1983

Attentional style of female field hockey athletes

Jill Marie Dunphy
Ithaca College

ATTENTIONAL STYLE OF FEMALE FIELD HOCKEY ATHLETES

by

Jill Marie Dunphy

An Abstract

of a thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in the School
of Health, Physical Education,
and Recreation at
Ithaca College

September 1983

Thesis Advisor: Dr. A. Craig Fisher

ABSTRACT

This study investigated attentional style, perceived ability and success, and competitive trait anxiety of successful and less successful field hockey athletes. Female varsity college players (N = 179) completed the test of field hockey attentional style (TFHAS), personal assessment questionnaire (PAQ), and Sport Competition Anxiety Test (SCAT). Cronbach's coefficient alpha revealed that the TFHAS exhibited moderate internal consistency for each of the seven scales. Moderate test-retest reliability was revealed for the three testing instruments. The degree of commonality of the TFHAS, PAQ, and SCAT was revealed using Pearson product-moment correlation. Some correlations between the TFHAS scales were higher than expected indicating a lack of discreteness of the scales. Moderate correlation between perceived ability and perceived success indicated athletes' perceptions of their ability are somewhat similar to their perceptions of their success. Stepwise discriminant analysis assessed the accuracy of the group classification of the successful and less successful athletes, and interpreted which variables discriminated the groups. The percentage of athletes classified in their respective groups was 72.9%. Successful athletes were classified 91.5% correctly and less successful athletes were classified 40% correctly. The low percentage suggests that attention may not be an important variable for less successful athletes. Canonical correlation explained approximately 15.6% of the success variance.

Stepwise discriminant analysis revealed RED, OIT, NET, and NIT to be important in explaining the variance. From the univariate analysis, BET and NET appear to be desirable attentional focuses for field hockey athletes, and OET, OIT, and RED appear to adversely affect sport performance. No significant between groups differences were found for NIT, and SCAT.

ATTENTIONAL STYLE OF FEMALE FIELD HOCKEY ATHLETES

A Thesis Presented to the Faculty of
the School of Health, Physical
Education, and Recreation
Ithaca College

In Partial Fulfillment of the
Requirements for the Degree
Master of Science

---

by
Jill Marie Dunphy
September 1983

Ithaca College
School of Health, Physical Education, and Recreation
Ithaca, New York

CERTIFICATE OF APPROVAL

MASTER OF SCIENCE THESIS

This is to certify that the Master of Science Thesis of

Jill Marie Dunphy

submitted in partial fulfillment of the requirements for the degree of Master of Science in the School of Health, Physical Education, and Recreation at Ithaca College has been approved.

Thesis Advisor:

Committee Member:

Candidate:

Chairman, Graduate Programs in Physical Education:

Dean of Graduate Studies:

Date: Aug. 30, 1983

ACKNOWLEDGMENTS

The investigator would like to thank everyone involved in the completion of this study:

1. Dr. A. Craig Fisher, my thesis advisor, for the time, guidance, and good humor given to me throughout the writing of this thesis.

2. Dr. Deborah Wuest, committee member, for her valuable comments.

3. Della, Paula, Marci, and Elaine, my roommates, for putting up with me during the writing of this thesis.

4. Cathy for sparking my interest in field hockey.

5. All field hockey players and coaches who were kind enough to participate in this study.

6. Pam for the use of her typewriter which I used when typing nights at the Commonwealth Gas Company.

7. My family, especially my parents for their encouragement, patience, and love.

DEDICATION

This thesis is dedicated to the 1982 Ithaca College Women's Field Hockey team, winner of the NCAA Division III National Championship.

TABLE OF CONTENTS

LIST OF TABLES

Chapter 1

INTRODUCTION

Success in athletics depends to a large extent on the individual's ability to meet the demands of the sport and perform the inherent motor skills. All motor skills can be classified as closed or open movements. Most team sports (e.g., football, soccer, basketball, and field hockey) are open skill sports because their movements are performed under conditions where relevant stimulus events are changing. In order to perform effectively in these sports, players must spontaneously react to the ever changing task demands of the game. Soccer and field hockey players need to continually react to the movements of teammates, opponents, and the ball. As situations change, the player's focus of attention must change in order to be successful in sport (Lawther, 1977).

A successful player is able to mesh the task demands of the external environment with the competencies of mental readiness (i.e., the internal environment). For example, in field hockey it is important to know when to pass to a teammate and when to keep the ball and dribble. If the player has an inappropriate focus of attention (e.g., worrying about previous mistakes), then she will probably be unable to perform effectively. For successful performance, concentration on the proper cues is necessary (i.e.,

attending to the relevant cues while ignoring the irrelevant cues).

Specifically, in field hockey, a broad external attentional focus seems desirable in order to watch the movements of teammates and opponents. If a player tries to attend to coach and teammates on the sidelines and friends in the stands, as well as watch opponents' and teammates' movements, it is likely that this player will be overwhelmed with too much information. The resultant information overload will likely lead to performance decrements.

During sports situations athletes are continually confronted with making decisions about their actions. When faced with a decision, a player relies on a broad internal focus to analyze the situation. A narrower focus is necessary to eliminate several possibilities in order to take some specific action. Thus, one can readily see that, for optimal performance in sport, attention must be flexible and adaptable in order to meet the task demands.

Anxiety often impairs the flexibility of attention and concentration. As the athlete gets anxious, attentional focus narrows involuntarily resulting in the exclusion of both irrelevant and relevant cues (Nideffer, 1981). The athlete will either become tunnel visioned (i.e., excessively narrow and focused on too few cues) or will scan many environmental cues without processing any of the cues.

From the previous description of field hockey tasks and their expected interrelationship with attention and

anxiety, attention and anxiety seem intuitively to be closely related to field hockey ability and success. Thus, the empirical relationships between attentional style of field hockey athletes and levels of anxiety, ability, and success will be examined in this study.

Scope of Problem

This study examined attentional style, competitive trait anxiety, and perceived ability and perceived success of successful and less successful field hockey athletes. Subjects (N = 179) were female varsity college players from 16 teams in the United States. The level of success was determined as follows: successful teams were ranked in the top 10 of Division I or in the top five of Division II and Division III at the end of the 1982 season. Less successful teams finished the 1982 season winning less than one-third of their games.

Self-report measures were used to collect data for each variable. Attention was measured using a sport-specific inventory of field hockey situations--Test of Field Hockey Attentional Style (TFHAS) (Appendix A)--containing descriptions of situations pertinent to both offensive and defensive players. Competitive trait anxiety was measured by Martens (1977) Sport Competition Anxiety Test (SCAT) (Appendix B) and perceived ability and success with a personal assessment questionnaire (PAQ) (Appendix C).

Internal consistency of the TFHAS was derived from Cronbach's (1951) coefficient alpha analysis. Test-retest

reliability was calculated by Pearson product-moment correlation. The attentional scales of the TFHAS, perceived ability, perceived success, and competitive trait anxiety were subjected to correlational analysis to assess the interrelationships.

Hypotheses were tested by discriminant analysis in order to (a) classify the successful and less successful athletes into their respective groups, and (b) identify the variables that discriminated the groups.

Statement of Problem

The relationship between attentional style, competitive trait anxiety, perceived ability, and perceived success was investigated for successful and less successful field hockey athletes. To what extent does attentional style, competitive trait anxiety, perceived ability, and perceived success accurately predict successful performance in field hockey?

Hypotheses

The following hypotheses were delineated and tested:

1. There will be a significant difference between the scores on the TFHAS for successful and less successful field hockey athletes.

2. There will be a significant difference between the scores on SCAT for successful and less successful field hockey athletes.

3. There will be a significant difference for

perceived ability as measured by the PAQ for successful and less successful field hockey athletes.

4. There will be a significant difference for perceived success as measured by the PAQ for successful and less successful field hockey athletes.

Assumptions of Study

The following assumptions were delineated in order to conduct this investigation:

1. The athletes were able to relate to the situations and the modes of response for each test.

2. Field hockey athletes from teams ranked in the top 10 of Division I and the top five of Division II and Division III at the end of the 1982 season are successful athletes.

3. Field hockey athletes on teams winning less than one-third of the games during 1982 are less successful athletes.

4. Field hockey-specific attention is measured effectively by the TFHAS.

5. Competitive trait anxiety is measured effectively by SCAT.

6. Perceived ability and success are measured effectively by the PAQ.

Definitions of Terms

The following definitions clarify the meaning of terms used in this investigation:

1. Attention: the mental process of selectively or

broadly focusing on internal (thoughts and feelings) or external (environmental) stimuli.

2. Attentional style: the composite attentional strengths and weaknesses of individuals along the attentional dimensions of width (broad or narrow) and direction (internal or external).

3. Effective attention: when individuals properly adjust their focus to meet the attentional demands of particular situations.

4. Ineffective attention: when individuals' attentional focus is inappropriate in a particular situation.

5. Width dimension of attention: this refers to the amount of information and how broad a perceptual field individuals control.

6. Directional dimension of attention: this refers to whether the attentional focus is internal or external.

7. Broad external focus of attention (BET): an effective attentional style for open skill sports in which the focus is on a range of environmental cues.

8. Overloaded external focus of attention (OET): an ineffective attentional style for open skill sports in which the focus is on too broad a range and too large a number of environmental cues.

9. Broad internal focus of attention (BIT): an effective attentional style for open skill sports in which the focus is on a range of cognitive and proprioceptive stimuli.

10. Overloaded internal focus of attention (OIT): an ineffective attentional style for open skill sports in which the focus is on too broad a range and too large a number of cognitive and proprioceptive stimuli.

11. Narrow external focus of attention (NET): an effective attentional style for open skill sports in which the focus is directed toward selected environmental cues.

12. Narrow internal focus of attention (NIT): an effective attentional style for open skill sports in which the focus is directed towards selected cognitive and proprioceptive stimuli.

13. Underinclusive focus of attention (RED): an ineffective attentional style for open skill sports in which the focus is reduced and directed towards too few internal or external cues.

14. Field hockey athlete: a female member of a college varsity field hockey team.

15. Successful field hockey team: a field hockey team that finished their 1982 season ranked in the top 10 of Division I or in the top five of Division II or Division III, according to the last NCAA ranking.

16. Less successful field hockey team: a field hockey team that finished their 1982 season winning less than one-third of their games.

17. Open skill sport: a sport characterized by spontaneous reactive movements designed to meet the ever changing task demands.

Delimitations of Study

The investigation included the following delimitations:

1. This study involved only college females from varsity field hockey teams.

2. Attentional styles were assessed by the TFHAS.

3. SCAT is a self-report assessment tool and the sole measure of competitive trait anxiety.

4. The PAQ is a self-report instrument and the sole measure of perceived ability and success.

Limitations of Study

The investigation was limited by the following:

1. The results of this study can only be generalized to field hockey athletes who are considered similar to those in this study.

2. Attention, anxiety, ability, and success were examined only within the confines of the definitions provided and tests used.

3. The TFHAS appears to possess face validity and apparently satisfies Nideffer's construct, but beyond that little is known about the test.

Chapter 2

REVIEW OF RELATED LITERATURE

This chapter consists of related literature concerning the task demands of field hockey; general characteristics of attention; the interrelationship of attention, anxiety, and arousal; and specificity of attention in sport. A summary concludes this chapter.

Task Demands of Field Hockey

Field hockey is a fast-paced game in which players move the ball down the field and attempt to score by putting the ball in the goal (Barnes & Kentwell, 1979). Players are continually reacting to the movements of teammates, opponents, and the ball. Situations are constantly changing, thus a player's focus of attention must change (Lawther, 1977).

Field hockey requires a broad external attentional focus for optimal performance (i.e., focus on a range of environmental cues). When thoughts revolve around personal feelings, awareness of the competitive situation may be lost (Stevens, 1980). Players must be able to recall similar situations previously practiced and stored in memory and quickly analyze the present situation to decide upon a specific plan of action (Schultz, 1982). Some actions are the result of split-second decisions. For example, if a player is being tightly marked there is less

time to react and, therefore, the action must be reflexive in order to be effective.

Passes, dodges, tackles, and shots on goal are continually rehearsed in practice so that they may be spontaneously executed (effectively) even in pressure situations. Oftentimes players must decide whether to keep the ball and dribble down the field or pass to a teammate. When passing, the player must consider the type of pass to use, as well as the speed and direction. If too much time is taken to execute the pass or shot, an opponent might gain possession of the ball and the player will have failed at the task.

Usually situational demands dictate the player's actions (e.g., pass flat if a teammate is parallel and calling for the ball). However, sometimes a player will do what she thinks will be successful in spite of the obvious solution dictated by a specific situation. For example, in a penalty stroke situation with a short goalie, the logical shot would be a high flick to the right corner (i.e., the goalie's right) of the goal. Yet if the shooter is more confident with a low flick, she may shoot a low shot.

To be successful in field hockey, a player must be able to analyze situations and make quick decisions (Schultz, 1982). Other important tasks include execution of fundamentals, a quick transition from offense to defense, focusing on relevant cues while ignoring irrelevant cues,

and becoming totally absorbed in the "flow of the game." The less experienced player will fail because she is unable to perform effectively in pressure situations, loses concentration, and becomes overwhelmed by all the irrelevant cues of the game (Stevens, 1980).

General Characteristics of Attention

The importance of attention for understanding and predicting behavior has long been emphasized in psychology and recently is being recognized in athletics (Nideffer, 1976b; Parker, 1980; Vallerand, 1982). Attentional constructs have formed the basis of theories designed to explain phenomena ranging from schizophrenia (Shakow, 1962) to successful tennis performance (Van Schoyck & Grasha, 1981). Attention, the ability to direct our senses and thought processes to particular objects, thoughts, and feelings is important in order to perform effectively in any particular situation (Nideffer, 1978). For example, when driving an automobile, an individual has many cues to attend to and process. The veteran driver is able to attend to the task demands of driving (e.g., traffic signals, road signs, other cars on the road, and pedestrians) and is able to maneuver the automobile without too much difficulty. The task of driving, especially a standard shift automobile, is often too difficult for a beginning driver because there is too much information to process. However, for the veteran driver, driving a standard shift is as easy as driving an automatic shift automobile. Specifically in the

sport of field hockey, a beginning player tends to worry about performing the "basics" (i.e., hand position on stick, mechanics of dribbling, and execution of passes). For the veteran player the above skills are automatic and, therefore, this player is able to attend to the important cues of the game (what is happening around her).

The preceding two examples clearly indicate that a broad focus is necessary in order to attend to all the informational cues necessary to perform effectively. However, the breadth of focus does not entirely capture attentional style. Attention can be conceptualized in at least two dimensions: breadth of focus and direction. Breadth of focus or width refers to the amount of information individuals let into their consciousness on a continuum ranging from very narrow (filtering out a great deal of information) to very broad (Easterbrook, 1959; Wachtel, 1967). Broad attention is necessary when a large amount of information must be synthesized in order to assess a problem and determine a solution. In contrast, attention is narrowed in order to take specific action and to avoid being distracted. The continuum from broad to narrow focus can be compared to the zoom lens of a camera which is capable of zooming in (narrow focus) and zooming out (broader focus) (Orlick, 1980).

Attention is further explained by the direction dimension which extends itself on an internal-external continuum. That is, the focus of attention may be directed

within the individual or at the external environment (Vallerand, 1982). An internal attentional focus is required to plan for or rethink a situation, and is also necessary in order to be sensitive to one's own bodily feelings. For example, long distance runners develop an internal focus when they associate to pain. These athletes are open to the painful cues and objectively read them and react to them. As athletes associate to the pain in an objective, rational way, they dissociate from it emotionally (Nideffer, 1979). Pain used in a rational way can indicate if the athlete can go faster or farther. In contrast, an external attentional focus is apparently required to react to a changing athletic situation, such as hitting a baseball or reacting to an opponent's move in field hockey. As a general rule, a more external attentional focus is needed with complex and rapidly changing situations. However, as analysis or planning increase, attention becomes more internal and reflective.

In summary, attentional competencies such as controlling width and direction should change adaptively as a function of specific environmental demands. Knowledge of attentional abilities and environmental demands should increase the accuracy of prediction of task success or failure (Nideffer, 1976a).

Attention, Anxiety, and Arousal

The relationship between attention, anxiety, arousal, and performance is important in athletics. Frequently, in sport, an athlete's level of arousal adversely affects

performance (e.g., the individual who "chokes" at the free throw line in the final seconds of an important basketball game). High anxious individuals do not perform as well as low anxious individuals on complex motor tasks (Carron, 1968; Lawther, 1977). Because of the complexity of the demands in field hockey, anxiety would seem to be an important variable in field hockey performance (Stevens, 1980). Anxiety also affects the width and direction of attention, and researchers have discovered that high anxiety tends to narrow attention (Easterbrook, 1959; Kahneman, 1973; Landers, 1980; Nideffer, 1976a; Wachtel, 1967). Since a broad attentional focus seems desirable in field hockey, and since anxiety reduces attention, the relationship between anxiety, attention, and performance is a critical one.

Easterbrook (1959) proposed that emotional arousal acts to reduce the range of cues that an individual uses. Range of cues is defined as the total number of environmental cues in any situation that an individual observes, maintains an orientation towards, responds to, or associates with a response. Reduction in the range of cue utilization improves performance in some tasks because when irrelevant cues are excluded only relevant cues remain, and this should lead to improvement in performance. However, in tasks where a wide range of cues is necessary for proficiency, reduction of cues impairs performance. There seems to be an optimal range of cue utilization for each task (Easterbrook, 1959).

Generally, as anxiety increases, performance first improves because some irrelevant cues are excluded, and then

declines as some of the relevant cues are also excluded (Wachtel, 1967). Because arousal and anxiety affect people differently, depending upon the particular situation, it must be concluded that arousal is neither consistently facilitative nor consistently disruptive (Wachtel, 1967).

Kahneman (1973) reviewed previous literature (e.g., Easterbrook, 1959; Wachtel, 1967) and reported several attentional changes due to increasing arousal levels. High arousal is associated with narrowing of attention, difficulty in making fine discriminations, and increased lability (scanning) of attention with a corresponding increase in distractability. Under extreme conditions of low arousal, individuals fail to adopt a task set and also fail to evaluate the quality of their performance (Kahneman, 1973). This inability to adjust to task demands results in a reduction of the quality of performance.

Kahneman agreed with Easterbrook's hypothesis that, in high arousal conditions, attention tends to be concentrated on the dominant and most obvious aspects of the situation (i.e., the central cues). High arousal apparently mediates an increased tendency to focus on a few relevant cues. To perform effectively, an individual must distinguish relevant cues from irrelevant cues. High arousal tends to impair cue distinction, consequently the capacity to focus on the relevant cues is reduced. Thus, under high arousal, individuals initially become more selective, yet the effectiveness of their cue selections may deteriorate if fine distinctions are necessary (Kahneman, 1973).

Bacon (1974) stated that arousal narrows the range of cues processed by systematically reducing responsiveness to the aspects of the situation that attract a lesser degree of attentional focus. Bacon's results, that emotional arousal decreases responsiveness to peripheral stimuli, support Easterbrook's and Wachtel's findings.

Nideffer (1981) further explained the interaction between attentional processing and increased arousal as follows:

1. There is a breakdown in the ability to shift from one type of attention to another (i.e., attention becomes less flexible).

2. As pressure increases attention tends to narrow involuntarily resulting in tunnel vision.

3. Narrowing of attention is usually followed by an internal focus.

As athletes begin to pay more attention to thoughts and feelings, they fail to attend to the relevant external information. Increased arousal causes physiological changes, such as increased muscle tension and alterations in breathing, which affect fine motor coordination and timing. The combination of attentional disturbances and physical changes often results in performance errors.

Nideffer (1979) suggested that if coaches were able to describe the attentional demands of important sport tasks and the attentional style of their athletes, and understood how these two variables interacted, then coaches might be able to improve athletes' performances. For example, if the

sport task demanded a great deal of discrimination between relevant and irrelevant external cues and athletes tended to be excessively narrow in important sport situations, coaches might be advised to teach athletes how to identify and select the important cues that would enhance task completion. Another approach would be to reduce arousal so excessive narrowing would not occur.

Specificity of Attention in Sport

The characteristics of attentional demands in athletics and the ability of athletes to shift attention rapidly (e.g., from a broad focus to a narrow focus) is critical to sport performance. Each sport places demands on the participant with respect to the attentional components of width and direction (Nideffer, 1979). Some sports, such as football and soccer, demand a variety of attentional focuses while others, such as golf and diving, demand focused concentration in singular directions (e.g., internal). Specifically in field hockey, a very narrow attentional focus is necessary to execute a penalty stroke, whereas a broader focus is necessary to watch opposing players' movements. Congruence between an athlete's attentional style and the task demands of the situation leads to greater opportunities for successful performance. However, if a mismatch exists between attentional style and task demands, performance errors will occur (Nideffer, 1978).

Attentional style can be assessed by the Test of Attentional and Interpersonal Style (TAIS), a general test to measure attentional behavior and performance across a

range of life situations (Nideffer, 1976b). Three types of effective attentional behavior (i.e., broad external, broad internal, and narrow) and three types of ineffective attentional behavior (i.e., overloaded external, overloaded internal, and underinclusive) are represented by the general situations.

As defined and used by Nideffer, the concept of attentional style has the characteristics of a relatively stable trait. A trait describes, predicts, or explains behavior in a variety of life situations. Thus, the assumption underlying Nideffer's TAIS is that attentional style is constant across competitive situations. It therefore follows that no matter what the situation is the attention trait will be equally effective in describing, predicting, or explaining behavior. Researchers, however, have criticized the idea of generalizing a trait, such as attention, across situations and offer arguments and data to support their position (Morgan, 1978; Van Schoyck & Grasha, 1981). If attentional style is stable across situations, then one predisposes certain athletes to failure in certain situations. Possessing certain attentional focuses can lead to optimum performance in sport situations that place a premium on that particular attentional style. However, in sport situations where a variety of attentional focuses are necessitated by the task demands, it appears that the ability to switch focuses to the appropriate one is the key to successful performance.

The trait approach is not adequate enough to fully explain behavior because it is concerned only with the person variable and does not consider the situations as a variable. Most researchers today would agree that people will behave differently depending upon the situation. For example, a meek and conscientious student may be very aggressive when on the field hockey field. In order to fully understand this athlete's behavior, it is necessary to consider both the personality traits of an individual and the specific situations.

The idea of considering the interaction of personality and situations to explain behavior is the essence of the interactional approach (Endler & Magnusson, 1976; Mischel, 1976). This approach has been recognized repeatedly in sport personality literature reviews and research studies (Fisher, Horsfall, & Morris, 1977; Fisher, Ryan, & Martens, 1976). The interaction between personality traits of athletes and their specific environments is important to understand athletes' anxiety patterns, to attempt to improve or predict performance outcomes, and to account for more of the total behavior variance (Fisher & Zwart, 1982; Hogan, De Soto, & Solano, 1977; Morgan & Johnson, 1979).

The interactional approach raises the issue of specificity. If behavior is, in fact, partly dependent upon specific situations, then how well can general tests which do not consider specific situations accurately explain behavior? In order to get accurate answers about

individuals' behavior in the situation of interest, it is necessary to ask specific questions.

Assuming the importance of situational specificity, it is questionable that the TAIS could predict performance accurately or adequately across a variety of life situations, including sport. The test items have been criticized because they lack relevance to any particular sport frame of reference and fail to account for differences among competitive situations (Van Schoyck & Grasha, 1981). To the extent that the TAIS does not capture situational demands, then Nideffer's test is not an appropriate means to assess attentional ability in specific sport environments. Thus, there is a need to construct specific assessment inventories which capture the specific situational demands in order to measure attention effectively in sport (Vallerand, 1982).

Sport-specific inventories have been developed from the TAIS during the past 5 years. Modification of the general attentional test resulted in tests specific to sport situations and, thus, offered viable alternatives to the general attentional test. Examples of these sport-specific tests include: baseball (Ford, 1981), riflery (Etzel, 1979), soccer (Taylor, 1979), tennis (Van Schoyck & Grasha, 1981), and volleyball (Massey, 1981). In studies where the sport-specific instrument was compared with the general TAIS, the sport-specific measure was found to be a better predictor of ability and success.

Van Schoyck and Grasha's tennis inventory (T-TAIS) had

higher test-retest and internal consistency coefficients than the TAIS for beginner, intermediate, and advanced tennis players. The T-TAIS also differentiated among tennis skill levels better than the TAIS; however, this did not occur uniformly across the subscales. The mean scores of OET, OIT, and NAR did not vary with tennis skill level.

Taylor (1979) compared the effectiveness of Nideffer's TAIS with his soccer-specific inventory (TSAS) to discriminate levels of perceived ability and success of college soccer players. The TSAS had higher test-retest and internal consistency coefficients than the TAIS. Each of the six TSAS attentional scales differentiated soccer athletes of high and low perceived ability and success, compared to two TAIS scales, BET and BIT. In addition, soccer athletes of high perceived ability and success exhibited a broad external attentional focus on both the TSAS and TAIS, while those of low perceived ability and success did not.

Massey (1981) compared the effectiveness of Nideffer's TAIS with his volleyball-specific inventory (TVAS) to discriminate between college volleyball athletes of high and low anxiety and high and low perceived ability and success. The TVAS had higher test-retest reliability on BET, OIT, NAR, and RED scales; and higher adjusted internal consistency than the TAIS. All six TVAS scales appeared to accurately discriminate success levels, while only BET, BIT, OET, and RED TAIS scales did not. Ability, on the other hand, was explained by only one TVAS scale, OIT, and three TAIS scales.

Low ability athletes are frequently overloaded internally. The above results suggest that the TVAS predicts success better than ability, unless the OIT scale is the discriminating factor in high and low ability.

Ford (1981) compared the effectiveness of Nideffer's TAIS with his baseball-specific inventory (TBAS) to discriminate the batting success of high school and college baseball athletes. The TBAS had higher adjusted internal consistency coefficients than the TAIS. Analysis of data revealed that the TBAS differentiated between high and low batting averages while the TAIS did not.

Summary

A field hockey player is confronted with several cues during a game. Some of these include movement of the ball, positioning of teammates and opponents, coach's voice, and officials. To perform optimally the player must attend to the relevant cues while ignoring the irrelevant cues in a given situation. As the situational cues change, a player's focus of attention must change to meet the task demands (Lawther, 1977). To be successful in sport, attentional focus needs to change widthwise (broad to narrow) and directionally (external to internal) depending on the situation. Important attentional focuses in field hockey include broad external, broad internal, narrow external, and narrow internal. Ineffective focuses include overloaded external, overloaded internal, and underinclusive.

Field hockey appears to require a broad external attentional focus in order to attend to a range of external

cues on the field (Stevens, 1980). However, when players need to analyze situations and recall similar situations stored in memory, a broad internal focus seems desirable. A narrow focus is necessary to take specific action such as executing a penalty stroke or passing to a teammate inside the circle. As a general attentional rule, a more external focus is needed with complex and rapidly changing situations. However, as analysis or planning increases, attention becomes more internal or reflective.

The relationship of attention, anxiety, arousal, and performance is important in athletics. When aroused, an athlete may have difficulty concentrating. As the athlete gets anxious, attentional focus narrows involuntarily resulting in the exclusion of both irrelevant and relevant cues. The athlete may become tunnel visioned. Or the athlete may, in fact, scan everything in the environment without processing any of the cues and, therefore, not be able to react appropriately to anything. Also under conditions of high arousal, attention becomes less flexible and is more internal (Nideffer, 1981).

Attentional style can be assessed by the Test of Attentional and Interpersonal Style. This is a general test designed to predict behavior across a range of situations. The test has been criticized on the basis that attention is not a stable trait, implying a lack of constancy across competitive situations (Van Schoyck & Grasha, 1981).

Sport-specific inventories have been developed from the TAIS during the past 5 years. Inventories were created

for the following sports: baseball, riflery, soccer, tennis, and volleyball. When researchers compared the sport-specific instrument with the general TAIS, the sport-specific test was found to be a better predictor of ability and success.

Chapter 3

METHODS AND PROCEDURES

The following chapter will deal with the methods and procedures used in this investigation. Selection of subjects, testing instruments, methods of data collection, scoring of data, treatment of data, and summary will be addressed.

Selection of Subjects

The subjects involved in this investigation (N = 179) were female varsity field hockey players at 16 colleges and universities in the United States. Five Division I, two Division II, and nine Division III schools actually participated. Letters explaining this study were initially sent to 17 successful and 15 less successful teams. Successful teams finished their 1982 season ranked in the top 10 of Division I or in the top five of Division II or Division III, according to the last NCAA ranking. Less successful teams finished their 1982 season winning less than one-third of their games. Of the 32 teams initially chosen, 29 responded and 22 schools agreed to participate. Of the 22 teams, only 16 actually completed the tests and mailed back the results. The sample included 119 successful and 60 less successful athletes.

Testing Instruments

The following tests were administered to the subjects: a test of field hockey attentional style (TFHAS) (Appendix A),

the Sport Competition Anxiety Test (SCAT) (Martens, 1977) (Appendix B), and a personal assessment questionnaire (PAQ) (Appendix C).

The TFHAS consists of 72 statements which represent attentional demands specific to field hockey. In order to construct the TFHAS the investigator familiarized herself with Nideffer's TAIS and a test of soccer attentional style (TSAS) (Taylor, 1979). Three field hockey players and a coach were consulted to determine the task demands of field hockey and the various situations that occur frequently in the sport. Many of the situations closely parallel the TSAS situations because the task demands for field hockey are similar to soccer. These situations were chosen on the basis that they would be relevant and easily understood by both offensive and defensive players, excluding goalies. Each statement pertained specifically to one attentional scale. If a statement pertained to more than one scale, it was revised so that it only applied to one scale or it was eliminated.

Seven types of attentional focuses are each represented by a separate scale. The effective scales are broad external focus (BET), broad internal focus (BIT), narrow external focus (NET), and narrow internal focus (NIT). The ineffective scales are overloaded external focus (OET), overloaded internal focus (OIT), and underinclusive focus (RED). Ten situations comprise the BET focus, 11 the OET, 11 the BIT, 12 the OIT, 9 the NET, 7 the NIT, and 12 the

RED focus of attention (Appendix F). Subjects responded to each situation on a 5-point Likert scale ranging from "never" to "always," representing the degree to which the behavior in the situation described the athlete's attention.

To determine each athlete's competitive trait anxiety, the SCAT was administered. Athletes responded to each item according to how they generally felt in competitive sport situations. One of the three following responses are possible for each item: "hardly ever," "sometimes," or "often." The SCAT was presented to subjects as the Illinois Competition Questionnaire, and was described in the instructions as a measure of feelings in sport situations to avoid potential negative reactions to a test of anxiety. The SCAT has a previous reported test-retest reliability of $\underline{r} = .77$.

The personal assessment questionnaire (PAQ) is a measure of perceived ability and success in field hockey. The test incorporated nine bipolar adjectives to describe ability and five to describe success. Subjects were instructed to place an X along the 5-point scale in the space that best represented their perceived ability or success. The PAQ was adapted from Coulson and Cobb's (1979) generalized expectancy of sport success scale, and has been shown to be reliable (internal consistency, $\underline{r} = .96$; test-retest reliability, $\underline{r} = .90$).

Methods of Data Collection

Each athlete received the following items: informed consent form, TFHAS, SCAT, PAQ, and an optical scanning sheet. Athletes were advised to complete the tests in the order they appeared in the packet. Responses for the TFHAS were recorded on the optical scanning sheet, whereas the answers to the PAQ and SCAT were each recorded on the inventory.

Because the data were collected through the mail, the coach of each individual team administered the tests in a group or on an individual basis. Follow-up letters were sent to coaches to remind them of testing procedures and to encourage a quick response rate. Upon collecting the tests, the coach returned them to the investigator.

Data were collected between February and May, 1983. Approximately 8 weeks after the first administration 13 Ithaca College athletes were retested to provide a measure of test-retest reliability.

Scoring of Data

The data from the TFHAS were submitted to the computer on optical scanning sheets. The computer read the scores and assigned an appropriate value from 1-5 for each response. These data were then entered on a disk file for future analysis.

The PAQ was hand-scored using a template with the appropriate value from 1-5 for each response, with 1 representing the most negative and 5 representing the most positive value. Subtotals were obtained for both perceived

ability and perceived success.

The SCAT was also hand-scored and the sum of the responses yielded the athlete's score. The responses to the SCAT items were given a numerical value of 1 to 3, with 1 representing the negative and 3 representing the positive value according to instructions provided by Martens (1977).

Treatment of Data

Internal consistency of the TFHAS was calculated using Cronbach's coefficient alpha analysis (Cronbach, 1951). To maximize internal consistency, an a priori decision was made to delete or recode items that were correlated with the entire scale less than .10.

Test-retest reliability was assessed by Pearson product-moment correlation. Thirteen subjects were retested 8 weeks after the initial testing to determine the stability of the TFHAS, PAQ, and SCAT. Pearson product-moment correlation was also utilized to quantify the interrelationships among attentional scales, perceived ability, perceived success, and anxiety; and for TFHAS between-scale comparisons.

Stepwise discriminant analysis was conducted using the Wilks' lambda method as the criterion for variable selection. Wilks' lambda is a multivariate measure of group differences utilizing several discriminating variables. The accuracy of the group classification of successful and less successful athletes can be determined. Interpretation of this analysis reveals success variance explained by attention, perceived ability and success, and anxiety; and which variables are important to success.

Summary

Varsity field hockey players (N = 179) representing successful and less successful teams participated in this study. The subjects completed a test of field hockey attentional style (TFHAS), the Sport Competition Anxiety Test (SCAT), and a personal assessment questionnaire (PAQ). Data were collected through the mail between February and May, 1983. Thirteen subjects were retested after an 8-week interval to provide a measure of test-retest reliability for each of the instruments.

Internal consistency of the TFHAS was calculated using Cronbach's (1951) coefficient analysis. Test-retest reliability was assessed by Pearson product-moment correlation. Pearson product-moment correlation was also utilized to assess the interrelationships among attentional scales, perceived ability, perceived success, and competitive trait anxiety. Stepwise discriminant analysis was conducted using the Wilks' lambda method to determine the accuracy of group classification, the success variance explained by the variables, and which variables were important to success.

Chapter 4

ANALYSIS OF DATA

The results of the investigation are presented in this chapter. The chapter is divided into the following sections: (a) internal consistency of the test of field hockey attentional style (TFHAS); (b) test-retest reliability of the TFHAS, PAQ, and SCAT; (c) intercorrelations of attention, PAQ, and SCAT; (d) descriptive statistics; (e) group classification; (f) canonical correlation analysis; (g) univariate analysis; and (h) summary.

Internal Consistency of the TFHAS

Internal consistency of the TFHAS was calculated by Cronbach's (1951) coefficient alpha analysis. Alpha reliabilities and the number of items for each of the attentional scales of the TFHAS are reported in Table 1. The alpha coefficients did not have to be adjusted to maximize internal consistency because all of the items correlated above .10 with their respective scale (Appendix F). Coefficients for the TFHAS varied from .56 (NIT) to .76 (BET), with an overall alpha coefficient of .65.

Test-retest Reliability for the Attentional Scales of the TFHAS

Test-retest coefficients for the 13 athletes who retook the test after an 8-week period are reported in Table 2. Test-retest reliability coefficients, measures of response stability over time, varied from .50 (RED) to .77 (BET, OET)

Table 1

Internal Consistency of the Test of Field Hockey Attentional Style

Scale	# of Items	a
BET	10	.76
OET	11	.61
BIT	11	.67
OIT	12	.74
NET	9	.57
NIT	7	.56
RED	12	.66

Table 2

Test-retest Reliability (n = 13) for Attentional Variables, Perceived Ability, Perceived Success, and Competitive Trait Anxiety

Variable	r
BET	.77
OET	.77
BIT	.61
OIT	.67
NET	.70
NIT	.65
RED	.50
AB[a]	.58
SUC[b]	.78
SCAT[c]	.69

[a]Ability.

[b]Success.

[c]Competitive trait anxiety.

for a range of .27.

Test-retest Reliability for Perceived Ability and Perceived Success (PAQ), and Competitive Trait Anxiety (SCAT)

Test-retest coefficients for the 13 athletes who retook the PAQ and SCAT are reported in Table 2. The reliability coefficients were as follows: perceived ability--.58, perceived success--.78, and competitive trait anxiety--.69. These reliabilities are lower than those reported elsewhere for PAQ (Massey, 1981) and SCAT (Martens, 1977), but would appear to be within the range of acceptability.

Intercorrelations of Attention, Perceived Ability, Perceived Success, and Anxiety

Pearson product-moment correlation assessed the relationships among all variables. Pearson r values among variables are reported in Table 3. Pearson r values ranged from a low of -.19 (NET and NIT with SCAT) to a high of .68 (ability with success).

Results from Table 3 indicate high commonality between some of the TFHAS scales, BET and NET, r = .67; OET and OIT, r = .66; and OET and RED, r = .63. The higher the Pearson r value (magnitude of the relationship), the less discrete the scales. It would appear, then, that some attentional scales are sharing significant variance with other scales. These scales (BET and NET, OET and OIT, and OET and RED) are perhaps too similar and, therefore, there may not actually be seven separate attentional scales, but rather three or four discrete scales.

Table 3

Intercorrelations of Attention, Perceived Ability, Perceived Success, and Competitive Trait Anxiety

	2	3	4	5	6	7	8	9	10
1. BET	-61	58	-52	67	51	-51	59	48	-33
2. OET		-41	66	-54	-46	63	-46	-35	36
3. BIT			-42	61	-51	-44	45	29	-31
4. OIT				-44	-53	65	-38	-33	33
5. NET					51	-47	53	43	-19
6. NIT						-47	36	40	-19
7. RED							-44	-31	28
8. AB								68	-23
9. SUC									-21
10. SCAT									

Note. Decimals omitted.

p .005 = .19.

The seven attentional scales of the TFHAS were moderately correlated with one another. The highest correlation was found between BET and NET, $r = .67$. The lowest correlations were found between OET and BIT, $r = -.41$; and between BIT and OIT, $r = -.42$.

Correlations between all effective attentional scales (BET, BIT, NET, NIT) yielded positive Pearson r values. Correlations between all ineffective attentional scales (OET, OIT, RED) also yielded positive Pearson r values. In addition, correlations between all effective and ineffective attentional scales (e.g., BET and OET, or OIT and NET) yielded negative Pearson r values.

All scales on the TFHAS were moderately related to perceived ability (r's ranged from .36 to .59). Slightly lower r values (.29 to .48) were found between TFHAS and perceived success. The effective attentional scales correlated positively with both perceived ability and perceived success, while the ineffective attentional scales correlated negatively with perceived ability and perceived success.

SCAT showed low correlations with perceived ability ($r = -.23$) and perceived success ($r = -.21$). Comparison of SCAT with the other predictor variables revealed low to moderately low correlations ($r = -.19$ to .36). Positive correlations were obtained between all ineffective attentional scales and SCAT, while negative correlations were obtained between all effective attentional scales,

perceived ability, perceived success, and SCAT.

Descriptive Statistics

The descriptive statistics for both successful and less successful field hockey athletes are reported in Table 4. The attentional mean scores for both subsamples were considerably higher on the effective scales (BET, BIT, NET, and NIT) than the ineffective scales (OET, OIT, and RED). Specifically, successful field hockey athletes apparently scored higher than less successful field hockey athletes on BET and NET, while less successful apparently outscored the successful on OET, OIT, and RED.

The perceived ability and perceived success mean scores were apparently higher for the successful athletes than the less successful. The mean scores for anxiety were very similar for both groups, 19.54 for successful and 19.52 for less successful.

Group Classification

The accuracy of the group classification of successful and less successful athletes is reported in Table 5. The percentage of group cases correctly classified was 72.9%. The actual successful group was classified 91.7% correctly with 97 subjects out of 109 predicted as successful. The actual less successful group was classified 40% correctly with 24 subjects out of 60 predicted as less successful. The n for the actual success group was adjusted because some subjects had at least one missing discriminating variable.

Table 4

Descriptive Statistics of Successful and Less Successful Field Hockey Athletes

	Successful (n = 119)		Less Successful (n = 60)	
Variable[a]	M	SD	M	SD
BET (50)	37.39	3.68	35.40	4.20
OET (55)	24.92	3.58	26.97	4.30
BIT (55)	40.92	4.32	40.28	4.36
OIT (60)	26.57	4.76	28.98	5.65
NET (45)	33.29	2.94	31.85	3.55
NIT (35)	24.93	3.07	25.05	3.02
RED (60)	23.74	4.03	26.10	5.04
AB (45)[b]	35.25	5.32	33.17	6.18
SUC (25)[c]	20.04	3.64	18.78	3.68
SCAT(30)[d]	19.54	4.10	19.52	4.66

[a]Maximum score in parenthesis.

[b]n = 105 and 59, respectively.

[c]n = 104 and 59, respectively.

[d]n = 106.

Table 5

Group Classification Results

Actual Group	n[b]	Predicted Group[a]	
		Successful	Less Successful
Successful	106	91.5% (97)	8.5% (9)
Less Successful	60	60.0% (36)	40.0% (24)

[a]72.9% of subjects correctly classified.

[b]13 subjects had at least one missing discriminating variable.

Canonical Correlation Analysis

The overall measure of the multivariate relationship between the outcome measure (actual success) and the predictor variables (attention, perceived ability and success, and competitive trait anxiety) revealed statistical significance, $R_c = .395$, $\chi^2(7) = 26.76$, $p < .01$. The significant canonical correlation explained approximately 15.6% of the variance using Wilks' lambda discriminant analysis.

The percentage of variance explained can be broken down using stepwise discriminant analysis. This analysis determines which variables are most important in explaining the success variance when all variables are considered simultaneously. The largest value was obtained for RED which was responsible for 6.5% of the explained variance. Other important scales appear to be NET which accounted for 1.6%, NIT which accounted for 3.2%, and OIT which accounted for 1.3% of the explained variance. Therefore, the remaining six variables only account for 3.0% of the explained variance.

Univariate Analysis

There was a significant difference between successful and less successful athletes on attention, perceived ability, and perceived success; while no significant difference existed between these athletes on competitive trait anxiety (Table 6). Five of the seven univariate F-ratios revealed statistical significance between the two groups, $p < .01$.

Table 6

Univariate Analysis of Attention, Perceived Ability, Perceived Success, and Competitive Trait Anxiety

Variable	Wilks' Lambda	F[a]
BET	.94301	9.70**
OET	.93995	10.06**
BIT	.99510	1.66
OIT	.95154	8.62**
NET	.95546	9.25**
NIT	.99967	.05
RED	.93892	11.19**
AB	.99577	4.83*
SUC	.99534	4.47*
SCAT	.97670	.01

[a] df = 1, 161.

*$p < .05$.

**$p < .01$.

Only BIT and NIT failed to reach statistical significance. The finding of a significant difference supported the first hypothesis that there will be a significant difference between the scores on the TFHAS for successful and less successful field hockey athletes.

Univariate analysis for competitive trait anxiety did not reveal a significant difference between the two groups, F (1, 161) = .01, $p > .05$. The finding of no significant difference refuted the second hypothesis that there will be a significant difference between the scores on SCAT for successful and less successful field hockey athletes.

Univariate analysis for perceived ability revealed a significant difference between the two groups, F (1, 161) = 4.83, $p < .01$. The finding of a significant difference supported the third hypothesis that there will be a significant difference for perceived ability as measured by the PAQ for successful and less successful field hockey athletes.

Univariate analysis for perceived success revealed a significant difference between the two groups, F (1, 161) = 4.47, $p < .01$. The finding of a significant difference supported the fourth hypothesis that there will be a significant difference for perceived success as measured by the PAQ for successful and less successful field hockey athletes.

Summary

Alpha reliabilities for internal consistency for the TFHAS varied from .56 (NET) to .76 (BET), with an overall alpha coefficient of .65. The TFHAS reliabilities varied from .50 (RED) to .77 (BET, OET) for the attentional scales. Other reliability coefficients were as follows: perceived ability--.58, perceived success--.78, and competitive trait anxiety--.69.

Pearson product-moment correlation revealed moderate relationships among the seven attentional scales. The highest correlation was found between BET and NET, r = .67. Moderate correlations suggest a lack of discreteness between scales. Correlations between the TFHAS and perceived ability and perceived success yielded positive r values for the effective scales with ability and success, and negative r values for the ineffective scales with ability and success. SCAT correlations yielded positive r values with the ineffective attentional scales and negative r values with the effective attentional scales as well as perceived ability and perceived success.

Descriptive statistics yielded higher mean scores for both groups on the effective scales than the ineffective scales. Successful athletes outscored the less successful on BET, NET, perceived ability, and perceived success. In contrast, less successful athletes outscored the successful on OET, OIT, and RED. The percentage of athletes correctly classified in their respective groups was 72.9%. The

successful group was classified 91.5% correctly while the less successful group was only classified 40% correctly.

Canonical correlation analysis explained approximately 15.6% of the success variance. Stepwise discriminant analysis found RED to be the most important discriminating variable of the two groups, accounting for 6.5% of the explained variance. Univariate analysis found significant differences between the two groups based on test scores from the TFHAS and PAQ. No significant between groups difference was found on SCAT.

Chapter 5

DISCUSSION OF RESULTS

The results presented in chapter 4 are discussed in this chapter. Topics include the following: internal consistency of the TFHAS; test-retest reliability of the TFHAS, PAQ, and SCAT; intercorrelations of attention, perceived ability, perceived success, and anxiety; descriptive statistics; group classification; canonical correlation analysis; univariate analysis; and summary.

Internal Consistency of the TFHAS

Coefficient alpha reliabilities for the attentional scales of the TFHAS are reported in Table 1. Cronbach's (1951) alpha reliability is a measure of internal consistency, the degree to which each item relates to a specific scale. Attentional scales reflecting a moderate alpha coefficient contain items that were answered in a homogeneous manner. Alpha reliabilities ranged from .56 (NET) to .76 (BET), with an overall alpha coefficient of .65.

The narrow scales, NET (.56) and NIT (.57), had the lowest internal consistency. This finding suggests that perhaps these two scales should be investigated for further clarification. In previous sport studies on attentional style (Ford, 1981; Massey, 1981; Taylor, 1979), there was only one narrow scale, NAR, which was comprised of both internal and external items. This scale was reported to

have low to moderate internal consistency: .43 (Ford), .33 (Massey), and .67 (Taylor). This finding led these investigators to recommend the separation of the NAR scale into internal and external components. Hooper (1983) used both the NET and NIT scales in his study on attentional style of soccer athletes. His results indicated moderate internal consistencies for both narrow scales (NET--.68 and NIT--.65).

Reliability of the TFHAS, PAQ, and SCAT

The test-retest reliability coefficients for each of the seven TFHAS scales are reported in Table 2. Thirteen athletes retook the tests 8 weeks after the initial administration as a measure of response stability. Reliability coefficients ranged from .50 (RED) to .77 (BET, OET).

Test-retest reliability coefficients for the PAQ and SCAT are listed in Table 2. The PAQ coefficients for ability (r = .58) and success (r = .78) were considerably lower than those reported by Massey (1981), but similar to those reported by Taylor (1979). Taylor reported ability reliability of .72 and success reliability of .86.

The apparent difference between ability and success coefficients may be due to a few reasons. Firstly, athletes may have found it easier to consistently evaluate their success than their ability because athletes have a clear estimation in their minds of their previous success. Secondly, the nature of the bipolar adjectives pairs may have had some effect. The success pairs are more self-

explanatory and, therefore, can be answered without too much difficulty. Some of the ability adjective pairs require a comparison with other athletes such as the pair "better than most" and "worse than most," or the pair "above average" and "below average."

As a result, it is necessary for athletes to determine who these "others" are and who is considered the "average" field hockey player. It would, therefore, seem that athletes were less certain about how they compared with others than they were about their past success. Perhaps the ability section of the PAQ should be revised to state "My field hockey ability as compared to an All-American is . . . ."

The coefficient for competitive trait anxiety, $\underline{r} = .69$, is slightly lower than that reported by Martens (1977) and Massey (1981). This moderate reliability for anxiety scores may be due to a few reasons. Firstly, during the initial testing, the tests were administered in a group setting, while retesting was done on an individual basis. Perhaps the reliability would have been higher if the test settings had been similar. Secondly, the 8-week interval was longer than Massey's interval, which would tend to decrease test-retest reliability.

Intercorrelations of Attention, Perceived Ability, Perceived Success, and Anxiety

The intercorrelation values for the seven attentional scales, perceived ability and success, and anxiety are reported in Table 3. Interscale correlations of the TFHAS

were in the direction (i.e., positive or negative) expected by the investigator. Correlations were as follows: positive between all effective scales (BET, BIT, NET, and NIT); positive between all ineffective scales (OET, OIT, and RED); and negative between all effective and ineffective scales.

Some of the Pearson r values were slightly larger than expected. For example, BET and NET showed a correlation of .67. These two scales share the directional component of an external focus but are opposite in the width component, broad and narrow. Thus, the items on these two scales are not as independent as initially thought.

Another unexpectedly high correlation occurred between BIT and NET, r = .61. These two scales differ in both width and directional components. Therefore, one would expect a somewhat lower correlation. Thus, perhaps some items on these scales should be revised in order to make the scales more discrete.

Correlations between the attentional scales and perceived ability revealed moderate correlations for effective scales (r = .36 to .59) and ineffective scales (r = -.38 to -.46). Slightly lower intercorrelations were observed between the attentional scales and perceived success. Pearson r values ranged from .29 to .48 for effective scales and -.31 to -.35 for ineffective scales. The correlation between ability and success was moderate, r = .68. Apparently individuals who scored high on

perceived ability tended to score high on perceived success as well. Therefore, athletes' perceptions of their ability are somewhat similar to the perceptions of their success in sport. This relationship was expected because athletes will often describe their ability based on the previous success of their team. For example, a field hockey player from a less successful team probably would not describe her ability as "superior" and "better than most" if her team had not won a game all season. Conversely, a player from a highly successful team might tend to use the adjectives "superior," "strong," and "better than most" to describe her field hockey ability.

Descriptive Statistics

An effective attentional profile was revealed for both successful and less successful field hockey athletes as seen by the mean scores reported in Table 4. Of the seven attentional focuses, the highest apparent mean scores were obtained for the effective scales (BET, BIT, NET, and NIT). In relationship to maximum scores, perceived ability and perceived success revealed the greatest variability of all variables, with perhaps the exception of competitive trait anxiety.

Overall the athletes perceived themselves to possess moderate field hockey ability and moderately high success in past field hockey endeavors. The successful athletes perceived themselves slightly higher on ability and success than did the less successful athletes. This finding somewhat reinforces the construct validity of the PAQ that

successful athletes tend to perceive themselves higher on ability and success than do less successful athletes. However, this apparent difference was not of the magnitude that was expected. Perhaps less successful athletes do not perceive themselves low in ability and success because they do not fully understand the parameters of being successful. They might not realize how difficult it is to produce superior performance.

The two groups may be using different criterion measures of success. Successful athletes may be using objective reality (i.e., win/loss records and the number of goals scored in a game) whereas the less successful athletes may be using subjective reality (i.e., emphasis on improvement in individual and team performance rather than winning). The two groups might also have a different orientation to success. The successful athletes are possibly more achievement oriented, more effort oriented, and more committed than the less successful athletes.

High quality or successful performance in sport is frequently associated with low anxiety levels. In other words, high anxious individuals do not perform as well as low anxious individuals on complex motor tasks (Carron, 1968; Lawther, 1977). In this investigation, however, the mean scores for competitive trait anxiety were similar for both groups of field hockey athletes, with successful athletes slightly outscoring the less successful athletes on SCAT. There are a few possible explanations for this

finding. Highly successful athletes might perceive themselves as anxious because of their demanding game schedules and the constant realization of post-season play. Also their coaches have high expectations and athletes may be anxious because of feelings that they will not live up to these expectations.

Group Classification

Discriminant analysis for group classification reported the number of and percentage of athletes correctly classified in their respective groups. The percentage of athletes correctly classified was 72.9%. This number is perhaps misleading because of the percentages for both subgroups. The actual successful group was classified 91.5% correctly with 97 out of 109 subjects predicted as successful. The actual less successful group was classified 40% correctly with 24 out of 60 predicted as less successful.

An explanation for the low percentage of correctly classified less successful athletes is that attention may not be equally important across varying skill levels. Attention appears to be a more important variable for successful athletes than for less successful athletes. Successful athletes are able to attend to and process the important cues of the game. Less successful athletes are often unable to attend to the task demands because they are worrying about performing the basic skills in field hockey. If attention is not as important a variable for the less successful athlete, then this variable should not be used

independently to classify the less successful athlete. Perhaps other variables such as commitment and motivation should be used to classify these athletes. Coaches of less successful athletes ought to be concerned with skill development and commitment, rather than attention control.

In contrast, successful athletes with a mastery of field hockey are able to attend to the important cues of the game. Athletes at high levels of play can become aware of their attentional focuses and with practice can learn to alter their focuses. Drills can be structured to require a change of attentional focus. For example, a player moving the ball down the field in a weave formation, with two teammates and two defensive opponents, needs a broad external focus in order to attend to the players' movements and to locate spaces on the field. Once inside the circle, however, the focus narrows in order to shoot at the goal. If the player's attentional focus did not switch (i.e., from a broad to a narrow focus), then perhaps the player might fail at the task and lose possession of the ball.

Canonical Correlation Analysis

Canonical correlation explained approximately 15.6% of the success variance. Although the predictor variables (attention, perceived ability, perceived success, and anxiety) explained a significant amount of the success variance, other variables, such as commitment and motivation, are also related to successful performance. As stated earlier, these variables (commitment and motivation) may be important especially for the less successful athlete. In

other words, there was a significant percentage of variance accounted for when one considers the possible variables which could contribute to performance.

Stepwise discriminant analysis determined which of the variables were most important in explaining the success variance when all variables were considered simultaneously. Success variance can be explained by the following attentional scales: RED, OIT, NET, and NIT. Athletes whose attention is underinclusive (reduced) make mistakes because they narrow attention excessively and, therefore, fail to include all the task-relevant information. Tunnel vision (i.e., focusing on a single cue) does not provide the athlete with enough information to perform optimally in field hockey. These underinclusive athletes are sometimes termed "ball watchers" by coaches. It is important for these athletes to become more aware of their teammates' positioning on the field, as well as the many options to use when they play the ball. Drills should be structured to force the player to move in various patterns and use a variety of hits to pass off to teammates.

Similarly, athletes who are overloaded internally (i.e., overwhelmed by their thoughts) do not possess the attentional abilities to successfully meet the task demands of field hockey. Effective performance during a field hockey game is predicated on an external readiness (both broad and narrow) in order that the proper environmental cues be selected and acted upon. If players appear to be overloaded internally, often a coach will ask, "What are you thinking?"

It is advisable for a coach to know what athletes are thinking in game situations, and the coach probably would not know unless the athletes are questioned.

For optimal performance, players must be able to narrow down their external focus (NET) as well as their internal focus (NIT) to decide upon a course of action. It is necessary to have a preplanned attack for various situations and these techniques may be developed in drills and then implemented during the scrimmages. The narrow external focus is necessary to execute a penalty stroke or to pass to a teammate inside the circle. A narrow internal focus is necessary to quickly alter the plan of attack as dictated by the situation.

The previous literature of Stevens (1980) and Schultz (1982) has made reference to the importance of both a broad external and broad internal focus for optimal performance in field hockey. On the surface, the data indicated that the broad external focus and the broad internal focus do not seem to be important discriminating variables. These findings are due to the stepwise nature of the analysis and the variance that both BET and BIT share with those variables that entered the discriminant analysis ahead of them. The magnitude of the correlation of BET with discriminating variables would seem to indicate that any effect BET might have is negated because of the shared variance. In actuality, BET and BIT may be important variables but not as important as the first four variables that entered the discriminant analysis--RED, OIT, NET, and NIT.

Univariate Analysis

Mentioned previously were the variables important for explaining the shared success variance (RED, OIT, NET, and NIT). These variables while important when looked at simultaneously are not the only variables to explain success. When each of the 10 variables (seven attentional scales, perceived ability, perceived success, and competitive trait anxiety) are looked at singularly, five of the seven attentional variables reached statistical significance (Table 6). This finding supported the first hypothesis that there will be a significant difference between the scores on the TFHAS for successful and less successful field hockey athletes.

It was anticipated that the broad focus would be critical in an open fast-paced game such as field hockey. Field hockey is a game in which players must analyze situations and make quick decisions (Schultz, 1982). Field hockey athletes are continually reacting to movements of teammates, opponents, and the ball. The broad external focus is necessary to effectively integrate many environmental cues at one time (Stevens, 1980). Being broad and external involves perceiving, selecting, and processing relevant environmental cues. Players are reacting to teammates and opponents while moving the ball or anticipating a pass (Barnes & Kentwell, 1979). Although BET did not appear important in the previous section for explaining shared variance, the broad and external focus is important when this

variable was considered univariately. Data supported Stevens' assertion about the importance of BET because the broad external focus reached statistical significance at the .01 level (Table 6). Therefore, it would appear that the ability to focus on a range of environmental cues leads to optimal performance in field hockey.

While being broad and external is important, the broad internal focus is not as important as initially thought. BIT, which was unable to explain success variance, was also not significant when considered univariately. Data refuted Schultz's suggestion of the importance of being analytical because the broad internal focus failed to reach statistical significance (Table 6). This finding suggests that successful athletes are not utilizing more strategy and are not doing more internal processing than the less successful athletes. It is not reasonable for athletes in open skill environments to be able to see and feel everything and then make the appropriate adjustments. Being broad and internal would take the player's attention away from the ball and from what is going on. A player does not have time to think of plans of attack because in field hockey the play is continuous and the players are constantly moving down the field. Therefore, it would not appear that the ability to focus on a range of cognitive and proprioceptive stimuli leads to optimal performance in field hockey.

The narrow scales, while important for explaining

shared variance, did not both reach statistical significance in this analysis. Data indicated that the narrow external focus is important for successful performance because NET reached statistical significance at the .01 level. The narrow external focus is necessary to take some specific action, such as executing a penalty stroke or passing to a teammate inside the circle. In addition, the ability to switch from a broad external focus to a narrow external focus would seem important for optimal performance in field hockey. In contrast, the narrow internal focus does not appear as important a variable as initially thought. Data revealed that NIT was not significant at the .05 level (Table 6). It is interesting to note however, that NIT, while not important in this univariate analysis, was significant for explaining shared variance. At this time, the investigator is unable to explain this finding and suggests that the NIT scale be investigated further.

Other variables significant in this analysis were OET, OIT, and RED. Less successful athletes were more overloaded, externally and internally, than the successful athletes. This finding is consistent with Nideffer's model of attention (1976a) that in open skill sports attending to too much information (i.e., environmental stimuli as well as cognitive stimuli) is not conducive to optimal sport performance. In addition, data indicated that less successful athletes tended To narrow excessively, and therefore failed to include all the task relevant information. This finding is consistent

with Nideffer's model of attention (1976a) that in open skill sports focusing on a single cue is not conducive to optimal sport performance.

The above results suggest that processing too much or too little information adversely affects performance. Therefore, it appears that a broad external focus and a narrow external focus are desirable attentional focuses for optimal performance in field hockey. Meanwhile, an overloaded external focus, an overloaded internal focus, and an underinclusive focus are, perhaps, harmful to performance.

The attentional scales were not the only variables to reach statistical significance. Both perceived ability and perceived success were significant at the .01 level. These findings supported the third and fourth hypotheses that there will be significant differences for perceived ability and perceived success as measured by the PAQ for successful and less successful athletes. Successful athletes perceived themselves higher on ability and success than less successful athletes. This finding reinforces the construct validity of the PAQ.

One variable that did not reach statistical significance in this analysis was competitive trait anxiety. This finding suggested that the anxiety levels for both groups of athletes were similar. The finding of no significant difference refuted the second hypothesis that there will be a significant difference between the scores on SCAT for successful and less successful athletes. An explanation for this finding is that

arousal and anxiety affect people differently. It can, therefore, be concluded that arousal is neither consistently facilitative nor consistently disruptive (Wachtel, 1967).

Summary

Cronbach's (1951) alpha reliability coefficients ranged from .56 to .76 for the TFHAS. The lowest internal consistency was found for the narrow scales suggesting that both NET and NIT be investigated further.

Moderate test-retest reliability of the TFHAS, PAQ, and SCAT was assessed using Pearson product-moment correlation. The reliability coefficient for perceived success was higher than for perceived ability. Perhaps success was easier to evaluate because athletes have a clear estimation in their minds of their previous success. Also, ability questions on the PAQ necessitate a comparison and it is not stated with whom athletes are comparing themselves.

Pearson product-moment correlation also assessed the interrelationships of the variables. Correlations were in the expected direction, but some of the Pearson r values were higher than expected. Moderate correlations among the TFHAS scales indicated commonality and, therefore, items on some of the attentional scales should be revised in order to make them more discrete. Moderate correlation was revealed between perceived ability and perceived success indicating that athletes' perceptions of their ability were somewhat similar to their perceptions of their success.

An effective attentional profile was revealed for both successful and less successful athletes. The successful perceived themselves higher on ability and success than the less successful. Competitive trait anxiety mean scores were similar for both groups suggesting that successful performance was not due to low anxiety levels.

Discriminant analysis for group classification suggested that attention may not be important across all skill levels. Instead, attention seems more important for successful athletes probably because they have mastered the basic skills of field hockey and, therefore, can attend to the cues of the game. They can become aware of their attentional focuses and can learn to alter them. Less successful athletes need not be overly concerned with attention because they have not mastered the basic skills. Perhaps other variables, such as commitment and motivation, would be more accurate in classifying these athletes.

Stepwise discriminant analysis revealed RED, OIT, NET, and NIT to be the most important variables for explaining success variance. Athletes whose attention is underinclusive make mistakes because they are unable to attend to all of the important cues. Athletes who are overloaded internally cannot successfully meet the task demands of the game because they are overwhelmed by their thoughts. The broad external and broad internal focuses appeared unimportant in explaining success variance because of the variance BET and BIT shared with the other attentional scales.

Univariate analysis of the 10 variables revealed five attention scales and perceived ability and success to be statistically different for successful and less successful field hockey athletes. Data indicated that BET and NET seem important for successful field hockey performance, and that OET, OIT, and RED may adversely affect performance. Also, successful athletes perceived themselves higher on ability and success than less successful athletes.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study investigated attentional style, perceived ability and success, and competitive trait anxiety of successful and less successful field hockey athletes. Female varsity college players (N = 179) completed the following three tests: test of field hockey attentional style (TFHAS), personal assessment questionnare (PAQ), and Sport Competition Anxiety Test (SCAT). As a measure of reliability for the testing instruments, 13 of the athletes were retested 8 weeks following the initial test administration.

The TFHAS consists of 72 items which represent attentional demands specific to field hockey. Seven types of attentional focuses (BET, OET, BIT, OIT, NET, NIT, and RED) are each represented by a separate scale. The PAQ measured each athlete's perception of her ability and success in field hockey, and SCAT determined each athlete's competitive trait anxiety.

Internal consistency coefficients of the TFHAS varied from .56 (NIT) to .76 (BET). Moderate test-retest reliability was found for the TFHAS, .50 (RED) to .77 (BET, OET). Reliability coefficients for perceived ability (r = .58), perceived success (r = .78), and competitive trait anxiety (r = .69) were similar to those reported by Taylor (1979).

To quantify the interrelationship among the 10 variables, Pearson product-moment correlation was used. Moderate relationship was revealed for the seven attentional scales. Some correlations between TFHAS scales were higher than expected indicating a lack of discreteness of the scales. Perceived ability and success correlated positively with the effective attention scales (i.e., BET, BIT, NET, and NIT) and negatively with the ineffective attention scales (i.e., OET, OIT, and RED). Moderate correlation between perceived ability and perceived success indicated that athletes' perceptions of their ability were somewhat similar to their perceptions of their success.

Descriptive statistics yielded higher mean scores for both groups on the effective attention scales. Successful athletes outscored the less successful on BET, NET, perceived ability, and perceived success. In contrast, less successful athletes outscored the successful on OET, OIT, and RED.

The discriminant analysis for group classification suggested that attention may not be important across varying skill levels. The percentage of athletes correctly classified in their respective groups was 72.9%. The successful group was classified 91.5% correctly and the less successful group was classified 40% correctly. Therefore, attention appears to be a more important variable for successful athletes than less successful athletes. Successful athletes, having mastered the basic skills, are able to become aware of their attentional focuses and can learn to alter them.

Canonical correlation explained approximately 15.6% of the success variance. Stepwise discriminant analysis revealed RED, OIT, NET, and NIT to be the most important variables in explaining shared variance. Other variables, such as BET and BIT, were not as important in this analysis because of the variance that they share with the other variables.

Univariate analysis revealed significant differences between successful and less successful athletes on five attentional scales, perceived ability, and perceived success. The broad external and narrow external attentional focuses appeared desirable for optimal performance in field hockey, and the overloaded external, overloaded internal, and underinclusive focuses appeared to adversely affect sport performance. Successful athletes perceived themselves higher on ability and success, while no significant between groups difference was found on anxiety levels for successful and less successful field hockey athletes.

Conclusions

The results of this study yielded the following conclusions regarding the relationship between attentional style, perceived ability and success, and competitive trait anxiety for successful and less successful field hockey athletes:

1. BET, OET, OIT, NET, and RED of the TFHAS are the attentional scales that are significantly different for successful and less successful field hockey athletes.

Field hockey athletes process external cues and narrow attention under certain conditions.

2. Perceived ability and perceived success as measured by the PAQ are significantly different for successful and less successful field hockey athletes.

3. Competitive trait anxiety as measured by SCAT is not significantly different for successful and less successful field hockey athletes.

4. Attention appears to be more important for successful field hockey athletes than for less successful.

Recommendations

The following recommendations for further study were made after the completion of this investigation:

1. A large scale factor analysis of the TFHAS scales should be conducted to assess the discreteness of the TFHAS scales and to eliminate overlapping test items.

2. A field hockey-specific anxiety test should be constructed because SCAT is a general sport anxiety test, and is not adequately generalizable across specific sport environments.

3. The PAQ should be revised for better understanding and to provide a better comparison measure for ability and success in field hockey.

4. Tests of attentional style should be developed for other sports using appropriate situations to represent the seven attentional scales used by the TFHAS in this study.

Appendix A

TEST OF FIELD HOCKEY ATTENTIONAL STYLE

INSTRUCTIONS

USE NO. 2 PENCIL. DO NOT WRITE ON THE TEST BOOKLET

Read each item carefully and then answer according to the frequency with which it describes you or your field hockey behavior. For example, item 1 is "I can anticipate certain moves and often make interceptions."

A = NEVER

B = RARELY

C = SOMETIMES

D = FREQUENTLY

E = ALWAYS

If your answer to the first item is SOMETIMES, you would darken 3 on the answer sheet for item 1. The same key is used for every item, thus each time you mark an A you are indicating NEVER, etc.

1. Please be sure to mark your name in the space provided at the top of the answer sheet.

2. Fill in your school's name in the space under identification number.

Appendix A (continued)

1. I can anticipate certain moves and often make interceptions.

2. While playing I am constantly analyzing the game.

3. While the coach shouts to me during a game my performance declines as I try to listen to the instructions.

4. I am surrounded by opponents, but I am still able to receive a pass and then pass to a teammate.

5. My performance deteriorates considerably on a bumpy field.

6. I am about to shoot when I see or hear a teammate in a slightly poorer scoring position. I attempt to pass the ball to her.

7. I am about to receive a pass. One minute earlier an opposing player waiting right behind me hit me in the shin with her stick in a similar situation. I fail to control the ball.

8. I can observe a situation and think ahead.

9. While dribbling down the field I can hear a teammate who is calling for the ball.

10. If my stick breaks during a game, I can quickly adapt to the new stick and concentrate on the play.

11. I lose possession of the ball when I could have passed to several teammates all calling for the ball and in good position.

12. I have just scored or done something exceptional. I sit back on my performance with the feeling that I have earned my place on the team for the rest of the match and the next game.

13. I have been sitting on the substitutes' bench for most of the game and have developed strong feelings against the coach. When finally called upon in the last 5 minutes I am unable to concentrate on the game.

14. I have been fouled but the referee does not stop the play. I immediately run after the official and continue to complain, forgetting the game.

Appendix A (continued)

15. I have just made an important mistake. My teammates assure me that it was not completely my fault, but I continue to think about the error and make more mistakes.

16. I am constantly aware of where the opposition are during a game.

17. If my performance has begun poorly, I am able to forget about that and concentrate on the game.

18. I dribble, unaware of my teammates and opponents other than those immediately around me.

19. I lose the ball after failing to hear or see an opponent running up behind me.

20. I am accused of "ball watching" by the coach.

21. During the half time talk with the coach I am not able to concentrate on what she is saying because I am thinking about my mistakes during the first half.

22. I see a situation and recall a move practiced previously or suggested by the coach, and begin to put it into operation.

23. During a game my mind seems "blank" and many of my actions lack purpose.

24. I am able to hear my teammates calling for the ball and I pass off to one of them.

25. I make an important mistake, but am not affected by the error as I continue to be involved in the game.

26. It is easy for me to concentrate when playing either at home or away.

27. My friends are watching me and I set out to impress them by dribbling the ball the length of the field in an attempt to score.

28. I make more mistakes in a crowded penalty circle than in other areas of the field where there are fewer players at any one time.

29. While playing defense, I am tempted to follow the ball, leaving my designated opponent free.

Appendix A (continued)

30. I have just been tripped by an opponent without the official noticing the foul. In anger, I yell at the official and receive a warning.

31. I get frustrated when a teammate is performing poorly.

32. It is equally easy for me to concentrate against less skilled and more skilled opponents.

33. I have just been given a yellow card by an official. I play less competitively because I am thinking that if I receive another card I will be kicked out of the game.

34. I see two teammates both unmarked and unable to make a decision which to pass to, I pass to a point between both of them.

35. In important games excessive pressure to do well leads me to do things hastily without thinking.

36. I see two open teammates, one requiring a short push pass, the other needing a long drive. I give the ball away with neither a drive nor push pass, unable to decide whom to pass to.

37. I am dribbling just outside the circle and have two opponents preventing me from entering the circle. I dribble up to them and then pass to a teammate.

38. The coach has instructed me to do something I disapprove of. My performance suffers, while I think about the instructions and my own feelings.

39. I am in a tight situation with the ball and notice another player out of the corner of my eye. I assume she is on my team and pass, only to see that I have given the ball to an opponent.

40. When I am performing I "coach" myself mentally with instructions.

41. An opponent is dribbling towards me. I remember which side she usually dodges and I am ready to anticipate her move.

42. I have the ball in a three-on-one situation but I lose it easily as I fail to decide whom to pass to and when.

43. A teammate has just strongly complained to me after I failed to pass to her in a good position. I receive the ball again and make an extra effort to pass to her but

Appendix A (continued)

this time she is covered and I give the ball away unnecessarily.

44. When I am actually playing, I am almost totally unaware of the spectators' presence.

45. I seem to be constantly aware of where the boundaries of the field and goals are without always checking first.

46. I remember previous errors and quickly make appropriate adjustments, in terms of my position on the field for example.

47. The playing area is very muddy or it is cold and raining but I am able to control the ball.

48. When I am tired I tend to make a lot of mistakes and lose concentration on the game.

49. I can quickly recognize others' mistakes and cover for them.

50. I can usually remain confident even through one of my poorer performances.

51. I am about to drive the ball down the field and an opponent shouts at me. I ignore this and am able to hit the ball to a teammate ahead of me.

52. I tend to intercept a lot of passes because I seem to know where the ball is going to go next.

53. I talk or think to myself as I plan my next move. For example, ". . . if I pass to her, she can pass back to me there . . . ."

54. I am supposed to cover an opponent. The referee makes a call and I dispute the call. I fail to see my opponent dribbling by me into the circle.

55. I am able to watch opposing players' movements and respond appropriately.

56. I consciously "talk to myself" while I am performing.

57. I am worried about playing against a superior team or against a much better player.

58. When I make a mistake, I have trouble forgetting it and concentrating on my ongoing performance.

Appendix A (continued)

59. When playing away from home I may be distracted by the new surroundings particularly just before the game and early in the match.

60. I tend to lose concentration just before half time.

61. I tend to give the ball away in the circle, or do something hurriedly or instinctively, rather than stopping to think.

62. I remember social or personal problems during a game.

63. I notice a teammate in a good position and continue to try to pass to her ignoring another player in a better position.

64. I would describe myself as a constructive player, recognizing obscure openings and making intelligent use of the ball.

65. In important games excessive pressure to do well causes me to make mistakes, particularly at the beginning.

66. I am easily beaten in two-on-one situations because I can't take in all the information and tend to rush in without stopping to think.

67. When I am slightly injured and continue to play I tend to make a lot of mistakes and lose concentration on the game.

68. Despite the noise of the crowd I am able to pick out my coach's voice from our bench. I listen to her instructions and make the proper adjustment.

69. I am aware of how plays are developing around me.

70. I would rather play in a one-on-one situation than when more players are involved and I have to be aware of many more possibilities.

71. There are moments when I am not aware of where my teammates are during a game.

72. I have just tapped the ball with the wrong side of my stick, however, the official missed the call. I am able to continue without this affecting me.

Appendix B

SPORT COMPETITION ANXIETY TEST ITEMS

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

Appendix C

PERSONAL ASSESSMENT QUESTIONNAIRE (Form F)

Name: _____

Institution: _____

Please mark X in the space that best represents your personal assessment of the statements. Example: If you have always been a successful field hockey player, mark X in the left hand space; if you have been unsuccessful as often as successful, mark X in the middle space; if you have been an unsuccessful field hockey player, mark X in the right hand space.

As a field hockey player I have been generally

successful	___ ___ ___ ___ ___	unsuccessful
unnoticed	___ ___ ___ ___ ___	recognized
frustrated	___ ___ ___ ___ ___	rewarded
happy	___ ___ ___ ___ ___	sad
uncertain	___ ___ ___ ___ ___	confident

My field hockey ability is

above average	___ ___ ___ ___ ___	below average
bad	___ ___ ___ ___ ___	good
ridiculed by coach	___ ___ ___ ___ ___	praised by coach
superior	___ ___ ___ ___ ___	inferior
limited	___ ___ ___ ___ ___	broad
praised by others	___ ___ ___ ___ ___	ridiculed by others
encouraging	___ ___ ___ ___ ___	frustrating
strong	___ ___ ___ ___ ___	weak
worse than most	___ ___ ___ ___ ___	better than most

Appendix D

INFORMED CONSENT FORM

Very little research has been conducted into the characteristics of women athletes, and probably to your knowledge no research has been done with field hockey athletes. To remedy this, you can help by participating in this study:

I am extremely interested in field hockey and would like to examine the relationship between attentional styles (i.e., what cues athletes attend to) and team performance. Different field hockey player situations require different attentional styles as well as the ability to shift attention in response to changing situations on the field. For example, executing a penalty stroke calls for very narrow attention while watching opposing players' movements requires a broader attention span.

Your team has been selected from hundreds of field hockey teams in the United States to participate in this study. As a subject, you will be asked to complete the following paper-and-pencil tests:

1. Test of Field Hockey Attentional Style: This test is a sport-specific measure of attention (30 min.).

2. Illinois Competition Questionnaire: This test indicates your attitude toward competition (3 min.).

3. Personal Assessment Questionnaire: This test measures the individual field hockey player's ability and success in field hockey (3 min.).

Appendix D (continued)

The total time involved is 35-45 minutes for the testing procedures. The tests may be taken in a group or individual setting.

It is important for you to realize that your coach will administer the tests and will have access to your data, therefore confidentiality cannot be guaranteed. To maintain confidentiality between athlete, coach, and myself, code numbers will be used instead of your name. The physical and psychological risks are minimal. Participation in this study is voluntary and your initial agreement to participate does not stop you from discontinuing participation at any time. If you have difficulty with any particular question, answer it as you think best.

If you wish to inquire about the test results you can contact either the coach or myself. I can be reached at the following address: Ithaca College, School of HPER, Ithaca, New York 14850.

Please consider the purpose and time commitment of this study before you decide whether or not to participate. Please indicate your decision below. Thank you.

_____ Yes, I voluntarily choose to participate in this study. I have read the above and I understand its contents. I acknowledge that I am 18 years of age or older.

_____ No, I do not wish to participate in this study.

_____ _____

Signature Date

Appendix E

LETTER TO COACHES

Dear Coach,

Even in 1983 very little research has been done with women athletes and even less in the sport of field hockey. Apparently most investigators do not feel that this sport warrants their time. However, I am extremely interested in field hockey and would like to investigate the characteristics of field hockey players from teams with varying levels of performance. One such characteristic of central concern is attentional style (i.e., what cues athletes attend to).

You are well aware as a coach that some athletes are not always concentrating on the task demands but seem to be "somewhere else." Different field hockey player situations appear to require different attentional styles as well as the ability to shift attention in response to changing situations on the field. For example, executing a penalty stroke calls for very narrow attention, while watching opposing players' movements calls for a broader attention span. If inappropriate attentional styles are identified, you as the coach may be able to alter the focus of attention to the optimal style for the specific situation.

Athletes involved in this study will be asked to complete the following enclosed tests:

1. Test of Field Hockey Attentional Style

2. Illinois Competition Questionnaire

3. Personal Assessment Questionnaire

The total time involved is 35 to 45 minutes for the testing procedures. I am aware that sometimes athletes can become frustrated while taking written tests because the questions asked are not related to sport. I can guarantee task relevancy with these three paper-and-pencil tests because the questions are sports specific and encompass field hockey. Athletes typically enjoy sport-specific tests and potentially gain from the experience.

I am interested in obtaining a cross section of institutions but it is not possible for me to travel across the United States so I am asking for your help in my data collection. Might you be interested enough to do the following?

Appendix E (continued)

1. Contact your varsity field hockey players from your 1982 squad, the starters, and regular substitutes with the exception of the goalies (because the entire test battery is not relevant for goalies).

2. Administer the three tests to your players in either a group setting or allow players to fill them out on their own and return them to you. Naturally it would be better for you to do the testing on a group basis where you control them, but it is up to you to decide which would be easier for you and your athletes.

3. After the data are collected, send the packet back to me in the postage-paid envelope.

Your participation is essential because without your help I will be unable to follow through with my study. Please return the enclosed postcard indicating whether or not you are interested in the study and how many test packets you will need.

Thank you for your consideration in this matter.

Sincerely,

Jill M. Dunphy
Graduate Student

Enc.

Appendix F

ITEMS NUMBERS FOR TFHAS SCALES

Attentional Scale	Item Number
BET	9, 16, 18[a], 19[a], 45, 49, 55, 64, 69, 71[a]
OET	3, 11, 28, 34, 36, 39, 42, 59, 61, 66, 70
BIT	1, 2, 8, 17, 23[a], 40, 46, 50, 53, 56, 72
OIT	7, 13, 21, 35, 38, 43, 48, 57, 60, 62, 65, 67
NET	4, 6[a], 24, 29[a], 37, 47, 51, 52, 68
NIT	5[a], 10, 22, 26, 32, 41, 44
RED	12, 14, 15, 20, 25[a], 27, 30, 31, 33, 54, 58, 63

[a]Reverse scored.

REFERENCES

Bacon, S. J. Arousal and the range of cue utlization. Journal of Experimental Psychology, 1974, 102, 81-87.

Barnes, M. J., & Kentwell, R. G. R. Field hockey: The coach and player (2nd ed.). New York: Macmillan, 1972.

Carron, A. V. Motor performance under stress. Research Quarterly, 1968, 39, 463-469.

Coulson, R., & Cobb, R. B. Development and assessment of a scale to measure generalized expectancy of sport success. Paper presented at the meeting of the American Alliance for Health, Physical Education, Recreation, and Dance, New Orleans, March 1979.

Cronbach, L. J. Coefficient alpha and internal structure of tests. Psychometrika, 1951, 16, 297-334.

Easterbrook, J. A. The effect of emotion on cue utilization and the organization of behavior. Psychological Review, 1959, 66, 183-210.

Endler, N. S., & Magnusson, D. Personality and person by situation interaction. In N. S. Endler & D. Magnusson (Eds.), Interactional psychology and personality. Washington: Hemisphere, 1976.

Etzel, E. F. Validation of a conceptual model characterizing attention among international rifle shooters. Journal of Sports Psychology, 1979, 1, 281-290.

Fisher, A. C., Horsfall, J. S., & Morris, H. H. Sport personality assessment: A methodological re-examination.

International Journal of Sport Psychology, 1977, 8, 92-102.

Fisher, A. C., Ryan, E. D., & Martens, R. Current status and future direction of personality research related to motor behavior and sport: Three panelists' views. In A. C. Fisher (Ed.), Psychology of sport: Issues and insights. Palo Alto: Mayfield, 1976.

Fisher, A. C., & Zwart, E. F. Psychological analysis of athletes' anxiety responses. Journal of Sport Psychology, 1982, 4, 139-158.

Ford, T. W. Prediction of batting success. Unpublished master's thesis, Ithaca College, 1981.

Hogan, R., De Soto, C. B., & Solano, C. Traits, tests, and personality research. American Psychologist, 1977, 32, 225-264.

Hooper, F. A. Attentional style of soccer athletes. Unpublished master's thesis, Ithaca College, 1983.

Kahneman, D. Attention and effort. Englewood Cliffs: Prentice-Hall, 1973.

Landers, D. M. The arousal-performance relationship revisited. Research Quarterly for Exercise and Sport, 1980, 51, 77-89.

Lawther, J. D. The learning and performance of physical skills (2nd ed.). Englewood Cliffs: Prentice-Hall, 1977.

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

Massey, M. C. Attentional style of volleyball athletes. Unpublished master's thesis, Ithaca College, 1981.

Mischel, W. Introduction to personality. New York: Holt, Rinehart, 1976.

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

Morgan, W. P., & Johnson, R. W. Personality characteristics of successful and unsuccessful oarsmen. International Journal of Sport Psychology, 1978, 9, 119-133.

Nideffer, R. M. Test of attentional and interpersonal style. Journal of Personality and Social Psychology, 1976, 34, 394-400. (a).

Nideffer, R. M. The inner athlete: Mind plus muscle for winning. New York: Crowell, 1976. (b)

Nideffer, R. M. The relationship of attention and anxiety to performance. In W. F. Straub (Ed.), Sport psychology: An analysis of athlete behavior. Ithaca, N.Y.: Mouvement, 1978.

Nideffer, R. M. The role of attention in optimal athletic performance. In P. Klavora & J. Daniel (Eds.), Coach, athlete, and the sport psychologist. Toronto: School of Physical and Health Education, University of Toronto, 1979.

Nideffer, R. M. The ethics and practice and applied sport psychology. Ithaca, N.Y.: Mouvement, 1981.

Orlick, T. In pursuit of excellence. Champaign: Human Kinetics, 1980.

Parker, J. E. A developmental perspective of attention in youth sport. Charlottesville, Va.: University of Virginia, 1980. (ERIC Document Reproduction Service No. ED 204 314)

Schultz, B. Building a solid field hockey foundation. Scholastic Coach, August 1982, pp. 51-54.

Shakow, D. Segmental set. Archives of General Psychiatry, 1962, 6, 1-17.

Stevens, N. L. Beyond winning: The goal of noncritical thought. In NAGWS field hockey guide, June 1980-June 1982. Reston, Va.: American Alliance for Health, Physical Education, Recreation, and Dance, 1980.

Taylor, A. H. Attentional style of soccer athletes. Unpublished master's thesis, Ithaca College, 1979.

Vallerand, R. J. Attentional style (TAIS) in sport: The need to get more sport specific. Unpublished manuscript, University of Guelph, 1982.

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

Wachtel, P. L. Conception of broad and narrow attention. Psychological Bulletin, 1967, 68, 417-429.