, indicating this athlete is good at narrowing her attention without excluding important information. Finally, the behavior control scale, BCON, is 1.5 standard deviations above the mean. This indicates she may feel the need to control her teammates' behaviors and may act impulsively at times.

This athlete's attack percentage, 248 is a little low, but her digs per game average, 3.3 is very high. The TAIS profile indicates this athlete is able to perform well because of her ability to narrow her attention to relevant

cues. She focuses very well on pertinent information and this helps her be successful. Her high need for control may be related to her low attack percentage. She may be trying to do too much for the team, reacting impulsively instead of maintaining self control. This impulsiveness may be causing her to be less successful when attacking.

Athlete 031

The score on information processing scale, INFP, is one standard deviation above the mean, indicating this athlete perceives her environment to be more busy than the average person. She has good broad external focus, BET, and broad internal focus, BIT and the corresponding overload scales, overload external, OET, and overload internal, OIT, are within the normal range. She is nearly one standard deviation above the mean in her ability to narrow her attention, NAR, and has an average score for reduced attention, RED, which indicates she is good at narrowing to relevant information without excluding important information. Finally, her behavior control score, BCON, is within the normal range.

This athlete's attack percentage and digs per game are very good, 306 and 2.2 respectively. Her TAIS profile indicates she has good attentional and control characteristics suggesting she is a very consistent performer who is very comfortable within her environment.

Athlete 044

This athlete does not perceive her environment to be very busy. Her information processing score, INFP, is one standard deviation below the mean. Her broad external focus, BET, is 2.5 standard deviations below the norm and her broad internal focus, BIT, is 1.5 standard deviations below the average. These scales indicate she does not have good external or internal focus. The overload external scale, OET, and overload internal scale, OIT, indicate she may become easily overloaded or distracted with too much information. Her narrowing ability, NAR, is slightly above the norm, however, she tends to exclude relevant information when making decision, i.e., her reduced attention scale, RED, is two standard deviations above the norm. Finally, her behavior control score, BCON, is within the normal range.

The attack percentage for this athlete, 229, is somewhat low for an outside hitter. However, her digs per game average is extremely high, 3.9. Because attacking is a complex skill, and the fact that her profile indicates she may become very overloaded when the environment becomes more demanding, these characteristics combined may be the cause of her lower attack percentage.

Athlete 036

This athlete perceives her environment to be as busy as the average person. Her information processing score, INFP, is right at the mean. She has good broad external focus,

BET, and is one standard deviation below the mean with broad internal focus, BIT. Her overload scores, overload external, OET, and overload internal, OIT, are both one standard deviation above the mean. However, this athlete's ability to narrow her focus, NAR, is also one standard deviation above the mean. This indicates that although she could become overloaded by external and internal information, she is effective in narrowing her focus in on the pertinent details. Her reduced attention scale, RED, indicates she does not exclude important information when making decisions. Finally, her behavior control score, BCON, is within the normal range.

This athlete's attentional strength is her ability to narrow her attention. She has a good attack percentage, 294, and is above average in digs per game, 2.5. She may tend to get overloaded when the environment becomes more demanding, however, the profile indicates she would remain a consistent performer. As suggested above, this is probably due to her ability to narrow her attention so effectively.

Athlete 039

The information processing score, INFP, indicates this athlete perceives her environment to be slightly more busy than the average person. Both her broad external focus, BET, and broad internal focus, BIT, are within the normal range along with her overload scales, overload external, OET, and overload internal, OIT. These four scales indicate this

athlete has good attentional characteristics. This athlete's ability to narrow her attention, NAR, is one standard deviation above the mean and she has an average score for reduced attention, RED, indicating she narrows well, without excluding important information. Finally, her behavior control score, BCON, is within the normal range.

This athlete's attack percentage is slightly low at 242, but she is well above average in digs per game at 2.9. Her ability to narrow her focus well is her strongest attribute to being a successful player. All her scores fall within the normal range, which indicates she would tend to be a very consistent player. Because her TAIS profile shows such consistency, a detailed look at her physical characteristics is needed to help determine why she has such a low attack percentage.

Athlete 016

The information processing score, INFP, for this athlete is right at the mean. This indicates the athlete perceives her environment to be as busy as the average person. She has normal broad external focus, BET, and broad internal focus, BIT. She scored 2.5 standard deviations above the mean on her overload external scale, OET, and 1.5 standard deviations above the norm on her overload internal scale, OIT. This indicates she may tend to get overloaded both externally and internally when the environment becomes more demanding. The narrowing of attention scale, NAR, is

slightly above 1 standard deviation as well as the reduced attention scale, RED. These two scales indicate this athlete is above average in narrowing her attention, but does not always include all the relevant information when making a decision. Finally, the behavior control scale, BCON, is 1.5 standard deviations above the mean. This indicates this athlete may like to exert control over her teammates' behaviors and may sometimes act impulsively.

This athlete's attack percentage, 251, is a little low and her digs per game score, 2.2 is a little above average. The TAIS profile indicates she may tend to get overloaded both internally and externally when her environment becomes more demanding, plus she may try to control the behaviors of her teammates' and/or react impulsively. This would be more likely to happen when she is attacking because of the busier environment and this may be the cause of her low attack percentage.

Athlete 015

This athlete's information processing score, INFP, is one standard deviation below the average, which indicates she does not see her environment as very busy. The broad external focus, BET, is 1.5 standard deviations below the mean and the overload external scale, OET, is 2 standard deviations above the mean. This indicates that she may have trouble dealing with large amounts of information from the environment. Her broad internal focus, BIT, is normal with

the overload internal scale, OIT, registering 1.5 standard deviations above the mean. Again, this indicates she may become overloaded when the environment becomes more demanding. This athlete's ability to narrow her focus, NAR, is average, but the reduced attention score, RED, indicates she may reduce her attention too far and exclude important information when making a decision. Finally, the behavior control scale, BCON, is slightly above 1 standard deviation above the mean indicating she may act impulsively at times and/or try to control her teammates' behaviors.

The attacking percentage for this athlete, 345, is very good, however, her digs per game average is somewhat low, 1.4. This may be related to her becoming overloaded with information and not reducing her attention to only the relevant stimuli when playing defense. She may try to include too many variables causing her success rate to be low. This information along with a detailed look at her physical characteristics would help determine why she has such a high attack percentage and low digs per game average.

Athlete 030

The information processing scale, INFP, indicates this athlete perceives her environment to be slightly more busy than the average person. Her broad external focus, BET, broad internal focus, BIT, overloaded external, OET, overload internal, OIT, ability to narrow attention, NAR, and reduce attention, RED, are all within the normal range.

This indicates she is a very consistent athlete with good attentional abilities. The score on the behavior scale, BCON, is 2 standard deviations above the mean. This indicates she has a willingness to exert control over her teammates' behaviors and may tend to act impulsively.

This outside hitter's attack percentage is a little low, .207, but she has a very high digs per game average, 3.1. Her profile indicates she is a relatively consistent performer. However, her tendency to be impulsive may be the cause of her low attack percentage. She may try to exert too much control offensively and lose her self-control.

Athlete 017

The information processing score, INFP, is almost 2 standard deviations above the norm. This indicates the athlete perceives her environment as extremely busy. Her broad external focus, BET, is in the normal range, and her overload external score, OET, is also there. The internal attentional focus, BIT, is 1 standard deviation above the mean and the related scale, overload internal, OIT, is in the normal range. These four scales indicate this athlete does not get overloaded externally or internally very easily. The athlete's ability to narrow her focus, NAR, is very good, i.e., 1.5 standard deviations above the mean. The reduced attentional scale, RED, is located in the normal range. Finally, the behavior control score, BCON, is located within the normal range.

This athlete's attentional strength is her ability to narrow her focus. Her attack percentage, 257, is a little low, but her digs per game is average at 2.0. Her TAIS profile indicates she would be a very consistent player. A detailed look at her physical characteristic is needed to help determine why she has such a low attack percentage.

Summary

In the outside hitting position there did not appear to be any commonalities among the top ten performers and their individual TAIS attention and control profiles. Each athlete's individual scores for each of the attention and control scales measured in this study had unique characteristics. These individual characteristics helped to interpret higher and/or lower performances in the outside hitters' tasks, evaluated by attack percentage and digs per game.

Middle Blockers

In the middle blocking position there are two main tasks; attacking and blocking (Chapter 3, Figure 4, p 32). The attack percentage for middle blockers is the same as for outside hitters and blocking also has the same relationship. The bigger the number, the better the performance. A good attack percentage for a middle blocker is anywhere between 300 to 350 (DeBoer, 1992). A good blocks per game average is 1.0 or higher (DeBoer, 1992).

These two tasks are very good indicators of how well middle blockers are performing. Middle blockers should consistently be at the top of these two performance measures. In Figure 7, the TAIS attention and control profiles are presented for each athlete in the middle blocking position. A specific athlete's TAIS profile is identified by their specified number which is written at the top of each individual figure.

Athlete 021

The information processing score, INFP, indicates this athlete perceives her environment to be as busy as the average person. Both the broad external focus, BET, and broad internal focus, BIT, are within the normal range. The overload external scale, OET, is also within the normal range and the overload internal scale, OIT, is 1 standard deviation below the mean. These factors indicate this athlete has good external and internal focus and does not seem to get overloaded very easily. The narrow attention scale, NAR, is the highest attentional scale for this athlete indicating she attends to the most relevant information very well. Her reduced attention score, RED, indicates she does not exclude important information when making decisions. Finally, the behavior control score, BCON, is within the normal range.

This athlete's attack percentage, 392, and blocks per

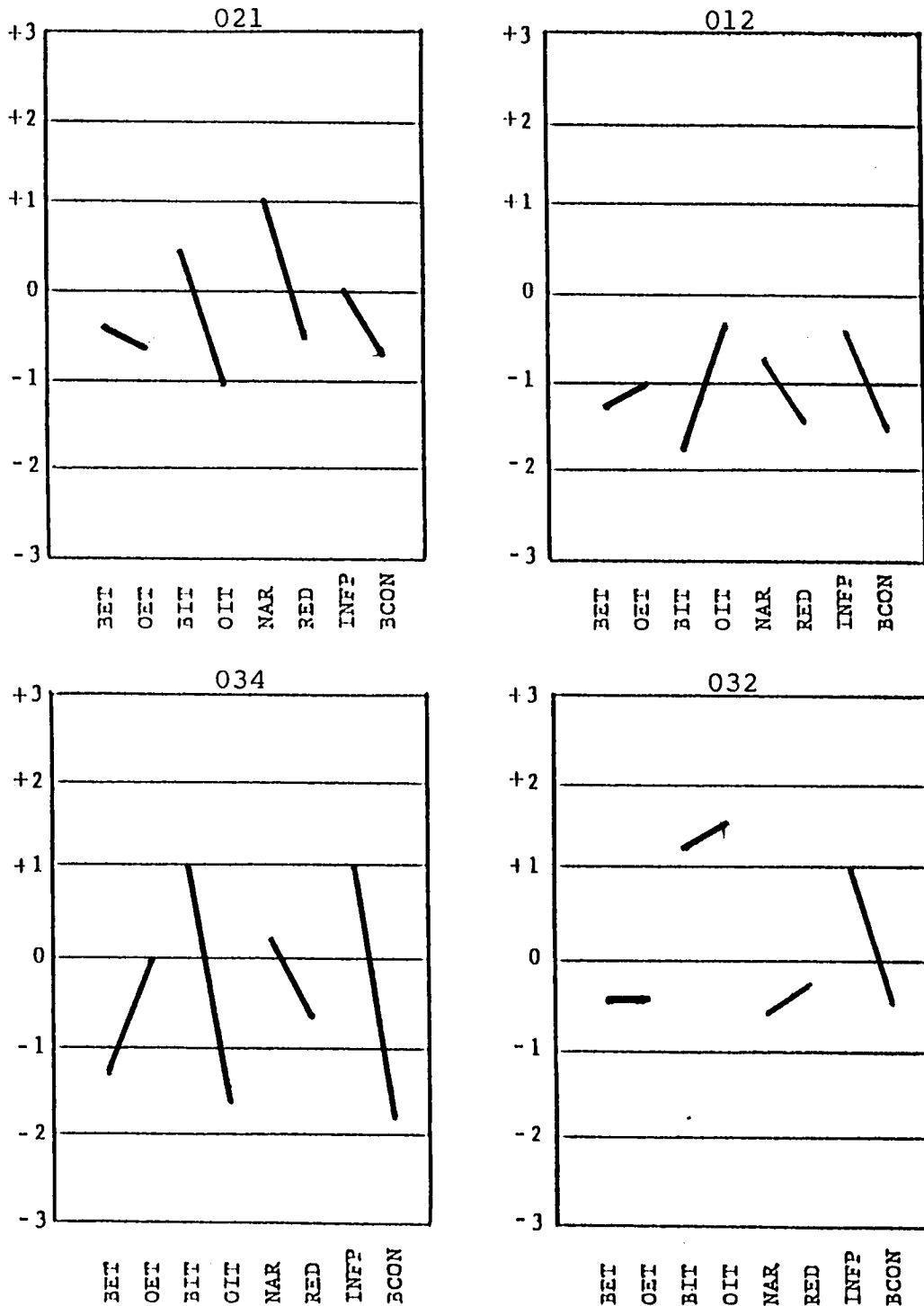


Figure 7. The attention and control TAIS profiles for middle blockers, based on the standardized scores, (Z scores), for university students (Nideffer, 1976a).

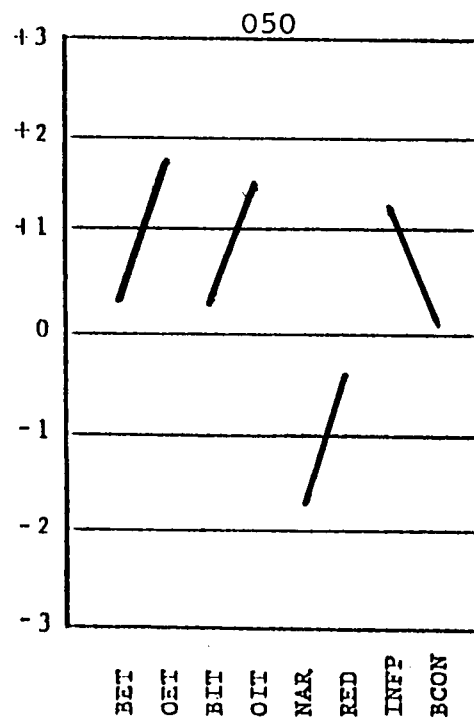
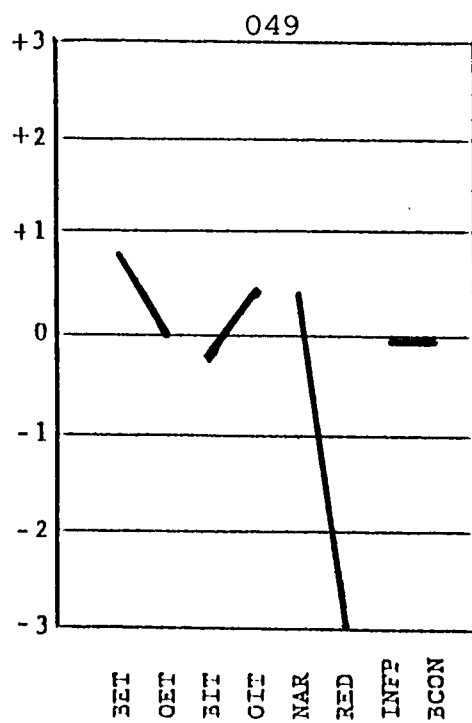
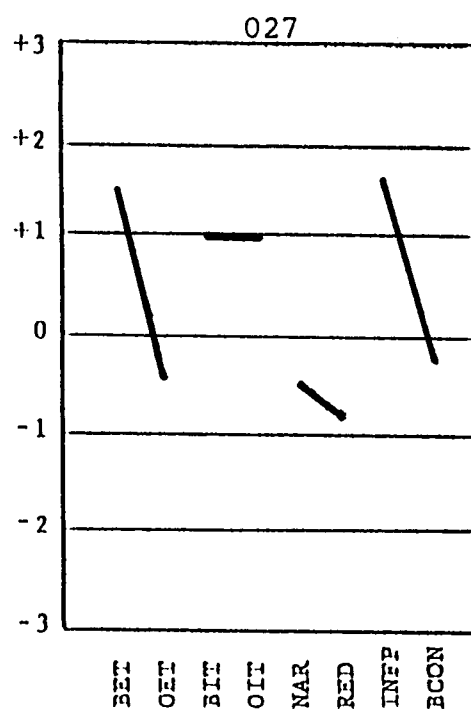
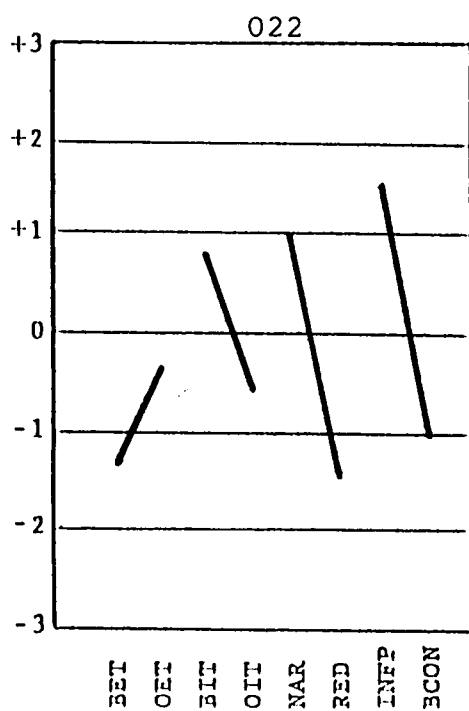


Figure 7: (Cont.)

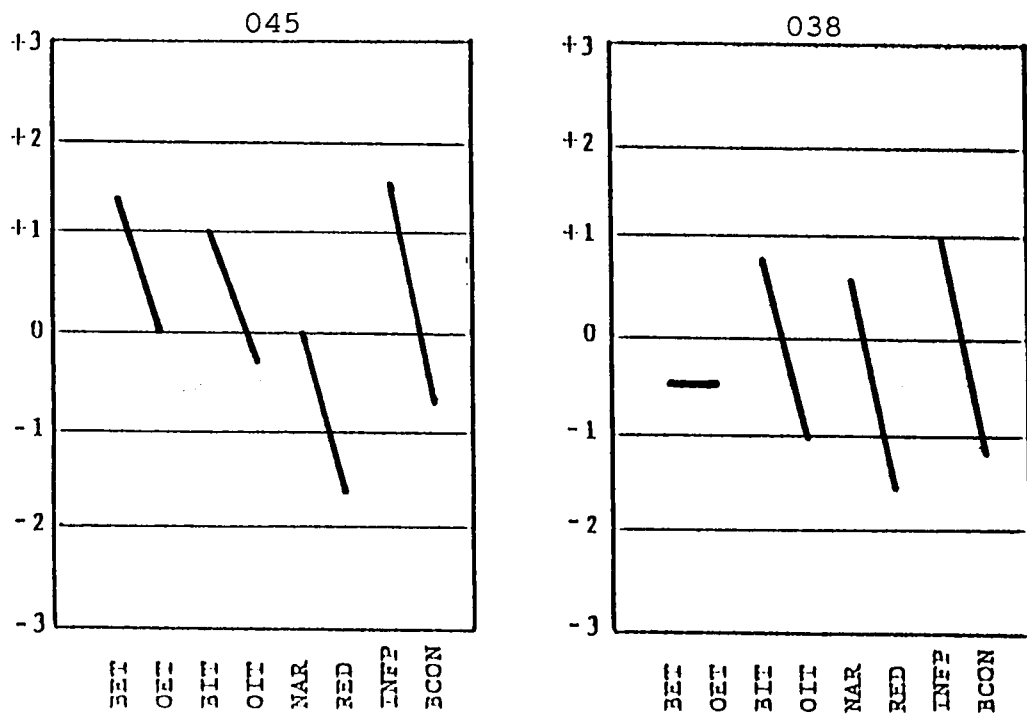


Figure 7: (Cont.)

game, 1.7, are extremely high. Her ability to narrow her focus is her greatest strength and the fact that all her other scores fall within the normal range indicates she is a very consistent player.

Athlete 012

The information processing score, INFP, indicates this athlete perceives her environment to be only as busy as the average person. Her broad external focus, BET, is slightly below 1 standard deviation, and the corresponding scale, overload external, OET, is 1 standard deviation below the mean. The broad internal scale, BIT, is almost 2 standard deviations below the mean. Her overload internal scale, OIT, is within the normal range. These scales indicate that she may tend to become overloaded both externally and internally when the environment becomes more demanding. Her ability to narrow her attention, NAR, is normal and she tends to be good at making decisions without excluding important information, i.e., her reduced attention scale, RED is within the normal range. Finally, her behavior control score, BCON, is 1.5 standard deviations below the mean. This indicates she does not feel the need to control her teammates' behaviors and rarely acts impulsively.

This athlete's attack percentage, 37.8, and blocks per game, 1.3, are very good. Her TAIS attentional scales are somewhat low, but because she does not perceive her environment to be overly busy, she can perform successfully.

In addition she is good at narrowing her attention without excluding important information when making decisions.

Athlete 034

The information processing scale, INFP, is 1 standard deviation above the mean indicating this athlete perceives her environment to be more busy than the average person. Her broad external focus, BET, is a little more than 1 standard deviation below the mean, with the corresponding scale, overload external, OET, registering at the exact mean. This indicates she may tend to become externally overloaded when the environment becomes more demanding. The broad internal scale, BIT, is 1 standard deviation above the mean, with the overload internal scale, OIT, registering 1.5 standard deviations below the mean, indicating she has good internal focus. The ability to narrow attention, NAR, is within the normal range along with the reduced attention scale, RED. Finally, the behavior control score, BCON, is 2 standard deviations below the mean. This indicates this athlete does not feel the need to control her teammates' behaviors and rarely acts impulsively.

This athlete's attack percentage, 365, and blocks per game, 1.1, are very good. She may tend to get overloaded externally more quickly than internally. However, her scores are all within or near the normal range and she has good narrowing ability so she would tend to be a very consistent player.

Athlete 032

This athlete's information processing score, INFP, is 1 standard deviation above the mean, indicating she perceives her environment as more busy than the average person. Her broad external scale, BET, and overload external scale, OET, and both within the normal range. The broad internal scale, BIT, is slightly above 1 standard deviation above the mean, and the overload internal scale, OIT, is slightly higher than the BIT scale indicating she may get overloaded internally when the environment becomes more demanding. This athlete's ability to narrow her focus, NAR, is normal, along with her reduced attention scale, RED. Finally, the behavior control score, BCON, is within the normal range.

The attack percentage for this athlete, 374, is very good, and her blocks per game, .90, is just below a good average. Her profile indicates she may tend to get overloaded internally and this may be the cause of her low blocking average. Instead of keeping an external focus and reacting to the play as she sees it developing, she may be thinking too much and guessing at where the setter is going to set the ball. This would cause her success rate in blocking to fall.

Athlete 022

This athlete's information processing score, INFP, is 1.5 standard deviations above the mean. This indicates she perceives her environment to be very busy. The broad

external scale, BET, is slightly below 1 standard deviation from the mean and the overload external score, OET, is within the normal range indicating she may tend to get overloaded externally when the environment becomes more demanding. Both the broad internal score, BIT, and overload internal score, OIT, are within the normal range. This athlete's narrowing ability, NAR, is very good registering 1 standard deviation above the mean. Her reduced attention score, RED, is 1.5 standard deviations below the mean, indicating she does not exclude important information when making decisions. Finally, the behavior control score, BCON, is 1 standard deviation below the mean. This indicates she does not feel the need to be in control of her teammates' behaviors or act impulsively.

The attack percentage, 259, for this athlete is relatively low, however, she has a high blocks per game average, 1.3. Her lack of BET focus may be the cause her low attack percentage in that with the skill of attacking an athlete needs to be aware of many stimuli. However, she perceives her environment to be very busy and has good narrowing ability so she would tend to be a very consistent player. A detailed look at her physical characteristics is needed to help determine why she has a low attack percentage.

Athlete 027

This athlete's information processing score, INFP is

1.5 standard deviations above the mean. This indicates this athlete perceives her environment as very busy. Her broad external focus, BET, is very good, scoring 1.5 standard deviations above the mean. Her overload external scale, OIT, is within the normal range. Both the broad internal focus, BIT, and the overload internal scale, OIT, are 1 standard deviations above the mean. These four scales indicate she has good attentional focus both externally and internally. She may have a tendency to become overloaded internally, but because she perceives her environment as very busy, it would be uncommon. The narrowing attention scale, NAR, is within the normal range and the reduced attention scale, RED, is also in this range. Finally, the behavior control score, BCON, is within the normal range.

The attack percentage for this athlete, 316, is very good, but her blocks per game average is a little low, .70. Overall, her BET and BIT scales are somewhat high, but because she perceives her environment to be very busy, and has good narrowing ability, she would tend to be a very consistent player. A detailed look at her physical characteristics is needed to help determine why she has a low blocking average.

Athlete 049

This athlete's information processing score, INFP, is right at the mean, indicating she perceives her environment to be as busy as the normal person. Five of her attentional

scales; broad external, BET, broad internal, BIT, overload external, OET, overload internal, OIT, and narrowing ability, NAR, are all within the normal range indicating she has good attentional abilities. However, the reduced attentional scale, RED, is 3 standard deviations below the mean. This may indicate she is focusing on some irrelevant information and excluding it when making a decision. Finally, the behavior control score, BCON, is within the normal range.

The attack percentage for this athlete, 374, is very good, but her blocks per game, .70, is a little low. This athlete's TAIS profile indicates she is a very consistent player, with the exception of her RED scale. Her low RED score may be related to her low blocking average. She may be allotting too much attention to irrelevant cues and reducing them to irrelevancy, when she could be using that attention to focus on stimuli that would make her more successful.

Athlete 050

This athlete's information processing score, INFP, is slightly higher than 1 standard deviation above the mean, indicating she perceives her environment to be more busy than the average person. Both her broad external focus, BET, and broad internal focus, BIT, are within the normal range. However, the overload external scale, OET, is almost 2 standard deviations above the mean and the overload

internal scale, OIT, is 1.5 standard deviations above the mean indicating she may tend to become overloaded both externally and internally when the environment becomes more demanding. Her ability to narrow her attention, NAR, is 1.5 standard deviations below the mean and her reduced attention scale, RED, is within the normal range. This indicates she may be focusing on irrelevant information and excluding important details when making decisions. Finally, the behavior control score, BCON, is within the normal range.

The attack percentage for this athlete is 269, this is low for a middle blocker. However, her blocks per game average, 1.0 is good. Her TAIS profile indicates that she tends to get overloaded in busy environments and exclude important information when making decisions. Because her narrowing ability is very low, she may not focus on the relevant stimuli when attacking. This characteristic along with the nature of this position, blocking and immediately attacking within the same rally, may be the cause of her low attack percentage.

Athlete 045

This athlete's information processing score, INFP, is 1.5 standard deviations above the mean, indicating she perceives her environment to be very busy. Both her broad external focus, BET, and broad internal focus, BIT, are 1 standard deviation above the mean, indicating she has above average attentional focus. The overload external scale,

OET, and overload internal scale, OIT, are both within the normal range. This athlete's ability to narrow her attention, NAR, is average and her reduced attention scale RED, is 1.5 standard deviations below the mean. This indicates she is able to focus her attention on relevant stimuli and make decisions without excluding important information. Finally, the behavior control score, BCON, is within the normal range.

This athlete's attack percentage, 21.5, is very low for a middle blocker, but she does have a good blocks per game average, 1.1. Her TAIS profile indicates she perceives her environment to be very busy and the remaining attention and control scales suggest she is a very consistent player that would be very successful at both skills. This information suggests that a detailed look at this athlete's physical characteristics is needed to help determine why she has a low attack percentage.

Athlete 038

The information processing scale, INFP, is 1 standard deviation above the mean, indicating this athlete perceives her environment to be more busy than the normal person. Her broad external scale, BET, and overload external scale, OET, are both within the normal range. The broad internal scale, BIT, is close to being 1 standard deviation above the mean, with the overload internal scale, OIT, 1 standard deviation below the mean, indicating she rarely becomes overloaded

internally. This athlete's narrowing ability, NAR, is normal, but her reduced attention scale, RED, is slightly lower than 1 standard deviation below the mean. This indicates she focuses well on stimuli without excluding important information when making decisions. Finally, the behavior control score, BCON, is within the normal range.

The attack percentage for this athlete, 214, is low for a middle blocker, and her blocks per game, .60 is also low. Her profile indicates she is a very consistent player, with normal attentional strengths and good narrowing ability. Therefore, a detailed look at this athlete's physical characteristic is needed to help determine why she has both a low attack percentage and low blocking average.

Summary

In the middle blocking position there did not appear to be any TAIS profile commonalities among the top ten performers and their individual attention and control profiles. Each athlete's individual scores for each of the TAIS attention and control scales measured in this study had unique characteristics. These individual characteristics helped to interpret higher and/or lower performances in the middle blocker's tasks, evaluated by attack percentage and blocks per game.

Setters

In the setting position the main task is setting the ball to the best position for your team (Chapter 3, Figure

5, p. 33). An assist is recorded every time an attacker kills the ball for a point or sideout. A good assist average for a setter is 11.0 per game (DeBoer, 1992). Setters are always at the top of this performance measure, because it is their role for the team. In Figure 8, the TAIS attention and control profiles are included for each athlete in the setting position. A specific athlete's TAIS profile is identified by their specified number which is written at the top of each individual figure.

Athlete 037

This athlete's information processing score, INFP, is in the normal range, indicating she perceives her environment to be as busy as the average person. Her broad external scale, BET, is within the normal range, but the overload external scale, OET, is slightly above 1 standard deviation from the mean. The broad internal scale, BIT, is 1 standard deviation below the mean, with its corresponding scale, overload internal, OIT, 1 standard deviation above the mean. This athlete's ability to narrow her attention, NAR, is within the normal range and her reduces attention scale, RED, is 1 standard deviation above the mean. These scales combined would indicate this athlete would tend to become overloaded, both externally and internally, when her environment becomes more demanding and she would make errors in decisions because of excluding important information. Finally, her behavior control score, BCON, is 1.5 standard

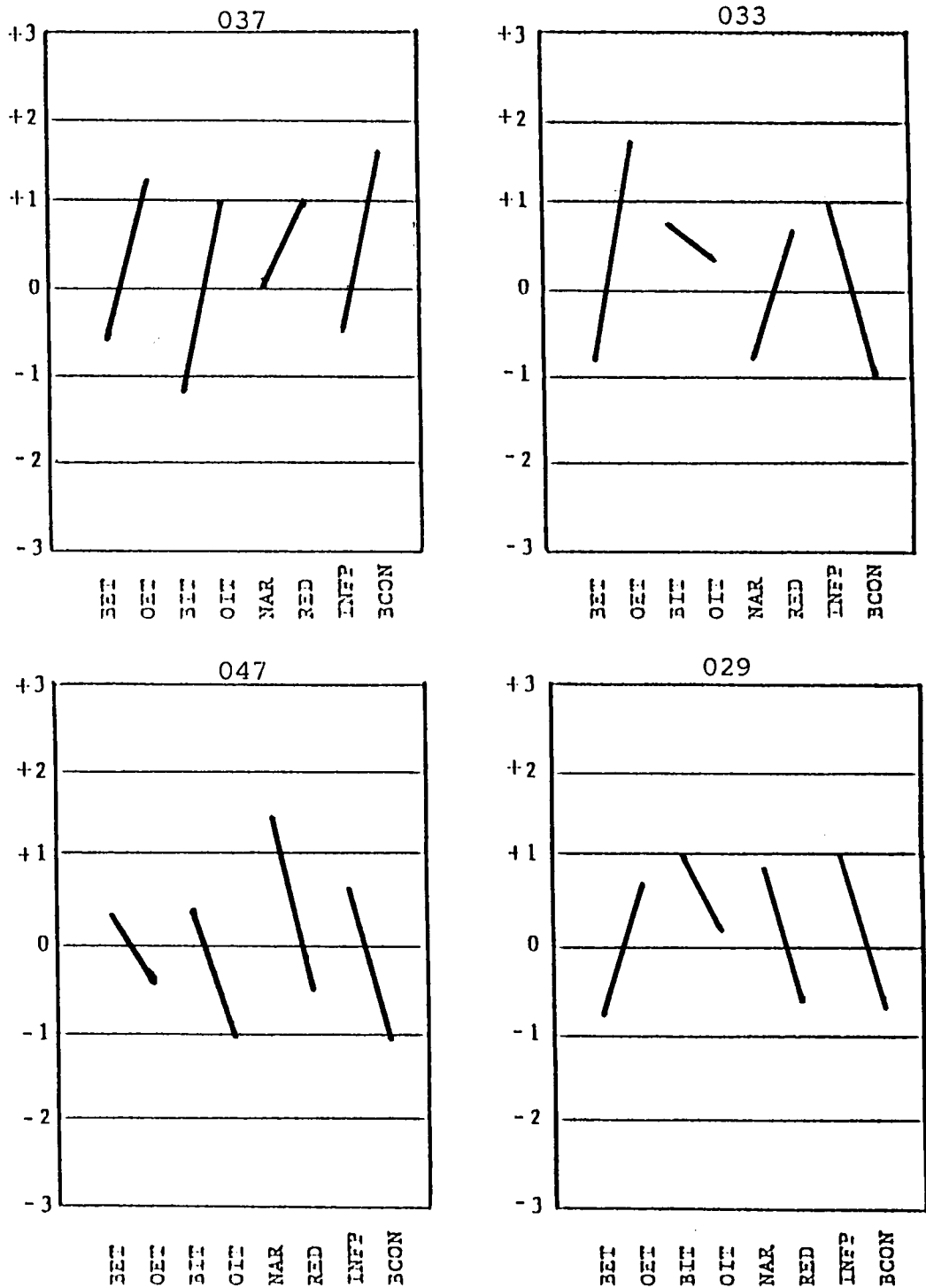


Figure 8. The attention and control TAIS profiles for setters, based on the standardized scores, (Z scores), for university students (Nideffer, 1976a).

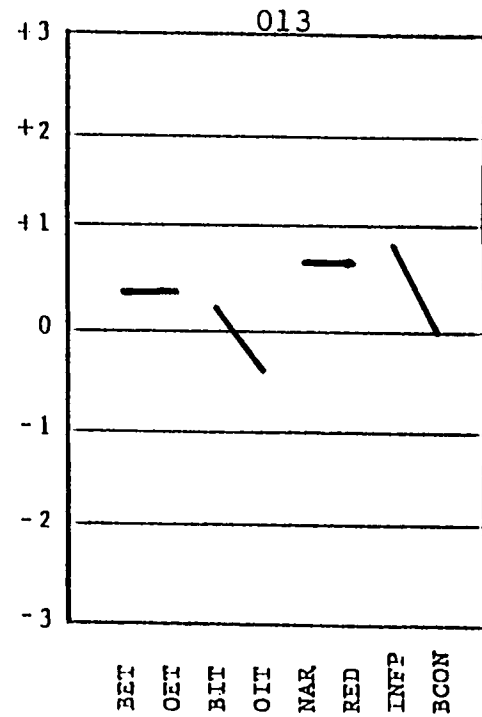
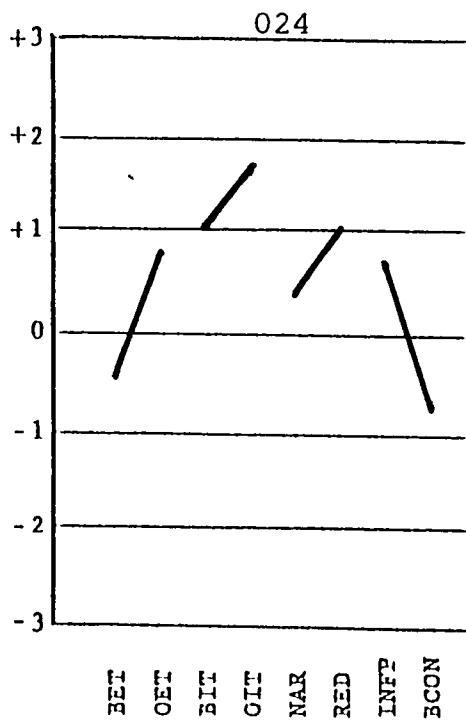
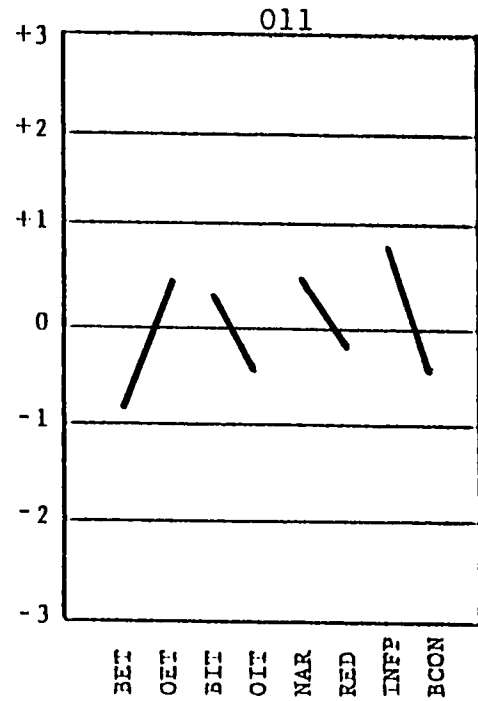
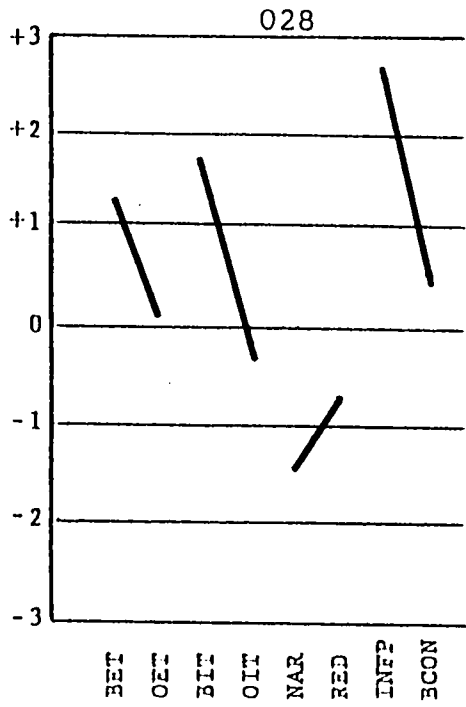


Figure 8: (Cont.)

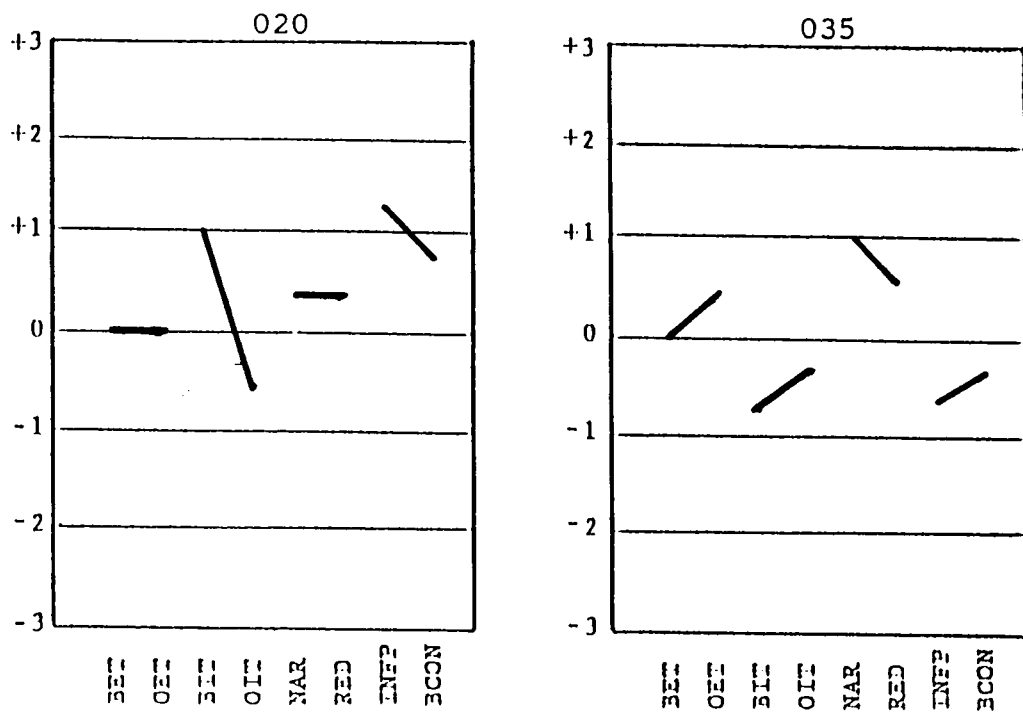


Figure 8: (Cont.)

deviations above the mean. This indicates she may feel the need to control her teammates' behavior and act impulsively.

This athlete's assists per game average, 16.5, is very good. Her TAIS profile indicates she tends to get overloaded, both internally and externally, when the demands within the environment increase. Also, she may try to take too much control of her environment and not always act in the best interest of the team. Since her assists per game average is so high and her TAIS profile is contradictory to such success, a detailed look at this athlete's physical characteristics and the type of team she plays with is needed to help determine why her performance is so successful.

Athlete 033

This athlete's information processing score, INFP, is 1 standard deviation above the mean, indicating she perceives her environment to be more busy than the average person. Her broad external focus, BET, is within the normal range, however, her overload external scale, OET, is almost 2 standard deviations above the mean indicating she tends to become overloaded when the environment becomes more demanding. Both her broad internal scale, BIT, and overload internal scale, OIT, are within the normal range. This athlete's ability to narrow her focus, NAR, is within the normal range and her reduced attention scale, RED, is also within the normal range. Finally, the behavior control

score, BCON, is 1 standard deviation below the mean. This indicates she does not feel the need to control her teammates' behaviors and rarely acts impulsively.

The assists per game average for this athlete, 12.4, is very good. Her TAIS profile indicates she may get overloaded externally when the environment gets more demanding, and exclude relevant information when making decisions. However, internally she is stable which may allow her to set the ball consistently to her attackers. A detailed look at her physical characteristics and the team she plays with is needed to help further determine why she is successful.

Athlete 047

This athlete's information processing score, INFP, is slightly higher than the mean, indicating she sees her environment as being slightly more busy than the average person. Her broad external focus, BET, and overload external scale, OET, are both within the normal range. The broad internal focus scale, BIT, is within the normal range, with the overload internal scale, OIT, registering 1 standard deviation below the mean. These four scales indicate she has good attentional focus and rarely becomes overloaded. This athlete's ability to narrow her attention, NAR, is very good. It is 1.5 standard deviations above the mean. Her reduced attention scale, RED, is within the normal range. Finally, the behavior control score, BCON, is

1 standard deviation below the mean. This indicates this athlete does not feel the need to control her teammates' behaviors and rarely acts impulsively.

The assists per game average for this athlete, 12.2 is very good. Her TAIS profile indicates she is a very consistent player, who has a very good ability to narrow her attention. She rarely gets overloaded, or makes mistakes by excluding relevant information.

Athlete 029

This athlete's information processing score, INFP, is 1 standard deviation above the mean, indicating she perceives her environment to be more busy than the average person. Her broad external focus, BET, and overload external scale, OET, are both within the normal range. The broad internal focus, BIT, is 1 standard deviation above the mean, with its corresponding scale, overload internal, OIT, registering within the normal range. These four scales indicate she has good attentional focus and rarely becomes overloaded. This athlete's ability to narrow her attention, NAR, is 1 standard deviation above the mean and her reduced attention scale, RED, is within the normal range. This indicates she narrows her attention well without excluding important information when making decisions. Finally, the behavior control score, BCON, is within the normal range.

This athlete's assists per game average, 11.9 is very good. Her profile indicates she is a very consistent

player, who perceives her environment to be busy and is able to narrow her attention very well to make good decisions.

Athlete 028

This athlete's information processing score, INFP, indicates she perceives her environment as extremely busy, almost 3 standard deviations above the mean. Both her broad external focus, BET, and broad internal focus, BIT, are slightly over 1 and nearly 2 standard deviations above the mean, respectively. The corresponding overload scales, overload external, OET, and overload internal, OIT, are both within the normal range. These four scales indicate this athlete rarely becomes overloaded when the environment gets more demanding. However, this athlete's ability to narrow her attention, NAR, is low, registering nearly 1.5 standard deviations below the mean and her reduced attention scale, RED, is within the normal range. These two factors indicate that sometimes she may not narrow her attention enough and when she does narrow her attention, she may exclude information when making decisions. Finally, the behavior control score, BCON, is within the normal range.

This athlete's assists per game average, 11.9 is very good. Her TAIS profile indicates she sees her environment as extremely demanding. This allows her BET and BIT scale to be so high without causing her problems. Her weaknesses are her low ability to narrow her attention, and the tendency to exclude important information when making decisions.

Athlete 011

This athlete's information processing score, INFP, is almost 1 standard deviation above the mean, indicating she perceives her environment as slightly more busy than the average person. All six attentional scale, broad external, BET, broad internal, BIT, overload external, OET, overload internal, OIT, narrowing, NAR, and reduced attention, RED are within the normal range. This indicates she is a very consistent player who remain in control when the environment becomes more demanding. Finally, the behavior control score, BCON, is within the normal range.

This athlete's assists per game average, 11.8, is very good. Her TAIS profile, all scales within the normal range, is an indication of how she is able to be successful. It indicates she is a very consistent player, who is very much under control and at ease within her environment.

Athlete 024

This athlete's information processing score, INFP, is nearly 1 standard deviation above the mean, indicating she perceives her environment as more busy than the average person. Her broad external focus, BET, is within the normal range, with the corresponding scale, overload external, OET, scoring slightly higher. The broad internal scale, BIT, is 1 standard deviation above the mean, and the overload internal scale, OIT, is nearly 2 standard deviations above the mean. These four scales indicate she may tend to become

overloaded, both externally and internally, when the environment becomes more demanding. This athlete's ability to narrow her focus, NAR, is normal, and the reduces attention scale, RED, is 1 standard deviation above the mean, indicating she may tend to exclude some information when making decisions. Finally, the behavior control scale, BCON, is within the normal range.

This athlete's assists per game average, 10.6 is slightly below a good average. Her TAIS profile indicates she may tend to get overloaded when the environment gets more demanding, both externally and internally. Also, she may make mistakes because she excludes important information when narrowing her attention. Combining this information would cause her to become very inconsistent, which would account for a lower assists per game average.

Athlete 013

This athlete's information processing score, INFP, is nearly 1 standard deviation above the mean, indicating she perceives her environment as slightly more busy than the average person. All six of her attentional scales; broad external, BET, broad internal, BIT, overload external, OET, overload internal, OIT, narrowing, NAR, and reduced attention, RED, are within the normal range indicating she is very consistent and remains in control when the environment becomes demanding. Finally, the behavior control score, BCON, is within the normal range.

This athlete's assists per game average, 9.3 is almost two percentage points away from a good average. Her profile indicates she is a very consistent player, with good narrowing ability. Because of this information a detailed look at this athlete's physical characteristics and the team she plays with is needed to help determine why her assists per game average is so low.

Athlete 020

This athlete's information processing score, INFP, is slightly above 1 standard deviation from the mean, indicating she perceives her environment to be more busy than the average person. Her broad external focus, BET, and overload external scale, OET, are both within the normal range. Her broad internal focus is 1 standard deviation above the mean, with the corresponding scale, overload internal, OIT, within the normal range. These four scales indicate she does not tend to become overloaded when the environment becomes more demanding. This athlete's narrowing ability, NAR, and the reduced attention scale, RED, are within the normal range indicating she has good narrowing ability and does not exclude important information when making decisions. Finally, the behavior control score, BCON, is within the normal range.

The assists per game average for this athlete, 8.6 is very low. Her TAIS profile indicates she is a consistent player with good attentional and control characteristics.

Because of this information a detailed look at this athlete's physical characteristics and the team she plays with is needed to help determine why her assists per game average is so low.

Athlete 035

This athlete's information processing score, INFP, is slightly lower than the mean, indicating she perceives her environment to be not quite as busy as the average person. Her broad external focus, BET, overload external scale, OET, broad internal focus, BIT, and overload internal scale, OIT, are all within the normal range indicating she has good attentional abilities. The narrowing ability of this athlete, NAR, is 1 standard deviation above the mean and the reduced attention scale, RED, is within the normal range. This indicates she has good narrowing ability and does not exclude important information when making decisions. Finally, the behavior control scale, BCON, is within the normal range.

The assists per game average for this athlete, 6.7 is extremely low. Her profile indicates she does not perceive her environment as very busy and this may cause her to become overloaded, both externally and internally, when the environment becomes more demanding. She does however, have good narrowing ability. A detailed look at her physical characteristic and the team she plays with would allow for further indication of why she has such a low assists per

game average.

Summary

In the setting position there did not appear to be any commonalities among the top ten performers and their individual TAIS attention and control profiles. Each athlete's individual scores for each of the attention and control scales measured in this study had unique characteristics. These individual characteristics helped to interpret higher and/or lower performances in the setter's tasks, evaluated by assists per game.

CHAPTER FIVE

DISCUSSION

The Test of Attentional and Interpersonal Style (Nideffer, 1976a), was developed as an instrument that would identify an individual's strengths and weaknesses and suggest steps for remediation (Nideffer, 1981). The results of this study indicated that there are no interrelationships between the task demands of position played, performance measures, and attentional focus and control factors as measured by the TAIS. In each position; i.e., outside hitters, middle blockers and setters, there were no consistent commonalities found. Each athlete had a unique TAIS profile that differentiated them from athletes within their position and also athletes within other positions. Also, when examining the physical characteristics of each athlete and how they effected their performance measures, the data reinforced the idea that each athlete and their specific traits must be treated on an individual basis. Thus, the data supported the original constructs of the TAIS, (Nideffer, 1990, 1976a) indicating it is a tool for individuals and their specific situations, and not an instrument to be used to make generalization about large numbers of people.

In addition to the TAIS profile, each athlete's individual physical characteristics, strengths, weaknesses and relationships to their teams performance were a

determining factor to the performance measures. For example, in the outside hitting position, one of the top attacker's TAIS profile indicated she becomes overloaded externally, internally, and may exclude important information when the environment becomes more demanding. However, physically, she is 6'1" and left handed. These two characteristics give her two great advantages in the sport of volleyball. First, she is above average height for a volleyball player. And secondly, because most athletes train and compete against right handed players, several adjustments must be made to compensate for the difference of this athlete spiking left handed. Thus, she is very successful because of her physical attributes.

In the middle blocking position one of the top attackers and blockers is a very gifted athlete. Her TAIS profile indicates she does not see her environment as very busy and she tends to get overloaded internally when the environment becomes more demanding. She is also considered a very young player because of her age and playing experience at the Division I level. Physically she is average in height, but her athletic ability allows her to perform extremely well and be a top performer in the middle blocking position. Another athlete is toward the top in her blocks per game average, but is one of the lowest in attack percentage. Physically she is 6'1" which gives her an advantage in blocking. Mechanically, her attacking

technique limits her shot selection and powerfulness when striking the ball. Her TAIS profile indicates she is a very consistent player with good attention and control characteristics. However, because she has not been trained properly in technique, her attack percentage will more than likely not improve.

In summary, the results of this study relate to Nideffer's theory and research (1990, 1981, 1976a) that suggests each athlete must be considered as an individual and their specific characteristics, strengths, weaknesses, and TAIS profile must all be interrelated to achieve a proper and successful training and counseling program. The data from this study reinforces these constructs, in that each athlete's specific TAIS profile was different and their individual performance scores were so sharply effected by the individual physical characteristics, strengths and weaknesses that correlations could not be drawn and relationships needed to be used between the TAIS profiles and physical attributes to determine full explanations for overall performance.

As an example of how a TAIS profile can be used, we can demonstrate with the setter who had a great assists per game average, but a contradicting TAIS profile that indicated she became overloaded when the environment became more demanding and tended to exclude important information when making decisions. A sport consultant or her coach could use the

information within her TAIS profile to develop drills that would help her remain calm and in control when her environment becomes more demanding. This would allow her to become more consistent and confident in her abilities, plus provide better sets for her attackers. Because she is already surrounded by great attackers, i.e., an average of 16.5 assists per game, her becoming more consistent and confident in demanding environments could possibly raise her team's level of performance.

CHAPTER SIX

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

The purpose of this case study across subjects and positions was to describe the interrelationships among task demands of position played, level of performance, and attentional focus and control factors for elite female volleyball players in the outside hitting, middle blocking, and setting positions.

The participants for this study, (N = 30), were highly skilled Division I female volleyball athletes. All participants were members of a conference regulated by the National Collegiate Athletic Association, (NCAA). The top 10 outside hitters, middle blockers and setters were chosen through statistical performance measures related to each specific position. This procedure was validated by submitting it to an judge who was very familiar with the sport of volleyball and the Test of Attentional and Interpersonal Style developed by Robert Nideffer (1976a). The participants were asked to complete the Test of Attentional and Interpersonal Style (Nideffer, 1976a) questionnaire which was administered to them by a member of their coaching staff. Following the return of the data, a case study file was made for each athlete which included: (a) the position played, (b) their TAIS profile, and (c)

game statistics.

The results of this study indicated that the individual differences in each TAIS profile and an athlete's specific characteristics, which affected their performance measures, caused no interrelationships to be found. Each athlete's profile had unique characteristics that differentiated it from others within the same position and the other two positions. The results of this study supported the theory and research of Nideffer (1976a, 1981, 1990), stating that the TAIS is an instrument to be used with individuals to develop training and counseling programs.

Conclusions

The purpose of this study was to determine the interrelationship among task demands of position played, level of performance, and attentional focus and control factors for female volleyball players. The following conclusions were made:

1. Because of individual characteristics a person possesses and the environment they live in, a TAIS profile will provide specific information that is unique for that specific person. Commonalities among profiles were not found in this study, suggesting that each person has a unique make-up and must be interpreted on an individual basis.

2. By using the information provided by the TAIS

profile and incorporating individual's characteristics and specific sport competitive environment, a training and counseling program could be designed to facilitate and enhance performance levels on pertinent tasks.

3. The TAIS profiles did not indicate specific traits needed to be successful in each position; outside hitting, middle blocking and setting.

Implications for Further Research

In consideration of the importance in broadening the possibilities of finding patterns needed for success in specific positions, the following implications for further research have been suggested:

1. Design an attentional intervention program for volleyball players and record performance to determine if there are effects from mental training techniques.

2. Reforming an in depth case study, including the TAIS, to a higher level of elite athlete, for example, an Olympic or National Team competitor, or professional athlete who has created a style within the playing of their specific position. This may provide specific commonalities and the traits needed to be most successful.

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APPENDICES

APPENDIX A

COACHES INFORMED CONSENT LETTER

My name is Steve Hendricks and I am doing a research study for my Thesis at the University of Tennessee. The purpose of the study is to determine the interrelationships among the task demands of position, game statistics, and the scores on the Test of Attentional and Interpersonal Style for attentional, control, and interpersonal factors. Subjects for this study will be elite players in the outside attacking, middle attacking and setting positions. I would like to have your consent to include a few of your athletes. (list attached) Your agreement for your athletes to participate in the study would have them include the following: (a) their completion of a demographic questionnaire about their volleyball position, (b) their completion of the Test of Attentional and Interpersonal Style, and (c) the use of their game statistics to be obtained from the team statistician at my university.

Completion of the TAIS and the demographic questionnaire will take approximately 30 minutes of their time. If you agree to allow your athletes to participate, the demographic questionnaire and TAIS forms will be given to you at the SEC Tournament in Mobile, Alabama. The request is that you have one of your assistant coaches give the questionnaire and TAIS packet to each of the identified athletes immediately after returning home from the SEC's. The athlete can then take the packet home, complete the forms and return it to your assistant. Then the assistant coach would put the completed forms in the enclosed stamped addressed envelope and mail them back to me. All information will be kept strictly confidential. No one except myself and my committee advisor will have access to the data. No names will be attached and I will use numbers to combine the correct sets of information for each player. Finally, individuals will not be identified in reporting the results and conclusions of the study.

Risks are minimal and potential benefits include the possibility of the athletes using their profile to enhance their focus during future volleyball play. The generalized information from this study may enable coaches or sport psychology consultants to use the findings to understand important phenomena about the interrelationship of task demands of position and game statistics, with attentional, control, and interpersonal factors.

The athletes participation in the study is completely voluntary, and they may choose to withdraw at any time. However, I would greatly appreciate your support in having your athletes complete the questionnaires. Research in this area has been limited and the results would benefit both the sports psychology and volleyball profession.

After having read the attached letter, I understand the purpose of the study and provide consent for my athletes to participate fully.

Head Coach Signature

Date

APPENDIX B

PLAYER INFORMED CONSENT LETTER

You have been selected for inclusion in a study concerning the performance of highly skilled women volleyball players in NCAA Division I universities in the SEC. The purpose of this study is to determine the interrelationships among the task demands of your principle position in volleyball, the game statistics, and the scores on the Test of Attentional and (Interpersonal Style for attentional, control, and interpersonal factors. I have received permission from your coach for you to participate in this study. Your agreement to participate in this study would include the following:

Completion of a demographic questionnaire about your volleyball position play in your competitive career,

Completion of the Test of Attentional and Interpersonal Style, and

Use of your game statistics to be obtained from the team statistician.

Completion of the and the demographic questionnaire will take approximately 30 minutes of your time.

All information will be kept strictly confidential. No one, including the coaches, will have access to any of the information except the researchers. No names will be attached to the data; and individual players will never be identified in reporting the results and conclusions of the study. You may receive a copy of your profile at the end of the study, if you wish.

Risks are minimal and potential benefits include the possibility of you using your profile to enhance your focus during your own future volleyball play. You can gain an understanding of your attentional, informational processing, and interpersonal strengths and problem areas. The generalized information from this study may enable coaches or sport psychology consultants to use the findings to understand important phenomena about the interrelationship of volleyball task demands of positions and team statistics, with attentional, control, and interpersonal factors.

Your participation in the study is voluntary, and you may choose not to participate or withdraw from participating at any time. Neither your participation nor your withdrawal from the study will have any effect on your academic status or your standing with the volleyball team or your coaches.

After having read the above description of the study and my potential involvement, I understand the purpose of the study and what is expected of me. I agree to participate in this study.

Athlete's signature _____ Date _____

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE

Please answer the following or place a check mark in the appropriate blank.

College major: _____

Age _____ Height _____ Weight _____

Dominant hand: _____ Right _____ Left

Total number of years you have played competitive volleyball. _____

Positions played in college:	_____ outside	_____ middle	_____ setter
high school:	_____ outside	_____ middle	_____ setter
club/juniors:	_____ outside	_____ middle	_____ setter
Jr. high:	_____ outside	_____ middle	_____ setter

Please list other sports you have competitively competed in and indicate the age periods.

example: basketball _____ 10-13 _____ 14-17 _____ 18-22

_____	_____ 10-13	_____ 14-17	_____ 18-22
_____	_____ 10-13	_____ 14-17	_____ 18-22
_____	_____ 10-13	_____ 14-17	_____ 18-22
_____	_____ 10-13	_____ 14-17	_____ 18-22
_____	_____ 10-13	_____ 14-17	_____ 18-22

VITA

Steven Alan Hendricks was born in Bloomington, Illinois, on December 17, 1967, to Samuel and Betty Hendricks. He attended Danvers Grade School in his home town and graduated from Olympia High School in May of 1986. The following August he entered Ball State University, in Muncie, Indiana, and in May of 1990 he received his Bachelor of Science degree in Business Education. In the Fall of 1990 he accepted a graduate assistantship with the Women's Athletic Department at the University of Tennessee, Knoxville, and began study toward a Master of Science Degree with emphasis in sport psychology. He expects to receive the Master of Science degree in May 1992.