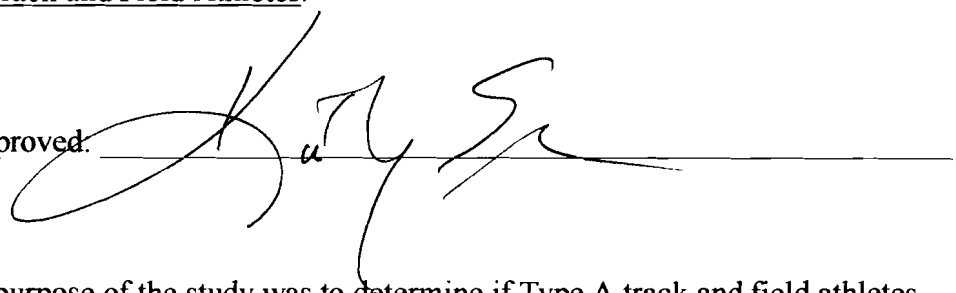
AN ABSTRACT OF THE THESIS OF

Jesse Wayne Griffin for the Master of Science in Physical Education presented on April 23, 1997.

Title: The Difference Between Type A/B Personality on Self-Efficacy and Trait/State Anxiety in Track and Field Athletes.

Abstract Approved: 

The purpose of the study was to determine if Type A track and field athletes differ from Type B track and field athletes on state anxiety (A-state), trait anxiety (A-trait) and self-efficacy under varying competitive situations. A sub-problem in the study was to determine if there was a relationship between A-state and self-efficacy. A repeated measures multivariate analysis of variance (MANOVA) was used to determine if interactions exist between competitive situations and personality type for track and field athletes on dependent measures of A-state and self-efficacy. An additional MANOVA was used to examine differences in personality type for track and field athletes self-confidence levels under varying competitive situations. Differences in A-trait for Type A and Type B track and field athletes were examined using a t-test. A Pearson Product Correlation was used to determine if a linear relationship between A-state and self-efficacy exists. Varsity track and field athletes from Emporia State University served as participants (N = 43). Athletes were assessed for Type A and Type B personality traits by the Modified Jenkins Activity Survey (mJAS). Levels of A-trait were obtained from the Sport Competitive Anxiety Test (SCAT). Cognitive and somatic

A-state were assessed by the Competitive State Anxiety Inventory-2 (CSAI-2) at three indoor track and field meets. Physical self-efficacy scores were obtained from the Physical Self-Efficacy Scale (PSE) at the same three indoor track and field meets. All questionnaires were distributed to athletes one hour prior to their first event at each respective meet. A significant difference, $F(3,22) = 3.86$, $p = .02$, was found to exist across dependent sessions for physical self-efficacy scores. The effects for interaction between personality type and dependent sessions were not significant for physical self-efficacy scores, $F(3,22) = 0.69$, $p > .05$. The effects for interaction between personality type and cognitive A-state, $F(3,22) = 2.45$, $p > .05$, and personality type and somatic A-state, $F(3,22) = 2.52$, $p > .05$, were also not significant. Correlational analysis revealed no significant linear relationship between cognitive A-state and physical self-efficacy, $r = -.26$, $p > .05$, or between somatic A-state and physical self-efficacy, $r = -.18$, $p > .05$. An additional repeated measures MANOVA showed the interaction between personality type and self-confidence, $F(3,22) = 1.50$, $p > .05$, was not significant. Finally, a t-test analysis revealed no significant differences in A-trait between personality types, $t = 1.39$, $p > .05$.

THE DIFFERENCE BETWEEN TYPE A/B PERSONALITY ON SELF-EFFICACY AND TRAIT/STATE ANXIETY IN TRACK AND FIELD ATHLETES

A Thesis

Presented to

the Division of Health,

Physical Education and Recreation

EMPORIA STATE UNIVERSITY

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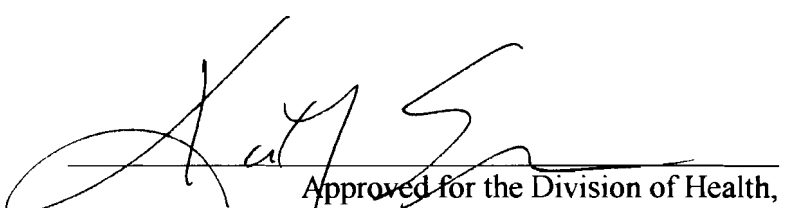

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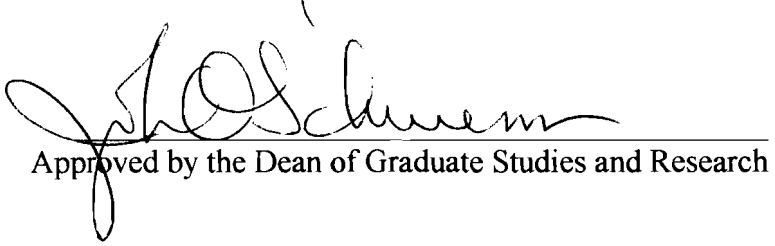

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A special thanks goes to my parents Gary and Cindy Griffin for their loving support and insight throughout my lifetime. Finally, I want to formally dedicate the work I have done on this thesis to my grandmother, Erma Houston. Her support throughout my academic endeavors has given me the strength and motivation to succeed.

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CHAPTER 1

INTRODUCTION

The scientific investigation of personality has its roots in the early 20th century. Freud, Jung and Adler are considered the founding fathers of psychological personality constructs. However, interest in personality can be traced back to ancient Greece. The Greek word persona represents actors in a play wearing masks (Worchel & Shebilske, 1992). Each actor was thought to express enduring characteristics in individually selected ways. Currently, personality is viewed as an, "unique set of enduring characteristics and patterns of behavior (including thoughts and emotions) that influence the way a person adjusts to his or her environment" (Worchel & Shebilske, 1992, p. 477).

Freud was interested in determining how an individual developed psychologically from birth through adulthood (Sulloway, 1979). He developed the psychoanalytic theory from the idea the unconscious mind is embedded with experiences, mainly sexual, from early childhood (Worchel & Shebilske, 1992). Unconscious programming experienced early in childhood was thought to have a direct effect on the way individuals cope and deal with daily endeavors later in life. Jung (Storr, 1983) and Adler (1924) were able to break away from Freud and develop rival theories which discredited the sexual basis for personality. Jung's analytical psychology promoted the notion personality is a result of innate uncontrollable qualities (Worchel & Shebilske, 1992). Adler's individual psychology was mainly concerned with social influences which effect and shape the way individuals cope with everyday occurrences (Worchel & Shebilske, 1992).

The work by Jung and Adler opened the doorway for social and humanistic theories of personality and laid the foundation for current personality research. Skinner believed the environment and social situations controlled people's behavior (Catina & Harnad, 1988). Rogers (1980) was interested in the development of self-concept. Self-concept was thought to be a result of personal judgments and attitudes of self-perception (Worchel & Shebilske, 1992). "Self-concept consists of our judgments and attitudes about our behavior, abilities, and even our appearance; it is our answer to the question-Who am I?" (Worchel & Shebilske, 1992, p. 492). Rogers thought individuals act and perceive the world in different ways based upon self-concept. Finally, Rotter (1954) developed a social learning theory which encompassed the idea of locus of control. Locus of control was thought to represent an individual's expectations of certain outcomes producing given behaviors (Worchel & Shebilske, 1992). These expectancies are learned and help individuals develop consistent ways of dealing with familiar settings.

Athletes are exposed to many social situations in life that shape their competency on the athletic field. They are required to make decisions, overcome challenges, and solve problems while on the playing field. Varying personalities predispose athletes with similar athletic abilities to respond differently from one another in a sport context (Gill, 1986). Sport psychologists attempt to understand the way athletes adjust and adapt to the changing endeavors encountered in competition. The ability of coaches to gain information about the personality of their athletes could assist coaches in improving the performance of their athletes.

Statement of the Problem

Coaching college track and field athletes can be a complicated process. Track and field coaches must be able to train and motivate athletes who have diverse personality types. Track and field is an individual sport where information about the personality of individual athletes could be valuable to coaches based on the individuality under which track and field athletes function. Three personality characteristics which this study will relate to athletic performance include: Type A/B personality, self-efficacy, and state anxiety (A-state)/trait anxiety (A-trait).

The ability to apply current Type A/B personality theory to athletes competing in track and field is speculative. Research has determined that individuals tend to perceive and deal with situations differently based on Type A or Type B personality traits (Strube, 1987). Research further suggests there is an inverse relationship between A-state/A-trait and self-efficacy in the context of competitive situations (Maddux, 1995). This study examined the way Type A/B personality traits effect A-state and self-efficacy during various levels of competition during a competitive collegiate track and field season.

Statement of the Purpose

The purpose of the study was to determine if Type A track and field athletes differ from Type B track and field athletes on A-state, A-trait and self-efficacy under varying competitive situations. A sub-problem in the study was to determine if there was a relationship between A-state and self-efficacy.

Hypotheses

1. There is no difference between Type A and Type B track and field athletes on physical self-efficacy scores under varying competitive situations.

2. There is no difference between Type A and Type B track and field athletes on A-state scores under varying competitive situations.
3. There is no relationship between A-state and self-efficacy scores under varying competitive situations.

Definitions

The following terms occur frequently throughout the study and are formally defined to provide a common base of understanding.

Self-efficacy - the belief in one's ability to accomplish a specific task (Bandura, 1977).

State Anxiety - (A-state) "an existing or immediate emotional state that fluctuates over time and is characterized by tension and apprehension" (Martens, Vealey, & Burton, 1990, p. 5).

Trait Anxiety - (A-trait) "a predisposition to perceive certain situations as threatening and to respond to these situations with varying levels of state anxiety" (Martens, Vealey, & Burton 1990, p. 5).

Type A Behavior - a behavior pattern that displays high levels of competitiveness, aggressiveness, and time pressure. This type of behavior pattern is thought to be a result of an individual trying to overcome circumstantial barriers (Strube, 1987).

Type B Behavior - a behavior pattern that displays an unhurried and relaxed predisposition to daily activity. This type of behavior pattern is thought to lack traits observed in the Type A behavior pattern (Strube, 1987).

Self-Confidence - an overall belief in one's ability to accomplish a general goal (Martens, Vealey, & Burton, 1990).

Statement of Significance

The ability of track coaches to understand the way their athletes perceive varying levels of competition is fundamental to enhancing athletic performance. Few, if any studies, have examined the way in which varying competitive situations effect the anxiety and self-efficacy of athletes with Type A/B characteristics. The current study attempts to bridge the gap between theoretical settings which involve Type A/B individuals and competitive track and field situations. By linking Type A/B personality to level of A-state and self-efficacy, sport psychologists and coaches may gain important knowledge about the way personality characteristics effect performance under various competitive situations.

Review of Literature

The purpose of this study was to determine if Type A track and field athletes differ from Type B track and field athletes on A-state, A-trait and self-efficacy under varying competitive situations. The review of literature examines the contexts of Type A/B personality, A-state/A-trait and self-efficacy. The review of literature is divided into six sections: self-efficacy theory, athletics and self-efficacy, A-state/A-trait theory, athletics and anxiety, self-efficacy and A-state/A-trait in sport settings, and Type A/B personality.

Self-Efficacy Theory

Life presents people with many complex problems, challenges, and decisions. Success in life is based on how well problems are solved, challenges are met, and decisions are made. The way humans adapt to adverse situations and to the subsequent success or failure has been an area of interest in social and clinical psychology. Self-

efficacy theory examines the cognitive link between performance and an individual's belief in his/her ability.

Bandura (1977) introduced self-efficacy theory to explain the effect of cognitive processes on task performance. In particular, Bandura was interested in determining the way an individual with high levels of self-confidence could perform poorly on specific endeavors of a given task. Bandura (1977) defined self-efficacy as the belief in one's ability to accomplish a specific task with a desirable outcome. When perceived self-efficacy levels are high, an individual will generally be more successful at a specific task. For instance, in order for a golfer to be successful, he/she needs to be perfect in many different areas of the game. High self-efficacy levels for each individual phase (i.e., driving, chipping, putting) of golf, generally leads to success in each respective area. When perceived self-efficacy levels are low, an individual will generally be less successful.

Bandura (1977) divided self-efficacy into two categories: outcome-efficacy expectations (outcome expectations) and self-efficacy expectations. Outcome expectations refer to the belief a given behavior will produce a specific result. Self-efficacy expectations are a belief in an individual's own ability to accomplish a task with a favorable result. An athlete could possess high levels of outcome expectations but fail to have high levels of self-efficacy expectations, ultimately resulting in a poor athletic performance (Weinberg, Grove & Jackson, 1992). Raising outcome expectancies does not necessarily increase performance. For example, a basketball player may believe an off-season weight lifting program will help increase strength and speed (high outcome expectations) but the basketball player does not believe he/she possesses the ability to

faithfully follow the prescribed program (low self-efficacy expectations). Although outcome expectations and self-efficacy expectations tend to function separately, they both can be useful in predicting task performance. Efficacy expectations, coupled with practice incentives and development of skill level, are helpful in determining success or failure on a task.

Bandura (1977) divided self-efficacy expectations into three dimensions. These dimensions are: magnitude, generality, and strength. Magnitude is the way in which an individual perceives his/her ability in relation to the difficulty of the task. The easier an individual perceives a task to be, the higher level of self-efficacy expectation he/she will have towards the task. For example, the task of jogging a mile may be perceived as very obtainable for one individual (high self-efficacy magnitude), while another individual may doubt his/her ability to jog that distance (low self-efficacy magnitude).

Generality is the ability of an individual to transfer self-efficacy expectations from one event to another. A track athlete who runs the 100 meter dash may feel he/she has the ability to compete well in the long jump, even if he/she has never competed in the event. The athlete generalizes self-efficacy expectations from the 100 meter dash to the long jump.

Strength is a measure of the intensity or how strong an individual believes in his/her ability to accomplish a certain task. An individual who possesses strong self-efficacy expectations will show more persistence and display more effort in accomplishing a task, than an individual with weak self-efficacy expectations (Berry & West, 1993; Lerner & Lock, 1995; Taylor & Brown, 1988). For example, two basketball players may have a goal to make 10 free throws in a row without missing. The player

who has a stronger belief in his/her ability will tend to practice more and exert more effort than his/her counterpart to accomplish the task.

Perceived self-efficacy levels will influence an individual's choice of activity, effort exerted, and persistence during an activity (Bandura & Adams, 1977). Bandura (1982) believed an individual who possesses a low level of self-efficacy expectation may not attempt an activity because he/she feels the activity is beyond his/her ability level. Two high jumpers with the same ability and experience may desire to jump a challenging height in practice. The athlete with a high self-efficacy expectation level will tend to believe in his/her ability to successfully jump the height and, therefore, be likely to attempt the jump. However, the athlete with a low self-efficacy expectation level will tend to doubt his/her ability to successfully jump the height and, therefore, be more apt to not attempt the jump.

Bandura (1982) believed that an individual with high levels of self-efficacy expectation tends to be more persistent at a task when faced with difficult obstacles. Generally, an individual possessing a high level of self-efficacy keeps trying to complete a task, even after numerous failures. On the other hand, an individual with a low level of self-efficacy expectation tends to stop trying to complete a task after only a few unsuccessful attempts. For instance, an individual who does not feel he/she possesses the ability to hit a bull's-eye when throwing darts, may stop trying after a series of misses. Whereas, an individual who fails to hit the bull's-eye, but believes in his/her ability to accomplish the task, will tend to continue attempting the task after experiencing prolonged failure.

Bandura (1977) determined self-efficacy expectations were developed through the following sources: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. Performance accomplishments are learning processes based on personal mastery of a given task (Bandura, 1977). An athlete tends to increase or decrease self-efficacy expectations based on mastery or lack of mastery of a physical task. Bandura (1982) indicated performance accomplishments determined levels of self-efficacy expectation more than any other single measure. An athlete who repeatedly experiences success at a given task tends to develop high levels of self-efficacy expectations, while another athlete who experiences consistent failure tends to develop low self-efficacy expectations.

Vicarious experiences consist of observing another individual perform a task (Bandura, 1977). When an athlete observes another person who is close in ability, age, and gender modeling a task successfully, the observation will generally have a positive influence on self-efficacy. Vicarious experiences are thought to be important in generating expectations necessary for high levels of self-efficacy. Vicarious experiences tend to be less effective mediators in the development of high levels of self-efficacy than personal accomplishments because an athlete must cognitively compare his/her own skill level with that of the model (Bandura, 1977). As a result of this comparison, it is possible he/she will overestimate the model's skills or under estimate his/her own skills.

Verbal persuasion is the action of verbally reassuring an athlete that he/she can accomplish a specific task (Bandura, 1977). Building self-efficacy through verbal persuasion tends to be easily accessible and requires little time. For verbal persuasion to be effective an athlete needs to believe the statements of the source are attainable and

realistic. Bandura suggested self-efficacy will not increase if the source is unreliable and/or the content of message is unattainable to the athlete.

High levels of emotional arousal resulting from taxing and stressful situations cause self-efficacy levels to decline (Bandura, 1977). Individuals tend to evaluate their anxiety based on levels of emotional arousal. Therefore, highly anxious situations generally elicit lower levels of situation specific confidence. Bandura believed a high level of anxiety caused individuals to question the source of anxiety as well as their own ability to overcome the anxious situation. He also suggested verbal persuasion, along with vicarious experience and high anxiety levels, were less dependable predictors of self-efficacy expectation levels than personal accomplishments.

Athletics and Self-Efficacy

Feltz, Landers, and Reader (1979) conducted one of the first studies that examined the relationship between an athlete's level of self-efficacy and performance. The study investigated differences on a beginning diving task between vicarious experiences and performance accomplishments. Prior to the dive, participants were assigned to one of three self-efficacy conditions: active participant, viewing a videotaped model, or viewing a live model. Each participant who actively participated was given verbal instructions, a demonstration, and physical guidance through the dive. Participants viewing the videotaped and live model conditions received only verbal instructions and a demonstration. The results indicated participants who actively participated (were physically guided), performed significantly better than participants in the videotaped and live condition groups. Conclusions indicate performance accomplishments (active participation) tend to significantly raise self-efficacy

expectations and, subsequent performance, more than vicarious experience (videotape and live model conditions). Furthermore, no significant difference in self-efficacy and performance was found to exist between viewing a live or videotaped model.

Feltz and Riessinger (1990) examined the effects mental imagery and performance feedback have on self-efficacy expectations in a competitive muscular endurance task. Results indicated performance feedback along with mastery (mental) imagery increased self-efficacy expectation levels and, subsequent performance, more than performance feedback alone.

Weinberg, Gould, and Jackson (1979) examined the influence self-efficacy expectations had on a competitive muscular endurance task. College men and women were instructed to hold their leg extended in a seated position until the point of failure (where they could no longer hold the position). Results indicated participants in the high self-efficacy condition not only believed in their ability more, but also were more persistent and outperformed subjects in the low self-efficacy condition. Furthermore, following failure on the first trial, high self-efficacy participants tended to extend their leg significantly longer than low self-efficacy participants on the second trial. These findings support the theory of self-efficacy and were confirmed in a follow up study by Wienberg, Yukelson, and Jackson (1980).

Lee (1982) examined the ability of young gymnasts and their coaches to predict future performance. Previous performance and perceived levels of self-efficacy expectation were considered independent variables. Participants were novice female gymnasts ranging in age from seven to twelve. Each participant performed on five different apparatus. Results indicated perceived self-efficacy expectation level

significantly predicted skilled performance in gymnastics for novice competitors. Previous performance was not an accurate predictor of skilled performance. The study demonstrated novice gymnasts could accurately predict subsequent performance in competitive situations.

Fitzsimmons, Landers, Tomas, and Mars (1991) conducted a study which contradicted the results of Lee (1982). Results indicated previous performance was a significant predictor of subsequent performance in a one repetition maximum bench press task (1RMBP). Participants were asked to perform a 1RMBP in six different sessions. Self-efficacy ratings remained consistent from trial to trail, while previous performance became more predictive of the next trial. By the fifth session, the previous trial's performance was a better predictor of the sixth trial performance than initial self-efficacy measures.

Viewing similar, rather that dissimilar models, increased levels of self-efficacy and performance on a leg extension task (George, Feltz, & Chase, 1992). The results support findings by Gould and Weiss (1981). Participants viewed models who were similar in athletic ability more favorably than any other variable (i.e., gender, height, weight). Models similar in athletic ability may provide comparison information for participants to evaluate their own ability to accomplish a leg extension task. Gender differences did not exist in this study. A separate finding of the study indicated self-efficacy was only a predictor of performance if participants perceived the task to be important. This finding supports contentions about the effects of incentive on self-efficacy (Bandura, 1977, 1986).

Miller (1993) examined the relationship between self-efficacy expectation levels and performance of competitive swimmers of various skill levels. Contrary to Bandura's (1979) assumption where only highly skilled participants are influenced by efficacy fluctuations, results of this study indicated a positive relationship between self-efficacy expectation level and performance existed at all skill levels. Low levels of self-efficacy produced poor performance and high self-efficacy levels resulted in enhanced performance at every skill level. Further findings indicated performance and self-efficacy levels act independently of motivation. The findings of this study challenge skill level and motivational concepts and direct researchers to consider the effectiveness of self-efficacy training for athletes.

All studies cited, attempt to establish links between self-efficacy theory and athletic performance. In most of the studies, performance accomplishments had the most influence on perceived self-efficacy expectations. Self-efficacy was found to be less influenced by verbal persuasion and vicarious experience.

A-State/A-Trait Theory

Arousal is a physiological response which effects the manner an individual makes decisions, solves problems, and overcomes challenges. Arousal is thought to exist on a continuum; the minimal end of the continuum is characterized by deep sleep and the maximal end of the continuum is characterized by intense excitement (Sage, 1977). Sonstroem (1984) defined anxiety as a state of increased physiological arousal coupled with generalized feelings of fear and apprehension. Furthermore, he contended anxiety results when individuals are overly concerned or uncomfortable with feelings which elicit

high arousal states. The review of literature on anxiety clarifies the way athletes perceive different competitive contexts and cope with these respective situations.

Yerkes and Dodson (1908) developed the widely accepted inverted-U hypothesis to explain the arousal/performance relationship. Yerkes and Dodson contended arousal levels increase to some optimal point where performance is maximized and, once this optimal point is exceeded, performance declines. The inverted-U hypothesis has served as the foundation for research concerning the relationship between arousal and performance. The inverted-U hypothesis was further expanded by relating level of stress to optimal arousal levels (Martens & Landers, 1970). In order for optimal performance to be achieved, high, moderate, and low levels of stress need to match the arousal needs of the task.

Hanin (1978) considered the inverted-U hypothesis insufficient to account for individual differences in the arousal/performance relationship. The Zone of Optimal Function Theory (ZOF) was developed to specifically look for optimal levels of arousal under various situations (Hanin, 1978). The ZOF theory is highly specific to competitive situations and more sensitive than the inverted-U hypothesis. Raglin and Turner (1993) determined optimal levels of arousal are related to levels of A-trait. An athlete's level of A-trait tends to predispose him/her to react with varying levels of A-state (low to high) and function under different optimal arousal/performance levels. In other words, each individual tends to function best under a specific zone of optimal arousal, as opposed to generally moderate levels of arousal proposed in the inverted-U hypothesis. Oxidine (1970) determined tasks requiring gross motor skills were best accomplished under high

levels of arousal. Complex tasks or tasks requiring fine motor skills were best performed under low levels of arousal.

Spielberger (1966) determined some individuals were more likely to suffer the effects of anxiety when arousal was high. In other words, some individuals have a predisposition to deal with arousing situations in an anxious manner. Anxiety tends to be viewed as either a trait or a state. Trait anxiety (A-trait) is defined as "a predisposition to perceive certain environmental stimuli as threatening or non-threatening and to respond to these stimuli with varying levels of state anxiety" (Martens, 1982, p. 9). State anxiety (A-state) is defined as "an existing or current emotional state characterized by feelings of apprehension and tension and associated with activation of the organism" (Martens, 1982, p. 9). Individuals displaying high levels of A-trait are thought to respond to threatening situations with accelerated A-state qualities, compared to individuals with low levels of A-trait (Spielberger, 1966). Support for A-state/A-trait relationship has been found in basketball players (Sonstroem & Bernardo, 1982) and karate competitors (Endler, King, & Herring, 1985).

Bandura (1977) believed high levels of anxiety affect self-efficacy. As anxiety levels increase, levels of self-efficacy generally fall (Bandura, 1977; Gould, Petlichkoff, & Weinberg, 1984; Martens, Burton, Vealey, Bump, & Smith, 1990). For example, an athlete who is constantly anxious before large crowds of people may begin to doubt his/her ability. This doubt causes a decrease in self-efficacy expectations and performance. Bandura (1989) also found self-efficacy tended to effect level of anxiety. For instance, an athlete who possesses high levels of self-efficacy tends to overcome situations which are threatening and provoke anxiety.

Competitive A-state has been determined to contain cognitive and somatic dimensions (Martens, Burton, Vealey, Bump, Smith, 1990). Cognitive anxiety is considered to be associated with negative self-evaluation, negative expectations, and worry (Morris, Davis, & Hutchings, 1981). Cognitive anxiety tends to result in worry via negative performance expectations and self-evaluations. Somatic anxiety is associated with physiological responses such as muscle tension, rapid heart rate, nervousness, and breathing deficiencies (Morris et al.). These responses generally develop from stimulation of the autonomic nervous system.

Somatic and cognitive anxiety generally function independently of one another in non-competitive situations (Davidson & Schwartz, 1976). Individual differences allow some individuals to experience the effects of cognitive and/or somatic anxiety independently of one another during various situations. Research indicates as a competitive situation nears, the relationship between somatic and cognitive anxiety strengthens (Swain, Jones, and Cale, 1990). Many of the same elements which increase somatic and cognitive anxiety tend to be similar during stressful situations. However, Martens et al. (1990) indicated somatic anxiety tends to increase prior to competitive situations, while self-confidence and cognitive components of anxiety do not change.

Athletics and Anxiety

The athletic field is a place in which stressful situations can cause athletes to become highly anxious. Anxiety has been determined to possibly facilitate or hinder performance under various competitive circumstances. The purpose for the following section is to address current issues concerning research on anxiety in the competitive sport setting.

Gould, Horn, and Spreemann (1983) determined anxiety facilitated performance in wrestlers. They examined individual differences which effected the degree of competitive anxiety in wrestlers of varying ability levels. Pre-competitive anxiety variables were assessed with a series of questionnaires one week, 24 hours, and one hour prior to a wrestling competition. Results indicated no significant difference existed between performance and pre-competitive anxiety patterns for experience level, success level, and age. High levels of competitive A-state were found to be associated with high levels of A-trait in wrestlers. Anxiety was thought to be a possible motivational guide which helped wrestlers get cognitively ready for competition. In addition, confidence in internal capacity to predict perceived ability (self-efficacy) and predict place of finish was positively related to performance. This study supports research conducted by Mahoney and Avener (1977), Martens and Gill (1976), Weinberg and Hunt (1976), and Ryska (1993).

Donzelli, Dougoni, and Jackson (1990) found non-elite runners categorized as successful, tended to display the highest levels of competitive A-state prior to the race. When the race started, successful runners reported levels of competitive A-state tended to drop. No significant difference between successful and less successful runners was reported to exist in levels of A-state during competition. Less successful women were the only group which retained high levels of A-state after the race started. This pattern was also evident when considering level of experience. Runners with the most experience were generally the most anxious prior to the race and reported feelings of anxiety dropped after the race started.

A study by Jones and Swain (1992) examined the effects of A-state on performance of intramural athletes. Results indicated intramural rugby, basketball, soccer, and field hockey athletes displayed no significant difference in cognitive and somatic anxiety between high/low competitiveness groups. However, athletes categorized as competitive were generally more self-confident and perceived cognitive anxiety as more facilitative than non-competitive athletes. In competitive university track and field athletes, cognitive anxiety remained constant for the high competitive group (Swain & Jones, 1992). The low competitive group progressively increased in levels of cognitive anxiety up to the beginning of the track meet. Somatic anxiety was reported earlier in low competitive track and field athletes. Pre-competitive analysis indicated the high competitive group displayed lower levels of both cognitive and somatic anxiety at every level, compared to the low competitive group. Speculation on the reasons for these results support the contention in which lower level competitive track and field athletes may have increased feelings of threat up to the beginning of their first event. These studies illustrated pre-competition anxiety is multidimensional and specific to sport setting.

Gould et al. (1984) studied intercollegiate wrestlers and high school volleyball players and found these athletes tend to have increased somatic anxiety up to the beginning of competition. Cognitive anxiety and self-confidence remained fairly constant and tended to be based on performance expectancies, while somatic anxiety developed over time in association to conditioned environmental stimuli.

The review of current literature concerning different dimensions of anxiety indicates the importance of considering individual differences in conjunction with A-

state. Anxiety is considered multidimensional and should be viewed in a subjective manner depending on competitive situation. The next section will examine current literature in which components of A-state/A-trait are coupled with elements of self-efficacy in competitive settings.

Self-Efficacy and A-State/A-Trait in Sport Settings

Bandura (1977) predicted expectations of personal efficacy are influenced by performance accomplishments, vicarious experiences, verbal persuasion, and physiological arousal. Physiological arousal tends to be a cognitive mediator between self-efficacy and performance. Bandura predicted self-efficacy and physiological arousal would have a reciprocal effect on one another, i.e., the level of physiological arousal depends on an individual's perception of his/her ability to accomplish the task at hand and, self-efficacy tends to fluctuate as a result of varying levels of arousal.

Feltz and Mugno (1983) conducted a study to determine the effects previous back diving accomplishments would have on future performance. Results indicated self-efficacy beliefs and heart rate were significant predictors of performance on the initial dive. However, performance on each successive dive was the best predictor of subsequent dives. The relationship between performance and self-efficacy got progressively weaker over the course of the trials. Results of the study support the notion autonomic arousal is a strong predictor of self-efficacy but not as strong as previous back diving performance. The only time physiological arousal was actually a significant predictor of self-efficacy expectations was before the first dive.

La Guardia and Labbe (1993) examined the relationship between general and task-specific self-efficacy measures and subsequent distance racing performance. The

relationship between level of A-state and self-efficacy was also examined in terms of distance racing performance. Participants were men and women runners of varying ability levels, who were at least nineteen years of age and competed in three distance running events ranging from one mile to ten-thousand meters. Results indicated runners with higher scores on task-specific self-efficacy measures had faster race performance than runners with lower task specific self-efficacy scores. A strong relationship existed between a runner's performance and outcome expectancy for each respective race. Efficacy information such as experience and past accomplishments were thought to contribute to successful prediction capabilities. General self-efficacy measures were not accurate predictors of performance. In addition, runners with high physical self-efficacy scores had significantly lower scores of A-state and A-trait, than runners with low physical self-efficacy scores prior to the competition.

George (1994) examined factors which influence self-efficacy and performance. He found experienced baseball players' perceived self-efficacy as a good predictor of subsequent hitting performance. A reciprocal relationship existed between self-efficacy and performance, i.e., levels of self-efficacy were predicted by past performance and self-efficacy levels predicted subsequent performance. Self-efficacy tended to serve as a mediator between past performance and future performance. However, past performance exerted a consistently stronger influence over self-efficacy than self-efficacy exerted on subsequent performance. This finding is consistent with earlier research done by Feltz and Mungo (1983). Finally, stronger levels of self-efficacy beliefs were associated with lower levels of cognitive and somatic anxiety.

Lox (1992) examined the relationship between perceived threat and level of A-state in intercollegiate volleyball players. Results indicated cognitive anxiety was negatively correlated with self-confidence and self-efficacy one hour prior to a midseason match. Perceived importance of match outcome and actual performance were positively correlated with somatic anxiety, self-confidence, and self-efficacy. Finally, the uncertainty of personal performance positively correlated with high levels of cognitive anxiety, while perceived performance was associated with somatic anxiety at lower skill levels.

Martin and Gill (1991) determined outcome efficacy expectations were a stronger predictor for performance than self-efficacy expectations for male high school distance runners. High school distance runners who were highly confident and had high outcome expectations (as opposed to believing in their ability to run fast), ran the fastest times. The authors suggest the results may have occurred because athletes were inexperienced and unable to accurately judge their own ability. Results indicated sport confidence and outcome efficacy expectations were predicted by trait sport-confidence. As athletes become more accomplished, they tend to rely on self-efficacy expectations as opposed to outcome efficacy expectations in evaluating competitive situations (Vealey, 1988).

Wong, Lox, and Clark (1993) determined team sport athletes generally report lower levels of competitive A-trait than individual sport athletes. Also, female athletes had higher levels of A-trait than male athletes. The results concerning gender are consistent with results found by Segal and Weinberg (1984).

Type A/B Personality

Friedman and Rosenman (1974) determined Type A behavior pattern was a predisposition for coronary heart disease. Type A behavior pattern is described as an endless struggle in the process of achieving poorly defined goals over a period of time. Major manifestations of Type A behavior include: impatience, constant competitive achievement striving, high aggressiveness, time urgency orientation, and frequent hostility. Individuals possessing these types of behaviors are categorized as Type A. Individuals categorized as Type B have reduced levels of these qualities.

Type A behavior pattern was originally established to measure the risk of coronary heart disease. However, during the last three decades, behavioral psychologists have been interested in establishing a link between Type A/B behavior pattern and other psychological constructs (Matthews, 1982). Chaplan and Jones (1975) determined stress negatively affected hard driving Type A individuals more than Type B individuals. In this study, Type A and Type B individuals were faced with a computer shutdown at a university during the final two weeks of the semester (i.e., leading up to finals). Type A individuals experienced higher levels of A-state in the face of this dilemma. Type A individuals tended to suffer from role ambiguity because there was a lack of internal control for the outcome. Lack of internal control was indicated by the unknown time in which computers would be available to use for term projects. Level of stress reported by Type A individuals was positively correlated with level of A-state. These findings support results found by Dembroski, MacDougall, and Musante (1984), in which Type A participants indicated a greater need for personal control than Type B participants.

Glass (1977) contended Type A individuals attempt to maintain control over stressful situations. To elicit control over situations, Type A individuals tend to set difficult goals, show impatience and hostility during frustrating circumstances, and seek to discover more about their strengths and weaknesses. According to the self-appraisal model, Type A individuals tend to display a greater need for information concerning their ability to complete tasks (Strube, 1987). Therefore, Type A individuals tend to engage in behavior that provides important diagnostic information about the situation at hand. Time urgency, competitiveness, and hostility are seen as a by-product of acquiring self-appraisal information.

External locus of control was found to be negatively related to Type A behavior (Feather & Volkmer, 1988). The research used participants who were enrolled in an introductory psychology course. Participants were exposed to eight course structures concerning feedback, effort, and time pressure. Type A individuals generally preferred situations involving effort and feedback. Effort and feedback were found to be independent of external locus of control. The results of the study also found Type A individuals tend to apply higher standards when evaluating their own performance, set more difficult goals, seek more competitive situations, and display more hostility and impatience while striving to complete a task than Type B individuals.

Doster and Guynes (1993) determined Type A individuals tend to orient their psychological process to heighten the challenge of the task. When presented with an externally controlled, slow paced competitive computer task, Type A individuals incorporated a more active, effortful, and taxing approach to solve the problem. When Type A individuals were faced with a fast-paced system, effort was increased and faster

response times resulted. Type A individuals generally choose competitive tasks which are fast paced and consistent. Slow paced tasks are associated with less control over task duration and are thus, less appealing for Type A individuals.

Type A behavior pattern is thought to elicit more goal commitment, goal acceptance and higher standards than the Type B behavior pattern (Dean, Phillips, & Ivancevich, 1988; Phillips, Freedman, Ivancevich, & Matteson, 1990; Racicot, Day, & Lord, 1991). Racicot et al. (1991) determined Type A individuals tended to be more satisfied with goals which allow individual task competency to be assessed. Type A individuals outperformed Type B individuals when goals and strategies for an anagram puzzle task were self-set. This finding suggests Type A individuals tend to perform their best in high, self-choice situations. Finally, when Type A individuals were allowed to use their own strategy to accomplish the anagram task, the expectancy of success increased. Type B individuals tended to show the lowest expectancy of success in this condition.

Ellis and Fooshee (1992) found complementary information concerning goal setting and Type A behavior pattern while performing an anagram puzzle task. Results indicated Type A individuals tended to be less certain of their ability to reach set goals compared to Type B individuals. Type A individuals with anagram experience were more certain of their ability than Type A individuals with less experience. The task was also viewed as more interesting by Type A individuals than by Type B individuals. Type A personality was speculated to cause uncertainty in ability and higher interest levels because of a deadline being set for performance.

Summary

Sport psychology is a relatively new sub-area of applied psychology. A comprehensive picture of the athlete must be taken into account when trying to understand specific personality traits. Analyzing specific personality traits out of context, tends to distort true manifestations of a competitive situation. By examining various relationships between personality traits, sports psychologists will better understand how certain athletic personalities respond or are effected by different competitive contexts.

Personality traits tend to be related to each other in some dynamic fashion. The current review of literature examined three personality components: Type A/B behavior pattern, A-state/A-trait, and self-efficacy. The relationship between self-efficacy and A-state/A-trait is well documented (Bandura, 1977). The purpose of this study was to determine if Type A athletes differ from Type B athletes on A-trait, A-state, and self-efficacy under various competitive situations.

CHAPTER 2

METHOD

The purpose of the study was to determine if Type A track and field athletes differ from Type B track and field athletes on state anxiety (A-state), trait anxiety (A-trait) and self-efficacy under varying competitive situations. A sub-problem in the study was to determine if there was a relationship between A-state and self-efficacy. This chapter discusses the methods and procedures used to measure the differences in self-efficacy and A-state between competitive Type A and Type B track and field athletes. The following areas are examined: participants (target population, accessible population and sampling procedures), experimental design (research method, research design, internal validity, and substantive hypotheses), procedures, statistical design and summary.

Participants

Target Population

The participants in this study were track and field athletes from the varsity track and field team at Emporia State University (N = 43). Emporia State University is a medium size Midwestern university. The athletic program competes in the Mid-America Intercollegiate Athletic Association (MIAA) and is a member of the National Collegiate Athletic Association division II (NCAA II). Track and field athletes at Emporia State University range in skill from non-placers in the MIAA conference to athletes of international caliber. Therefore, results obtained using track and field athletes at Emporia State University may be projected to track and field athletes of varying ability levels, who compete at most NCAA II institutions across the United States.

Sampling Procedures

All participants in the study were volunteers. All academically and athletically eligible track and field athletes were considered to be possible participants unless they were injured or sick.

Procedures

Permission to conduct this study was obtained from the Institutional Review Board for Treatment of Human Subjects at Emporia State University (see Appendix A). In addition, permission to use the track and field athletes at Emporia State University was granted by the head men's and women's track and field coach. During a team meeting, the study was explained to all track and field athletes. The team meeting occurred two days before the first of three selected indoor track competitions. Athletes were asked to sign the informed consent document (see Appendix B) and were given an identification number to ensure confidentiality. All materials used during the experiment contained the same corresponding number for each athlete throughout the elapsed experimental time.

During the initial meeting, the basic procedures were explained to all participants. Each participant was asked to complete four different psychometric measures: the Modified Jenkins Activity Survey (mJAS), the Sport Competition Anxiety Test (SCAT), the Competitive State Anxiety Inventory-2 (CSAI-2), and the Physical Self-Efficacy Scale (PSE). Participants completed the SCAT and mJAS only at the initial meeting. These scales tend to measure stable personality characteristics which vary insignificantly over time. Participants completed the CSAI-2 and PSE on four separate occasions: first time at the initial meeting and then one hour prior to each of the indoor track

competitions. Participants were individually handed each scale by the experimenter one hour prior to their first event in each competition.

The first two indoor track and field meets were two weeks apart. These meets were large invitational indoor meets of varying difficulty levels. The third meet was the track and field team conference championships and occurred three weeks after the second meet.

Instrumentation

The mJAS (see Appendix C) is used to assess an individual's personality in terms of Type A or Type B behavior patterns (Davis, Smith, &Thomas, 1989). The modified version was developed as a condensed version of the Jenkins Activity Survey (JAS). Yarnold, Bryant, and Grimm (1985), determined the mJAS discriminated between individuals possessing Type A and B characteristics as effectively as the JAS. The scoring system was determined to be a strength of the mJAS because it allows Type A and Type B behavior patterns to be categorized more extensively than the JAS. The mJAS places individuals in one of four categories: extremely Type A, a tendency to be Type A, a tendency to be Type B, or extremely Type B. Finally, the mJAS was found to take approximately 60% less time to complete than the JAS. The mJAS consists of 21 one questions which have predictive abilities concerning Type A and Type B behavioral traits. Possible scores range from 0-21, with high scores reflecting a Type A behavior pattern. The scoring procedure is on a point system in which the total points are placed in one of four respective categories; (0-4) B+, (5-7) B-, (9-11) A-, and (12 and above) A+. A test-retest reliability coefficient for the mJAS of .66 was found to exist. Concurrent validity was established ($r = .54$) by correlating the mJAS with the Framingham scale.

Establishing construct validity was done by correlating speed/impatience (r = .40 - .60) and job involvement/hard driving/competitiveness (r = .10 - .30) with the original JAS.

The SCAT (see Appendix D) was developed to measure A-trait levels in athletes (Martens, 1982). The SCAT consists of 15 items scored on a three point Likert like scale, ranging from hardly ever to often. Possible scores range from 10 (low trait anxious) to 30 (high trait anxious). A reliability coefficient (r = .81) was obtained for the SCAT using a test-retest analysis of variance. The Trait Anxiety Inventory for Adults was correlated with the SCAT to establish concurrent validity (r = .44). Construct validity was established for the SCAT by eleven experimental and field studies (Martens, Burton, Vealey, Bump, & Smith, 1990).

The CSAI-2 (see Appendix E) was developed to measure the level of cognitive and somatic components of competitive state anxiety and state sport confidence in the sports setting (Martens et al., 1990). The CSAI-2 consists of 27 items scored on a four point Likert like scale, ranging from not at all to very much so. Scores range from 9 to 36. The 27 items are divided into three subscales, with nine items for each sub-scale. Martens et al., determined reliability coefficients using Cronbach's alpha for each sub-scale involving track and field athletes as follows: cognitive A-state (r = .79), somatic A-state (r = .82), and state self-confidence (r = .88). The Marlowe-Crowne Social Desirability Scale was correlated with the CSAI-2 for college track and field competitors and the following concurrent validity coefficient values were found: CSAI-cognitive (r = .30, $p < .01$), CSAI-somatic (r = .29, $p < .02$), and CSAI- self-confidence (r = .17, $p > .10$). Martens et al., later revised the CSAI-self-confidence sub-category due to low self-confidence correlational values and caused CSAI-self-confidence concurrent validity

coefficient values to increase ($r = .46$, $p < .01$). Establishing construct validity was done by correlating CSAI-2 sub-scales with the SCAT and the following results were found: CSAI-cognitive ($r = .40$), CSAI-somatic ($r = .60$), and CSAI- self-confidence ($r = -.51$).

The PSE scale (see Appendix F) is used to assess an individuals perceived physical ability and confidence during social situations (Ryckman, Robbins, Thornton, and Cantrell, 1982). The PSE scale consists of 22 items scores on a seven point Likert like scale, ranging from strongly agree to strongly disagree. The PSE is divided into two subcales: the perceived physical ability scale (PPA) and the physical self presentation confidence scale (PSPC). The following test-retest reliability coefficients were developed; PPA ($r = .85$), PSPC ($r = .69$), and PSE ($r = .80$). Construct validity for the PSE was established with a range of .75 to .85.

Statistical Design

The effect of Type A/B personality was examined in terms of self-efficacy and A-state by a multivariate analysis of variance (MANOVA) test. A t-test was used to determine differences between Type A/B participants in terms of A-trait. State anxiety was divided into cognitive and somatic constructs and examined separately. Therefore, dependent variables were self-efficacy, A-trait, cognitive A-state, and somatic A-state. Independent variables were personality Type A or Type B. Personality type was compared at four dependent sessions. A Pearson-Product correlation analysis was also used to determine if self-efficacy and A-state (cognitive and somatic) were related. Somatic A-state and cognitive A-state were correlated separately in terms of self-efficacy.

Measuring dependent variables was accomplished by using a 2 (personality type-Type A/Type B) x 3 (dependent variables-cognitive A-state/somatic A-state/self-efficacy) x 4 (dependent sessions-initial meeting/track meet #1/track meet #2/conference indoor track championship meet) MANOVA with repeated measures on the last factor. Analysis were taken from session to session on all personality factors between Type A and Type B participants. Post hoc analyses were used to better distinguish between personality type only if significant main effects were found for an interaction between session and personality type, significant difference was found between sessions, or significant differences were found between personality types. A Pearson-Product correlation was used to determine if a relationship between self-efficacy and somatic/cognitive A-state existed. All data was analyzed at the $p \leq .05$ level of significance.

Summary

Track and field athletes at Emporia State University were asked to complete the CSAI-2 and PSE one hour prior to their first event in three different indoor track and field meets. The scores on both scales were measured against a baseline which was determined at the initial meeting. A (2 x 3 x 4) repeated measures MANOVA was used to determine if a statistical difference exists between Type A athletes and Type B track and field athletes on self-efficacy and A-state (cognitive and somatic constructs) at four different times during an indoor track and field season. A t-test was used to determine if differences existed in A-trait levels for Type A and Type B track and field athletes. In addition, this study examined the relationship between self-efficacy and A-state (cognitive and somatic constructs).

CHAPTER 3

RESULTS

The purpose of the study was to determine if Type A and Type B track and field athletes differ from each other in trait anxiety (A-trait), state anxiety (A-state) and physical self-efficacy under varying competitive situations. A-state was divided into cognitive and somatic components and each component was examined separately. Furthermore, the Competitive State Anxiety Inventory-2 used to assess cognitive and somatic A-state contained a sub-scale for self-confidence (Martens et al., 1990). The ability to measure self-confidence was easily attained and used as an additional dependent measure. A sub-problem of the study was to examine the relationship between physical self-efficacy and A-state under all dependent sessions. Data were collected from 43 participants (23 men and 20 women). Means and standard deviations of all dependent variables are presented in Table 1. All data were analyzed at the $p \leq .05$ level of significance.

The Modified Jenkins Activity Survey (mJAS) was used to determine independent variable groups of Type A or Type B participants (Davis et al., 1989). Scores on the mJAS are categorized on a continuum from extremely Type A to extremely Type B and allows participants to be placed in one of four categories; A+ = extremely Type A, A- = having a tendency to be Type A, B- = having a tendency to be Type B, and B+ = extremely Type B. The number of participants in each category for this study were A+ (n = 16), A- (n = 17), B- (n = 3), B+ (n = 4), and (n = 3) showed equal signs of both Type A and B personalities. To increase statistical strength, participants labeled as

Table 1

Descriptive Statistics for all Dependent Measures

	Initial Meeting			
Participants	A (n = 16)		B (n = 10)	
	M	SD	M	SD
Cognitive A-state	20.63	7.07	19.90	7.77
Somatic A-state	17.94	7.71	19.40	5.02
Physical Self-Efficacy	104.00	17.19	106.70	12.06
Self-Confidence	24.69	6.57	22.90	5.13
Trait Anxiety	23.00	3.39	20.70	5.06

	1st Meet			
Participants	A (n = 16)		B (n = 10)	
	M	SD	M	SD
Cognitive A-state	20.44	7.55	20.30	6.60
Somatic A-state	18.69	5.35	18.60	4.77
Physical Self-Efficacy	114.25	15.80	104.90	5.47
Self-Confidence	22.63	4.69	21.20	5.05

2nd Meet

Participants	A (n = 16)		B (n = 10)	
	M	SD	M	SD
Cognitive A-state	21.75	3.86	16.60	4.62
Somatic A-state	19.38	4.16	14.80	4.57
Physical Self-Efficacy	108.31	13.94	110.00	9.49
Self-Confidence	22.06	4.28	25.40	6.43

3rd Meet

Participants	A (n = 16)		B (n = 10)	
	M	SD	M	SD
Cognitive A-state	10.88	6.17	20.60	6.98
Somatic A-state	21.44	5.70	17.40	5.64
Physical Self-Efficacy	111.38	17.22	114.50	10.77
Self-Confidence	23.06	6.08	25.70	4.99

Totals Across Groups

Participants	A (n = 16)		B (n = 10)	
	M	SD	M	SD
Cognitive A-state	20.92	6.16	19.35	6.49
Somatic A-state	19.36	5.73	17.55	5.00
Physical Self-Efficacy	109.48	17.22	109.03	9.45
Self-Confidence	23.11	5.41	23.80	5.40

Type A- were excluded from statistical analysis. Type A+ participants were subsequently labeled as "Type A" and participants showing no distinct signs of both Type A+ or A- were combined and labeled "Type B". The final numbers for "Type A" participants were 16 and for "Type B" participants were 10.

Hypothesis 1 states there will be no difference between Type A and Type B track and field athletes on physical self-efficacy scores under varying competitive situations. A repeated measures multivariate analysis of variance (MANOVA) was used to examine Hypothesis 1. The effects of interaction between personality type and sessions was not significant, $F(3,22) = 0.69$, $p = .57$ (see Table 2 and Graph 1). However, results of this analysis showed a significant main effect difference, $F(3,22) = 3.86$, $p = 0.02$, in individual sessions for all participants. Since the main effect of sessions was significant, separate post hoc analyses were performed using a Duncan's Multiple Range Test (see Table 3). Results of the post hoc analysis indicated Type A track and field athletes displayed a significant difference in physical self-efficacy scores between the initial meeting and meet #1. Type B track and field athletes displayed a significant difference in physical self-efficacy scores between the initial meeting and meet #3 and also a significant difference in these scores between meet #1 and meet #3. Hypothesis 1 is partially supported for differences between physical self-efficacy and personality type under varying competitive situations.

Hypothesis 2 states there will be no difference between Type A and Type B track and field athletes on A-state scores under varying competitive situations. A repeated measures MANOVA was used to examine Hypothesis 2. Both main effects and interaction between personality type and sessions were not significant for cognitive state

anxiety scores, $F(3, 22) = 2.45$, $p > .05$ (see Table 4 and Graph 2) or for somatic state anxiety scores, $F(3, 22) = 2.52$, $p > .05$ (see Table 5 and Graph 3). Hypothesis 2 is not rejected for cognitive A-state scores or somatic A-state scores.

Hypothesis 3 states there will be no relationship between A-state and self-efficacy scores under varying competitive situations. A Pearson Product correlation was used to determine the strength of the linear relationship between cognitive A-state and physical self-efficacy. A second Pearson Product correlation was used to determine the strength of linear relationship between somatic A-state and physical self-efficacy. Hypothesis 3 is not rejected for a relationship between cognitive A-state and physical self-efficacy $r = -.26$, $p > .05$ or for a relationship between somatic A-state and physical self-efficacy $r = -.18$, $p > .05$ (see Table 6).

Two additional dependent variables were analyzed to determine differences in Type A and Type B track and field athletes beyond initial hypotheses. Self-confidence was examined using a repeated measures MANOVA to determine if an interaction between Type A and Type B track and field athletes occurred at four different sessions (initial meeting/track meet #1/track meet #2/track meet #3). Both main effects and interaction between personality type and sessions were not significant for self-confidence scores, $F(3, 22) = 1.50$, $p > .05$ (see Table 7 and Graph 4). Trait anxiety data collected at the initial meeting was examined using a t-test. Results indicated no differences existed in A-trait between Type A and Type B track and field athletes ($p = .18$, see Table 8).

Table 2

MANOVA Between Groups Interaction Summary for Physical Self-Efficacy

	P-Value	F -Score
group	0.91	F(1,24) = 0.01
session	0.02*	F(3,22) = 3.86
group (x) session	0.57	F(3,22) = 0.69

*$p < .05$

Graph 1

Physical Self-Efficacy Interactions Between Groups

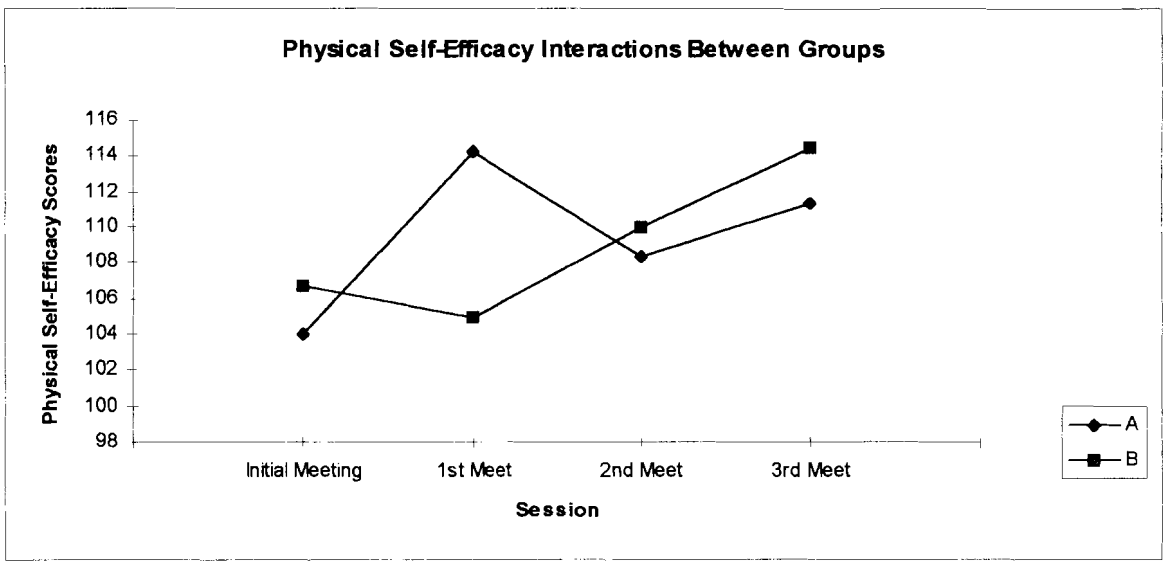

Table 3

Duncan's Multiple Range Test for Physical Self-Efficacy Session Effects

Type A Track and Field Athletes- session mean scores

Meet #1	Meet #3	Meet #2	Initial Meeting
114.25	111.38	108.31	104.00

Type B Track and Field Atheltes-session mean scores

Meet #3	Meet #2	Initial Meeting	Meet #1
114.50	110.00	106.70	104.90

Means connected by a line account for no significant difference $p > .05$.

Table 4

MANOVA Between Groups Interaction Summary for Cognitive A-State

	P-Value	F -Score
group	0.36	F(1,24) = 0.86
session	0.56	F(3,22) = 0.70
group (x) session	0.09	F(3,22) = 2.45

$p > .05$

Graph 2

Cognitive A-State Interactions Between Groups

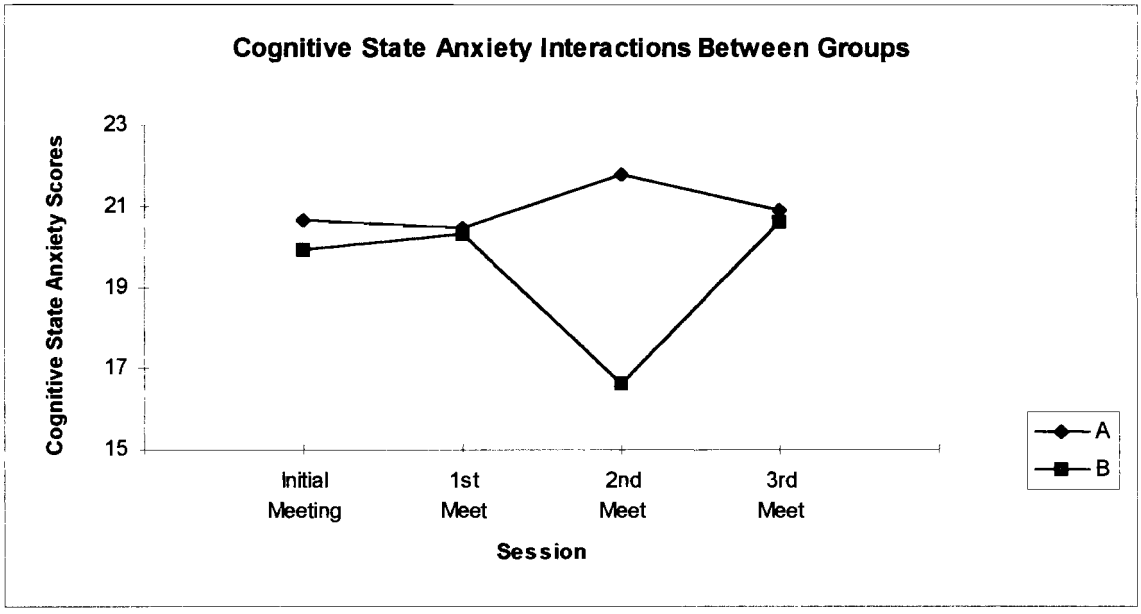

Table 5

MANOVA Between Groups Interaction Summary for Somatic A-State

	P-Value	F -Score
group	0.19	F(1,24) = 1.84
session	0.18	F(3,22) = 1.80
group (x) session	0.08	F(3,22) = 2.52

$p > .05$

Graph 3

Somatic A-State Interactions Between Groups

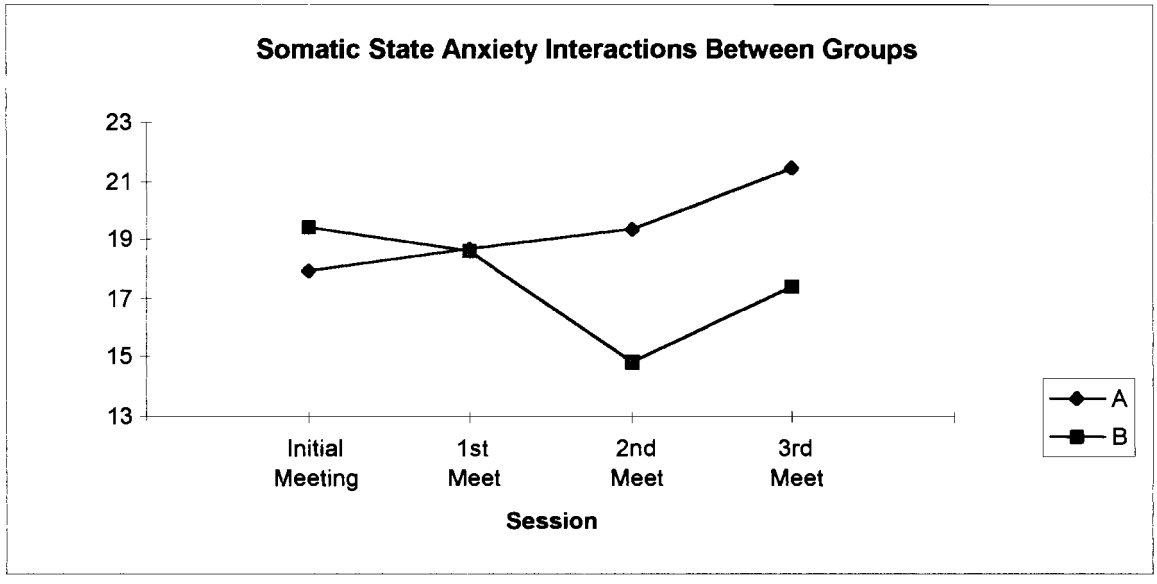

Table 6

Correlations Among Physical Self-Efficacy, Somatic A-State, and Cognitive A-State

	CSA	SSA	PSE
CSA	1.00	0.65*	-0.26
SSA		1.00	-0.18
PSE			1.00

*$p < .05$

CSA = Cognitive State Anxiety

SSA = Somatic State Anxiety

PSE = Physical Self-Efficacy

Table 7

MANOVA Between Groups Interaction Summary for Self-Confidence

	P-Value	F -Score
group	0.57	F(1,24) = 0.34
session	0.47	F(3,22) = 0.88
group (x) session	0.24	F(3,22) = 1.50

$p > .05$

Graph 4

Self-Confidence Interactions Between Groups

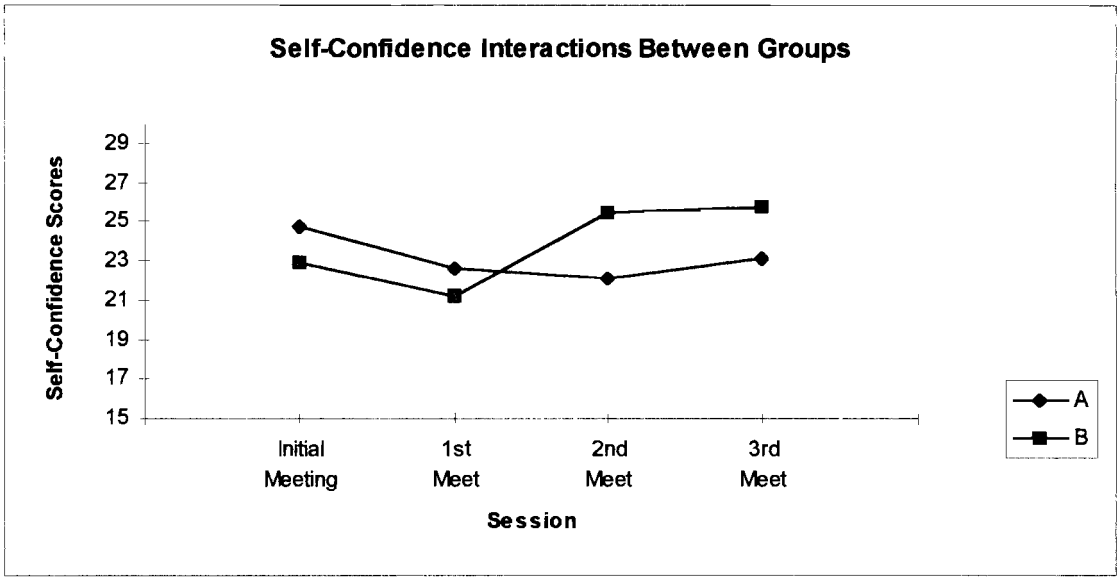

Table 8

Comparison of A-Trait at Initial Meeting for Type A/B Track and Field Athletes

	t-score	p-value	df
Trait Anxiety	1.39	0.18	24

CHAPTER 4

DISCUSSION AND RECOMMENDATIONS

The purpose of this study was to determine if Type A track and field athletes differ from Type B track and field athletes on levels of A-state, A-trait and self-efficacy under varying competitive situations. A sub-problem of this study was to determine if there was a relationship between A-state and self-efficacy. Track and field athletes ($n = 43$) at Emporia State University completed four psychometric instruments over a five week period during an indoor track and field season. The instruments used during the course of the study included the Modified Jenkins Activity Scale (mJAS), the Sport Competitive Anxiety Test (SCAT), the Competitive State Anxiety Inventory-2 (CSAI-2), and the Physical Self-Efficacy Scale (PSE).

Based on the results from the mJAS, 33 participants were categorized as Type A (A+ or A-), 7 participants were categorized as Type B (B+ or B-) and 3 participants displayed neither Type A or Type B characteristics. Over 75% of the participants were categorized as Type A and possess personality traits such as impatience, constant competitive achievement striving, being highly aggressive, time urgent and frequently hostile (Friedman & Rosenman, 1974). Individuals possessing Type A personality traits were also thought to have a higher need to maintain control over stressful situations (Glass, 1977). In this study, and for statistical strength, participants not being categorized as a Type A personality were compared to extremely Type A+ participants.

Hypothesis 1 states, Type A and Type B track and field athletes will not differ in physical self-efficacy scores under varying competitive situations and was partially supported. Results from a repeated measures MANOVA failed to support significant

interaction between personality type and sessions when examining level of self-efficacy. However, results indicated significant differences existed between sessions for Type A and Type B participants. The physical self-efficacy scores for Type A track and field athletes increased significantly from initial meeting to meet #1, while the physical self-efficacy scores for Type B track and field athletes increased significantly from initial meeting to meet #3 and from meet #1 to meet #3.

Bandura and Adams (1977) found perceived self-efficacy scores influenced choice of activity, effort exerted, and persistence during an activity. Initial results of this study indicated Type A and Type B track and field athletes are not different in the way they perceive their own ability to compete in track and field meets. The inability to distinguish differences between Type A and Type B track and field athletes on physical self-efficacy scores raises serious questions on the mJAS's ability to differentiate track and field athletes.

Follow up post hoc results found from examining Type A and Type B track and field athletes separately, need to be interpreted with caution because significant main effects for interaction between personality type and sessions were not found. Feltz and Mungo (1983) indicated past performance was a significant predictor of self-efficacy scores after the initial trial in a back diving competition. Feather and Volkmer (1988) determined Type A individuals tend to apply high standards when evaluating their own performance and set difficult goals. Being put into a competitive situation for the first time during the indoor track and field season may have not allowed Type A track and field athlete's the opportunity to accurately measure from past competitions perceived ability to compete. Since Type A individuals also tend to set higher goals and apply high

standards, a significant increase in physical self-efficacy scores may have resulted in the initial competitive situation of the season. Type A participants had no competitions before meet #1 and may have inaccurately judged their own ability. After competing in meet #1, Type A participants may have made more accurate judgments on physical self-efficacy since meet #2 and meet #3 do not significantly differ from the initial meeting or meet #1.

Based on research, Type B track and field athletes tend to set less difficult goals and lower standards, compared to Type A individuals (Feather & Volkmer, 1988). The significant increase in physical self-efficacy scores seen from initial meeting to meet #1 in Type A participants did not occur in Type B participants. Furthermore, Type B participants did increase physical self-efficacy scores significantly from the initial meeting to meet #3 and from the meet #1 to meet #3. Type B participants may have set lower standards and goals at meet #1 as compared to Type A participants. After competing in meet #1, the ability to judge physical self-efficacy may have increased and allowed for goals and standards to be more accurate. Perceptions of physical self-efficacy are more accurate if based on prior performance (George, 1994). Compared to Type A participants, Type B participants had more room to increase physical self-efficacy scores after meet #1, based on initial meeting and meet #1 physical self-efficacy perceptions.

Many factors could have been responsible for the contrasting and somewhat inconsistent results found in Duncan's Multiple Range Test for physical self-efficacy session effects. These factors include a large range of experience and ability levels in participants, event areas, a small number of participants for the experiment, and

performance. Although, these results need to be interpreted with caution, some differences between Type A and Type B track and field athletes were evident. Further research concerning Type A and Type B athletes and level of physical self-efficacy is warranted to clarify if actual differences exist.

Hypothesis 2 states Type A and Type B track and field athletes differ in A-state scores under varying competitive situations and was supported. The results obtained from the CSAI-2 indicated Type A and Type B track and field athletes tend to have similar A-state levels under all measured sessions. Results from a repeated measures MANOVA failed to support fluctuations in cognitive A-state and somatic A-state for the interaction between personality type and session. These findings were surprising because A-state levels were reported to rise in Type A individuals in the face of stressful situations (Chaplan and Jones, 1975). The championship track and field meet (meet #3) was the most important track and field meet of the indoor season. No significant differences between Type A and Type B participants in cognitive A-state or somatic A-state were found to exist during meet #3. Correlational analysis indicated a relationship existed between cognitive A-state and somatic A-state. This finding supports the contention during competitive situations the relationship between somatic and cognitive anxiety strengthens (Swain, Jones, & Cale, 1990).

The study was arranged in such a way distinct differences in participants may have been overlooked. All track and field event areas (throwing events, distance running events, jumping events, and sprint events) were combined and athletes were labeled track and field participants. There is a possibility each event area may need a different level of A-state to perform optimally. Hanin (1978) determined individual differences account

for different optimal levels of arousal for each person in competitive situations. Each event area may require a different arousal level for optimal performance to occur. All event areas possibly warrant its own individual test based on the arousal A-state relationship (Spielberger, 1966). If A-state is specific to an event area, the differences in Type A and Type B track and field athletes may have not been found.

Another possible problem which was not accounted for in this experiment is the experience level of the participants. This study was designed in such a way level of experience was not considered. Athletes ranged from freshman, who had little or no indoor track and field experience, to upperclassmen, who had international track and field experience. Individuals exposed to highly stressful competitive situations for the first time probably differ in their perception of the environment, compared to experienced track and field athletes. Since participants in the Type A and Type B categorizations had many different experience levels, results could have been distorted.

The CSAI-2 was also used to assess levels of self-confidence across sessions. Results indicated no difference in self-confidence levels existed between Type A and Type B track and field athletes. Reasons for the lack of differences found in levels of A-state between Type A and Type B track and field athletes were thought to be consistent with the no difference results found concerning self-efficacy. Furthermore, no difference was found when A-trait levels for Type A and Type B track and field athletes were examined. Since no differences were found to exist between Type A and Type B track and field athlete's level of A-state, no differences should exist in A-trait for these respective groups. This finding is consistent with the idea A-trait is related to A-state

(Spielberger, 1966). Spielberger determined individuals displaying high levels of A-trait would respond with accelerated A-state qualities.

Hypothesis 3 states no relationship will exist between level of A-state and physical self-efficacy scores under varying competitive situations and was supported. The results obtained from the CSAI-2 and PSE indicated a relationship did not exist between cognitive A-state and physical self-efficacy or somatic A-state and physical self-efficacy in all measured sessions. Many of the questions of the PSE were related to physical characteristics and had nothing to do with a competitive track and field setting (Ryckman et al., 1982). An instrument which has a direct link to track and field should be used to accurately assess the belief in one's ability to perform in a track and field setting. The inability to accurately relate physical characteristics to each measured session (which included track and field meets) could have possibly distorted results. Researchers should develop sport specific physical self-efficacy scales.

Limitations of the study

The participants in this study tended to possess very diverse competitive experiences in track and field. Diverse experiences may consist of, but are not limited to, different event areas, years of competitive experience, national meet exposure, and motivation level at the time of the study. Results should be interpreted with caution because these factors were not controlled. Furthermore, obtaining a non-random sample of track and field athletes from a rural setting may cause the inability to generalize results to other groups of track and field athletes. Finally, the sample size may have caused statistical significance to be rather difficult to attain.

Future Research

Future research should be structured to differentiate among track and field athletes in various ways. Instead of dividing track and field athletes based on Type A and Type B characteristics, the use of internal and external of locus of control may be more useful. Track and field athletes may need to be compared only within the context of event area, i.e., throwers are compared to throwers and sprinters are compared to sprinters. A study which compares anxiety levels of experienced and inexperienced athletes may also be beneficial. Finally, the number of participants used in the experiment needs to increase for stronger statistical analysis .

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Appendix A

Institutional Review Board for Treatment

of Human Subjects Permission Letter

EMPORIA STATE UNIVERSITY
1200 COMMERCIAL EMPORIA, KANSAS 66801-5087 316/341-5351
Fax 316/341-5909
RESEARCH AND GRANTS CENTER - BOX

October 25, 1996

Jesse Griffin
922 Sylvan, Apt. #6
Emporia, KS 66801

Dear Mr. Griffin:

The Institutional Review Board for Treatment of Human Subjects has evaluated your applicat for approval of human subject research entitled, "The Effect of Type A/B Personality on Levels Self-Efficacy and State/Trait Anxiety in Track and Field Athletes." The review board approved y application which will allow you to begin your research with subjects as outlined in your applicati materials.

Best of luck in your proposed research project. If the review board can help you in any other w don't hesitate to contact us.

Sincerely,

John O. Schwenn, Dean
Graduate Studies and Research

pf

cc: Kathy Ermler

Appendix B

Informed Consent Document

INFORMED CONSENT DOCUMENT

The Department/Division of HPER supports the practice of protection for human subjects participating in research and related activities. The following information is provided so that you can decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time, and that if you do withdraw from the study, you will not be subjected to reprimand or any other form of reproach.

1. **Procedures to be followed in the study, as well as identification of any procedures which are experimental.**

Four different types of measures will be used throughout the experimental process. During the first meeting subjects will fill out the modified Jenkins Activity Survey, Sport Competitive Anxiety Test, Physical Self-Efficacy Scale and Competitive Anxiety Inventory-2. Total time to complete all materials will be between 15 and 20 minutes. One hour prior your first competition in three indoor track and field meets the Physical Self-Efficacy Scale and Competitive Anxiety Inventory-2 will be completed. Total time to complete both measures will be between 5 and 10 minutes. The three predetermined indoor track and field meets are the Kansas State University Invitational on January 18, the Jayhawk Invitational on February 1, and the MIAA Championships on February 21-22.

2. **Description of any attendant discomfort or other forms of risk involved for participants taking part in the study.**

N/A

3. **Description of benefits to be expected from the study.**

To gain knowledge of how indoor track and field Type A/B athletes react to different competition levels in terms of state anxiety and self-efficacy.

4. **Appropriate alternative procedures that would be advantageous for the participants.**

N/A

"I have read the above statement and have been fully advised of the procedures to be used in the project. I have been given sufficient opportunity to ask any questions I had concerning the procedures and possible risks involved. I understand the potential risks involved and I assume them voluntarily. I likewise understand that I can withdraw from the study at any time without being subjected to reproach."

_____ _____

Subject and/or authorized representative Date

Appendix C

Modified Jenkins Activity Survey

modified Jenkins Activity Survey

_____ 1. How would your husband/wife (or closest friend) rate you?
a. Definitely hard-driving and competitive
b. Probably hard-driving and competitive
c. Probably relaxed and easy-going
d. Definitely relaxed and easy-going

_____ 2. How would you rate yourself?
a. Definitely hard-driving and competitive
b. Probably hard-driving and competitive
c. Probably relaxed and easy-going
d. Definitely relaxed and easy-going

_____ 3. How do you consider yourself?
a. More responsible than the average student
b. As responsible as the average student
c. Less responsible than the average student

_____ 4. Compared to the average student,
a. I give much more effort
b. I give an average amount of effort
c. I give less effort

_____ 5. College has
a. stirred me into action
b. not stirred me into action

_____ 6. Compared to the average student,
a. I am more precise
b. I am as precise
c. I am less precise

_____ 7. Compared to the average student,
a. I approach life much more seriously
b. I approach life as seriously
c. I approach life less seriously

_____ 8. How would most people rate you?
a. Definitely hard-driving and competitive
b. Probably hard-driving and competitive
c. Probably relaxed and easy-going
d. Definitely relaxed and easy-going

_____ 9. How would you rate yourself?
a. Definitely *not* having less energy than most people
b. Probably *not* having less energy than most people
c. Probably having less energy than most people
d. Definitely having less energy than most people

_____10. I frequently set deadlines for myself in courses or other things.
a. Yes
b. No
c. Sometimes

_____ 11. Do you maintain a regular study schedule during vacations such as Thanksgiving, Christmas, and Easter
a. Yes
b. No
c. Sometimes

_____ 12. I hurry even when there is plenty of time.
a. Often
b. Once in a while
c. Never

_____ 13. I have been told of eating too fast.
a. Often
b. Once in a while
c. Never

_____ 14. How would you rate yourself?
a. I eat more rapidly than most people
b. I eat as rapidly as most people
c. I eat less rapidly than most people

_____ 15. I hurry a speaker to the point.
a. Frequently
b. Once in a while
c. I never hurry a speaker

_____ 16. How would most people rate you?
a. Definitely *not* doing most things in a hurry
b. Probably *not* doing most things in a hurry
c. Probably doing most things in a hurry
d. Definitely doing most things in a hurry

_____ 17. Compared to the average student,
a. I hurry much less
b. I hurry as much
c. I hurry much more

_____ 18. How often are there deadlines in your courses?
a. Frequently
b. Once in a while
c. Never

_____ 19. Everyday life is filled with challenges to be met.
a. Yes
b. No
c. Sometimes

_____ 20. I have held an office in an activity group or held a part-time job when in school.
a. Frequently
b. Once in a while
c. Never

_____ 21. I stay in the library at night while studying until closing.
a. Frequently
b. Once in a while
c. Never

Appendix D

Sport Competitive Anxiety Test

Sport Competitive Anxiety Test

Sport Competition Anxiety Test for Adults

ILLINOIS COMPETITION QUESTIONNAIRE
Form A

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

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

Appendix E

Competitive State Anxiety Inventory-2

Competitive Sports Anxiety Inventory-2

Illinois Self-Evaluation Questionnaire

Name: _____ Sex: M F Date: _____

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

	Not At All		Somewhat		Moderately So		Very Much So
1. I am concerned about this competition	1		2		3		4
2. I feel nervous	1		2		3		4
3. I feel at ease	1		2		3		4
4. I have self-doubts	1		2		3		4
5. I feel jittery	1		2		3		4
6. I feel comfortable	1		2		3		4
7. I am concerned that I may not do as well in this competition as I could	1		2		3		4
8. My body feels tense	1		2		3		4
9. I feel self-confident	1		2		3		4
10. I am concerned about losing	1		2		3		4
11. I feel tense in my stomach	1		2		3		4
12. I feel secure	1		2		3		4
13. I am concerned about choking under pressure	1		2		3		4
14. My body feels relaxed	1		2		3		4
15. I'm confident I can meet the challenge	1		2		3		4
16. I'm concerned about performing poorly	1		2		3		4
17. My heart is racing	1		2		3		4
18. I'm confident about performing well	1		2		3		4
19. I'm concerned about reaching my goal	1		2		3		4
20. I feel my stomach sinking	1		2		3		4
21. I feel mentally relaxed	1		2		3		4
22. I'm concerned that others will be disappointed with my performance	1		2		3		4
23. My hands are clammy	1		2		3		4
24. I'm confident because I mentally picture myself reaching my goal	1		2		3		4
25. I'm concerned I won't be able to concentrate	1		2		3		4
26. My body feels tight	1		2		3		4
27. I'm confident of coming through under pressure	1		2		3		4

Appendix F

Physical Self-Efficacy Scale

Physical Self-Efficacy Scale

I.D. Number _____

The following statements concern attitudes and feelings you might have about yourself and a variety of situations. You are asked to indicate how strongly you agree or disagree with each of these statements by placing one of the numbers 1-7 in the blank to the left of each statement. The numbers correspond to the following levels of agreement.

1 = Strongly Agree
2 = Agree
3 = Slightly Agree
4 = Neither Agree or Disagree
5 = Slightly Disagree
6 = Disagree
7 = Strongly Disagree

_____ 1. I have excellent reflexes.
_____ 2. I am not agile and graceful.
_____ 3. I am rarely embarrassed by my voice.
_____ 4. My physique is rather strong.
_____ 5. Sometimes I don't hold up well under stress.
_____ 6. I can't run fast.
_____ 7. I have physical defects that sometimes bother me.
_____ 8. I don't feel in control when I take tests involving physical dexterity.
_____ 9. I am never intimidated by the thought of a sexual encounter.
_____ 10. People think negative things about me because of my posture.
_____ 11. I am not hesitant about disagreeing with people bigger than me.
_____ 12. I have poor muscle tone.
_____ 13. I take little pride in my ability in sports.
_____ 14. Athletic people usually do not receive more than me.
_____ 15. I am sometimes envious of those better looking than myself.
_____ 16. Sometimes my laugh embarrasses me.
_____ 17. I am not concerned with the impression my physique makes on others.
_____ 18. Sometimes I feel uncomfortable shaking hands because my hands are clammy.
_____ 19. My speed has helped me out of some tight spots.
_____ 20. I find that I am not accident prone.
_____ 21. I have a strong grip.
_____ 22. Because of my agility, I have been able to do things which many others could not do.

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Jesse Wayne Griffin

Signature of Author

5-7-97

Date

The Difference Between Type A/B Personality on Self-Efficacy and Trait/State Anxiety in Track and Field Athlet

Title of Thesis

Signature of Graduate Office Staff

5-7-97

Date Received