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I am submitting herewith a thesis written by Regina LaShon Faulkerson entitled "Media Exposure: The Zone of Optimal Functioning." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Dr. Debora R. Baldwin, Major Professor

We have read this thesis
and recommend its acceptance:

Accepted for the Council:

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MEDIA EXPOSURE: THE ZONE OF OPTIMAL FUNCTIONING

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Regina LaShon Faulkerson
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DEDICATION

This thesis is dedicated to my mother, Ruth E. Clark, grandmother, Catherine Clark, and my uncle, the Honorable Terry L. Clark for their faith in my ability, as well as their unconditional love and support.

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ABSTRACT

The purpose of this study was to examine the extent to which precompetitive anxiety predicted performance as measured by the zone of optimal functioning (ZOF) and is a function of increased media exposure in women basketball players.

Data were collected on a nationally ranked Division I women's basketball team over a four month period which included five regular season games, two of which were televised. For the purpose of this study, regular season was from mid-November to the end of February.

At the beginning and end of the season, each player completed the Measure of Pessimism (MOP), Life Event Survey Scale for Collegiate Athletes (LESCA), and the Profile of Mood State (POMS)questionnaires. Each player completed the Competitive State Anxiety Inventory-2 (CSAI-2) one hour prior to each of the five games. In addition, a 10-second pulse rate was taken from each player.

Findings suggested that 1) media exposure had no demonstrated affect on performance or anxiety; 2) pre and post measure of the POMS subscale for depression before and after the season was significant, as well as the total mood disturbances; and 3) there was no correlation between performance and precompetitive anxiety as it relates to the ZOF.

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CHAPTER 1

INTRODUCTION

Definitions of Arousal and Anxiety

The study of competitive anxiety has been of central importance to researchers. One of the earliest developments in competitive anxiety research was Spielberger's (1966) state-trait approach. The underpinnings of this approach suggest anxiety states (S-Anxiety) are emotional reactions that consist of a unique combination of (1) feelings of tension, apprehension and nervousness; (2) unpleasant thoughts or worries; and (3) physiological changes. These reactions vary in intensity and fluctuate over time (Spielberger,1989).

In contrast to S-Anxiety, trait anxiety (T-Anxiety) refers to the relatively stable individual differences in anxiety proneness as a personality disposition or trait. T-Anxiety may or may not be manifested directly in behavior, but can be inferred from the frequency that an individual experiences elevations in S-Anxiety. Individuals experiencing high T-Anxiety are generally more anxiety-prone (i.e., perceive more situations threatening). These individuals usually experience S-Anxiety reactions more frequently, and with greater intensity, than do individuals who are low in T-Anxiety

(Spielberger, 1989).

Anxiety has often been confused with arousal because of its increased central and autonomic nervous system activity (Sonstroem & Bernardo, 1982). Although anxiety and arousal result in increased physiological activity, anxiety refers to subjective feelings, while arousal reflects the general intensity level of our physiological processes. This intensity level, termed arousal, is frequently used interchangeably with other intensity related terms such as stress, tension and activation (Landers, 1977). Sage (1984) suggests that arousal is an energizing function that is responsible for the harnessing of the body's resources for intense and vigorous activity. The general state of arousal or activation ranges on a continuum from deep sleep to extreme excitement (Malmo, 1959). According to Landers and Boutcher (1993), arousal is a natural, ongoing state. However, when arousal levels become extremely high, individuals may experience unpleasant emotional reactions associated with the autonomic nervous system. This maladaptive condition is often referred to as "stress" or "state anxiety."

Measures of Arousal and Anxiety

Zaichkowsky and Takenaka (1993), utilized the current views of arousal by defining it as a multi-dimensional construct that refers to an energizing function of the mind and body. This energy varies

along a continuum from low (e.g., sleep) to high (e.g., extreme excitement). It contains a general physiological response in which several systems may be activated simultaneously, including heart rate, sweat gland activity, and electrical activity of the brain (p.512).

Duffy (1962) made definitive contributions to understanding brain mechanisms, autonomic nervous system activity, and other behaviors that accompany changes in arousal. The structures of the central nervous system (CNS) closely related to arousal include the cortex of the brain, the reticular formation, and the hypothalamus. These structures represent the most critical substructures related to anxiety and arousal (Carlson, 1986). The cerebral cortex is the convoluted mass of neural tissue that makes up the outer covering of the brain. This is the area which higher intelligectual functions take place, and cognitive representations of anxiety are fashioned.

The reticular formation is a complex system of ascending and descending collaterals that extend from the lower brain stem throughout the midbrain area. It is suggested the activity at the reticular formation level serves as an alarm system to awaken the rest of the brain (Cotman and McGaugh, 1980), which is characterized by increased neuronal activity from vast network of neurons at the level of the brainstem that continues to the cortex. It follows from these observations that the reticular formation should be involved in any situation in which alertness is at a premium, as is the case for athletic participation.

The hypothalamus is another forebrain structure that has been linked to arousal. It receives input from higher brain centers in the nervous system as well as from internal organs of the body. Although few studies on the role of the hypothalamus in sport behavior have been conducted, the fact that this structure is so integrally involved in the control of the endocrine system (which prepares the body for both psychologically and physically demanding circumstances) would suggest that hypothalamic functions are vital determinants of athletic proficiency.

The autonomic nervous system (ANS) is also very much involved in the arousal function. It is largely through this ANS network of neural fibers that bodily reactions to environmental stressors are expressed. The ANS is divided into two sections, the sympathetic and parasympathetic. The sympathetic section is responsible for psychophysiological exchanges associated with arousal. These changes include increased heart rate, pupil dilation, increased respiration, release of glucose for the liver, and decreased kidney output. The sympathetic section also releases catecholamines known as adrenaline and noradrenaline at the site of the gland or smooth muscles (with the exception of palmer sweat glands) (Zaichkowsky and Takenaka, 1991). The parasympathetic section of the ANS produces hypoarousal effects and in general a return of bodily function to a state of homeostasis. Accordingly, the interplay between the nervous system and endocrine system serves to

enhance performance.

Over the years, several physiological indices have been used to measure arousal including brain wave activity (electroencephalogram), heart rate (electrocardiogram), muscle tension (electromygraphy), perspiration (galvonic skin response), respiration, blood pressure, and biochemical indicators.

Researchers have criticized previous studies that have used behavioral measures as indicators of anxiety. They implied that investigations used either inaccurate competitive outcome measures (e.g., win/lose in wrestling) or performance measures that employed between-subjects (i.e., interindividual) comparisons that fail to control for differences in skill level. Further arguing that intraindividual performance scores (e.g., scores for a round of golf) are the result of mediating factors such as anxiety or simply differences in skill level (Burton, 1988).

Contemporary anxiety researchers have suggested using an intraindividual performance measure that controls for differences in skill level by comparing current performance to average or best previous performance. For example, intraindividual performance measures would compare (a) a swimmer's time today to her best previous performance, or (b) a baseball players batting accuracy in a particular game to his season's batting average. Martens, Sonstroem & Bernardo (1982) argue that the ability of intraindividual performance to control for differences in skill level provides a greater

level of measurement sensitivity that can more accurately measure the exact influence of anxiety on performance (Burton, 1988).

Behavioral observations are sometimes used to measure arousal, but the most common nonphysiological measures are self-report measures or questionnaires, such as the state anxiety inventory of the State-Trait Anxiety Inventory (Spielberger et al., 1970). The STAI was developed to provide reliable, relatively brief self-report measures of state and trait anxiety. Although a unidimensional measure, the STAI has been found to have construct validity and to be effective in sport settings (Hanin 1978, 1986; Morgan, 1980).

Because anxiety is believed to be multidimensional and individuals manifest anxiety in different ways, a multidimensional approach to anxiety measurement that contains both physiological and psychological measures presents a more complete picture of individual anxiety states and also provides more insight into the nature of anxiety in sport. Martens and his colleagues (Martens, Burton, Vealey, Bump, & Smith, 1990) constructed a multidimensional measure of competitive state anxiety unique to sport known as the Competitive State Anxiety Inventory-2 (CSAI-2) (Gill, 1986). The CSAI-2 assesses the cognitive worry and somatic anxiety on separate dimensions and also includes a third dimension, self-confidence. The initial psychometric testing of the CSAI-2 supports the reliability and validity of the scales and further reveals

that cognitive worry and somatic anxiety do not follow the same pattern of changes over time. The CSAI-2 should be a valuable tool for examining individual differences in anxiety patterns in sport settings and for investigating the relationship between such patterns and sport behaviors (Gill, 1986).

Individuals respond to anxiety in different ways. One athlete may respond by speaking rapidly, while another may exhibit sweaty palms. That is why it is of paramount concern that researchers become more aware of anxiety and its effects on athletic performance.

The 1972 inception of Title IX provided women equal opportunity to compete in organized athletics. It has been recently that women have received increasingly more media exposure (Conniff, 1996). However, women's media exposure in athletics have failed to reach the level of men. One event which seemingly put women at the forefront was the 1996 Olympics, where the world observed the level at which women were now competing. This help launch the 1996 American Basketball League (ABL) and the 1997 Women's National Basketball Association (WNBA). With these variables in mind, along with the fact of being a collegiate athlete, I found it troubling that there has been very little to no research conducted in the area of women's athletics and the relationship between media exposure and performance. With the increase in media exposure, more research is needed to identify variables which

impinge on athletic performance in the context of women sports. There's a plethora of research identifying anxiety as a variable in performance outcome. In this paper, I will examine to what extent precompetitive anxiety predicts performance as measured by the Zone of Optimal Functioning (ZOF) and a function of increased media exposure in women basketball players.

CHAPTER 2

LITERATURE REVIEW

Anxiety and Performance Theories

Drive Theory

Drive theory was the first major hypothesis explaining the relationship of competitive anxiety to performance. Drive theory was derived from the learning theory work of Hull (1943). As later modified by Spence and Spence (1966), drive theory predicts that performance (P) is a multiplicative function of habit strength (H) times drive state (D), or P=HxD. Within the Hull-Spence model, habit refers to the hierarchical order or dominance of correct or incorrect responses, while drive is essentially physiological arousal. In other words, drive theory proposes that as arousal or drive increases, learned behaviors are more likely to occur. During the early stages of skill acquisition, the dominant responses are likely to be incorrect responses. It is during this stage that increases in arousal will impair performance. However, in later learning, the dominant responses are correct and increases in arousal will enhance performance. Simply stated, drive theory depicts a positive linear relationship between arousal and performance.

It is questionable whether a linear relationship between arousal and performance can be found for accuracy tasks such as free throw shooting. However, Oxendine (1984) suggests that linear relations exist for gross motor activities involving strength, endurance, and speed. In other words, a very high level of arousal is desirable for optimal performance in these types of gross motor skills. Anecdotal evidence regarding 'superhuman' feats performed in emergency situations where unexpected physical strength, speed, or endurance was required (e.g., a mother lifting a vehicle off her trapped child) supports this view. Although these task are overlearned and require limited processing of information, the sport setting is highly structured, often involving complex decision-making and perceptual strategies, in addition to the performance of a motor skill. The surge of epinephrine resulting from an emergency situation may enhance strength in an uncontrolled manner, but this may be detrimental in actual sport performances. An example of this phenomenon would be an overaroused sprinter recording false starts in intense competition. Thus, on experiential grounds, it appears that there are limits to the amount of arousal the athlete can tolerate without suffering performance decrements (Landers and Boutcher, 1986).

Drive theory has faded from prominence for three main reasons. First, it has received limited empirical support. Martens's (1971) review of this literature showed that a majority of the studies that tested drive theory failed to support its predictions. Second,

there has been a tendency to view drive theory as difficult to test in the area of motor performance. Landers (1980) argued that it is difficult to determine habit hierarchies (i.e., the dominance of correct or incorrect responses) for complex motor skills. Third, there is anecdotal evidence for rejecting drive theory in the area of motor performance. Contrary to its predictions, many athletes, report that their performances are disrupted by excessive arousal or anxiety (Neiss, 1988).

Inverted-U Hypothesis

An alternative explanation of the arousal-performance relationship is based on the inverted-U hypothesis derived from the work of Yerkes and Dodson (1908). It predicts that as arousal increases from drowsiness to alertness, there is a progressive increase in performance efficiency. However, as arousal continues to increase beyond alertness toward a state of high excitement, there is a progressive decrease in task performance (Landers, 1980). More specifically, Yerkes and Dobson examined different levels of electrical shock on mice, and found that when simple discrimination tasks were being learned, the mice learned quicker when high shock levels were administered. Although, these same high levels of electrical shock interfered with learning when the task was more difficult. These findings suggest that a specific level of stimulus

intensity was required for optimal learning, and as the task increased in difficulty, the optimal intensity level of stimulus decreased.

Many studies using both laboratory tasks and field measures have provided support for the inverted-U hypothesis. Martens and Landers (1970) assigned high, moderate, and low trait-anxious junior high school males to three different stress conditions as they performed a motor-steadiness task in a controlled experimental setting. Self-report measures, heart rate samples, and palmer sweat responses confirmed three distinct levels of arousal. Results indicated that moderate trait-anxious subjects performed significantly better than low and high trait-anxious subjects, which showed an inverted-U performance relationship for subjects varying in levels of trait-anxiety.

Studying 145 Canadian high school basketball players, Klavora (1979) tested the validity of the inverted-U hypothesis. He had subjects complete the Spielberger state-trait anxiety inventory prior to each game and had coaches evaluate the performance of each player after each game. Results supported the inverted-U hypothesis showing that the best performances occurred under moderate levels of state anxiety, average performance under conditions of slight under-or overarousal, and poor performance under either very low or high levels of anxiety.

In a similar study, Sonstroem and Bernardo (1982) demonstrated that an inverted-U relationship exists between

basketball performance and arousal/anxiety. By assessing the composite performance scores of female university players and plotting these scores against arousal/anxiety scores, the researchers concluded that a moderate level of arousal/anxiety was associated with the highest level of performance.

Recent conceptual developments in this area have witnessed serious questioning of the validity of the hypothesis in the sporting context (Jones and Hardy, 1989; Neiss, 1988). Neiss (1988) has criticized the Yerkes-Dobson Law suggesting it should be discarded due to the absence of empirical support; the inability to adequately test such a theory and from problems in the basic premise of a global arousal construct of this theory. Martens (1971) suggests studies have compared performance levels of both low and high anxiety groups using only two levels of stress, the assumption being a linear continuum could be drawn from these two levels to increasing levels of stress. For this problem to be corrected, Landers (1980) suggested one must test the inverted-U hypothesis versus drive hypothesis in a design in which at least three or more levels of a situational stressors are applied. Specifically, the behavior which is being sought through these studies is not being directly tested. Rather, it has been assumed that a 'continuum' exists in the manner in which individuals perform when aroused. Additional criticisms include: (a) the failure to explain why performance is impaired at arousal levels above and below the optimum (Landers, 1980); (b) the

lack of clear empirical support (Neiss, 1988), despite the fact that it is '...nearly impossible to disprove since it would be unrealistic to expect better performance at what has been defined as the extremes of low arousal (comatose state) or high arousal (i.e., panic attack)' (Landers, 1994, p.127); (c) it only relates to general effects on global performance effectiveness rather than specific effects upon information-processing efficiency (Eysenck, 1984), and is therefore incapable of explaining the complexity of the relationship between arousal and subcomponents of performance (Hockey & Hamilton, 1983).

Despite the criticism for the inverted-U hypothesis, support for the theory is equivocal. The inverted-U has been accepted as truth, by many introductory psychology textbooks and an abundance of research journals. Although widely popular and an inherently appealing explanation of the arousal-performance relationship, the inverted-U hypothesis, like previous theories, is unable to explain individual differences in anxiety.

Zone of Optimal Functioning

Although many researchers have expanded on the notion of the inverted-U hypothesis to include a zone or band width, it was Yuri Hanin's work with athletes in the Soviet Union that led him to develop the Zone of Optimal Functioning (ZOF) hypothesis. Using a Russian

version of the Spielberger, Gorsuch, Lushene (1970) STAI to determine optimal anxiety levels, Hanin found that substantial differences existed across individuals in their optimal level of precompetition anxiety needed for best performance. "The assessment of performance anxiety states is based on a general conception of behavior which holds that the reliability and efficiency of any human activity will be a function of the individual's state at the time of performance" (Hanin, 1986, p. 46). According to Hanin, each individual has an arousal zone of optimal functioning (ZOF), and performance efficiency is best when the level of arousal falls within this zone (Hanin, 1980, 1986, 1989). The optimal level of precompetition anxiety may be low, moderate, or high, depending on the individual. The ZOF is established for individual athletes by adding and subtracting 4 points to their optimal precompetitive state anxiety levels, which correspond approximately to one-half the average standard deviation from his or her best performance (Hanin, 1986). Hanin proposed that athletes with precompetitive state anxiety levels within or close to their ZOF will perform better than athletes whose anxiety levels are outside their ZOF. "Thus, a meaningful relationship between anxiety level and performance can be detected in individual athletes more easily than in groups" (Hanin and Syrja, 1995).

Prapavessis and Grove (1991) supported the ZOF theory with their investigation of 12 high-performance clay shooters. This

research found that when precompetitive anxiety falls outside of the ZOF, performance deteriorates. Hanin and Kopysov (1977, cited in Hanin, 1980) also found that Soviet weight lifters whose anxiety was outside of their ZOF three days prior to competition were less successful than those weightlifters whose anxiety was within their ZOF.

Hanin (1980) further discovered that athletes are able to accurately predict precompetition anxiety levels several days prior to competition. The anxiety level of female divers measured 20 days before a very important contest correlated significantly (0.75) with their anxiety levels 2-3 hours before the start of the contest. For the male divers, this correlation was also significant at 0.31 (Hanin, 1980, 1986). The anticipated correlation between anxiety levels of 22 female gymnasts, measured five days before, and one hour prior to competition was 0.50 (Hanin, 1980, 1986, 1989, 1995). Raglin, Morgan, & Wise (1990) attempted to replicate Hanin's (1986) ZOF work with adult athletes in predicting precompetition anxiety to younger athletes. The researchers examined seventeen female swimmers, comparing actual and predicted levels of precompetition anxiety for both easy and difficult competitions. The results revealed that correlations for a difficult meet between predicted and actual precompetition anxiety were .77 and .39 for the easy meet. Based on this information, the investigators concluded that younger athletes are able to accurately predict their level of anxiety prior to a difficult

competition, in accordance with Hanin's ZOF theory. However, these female athletes were unable to accurately predict precompetition anxiety for easy competitions. Hanin (1980) suggested that the "predicted level of anxiety can appear as an indirect indicator of presupposed stress potential of the upcoming competition activity and of the unfavorability (or favorability), on the subjective part of the person, of the situation in which he is supposed to perform" (p.241).

Hanin (1986) found that athletes are able to recall their anxiety level during the competition retrospectively. "Retrospective evaluations provide the only means of determining the optimal anxiety level of an athlete if there is no opportunity to observe the athlete systematically in a number of important contests (Hanin, 1986, p. 49)." Eight female gymnast were asked 18 days after the competition to evaluate how they felt one hour before the beginning of a contest and before each specific gymnast event. The correlation between retrospective measure and a current assessment made one hour before the beginning of the competition was 0.74. The highest correlations for individual events were for the beam (0.89) and for free exercises (0.78) (Hanin, 1980, 1986, 1995). A highly significant correlation of 0.90 was obtained between two repeated retrospective measures of the best previous competition in a one day interval for 57 top-level Finnish athletes (Liukkonen, 1991; Hanin, 1995).

Imlay,Carda,Stanbrough, Dreiling, and O'Connor (1995), in a study examining 16 college track and field athletes, found that all the

athletes achieved an optimal level during the indoor season. However, three and seven months after the season, 11 athletes completed the STAI with instructions to recall their level of precompetition anxiety prior to their BEST performance of the indoor season. A significant correlation was found between the actual pre-BEST anxiety level and recalled anxiety at the three month (0.85) but not at the seven month (0.25) interval.

According to Imlay and his colleagues (1995), the accuracy of recalled precompetition anxiety states has not been extensively investigated. A variety of factors may influence the accuracy of a recalled anxiety state including the passage of time, individual differences in memory ability, and dysphoric moods (Ellis, 1991; Foa, McNalley & Murdock, 1989).

Hanin (1986) noted that there are two estimates which are implicit in such retrospective evaluations. First, the individual athlete must be able to accurately recollect the emotional state generally experienced prior to a competition. Second, these recollections and images must be given concrete expression in the context of a specific contest. And, athletes must take such images into account: the significance of the event, readiness to compete, and the various abilities of rivals.

Mediating Factors of Arousal and Performance

Competitive Anxiety Patterns and Sport Performance

The arousal-performance relationship in sport has led Fenz (1975) to add further insight into this already complex subject. Fenz was one of the first investigators to examine the relationship between patterns of precompetitive anxiety and athletic performance among parachute jumpers. With the use of varied arousal measures and designs, Fenz found differences in precompetitive anxiety patterns between good vs poor and experienced vs inexperienced parachutists. Although, the good performers and experienced jumpers did not differ from poorly skilled or novice jumpers in absolute arousal levels; they did differ in arousal patterns. The primary arousal pattern differences in the good and bad performers was their ability to control arousal. Good performers seemingly bring arousal under control to experience moderate levels of arousal at the time of performance. In a similar study, Mahoney and Avener (1977) compared elite gymnasts who qualified for the 1976 US Men's Olympic Gymnastics team to gymnasts who reached the trials but failed to qualify. Individuals completed retrospective reports of perceived anxiety at various times before and during performance. The results revealed the qualifiers' anxiety levels were as high or

higher than the nonqualifiers' anxiety levels prior to performance. The pattern anxiety differences between the groups, however, was not identical to the Fenz results as the better gymnasts exhibited higher levels of anxiety prior to competition. As with the parachuters, however, the better performers seemed to bring anxiety under control and return to moderate levels at the time of performance. This was evident because the qualifiers reported lower anxiety than nonqualifiers during performance.

Meyers, Cooke, Cullen, and Liles (1979) attempted to replicate and extend the findings of Mahoney and Avener (1977) by examining the competitive anxiety patterns of nine elite racquetball competitors. The results revealed that there was a significant difference between the anxiety patterns of skilled (national champion) and less skilled players (collegiate competitors). Although both groups began competition equally anxious, as the actual time of competition approached and began, a steady increase in anxiety among the more skilled players was observed. Highly skilled competitors also reported experiencing higher levels of anxiety when playing less skilled opponents as oppose to playing more skilled competitors (Gould, Horn, and Spreeman (1983).

Sport competition can generate much anxiety and worry, which in turn can affect physiological and thought processes so dramatically that performance often deteriorates. Mahoney and Avener (1977) noted that among the gymnasts, qualifiers seemed to approach

competition with a task orientation and to focus their energy and attention on the task, whereas the nonqualifiers worried more about being anxious. "Self-satisfaction with personal progress towards challenging standards provides a motivational orientation for performance accomplishments" (Bandura and Jourden, 1991, p.949), whereas self-dissatisfaction focuses attention away from the task.

Types of Sport and Level of Anxiety

Many athletes at some point in time have suffered from inappropriate levels of arousal. Athletes have often been unable to distinguish the amount of arousal necessary for a particular event, which oftentimes reflects in their performance. For example, golf and archery may require low levels of arousal for optimum performance whereas football blocking and soccer may require much higher levels. Oxendine (1970) suggested with such tasks as weightlifting, higher arousal levels are required than with an activity such as in golf putting. It is essential that athletes are able to distinguish between the two, in order to optimize performance.

Weinberg and Genuchi (1980) found the lowest levels of anxiety facilitated golf performance. They explained this as relating to the precision required in golfing as compared to the blending of strength and complexity requirements of other sports, in which

arousal might be more related to successful outcomes. Similarly, Cox (1986) found that spiking and serving in volleyball seem to benefit from low levels of competitive state anxiety as well.

Types of Anxiety: Somatic versus Cognitive

Generally, somatic anxiety is considered to be a conditioned or a reflexive response to environmental stimuli associated with competition. Cognitive anxiety, on the other hand, is more likely related to the athlete's perceived ability (Jones, Swain, & Cale, 1991).

Investigations examining the precompetition temporal patterning of cognitive and somatic anxiety components have been fairly consistent. Studies have shown that cognitive anxiety remains relatively stable prior to competition, while somatic anxiety tends to rapidly increase close to the start of the event. For example, Gould, Petlichkoff, and Weinberg (1984), found that prior to a collegiate volleyball tournament somatic anxiety and cognitive worry changed significantly. Although somatic anxiety increased prior to competition, cognitive worry and self-confidence remained stable (Caruso, Dzewaltowski, Gill, McElroy 1990). Karteroliotis and Gill (1987) also found that cognitive worry and somatic anxiety followed similar temporal patterns prior to and during competition.

Burton (1988) found that increases in cognitive worry caused swimming performance to decrease and a positive linear relationship

between self-confidence and performance. However, in a similar study, Gould, Petichkoff, Simons, Vevera (1987) found no relationship between cognitive worry and pistol shooting performance, and a negative linear relationship between self-confidence and performance. Caruso et al. (1990) suggested that cognitive and performance demands of the two tasks maybe the difference in the results of these studies.

Caruso, et al. (1990) examined male undergraduates who participated in a bicycle competition. Using a three counterbalanced conditions: a) noncompetition, b) success, and c) failure, Caruso found that task demands create high levels of physiological arousal (e.g., increased heart rate, increased muscle tension) that may have been interpreted as perceived physiological arousal (e.g., somatic anxiety). Additionally, cognitive worry decreased from precompetition to postcompetition in the success condition, possibly as a result of positive feedback. In the failure condition, cognitive worry increased from precompetition to postcompetition, possibly as a result of the negative feedback about performance. These findings support Martens, Burton, Vealey, Bump, & Smith (1983) hypothesis that cognitive worry changes when failure occurs or performance expectations change (Caruso, et al. 1990).

Anxiety and Performance in Children

Anxiety and performance have received a substantial amount of attention with adults; however, youth athletics have been all but ignored. Generalizations have been made about youth athletics from research with adults. As with adults, it is believed that anxiety leads to poor performance in younger athletes.

Athletic competition for children is a firmly established part of our society. Organized youth sports in the United States dates back to the early 1900s (Smoll, 1993). More than 20 million U.S. boys and girls between the ages of 6 and 18 participate in nonschool sports (Martens, 1986). Yet, there has been little research in the area of anxiety and performance in youth sport participation.

Hanson (1967) and Lowe and McGarth (1971) were among the first investigators to examine sources of stress in children's sports. Subsequently, both studies used telemetry to assess physiological arousal in little league baseball players. Comparisons were made to determine the variations in stress as a function of the situation in which the athlete was placed (e.g., each time the player was in the dugout, on deck, at bat). The findings revealed heart rates were highest when the athlete was at bat and suggested the importance of the immediate game situation was related to the level of stress experienced. Thus, both game and situation were found to be related

to stress responses in young athletes (Lowe & McGrath, 1971; Gould et al, 1983).

Simon and Martens (1979) also examined children's precompetitive state anxiety levels by comparing nonrequired school activities and nonsport (e.g., band) activities vs required school (e.g., physical education) activities and nonschool sports (e.g., basketball, etc.). The results revealed that nonrequired, nonsports activity participants exhibited higher levels of state anxiety than nonschool sports participants, who, in turn, exhibited more anxiety than participants in required school activities. Precompetitive state anxiety levels were found to be dependent on the sport played (Gould et al., 1983).

Children who were high in sport performance anxiety appeared to be especially sensitive to fears and negative social evaluations. Passer (1983) examined a number of personality variables as a means of identifying correlates of competitive trait anxiety in male soccer players 10 to 15 years of age. Results revealed that players in the upper and lower quartiles of his sample differed in that high competitive trait anxious players had lower levels of self-esteem, lower expectancies for personal performance, worried more frequently about poor performance, and worried more about incurring negative evaluation from important others. Passer concluded that fear of failure and fear of negative evaluation represent significant sources of threat to competitive trait-anxious

youth soccer players.

Research on motivation for involvement in youth sports clearly indicates that "fun" is a major reason for the participation of young athletes (Gill, Gross, & Huddleston, 1983; Gould, Felz, Weiss, & Petlichkoff, 1982; Scanlan & Lewthwaite, 1986). Scanlan et al (1982; 1984; 1986; 1978; 1979) has surveyed thousands of young and elite athletes and found that regardless of their competitive level, enjoyment of the sport fueled their motivation and commitment. Although enjoyment for each athlete may be defined in many ways, "when you understand the sources of enjoyment, you have the buttons to push to create enjoyment. That keeps people motivated, creates commitment and keeps them participating".

Research has shown that young athletes believe having fun, working with peers, and receiving praise from parents and coaches are primary sources for participating in sports rather than winning. In fact, Scalan and her associates (Scanlan & Lewthwaite, 1984; Scanlan & Passer, 1978, 1979) found that the greatest predictor of post-competition stress in more than 500 teams and individual sport players was losing. The more fun children had during the game, the less post-competition stress they felt, regardless of the game's outcome. Harris (1984) in an ethnographic study of two youth baseball teams, reported that involvement in the action of the game and opportunities for exercising control contributed to the level of fun experienced. It appears the relationships between the coach and

parents of young athletes are important because they determine whether the athletes have fun or not. It is the responsibility of the coach and parent to ensure young athletes are treated as children. "One of the quickest ways to reduce fun is for adults to begin treating children as if they were varsity or professional athletes" (Smoll,1993).

Anxiety and Performance as a Function of Gender

Results concerning the role of gender in the ability to predict forthcoming competitive anxiety have been contradictory. The concept of competitive anxiety has been studied extensively in sport psychology, but it is widely acknowledged that findings have been equivocal (Martens, Vealey, Burton & 1990). Gill (1988) reported that males scored higher than females on competitiveness and win orientation and that females scored higher than males on goal orientation. Gill concluded that females seem to focus more on personal goals and standards that reflect a noncompetitive achievement orientation whereas males focus more on interpersonal comparison and winning (Jones, Swain, & Cale, 1991). Cann (1991) suggests that this may be true due to women have had to endure claims that their activities are less worthy of financial and public support.

Rainey and Cunningham (1988) investigated issues related to competitive trait anxiety (CTA) among 64 male and 64 female varsity

athletes. It appeared from the study that because women's sports was given less attention than men's sports, expectations or criticism had less relation to CTA. However, the more female athletes placed importance on sports, the higher their CTA. Segal and Weinberg (1984) explained gender and anxiety as a relation in competitive sports and concluded that it is a consistent finding that females exhibit higher levels of CTA than males, with CTA being defined as "the tendency to perceive competitive sports situation as threatening and to respond to these with feelings of apprehension and tension" (p. 153). They found sex rather than sex role orientation related to the higher female scores, recommending emotional support and equal opportunity to girls engaging in sports as a "step in the right direction in reducing anxiety and negative consequences that have long been associated with participation in sport" (p. 158).

With regard to anxiety, Hanin (1980, 1986) found that female divers predicted their anxiety levels before the start of the competition more accurately than male divers. However, Salmininen ,Liukkonen, Hanin, and Hyvonen (1995) in a study with female and male long-distant runners, sprinters, rhythmic gymnasts, and ice skaters, found that male athletes were more accurate in assessing their anxiety levels than females.

Jones and Cale (1989a), in a study utilizing individuals in the squash quarter-finals of the 1988 English and Welsh Universities' Athletic Union Championship, found differential precompetition

temporal patterning of cognitive anxiety, somatic anxiety, and self-confidence in males and females. With the use of the CSAI-2 (Martens et al., 1990), females showed significantly more of an increase in cognitive anxiety than males, prior to competition. While somatic anxiety showed no increase in the males until the day of competition, it did however, increase in females at an earlier stage in the precompetition period. Self-confidence remained stable in males but decreased in females on the day of competition. Furthermore, females exhibited lower self-confidence than males one day before and on the day of competition.

The temporal patterning of the CSAI-2 (Martens et al., 1990) subcomponents in males supported multidimensional anxiety predictions that cognitive anxiety and self-confidence remain relatively unchanged during the precompetition period and somatic anxiety does not increase until just prior to competition (Martens et al., 1990).

Jones, Swain, & Cale (1991), in a study replicating and extending Jones and Cale's (1989a) examination of gender differences in the precompetition temporal patterning of cognitive anxiety, somatic anxiety, and self-confidence, found that cognitive anxiety remained stable for the males and significantly increased for the females on the day of competition. This finding differs slightly from their previous findings of a progressive increase in female cognitive anxiety throughout the precompetitive period.

Accordingly, both genders followed the same pattern for somatic anxiety, with increases only visible on the day of competition. Self-confidence decreased in both males and females. Although females exhibited a progressive reduction, males self-confidence decline did not occur until the day of competition (Jones, et al., 1991).

Jones et al., (1991) suggest these differences offer support that cognitive anxiety and self-confidence follow a differential precompetition patterning in males and females.

An individual's mental state, with regard to arousal or anxiety, is considered a vital force and, as such, is believed to affect performance, particularly in competitive or otherwise demanding situations (Gould & Krane, 1992; Hassmen & Blomstrand, 1995; Landers & Boutcher, 1986; Sonstroem, 1984). Hassmen and Blomstrand (1995) examined nine female soccer players. The players completed the Profile of Mood States test (POMS; McNair, Lorr, & Droppleman, 1971) before, immediately after, and two hours after each game during the regular season. The results of this investigation revealed the teams mood scores reflected the outcome of the games. Specifically, when the team lost, their mood states did reflect the loss on all occasions. However, the pregame mood scores did not vary in any systematic way that made it possible to predict the outcome of the games played, at least not at the team level. Thus, the relationship between precompetitive mood states and sport performance is most likely too complex, and the individual differences

are probably important to consider (Prapavessis & Grove, 1991).

The purpose of this study was to examine to what extent precompetitive anxiety predicted performance as a function of increased media exposure in women basketball players. It was hypothesized that (1) there would be a difference between anxiety, heart rate, and performance as it relates to media coverage; (2) there would be a difference in pre and post measures of the POMS, MOP, and LESCA; and (3) the zone would predict optimal performance.

CHAPTER 3

METHOD

Participants

The participants in this study were 11 members of a National Collegiate Athletic Association (NCAA) Division I women's basketball team, ranging from 18-21 years of age. Prior to data collection, the study was discussed with the coach. She was asked to sign a letter of consent (Appendix A). In addition, each participant was given a copy of a letter of explanation, and asked to complete an informed consent form prior to participating in this study (Appendix A). Only those athletes who completed the consent forms were eligible for inclusion in this study.

Materials

In order to measure the level of anxiety associated with performance, a multidimensional scale that purports to assess somatic anxiety, cognitive anxiety, and state self-confidence was administered. The Competitive State Anxiety Inventory-2 (CSAI-2)

(Martens, Burton, Vealey, Bump, and Smith, 1982), is composed of twenty-seven items (three nine-item subscales) arranged on a four-point Likert format from "not at all" to "very much so". To score the CSAI-2, each situation was scored separately and a reverse scoring process was used. For example, if the participant circled 3, the score was counted as 2 points (i.e., 1 = 4, 2 = 3, 3 = 2, 4 = 1). In addition to the CSAI-2, a Right Now version of the Profile of Mood States (POMS) (McNair, Lorr, and Droppleman, 1971) measured affective patterns prior to competition. The scale consists of 65 items that contribute to subscales for tension-anxiety, depression-dejection, fatigue-inertia, anger-hostility, vigor-activity, and confusion-bewilderment. Each adjective was scored from 0 (not at all) to 4 (extremely). By subtracting the vigor-activity score from the sum of the other five subscale totals, a Total Mood Disturbances (TMD) score was computed.

Another instrument used for measuring stress was Petrie's (1992) Life Events Survey for Collegiate Athletes (LESCA). The LESCA measures the degree to which situations in one's life are apprised as stressful. Athletes indicated the event's impact at the time of occurrence on an 8-point Likert Scale (-4 = extremely negative to +4 = extremely positive). Two life stress scores, negative (NEG) and positive (POS), were obtained by summing across those life events rated by the athlete as either negative or positive. In addition, a measure of hopelessness was administered to participants. The

Measure of Pessimism (MOP) scale (Heimberg & Beck, 1961) measured one's perspective of hopelessness state over time. A modified version of the measure of pessimism as it relates to basketball was utilized in this study. The modified version consist of 20 true-false statements. For every statement, each response was assigned a score of 0 (not affected) or 1 (affected), and the total "hopelessness score" was the sum of the scores on the individual items. Thus, the possible range of scores were from 0 (not at all hopeless) to 20 (extreme hopelessness).

Physiological response was measured by having each participant locate their pulse and count the number of heart beats they felt in a 10 second time frame. Afterwards, each participant was instructed to write the number of heart beats they felt at the bottom of their CSAI-2 form. By using a calculator, each heart beat number was multiplied by 6 and the total was written in red ink on the CSAI-2 forms.

Performances were measured by analyzing game statistics (i.e., steals, assists, points per game, minutes played, foul shot percentage, field goal percentage, rebounds, fouls per minutes played, and turnovers). The statistics used were those regularly recorded for use in the women's basketball program. In addition, the head coach was given a rating form. The form listed the names of each member of the team and required that the coach rate their performance on a scale of 1 to 10, where a score of 1 represented

poor performance and a score of 10 represented excellent performance. All surveys can be found in Appendix B.

Procedures

The day before the opening game, participants completed an informed consent form. After the form was signed, the participants were asked to complete three questionnaires--(1) LESCA; (2) MOP; and (3) POMS. Participants were then advised that these questionnaires would also be administered at the end of the regular season (the day after the last regular season game-February 25,1997).

On five game days, the participants completed the CSAI-2 questionnaire approximately 1.5 hours before the competition. After the completion of the CSAI-2 questionnaire, the athletes took a 10-second heart rate sample. They were instructed by the experimenter to locate their pulse and count the number of heart beats they felt in a 10-second time frame. After the 10 seconds, the experimenter asked the participants to write the number of beats they felt at the bottom of their CSAI-2 form and return the forms to the researcher. After the game, the game statistics were collected from the Sports Information Director. In addition, the coach was given a rating form to complete after two of the five games. The games selected were one TV game and one nonTV game. After completing the form, the coach returned

it to the researcher.

The five games were selected based on a beginning-middle-end format. This format afforded the researcher an opportunity to witness the growth of the team during the course of the season.

CHAPTER 4

RESULTS

Data were collected on a nationally ranked Division I women's basketball team over a four-month period which included five regular season games, two of which were televised. For the purpose of this study, regular season was from mid-November to the end of February.

State anxiety was assessed and evaluated for each of the five regular season games (Appendix B). Each athlete's zone of optimal functioning (ZOF) was derived based on the athlete's average precompetitive state anxiety level corresponding to her best performance. Specifically, Hanin (1980) measured anxiety with Spielberger's State Trait Anxiety Inventory (STAI; Spielberger et al, 1970) and the ZOF was operationally defined as plus or minus four points (approximately one half standard deviation) from this optimal level of anxiety. The performance measures included game statistics (e.g., shot percentage, total points, rebounds, assists, steals, personal fouls, and turnovers) over five games. The statistics were later submerged into one performance factor by using a calculation, Performance=Shot % (Total Points + Rebounds + Assists + Steals) - Personal Fouls - Turnovers + 10), designed by Sonstroem and

Bernado (1982). An alpha level of .05 was used for all statistical tests.

The first hypothesis stated that there would be a difference between anxiety, heart rate, minutes played, total points scored, and performance as it relates to media exposure. The mean score on the above dependent measures were used to calculate differences between the televised and non-televised games. Results were evaluated using a Multivariate analysis of variance (MANOVA). Descriptive statistics for the aforementioned results are included in Table 1.

Media coverage did not affect anxiety, heart rate, minutes played, total points scored, nor performance. In fact, analysis yielding a Wilks' Lambda found no significance, $F(7, 10) = .720$, $p > .05$.

The second hypothesis stated that there would be a difference in the pre and post measures of the POMS, MOP, and LESCA. Paired t-test were utilized in order to examine the differences between the variables as shown in Table 2.

The POMS consists of six (6) subscales (fatigue, vigor, depression, anger, confusion and tension). By adding the five negative mood states (tension, depression, fatigue, anger, and confusion) and then subtracting vigor, the one positive mood state, a total mood disturbance (TMD) was established. The TMD score was calculated to obtain a single global estimate of mood state for each player. There was significant difference $t(9) = -3.09$, $p < .01$ between

Table 1
Descriptive Statistics for Media Exposure

Variable	Television	No Television
Somatic	M 16.61 SD (4.13)	M 16.14 SD (4.83)
Cognitive	M 15.39 SD (4.57)	M 14.17 SD (3.69)
Self-Confidence	M 26.17 SD (5.20)	M 25.41 SD (3.35)
Average Anxiety	M 19.39 SD (2.17)	M 18.57 SD (2.27)
Heart Rate	M 90.33 SD (14.33)	M 93.00 SD (14.04)
Performance	M 22.00 SD (17.00)	M 22.00 SD (12.10)
Total Points	M 8.72 SD (9.00)	M 8.03 SD (6.50)
Minutes	M 24.00 SD (12.00)	M 20.40 SD (7.31)

Note: M=Mean; SD=Standard Deviation

Table 2
Descriptive Statistics for Mood and Stress: Before and After the Season

Dependent Variable		Before the Season	After the Season
POMS			
	Anger	M 8.4 SD 9.41	M 15.90 SD 10.13
	Confusion	M 4.40 SD 3.50	M 7.90 SD 3.41
	Fatigue	M 5.80 SD 3.33	M 9.10 SD 6.00
	Depression	M 7.50 SD 6.50	M 18.70* SD 10.00
	Vigor	M 17.50 SD 6.64	M 15.50 SD 5.00
	Tension	M 7.80 SD 5.12	M 12.00 SD 6.00
MOP		M 1.60 SD 1.78	M 1.60 SD 1.51
LESCA		M 10.50 SD 17.50	M -2.00 SD 16.13

Note: M=Mean; SD=Standard Deviation
*p<.05

total mood disturbance (TMD) before and after the season as shown in Figure 1. In fact, the TMD was significantly lower before the season than after the season. In addition, depression before and after the season was also significant t (9) = -2.87, $p < .01$ as shown in Table 2. Overall, players reported more depression after the season than before the season.

Scores ranged from 0 to 20 on the MOP, with scores of 0 indicating the athlete is not hopeless and 20 indicating he/she is extremely hopeless. All of the athletes scored below 5, which means they were closer to not having feelings of hopelessness. The analysis revealed no significant difference between the two measures ($p > .05$). In addition, the Life Event Survey for Collegiate Athletes (LESCA) pre and post measures were not statistically significant, t (9) = 1.53, $p > .16$. These results were also assessed utilizing paired t-test.

The final hypothesis stated that the zone would predict optimal performance for each athlete. A multiple regression revealed that individual's Zone Of Optimal Functioning (ZOF) did not predict performance as shown in Table 3. In fact, this analysis found that the ZOF did not predict how well an individual would perform nor did it predict total points an individual would score. Performance served as the dependent variable. The CSAI-2 subcomponents, heart rate scores and minutes played were used as the predictor variables in the multiple regression analyses. An interaction term (created by

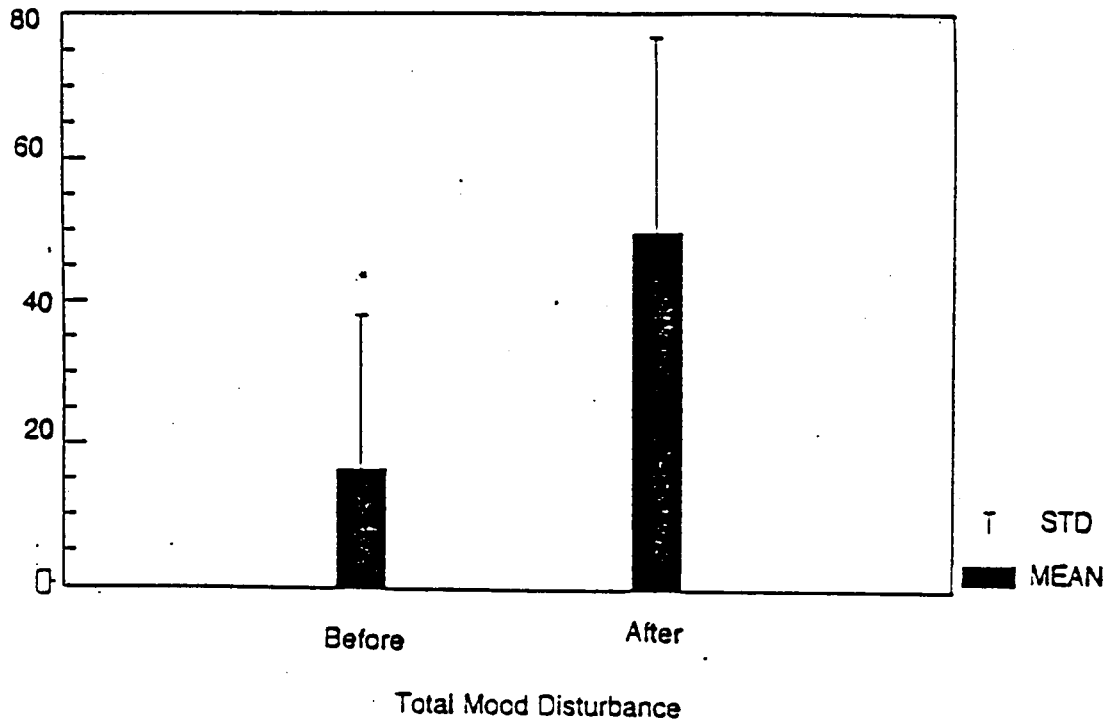

Figure 1. Total Mood Disturbance before and after the season

Table 3
Game-By-Game Multiple Regression Analysis: Performance

Dependent Variable	Predictors	Game 1		Game 2		Game 3		Game 4		Game 5	
		Beta	R Square	Beta	R Square	Beta	R Square	Beta	R Square	Beta	R Square
Performance	Somatic	-0.006	0.851	1.178	0.584	-0.241	0.9	-0.16	0.614	-0.696	0.508
	Cognitive	0.359		-1.29		0.416		0.556		0.414	
	Self-Confidence	0.081		0.089		0.877		0.334		-0.574	
	Zone 4	0.261		0.038				0.716		-0.51	
	Heart Rate	-0.043		-0.063		-0.058		-0.81		0.28	
	Minutes	1.089		0.839		-0.23		-0.155		0.901	

calculating the cross product of the anxiety scores and minutes played) was then entered. In this manner, the variance accounted for by the interaction was determined for each game.

A Pearson correlation game-by-game analysis revealed a significant relationship between self-confidence ($r = .86$) and minutes played ($r = .88$) as they pertain to performance for games 3 and 1, respectively. As expected, for all games performance was significantly correlated with total points ($p < .05$). As shown in Table 4, the higher each players' self-confidence and the more minutes played, the better the performance (See Appendix C for additional information).

Table 4
Pearson Correlations for Performance

	Game 1	Game 2	Game 3	Game 4	Game 5
Somatic	-.168	-.196	-.324	-.278	-.440
Cognitive	-.483	-.246	.374	.166	-.204
Self-Confidence	.292	.387	.863**	.078	.235
Average Anxiety	-.245	-.030	.615	.001	-.383
Zone+/- 4	.064	-.079	.a	.373	.214
Heart Rate	-.626	-.342	-.648	-.289	.134
Total Points	.928**	.675*	.925**	.977**	.931**
Minutes	.878**	.531	.555	.387	.547

**. Correlations is significant at the 0.01 level (2-tailed).
*. Correlations is significant at the 0.05 level (2-tailed).
a. Cannot be computed because at least one of the variables is constant.

Note: The following equation was used to determine performance:

Performance=Shot % (Total Points + Rebounds + Assists + Steals) - Personal Fouls - Turnovers + 10

CHAPTER 5

DISCUSSION

The purpose of this study was to examine the extent to which precompetitive anxiety predicted performance as a function of increased media exposure in women basketball players. In an attempt to examine this phenomenon, data were collected on five games (two of which were televised) during a four-month period on a NCAA Division I defending national championship-winning women's basketball team. Beginning the day before the first regular season game and two days after the final regular season game, players completed the POMS, LESCA, and MOP. Subsequently, on the selected five game days, each player completed the Competitive State Anxiety Inventory-2 (CSAI-2) and took a 10-second pulse rate. The CSAI-2 was utilized to measure precompetition state anxiety.

Hypothesis one: There will be a difference between anxiety, heart rate, minutes played, total points scored, and performance as it relates to media exposure.

This researcher discovered that media exposure had no demonstrated affect on performance or anxiety. However, limited research has been done in the area of performance anxiety in sport and media exposure. The studies, to date, primarily dealt with the language of televised sports for men and women. For example, a

study conducted by Messner, Duncan, and Jensen (1993) compared and analyzed the verbal commentary of televised coverage for two women's and men's athletic events: the "Final Four" of the women's and men's 1989 National Collegiate Athletic Association (NCAA) basketball tournaments and the women's and men's singles, women's and men's doubles, and the mixed-doubles matches of the 1989 U.S. Open tennis tournament. They found two categories of difference: (1) gender marking and (2) a "hierarchy of naming" by gender and, to a certain extent, by race. These differences were described and analyzed in light of feminist analyses of gendered language. It was concluded that televised sports commentary contributes to the construction of gender and racial hierarchies by marking women's sports and women athletes as "other," by infantilizing women athletes (and, to a certain extent, male athletes of color), and by framing the accomplishments of women athletes ambivalently.

However, there are a number of other studies which examine the mere presence theory of performance. Zajonc (1965) suggests that the mere presence of others creates arousal that in turn affects performance. Specifically, Zajonc proposed the following conclusions:

- The presence of others, either as an audience or as coactors, creates arousal or drive.
- Increased arousal increases the likelihood that the individual's dominant response will occur.

- If the skill to be performed is simple or well learned, the dominant response is the correct response and performance improves.

- If the skill is complex and not well learned, the dominant response is an incorrect response and performance is impaired.

In an attempt to test Zajonc's theory, Paulus and colleagues examined audience effects on gymnastics and batting performance in professional baseball. Findings suggest that the crowd size was not related to batting performance, and, contrary to predictions, better gymnasts were less facilitated by an audience than were poorer gymnasts (Paulus & Cornelius, 1974; Paulus, Judd, & Bernstien, 1977).

As with the present study, the media presence had no effect on the athlete's performance or anxiety level. This would suggest that other factors may contribute to athletes' increased anxiety levels and poor performance during competition (e.g., competition status).

One practical issue involving audiences and sport performance that has been studied is the so-called *home court advantage*. Schwartz and Barsky (1977) documented the home court advantage with professional baseball, football, and hockey teams and with college basketball and football teams. Teams won more games at home than away for all the sports, but the greatest advantage was for indoor sports such as basketball and hockey. The researchers concluded the source of the advantage was social support from a

friendly audience. However, Baumeister and Steinhiller (1984) documented a home court disadvantage. According to these researchers, directing attention to the internal performance process can disrupt the performance of well-learned, automatic skill. Elite athletes perform skills with minimal conscious attention. Thus, the opportunity to win a championship before a home crowd increases self-consciousness and disrupts skilled performance, which may suggest that the home court can be a disadvantage in some circumstances. They suggested the mere presence of others does not explain the home court advantage, although audience presence may play an important role.

Hypothesis two: There will be a difference in the pre and post measures of the POMS, MOP, and LESCA.

The findings from this particular study suggest pre and post measure of the POMS subscale for depression before and after the season was significant, as well as, the Total Mood Disturbance. These findings could have resulted from the fact that the POMS was administered a day before the first regular season game and again two days following the loss of the last regular season game to a top-ranked team.

The POMS, MOP, and LESCA measures were used to examine the moods, attitudes, and life events that may predict an athlete's state anxiety and performance level before and after a season of competition. The POMS was the only measure that was

significant.

Hassen and Blomstrand (1995) administered the POMS to nine female soccer players before, immediately after, and two hours after each game during the season. The findings suggested the outcome of the games affected the players' mood states. Tension, depression, anger, and confusion scores were lower, and vigor was higher when the team won. Prior to the games, only minor differences in POMS scores were detected, regardless of outcome. Taken together, the results did not support the notion that POMS scores could be helpful in predicting team performance.

Morgan (1985) proposed that a "mental health model" effectively predicts success in athletics. Essentially, the mental health model suggests that positive mental health and athletic success are directly related, whereas psychopathology and success are inversely related. In studies examining college and Olympic wrestlers, national team rowers and elite distance runners, Morgan and colleagues demonstrated that successful athletes did indeed possess more positive mental health characteristics and fewer negative mental health characteristics than the general population.

However, Morgan's findings are inconsistent with the results of the present study. Depression, a seemingly negative mood state, did not appear to affect the outcome of the team's performance. In fact, the subjects of this study completed the regular season with a 23-10 record and the 1997 NCAA Women's Division I National

Championship.

The competitive state anxiety concept has generally fallen into line with the clinical and test anxiety literature, in which the anxiety response has been separated into cognitive and somatic components (Davidson and Schwartz, 1976). Specifically, cognitive anxiety is the mental component of anxiety caused by negative expectations about success or negative self-evaluations, whereas somatic anxiety is the physiological or affective component of anxiety that is directly related to autonomic arousal (Burton, 1988). Landers and Boutcher (1993), suggest arousal is a natural, ongoing state. When arousal levels become extremely high, individuals may experience unpleasant emotional reactions associated with the autonomic nervous system. This maladaptive condition is often referred to as "stress" or "state anxiety."

Research has suggested that athletes perform best when state anxiety or stress is moderate and performance deteriorates when anxiety increases or decreases from this optimal level (Burton, 1988; Sonstroem and Bernardo 1982; Weinberg and Genuchi, 1980). Burton (1988) found that swimming performance decreased linearly with increases in cognitive worry, increased linearly with self-confidence, and demonstrated an inverted-U relationship with somatic anxiety. Interestingly, cognitive anxiety tends to rise whenever expectations of success become negative, thus accounting for why athletes often began worrying several days prior

to competition. However, competitive stress may be evaluated by one individual as facilitative to performance but as debilitating to performance by another individual.

These studies seemingly allude to the fact that low self-esteem may cause a high degree of stress. However, Hoffman's (1986) research of 50 individuals completing a "Will to Win" questionnaire discovered the opposite. This questionnaire helps the researcher determine differences in self perception and self-esteem levels among athletes and non-athletes. Of the 50 individuals completing the questionnaire, 25 were competitive athletes who actively trained in sport daily. Furthermore, his findings suggested that higher levels of self-confidence and self-esteem tend to be motivating factors (i.e., fear of losing) among athletes.

The subjects of the present study did not lack self-confidence. In fact, each player exhibited high levels of self-confidence throughout the season. This high level of self-confidence may be attributed to the level at which these athletes compete. Consequently, pre and post measures of the LESCA did not substantiate claims that life stressors and mediating cognitive worries hindered performance in highly skilled collegiate athletes, particularly defending national champions.

Hypothesis three: The zone of optimal functioning will predict optimal performance for each athlete.

In an effort to examine whether the ZOF predicted optimal

performance for each athlete, a multiple regression procedure was employed. The regression tested whether average anxiety predicted individual game performances, as proposed by the ZOF theory. Significant results were not found for this comparison, however. According to Salminen et al. (1995), athletes within their optimal zones performed significantly better than those who were outside their optimal zones. Similarly, Imlay et al. (1995) examination of track athletes found that more athletes possessed pre-competitive anxiety scores within their ZOF for good (63%) as compared to worst (31%) performance conditions. Krane (1993) combined the ZOF hypothesis with the multideminsional anxiety theory (Martens et al., 1990). Individual cognitive anxiety and somatic anxiety zones were identified, and it was hypothesized that athletes whose anxiety levels fell within these zones would be more successful than athletes whose anxiety levels were outside these zones. In fact, when athletes' cognitive and somatic anxiety were above their zones, poorest performances occurred. However, Krane failed to find significance between (Performance x Zone level) computed for cognitive and somatic anxiety.

Several factors may have contributed to these inconclusive findings. First, the sample used for this study was small, which reduced the power of this analysis. Second, some players did not compete in each game due to injury or the coach's decision. As a result, there were essentially fewer data points for those individuals.

Finally, the performance measure may have influenced the results. The basketball performance measure included all statistical data with the exception of minutes played. Thus, performance scores for individuals playing limited minutes may not have adequately reflected their performance. The performance measure also did not take into consideration the skill of the opposing players which may have impacted athlete performances. Additionally, precompetition anxiety levels were stable within subjects. That is, although the anxiety levels differed from individual to individual, the precompetition anxiety level within an individual remained relatively constant from game to game. This may suggest that perhaps individuals at this level of competition are able to control their individual arousal levels and outside factors may not provoke anxiety in these particular subjects.

An important factor is that previous studies of the ZOF hypothesis examined anxiety measured retrospectively as reported by the athletes. For example, Salminen et al., (1995) examined 80 Finnish athletes. The athletes completed a State Anxiety Inventory two weeks, one week, and one hour before the start of a competition. Each athlete was asked to think about their best performance in a previous competition, and evaluate how they felt before that competition. Based on that retrospective evaluation, the optimal zones were identified.

Similarly, Imlay et al, (1995) had sixteen track and field athletes complete the STAI 30 minutes prior to competition, during the indoor

season. Three and seven months after the season, 11 athletes completed the STAI with instructions to recall their pre-competition anxiety prior to their BEST performance of the indoor season. This method may not have been accurate in indicating anxiety as actually measuring anxiety prior to competition. Thus, having athletes recall their moods several hours, weeks and even months after the competition may be slightly exaggerated. However, when measuring anxiety at the time of each competition, athletes are not attempting to compare anxiety levels, but are simply reporting how they feel at that particular moment.

Conclusion

This study was designed to investigate to what extent precompetitive anxiety predicted performance as a function of increased media exposure of a top 10 nationally ranked NCAA Division I women's basketball team. Data that included five regular season games, two of which were televised, were collected over a four-month period. For the purpose of this study, regular season was from mid-November 1996 to the end of February 1997. The hypotheses were tested using several analysis of variance, regression methods, repeated measures and paired t-test designs.

The present study revealed the following:

1. Media exposure had no demonstrated effect on

performance anxiety.

2. There was a significant difference in the pre and post measures of the POMS subscale for depression before and after the season and total mood disturbance.
3. There was no correlation between performance and pre-competitive anxiety as it relates to the ZOF.

It is interesting to note that the subjects of this study lost one of the two televised games (94-93) in overtime against a top five-ranked team. The other televised game, against another top five-ranked team and the final regular season home game, saw the team secure a 64-59 victory.

In Game 2, a non-televised game that the team won 71-36, the coach's average rating for each player on the Coach's Rating Form was 8.5. In Game 3, a televised game and the overtime loss (94-93) mentioned earlier, players averaged 6.5. Ratings were not taken for games 1, 4 and 5, but the team won all three games 80-59, 84-61and 64-59, respectively.

It appears athletes at this particular level are not affected by media exposure. It has also revealed that the ZOF did not predict how well a player would perform in a game. It is suggested that future researchers fulfill the following tasks to improve upon this study:

1. Administer measurement tools during the entire season, which would also include the post-season. This would allow the researcher to obtain a more representative sample and would improve reliability.
2. Collect similar data on the opposing team. This would allow the researcher to conduct a comparative study of the two teams for the sake of discovering plausible explanations for precompetitive anxiety and performance.
3. Administer the CSAI-2 before and after each game. This would allow the researcher to see differences in each player's pre- and post-anxiety levels.

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APPENDICES

APPENDIX A

LETTERS OF INFORMED CONSENT

Topic: Letter and Informed Consent from Coach

Researcher: Regina L. Faulkerson

Information: All inquiries should be directed to:
Regina L. Faulkerson, Project Director
301-C Austin Peay Building, Knoxville, Tennessee 37996
(423) 974-3357.

Dear Coach:

Enclosed, please find a copy of the letter of informed consent for participants on your team. Your agreement to participate in this study would require that your athletes complete three questionnaires - Life Event Survey Scale for Collegiate Athletes (LESCA), Measure of Pessimism Scale, and the Profile of Mood State (POMS) - at the beginning and end of the season. These questionnaires will take approximately 20 minutes to complete. On game days, the athletes will be asked to complete the Competitive State Anxiety Inventory-2 (CSAI-2) one-to-two hours before the competition. A 10-second heart rate sample will be taken by the athletes immediately after the completion of the CSAI-2 form. Also, as the coach, you will be asked to complete a rating form following two of the five games observed (TV & nonTV) during the 1996-1997 season.

All information will be kept confidential. No one will have access to any of the information on the questionnaire except the researcher and her immediate professor, Dr. Debora Baldwin. All questionnaires will be kept separately from numbered signed consent forms such that the names cannot be matched to the participant's respective numbers without referring to the consent forms.

Your participation in this study is strictly voluntary, and you may choose to withdraw at any time during the course of this study. However, if you have any questions during or after this study, please feel free to contact me at (423) 539-5098.

I have read the purpose of the aforementioned information and will allow my players to participate in this study. I am also aware that this study is strictly voluntary.

_____ _____

Coach's Signature Date

_____ _____

Researcher's Signature Date

Topic: Letter and Informed Consent from Participant

Researcher: Regina L. Faulkerson

Information: All inquiries should be directed to:
Regina L. Faulkerson, Project Director
301-C Austin Peay Building, Knoxville, Tennessee 37996
(423) 974-3357.

Dear Participant:

You have been selected for inclusion in a study concerning anxiety and performance in women athletics. I have received permission from your head coach for your participation in this study. Your agreement to participate in this study would include the following:

(1) Completion of three questionnaires at the beginning and end of the study, taking approximately 20 minutes.
(2) Completion of one questionnaire one to two hours before each competition (totaling five games), taking approximately ten minutes.
(3) Administration of a 10 second heart rate sample one to two hours prior to each game.

Your game statistics of steals, assists, rebounds, points per game, minutes played, field goal percentage, foul shot percentage, fouls per minutes played, and turnovers will measure performance during the 1996-1997 season. The statistics used will be those that are regularly recorded for use in the women's basketball program.

All information will be kept confidential. No one will have access to any of the information on the questionnaire except the researcher and her immediate professor, Dr. Debora Baldwin. All questionnaires will be kept separately from numerically signed consent forms such that the names cannot be matched to the participants' respective numbers without referring to the consent forms.

Your participation in this study is strictly voluntary, and you may choose to withdraw at any time during the course of this study. Neither your participation nor your withdrawal from this study will have any effect on your academic status or your standing with the basketball team or coaches. If you have questions during or after this study, please feel free to contact me at (423) 539-5098.

I have read and understand the purpose of the attached information. I am fully aware of what is expected of me throughout this study and I agree to participate during the 1996-1997 basketball season.

_____ _____
Participant's name Participant's signature

_____ _____
Date Researcher's signature

APPENDIX B

QUESTIONNAIRES: COMPETITIVE STATE ANXIETY INVENTORY-2 (CSAI-2), MEASURE OF PESSIMISM (MOP), LIFE EVENT SURVEY SCALE FOR COLLEGIATE ATHLETES (LESCA), AND PROFILE OF MOOD STATE (POMS)

CSAI-2

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 I may not do as well in this competition as I could.	1	2	3	4
8. My body feels tense.				
9. I feel self-confident.	1	2	3	4
10. I am concerned about losing.	1	2	?	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 losing.	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

(Cont.)

	Not at all	Somewhat	Moderately so	Very much so
19. I'm worried 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

Cognitive score: _____

Somatic score: _____

Self-confidence score: _____

Measure of Pessimism

Instructions:

Listed below are 20 true and false questions. These questions should be answered as they relate to Basketball.

1. I look forward to the future with hope and enthusiasm. _____
2. I might as well give up because I can't make things better for myself. _____
3. When things are going badly, I am helped by knowing they can't stay that way forever. _____
4. I can't imagine what my life would be like in 10 years. _____
5. I have enough time to accomplish the things I most want to do. _____
6. In the future, I expect to succeed in what concerns me most. _____
7. My future seems dark to me. _____
8. I expect to get more of the good things in life than the average person. _____
9. I just don't get the breaks, and there's no reason to believe I will in the future. _____
10. My past experiences have prepared me well for my future. _____
11. All I can see ahead of me is unpleasantness rather than pleasantness. _____
12. I don't expect to get what I really want. _____
13. When I look ahead to the future, I expect I will be happier than I am now. _____
14. Things just won't work out the way I want them to. _____
15. I have great faith in the future. _____

16. I never get what I want so it's foolish to want anything. _____

17. It is very unlikely that I will get any real satisfaction in the future. _____

18. The future seems vague and uncertain to me. _____

19. I can look forward to more good times than bad times. _____

20. There's no use in really trying to get something I want because I probably won't get it. _____

Life Event Survey

Listed below are 69 events that sometimes occur in the lives of collegiate athletes. These events often produce change within an individual's life that require some adjustment by the individual. For each event that you have experienced within the last year (12 months) **Write the response which is appropriate for you next to the item.** Respondents mark as follows:

Extremely negative = -4
Negative = -3
Moderately negative = -2
Somewhat negative = -1
Somewhat positive = +1
Moderately positive = +2
Positive = +3
Extremely positive = +4

(Note)--Only respond to the items that you have experienced within the last year!

____ 1. Marriage
____ 2. Death of mate (boyfriend, girlfriend, spouse, significant other)
____ 3. Major change in sleeping habits (increase or decrease in amount of sleep)
____ 4. Death of close family member(s)
  a. Father
  b. Mother
  c. Brother
  d. Sister
  e. Grandfather
  f. Grandmother
  g. Other
____ 5. Major change in eating habits (increase or decrease in food intake)
____ 6. Death of close friend
____ 7. Outstanding personal achievement
____ 8. Male: mate pregnant
____ 9. Female: becoming pregnant
___ 10. Sexual difficulties
___ 11. Being fired from job

___ 12. Being apart from mate (boy/girlfriend, spouse, etc) due to sport
___ 13. Serious illness or injury of close family member(s)
  a. Father
  b. Mother
  c. Brother
  d. Sister
  e. Grandfather
  f. Grandmother
  g. Other
___ 14. Major changes in the number (more or less) of arguments with mate
___ 15. Major personal injury or illness
___ 16. Major change in the frequency (increased or decreased) of social activities due to participation in sport
___ 17. Serious injury or illness of close friend
___ 18. Breaking up with mate (boy/girlfriend, etc)
___ 19. Beginning a new school experience (beginning college, transferring colleges, etc)
___ 20. Engagement
___ 21. Academic probation/ ineligibility
___ 22. Being dismissed from dorm or other residence
___ 23. Failing an important exam
___ 24. Major change in relationship with coach (better or worse)
___ 25. Failing a course
___ 26. Major change in the length and/ or conditions of practice/training (better or worse)
___ 27. Financial problems concerning school
___ 28. Major change in relationship with family member(s) (better or worse)
___ 29. Conflict with roommate
___ 30. Male: mate having an abortion
___ 31. Female: having an abortion
___ 32. Major change in the amount (more or less) of academic activity (homework, class time, etc.)
___ 33. Pressure to gain/loss weight-due to participation in sport
___ 34. Discrimination from teammates/ coaches
___ 35. Major change in relationship(s) with teammate(s) (better or worse)
___ 36. Suspended from team for nonacademic reasons
___ 37. Trouble with academic counselor
___ 38. Major change in use of alcohol/ drugs (increased or decreased)
___ 39. Beginning sexual activity
___ 40. Major change in relationship(s) with friend(s) (better or worse)
___ 41. Recovery from illness/ injury/ operation
___ 42. Major change in level of athletic performance in actual competition (better or worse)

___ 43. Divorce or separation of your parents
___ 44. Major change in level of responsibility on team (increased or decreased)
___ 45. Receiving an athletic scholarship
___ 46. Not attaining personal goals in sport
___ 47. Major change in playing status on team
___ 48. Injury to teammates
___ 49. Being absent from school (classes) because of participation in sport
___ 50. Troubles with athletic association and/ or athletic director
___ 51. Difficulties with trainer/ physician
___ 52. Major change in playing time (playing more or less)--due to injury
___ 53. Major errors/ mistakes in actual competition
___ 54. Losing your athletic scholarship
___ 55. No recognition/ praise of accomplishments from coaching staff
___ 56. Pressure from family to perform well
___ 57. Loss of confidence due to injury
___ 58. Unable to find a job
___ 59. Change in coaching staff
___ 60. Female: menstrual period/ PMS
___ 61. Major change in level of academic performance (doing better or worse)
___ 62. Making career decisions (applying to graduate school, interviewing for jobs, etc)
___ 63. Being cut/ dropped from the team
___ 64. Continual poor performance of team
___ 65. Change in graduation schedule
___ 66. Major change in family finances (increased or decreased)
___ 67. Major change in attitude toward sport (like/ enjoy more or less)
___ 68. Victim of harassment/ abuse (sexual, emotional, physical)
___ 69. Victim of personal attack (rape, robbery, assault, etc)

Other events might have occurred to you in the past year (and affected you in a positive or negative manner) but were not included in this list. If there were such events, please list them below.

NAME _____ DATE _____

SEX: Male (M) Female (F)

IDENTIFICATION

Below is a list of words that describe feelings people have. Please read each one carefully. Then fill in ONE circle under the answer to the right which best describes HOW YOU HAVE BEEN FEELING DURING THE PAST WEEK INCLUDING TODAY.

The numbers refer to these phrases.

0 = Not at all
1 = A little
2 = Moderately
3 = Quite a bit
4 = Extremely

Col (C) O.P. (O)

	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
1. Friendly	0	1	2	3	4
2. Tense	0	1	2	3	4
3. Angry	0	1	2	3	4
4. Worn out	0	1	2	3	4
5. Unhappy	0	1	2	3	4
6. Clear-headed	0	1	2	3	4
7. Lively	0	1	2	3	4
8. Confused	0	1	2	3	4
9. Sorry for things done	0	1	2	3	4
10. Shaky	0	1	2	3	4
11. Listless	0	1	2	3	4
12. Peeved	0	1	2	3	4
13. Considerate	0	1	2	3	4
14. Sad	0	1	2	3	4
15. Active	0	1	2	3	4
16. On edge	0	1	2	3	4
17. Grouchy	0	1	2	3	4
18. Blue	0	1	2	3	4
19. Energetic	0	1	2	3	4
20. Panicky	0	1	2	3	4
21. Hopeless	0	1	2	3	4
22. Relaxed	0	1	2	3	4
23. Unworthy	0	1	2	3	4
24. Spiteful	0	1	2	3	4
25. Sympathetic	0	1	2	3	4
26. Uneasy	0	1	2	3	4
27. Restless	0	1	2	3	4
28. Unable to concentrate	0	1	2	3	4
29. Fatigued	0	1	2	3	4
30. Helpful	0	1	2	3	4
31. Annoyed	0	1	2	3	4
32. Discouraged	0	1	2	3	4
33. Resentful	0	1	2	3	4
34. Nervous	0	1	2	3	4
35. Lonely	0	1	2	3	4
36. Miserable	0	1	2	3	4
37. Muddled	0	1	2	3	4
38. Cheerful	0	1	2	3	4
39. Bitter	0	1	2	3	4
40. Exhausted	0	1	2	3	4
41. Anxious	0	1	2	3	4
42. Ready to fight	0	1	2	3	4
43. Good natured	0	1	2	3	4
44. Gloomy	0	1	2	3	4
45. Desperate	0	1	2	3	4
46. Sluggish	0	1	2	3	4
47. Rebellious	0	1	2	3	4
48. Helpless	0	1	2	3	4
49. Weary	0	1	2	3	4
50. Bewildered	0	1	2	3	4
51. Alert	0	1	2	3	4
52. Deceived	0	1	2	3	4
53. Furious	0	1	2	3	4
54. Efficient	0	1	2	3	4
55. Trusting	0	1	2	3	4
56. Full of pep	0	1	2	3	4
57. Bad-tempered	0	1	2	3	4
58. Worthless	0	1	2	3	4
59. Forgetful	0	1	2	3	4
60. Carefree	0	1	2	3	4
61. Terrified	0	1	2	3	4
62. Guilty	0	1	2	3	4
63. Vigorous	0	1	2	3	4
64. Uncertain about things	0	1	2	3	4
65. Bushed	0	1	2	3	4

MAKE SURE YOU HAVE ANSWERED EVERY ITEM.

EDITS POM 021

APPENDIX C

CORRELATION MATRIX FOR EACH OF THE FIVE GAMES

Correlations[a]

		SOM	COG	SELFCON	ANXIETY	ZONE4	HEARTRTE	TOTPOINT	MINUTES
Pearson Correlation	SOM	1.000	.736**	-.772**	.911**	-.240	-.351	-.429	-.386
	COG	.736**	1.000	-.434	.922**	-.458	-.160	-.654	-.692*
	SELFCON	-.772**	-.434	1.000	-.523	-.191	-.013	.535	.453
	ANXIETY	.911**	.922**	-.523	1.000	-.459	-.358	-.450	-.458
	ZONE4	-.240	-.458	-.191	-.459	1.000	.048	-.163	-.083
	PERFORM	-.168	-.483	.292	-.245	.064	-.626	.928**	.878**
	HEARTRTE	-.351	-.160	-.013	-.358	.048	1.000	-.461	-.471
	TOTPOINT	-.429	-.654	.535	-.450	-.163	-.461	1.000	.941**
	MINUTES	-.386	-.692*	.453	-.458	-.083	-.471	.941**	1.000
Sig. (2-tailed)	SOM	.	.010	.005	.000	.478	.290	.250	.305
	COG	.010	.	.182	.000	.157	.638	.056	.039
	SELFCON	.005	.182	.	.099	.574	.969	.138	.221
	ANXIETY	.000	.000	.099	.	.155	.279	.224	.215
	ZONE4	.478	.157	.574	.155	.	.889	.675	.832
	PERFORM	.665	.188	.446	.524	.870	.072	.000	.002
	HEARTRTE	.290	.638	.969	.279	.889	.	.212	.201
	TOTPOINT	.250	.056	.138	.224	.675	.212	.	.000
	MINUTES	.305	.039	.221	.215	.832	.201	.000	.
N	SOM	11	11	11	11	11	11	9	9
	COG	11	11	11	11	11	11	9	9
	SELFCON	11	11	11	11	11	11	9	9
	ANXIETY	11	11	11	11	11	11	9	9
	ZONE4	11	11	11	11	11	11	9	9
	PERFORM	9	9	9	9	9	9	9	9
	HEARTRTE	11	11	11	11	11	11	9	9
	TOTPOINT	9	9	9	9	9	9	9	9
	MINUTES	9	9	9	9	9	9	9	9

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

a. GAME = 1

Correlations[a]

		SOM	COG	SELFCON	ANXIETY	ZONE4	PERFORM	HEARTRTE	TOTPOINT	MINUTES
Pearson Correlation	SOM	1.000	.828**	-.595	.717*	-.017	-.196	.125	-.008	-.213
	COG	.828**	1.000	-.455	.815**	-.017	-.246	.185	.139	.068
	SELFCON	-.595	-.455	1.000	.060	.301	.387	-.358	.570	.189
	ANXIETY	.717*	.815**	.060	1.000	.195	-.030	-.064	.410	.037
	ZONE4	-.017	-.017	.301	.195	1.000	-.079	.015	.184	-.232
	PERFORM	-.196	-.246	.387	-.030	-.079	1.000	-.342	.675*	.531
	HEARTRTE	.125	.185	-.358	-.064	.015	-.342	1.000	-.648*	-.377
	TOTPOINT	-.008	.139	.570	.410	.184	.675*	-.648*	1.000	.576
	MINUTES	-.213	.068	.189	.037	-.232	.531	-.377	.576	1.000
Sig. (2-tailed)	SOM	.	.002	.053	.013	.961	.588	.714	.982	.555
	COG	.002	.	.160	.002	.960	.494	.585	.702	.851
	SELFCON	.053	.160	.	.861	.368	.269	.279	.086	.601
	ANXIETY	.013	.002	.861	.	.565	.935	.852	.239	.920
	ZONE4	.961	.960	.368	.565	.	.829	.965	.611	.519
	PERFORM	.588	.494	.269	.935	.829	.	.333	.032	.114
	HEARTRTE	.714	.585	.279	.852	.965	.333	.	.043	.283
	TOTPOINT	.982	.702	.086	.239	.611	.032	.043	.	.082
	MINUTES	.555	.851	.601	.920	.519	.114	.283	.082	.
N	SOM	11	11	11	11	11	10	11	10	10
	COG	11	11	11	11	11	10	11	10	10
	SELFCON	11	11	11	11	11	10	11	10	10
	ANXIETY	11	11	11	11	11	10	11	10	10
	ZONE4	11	11	11	11	11	10	11	10	10
	PERFORM	10	10	10	10	10	10	10	10	10
	HEARTRTE	11	11	11	11	11	10	11	10	10
	TOTPOINT	10	10	10	10	10	10	10	10	10
	MINUTES	10	10	10	10	10	10	10	10	10

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

a. GAME = 2

Correlations[b]

		SOM	COG	SELFCON	ANXIETY	ZONE4	PERFORM	HEARTRTE	TOTPOINT	MINUTES
Pearson Correlation	SOM	1.000	.485	-.492	.510	.[a]	-.324	-.608*	-.442	-.355
	COG	.485	1.000	-.081	.829**	.[a]	.374	-.350	.407	.167
	SELFCON	-.492	-.081	1.000	.333	.[a]	.863**	.444	.746*	.675*
	ANXIETY	.510	.829**	.333	1.000	.[a]	.615	-.252	.514	.359
	ZONE4	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]
	PERFORM	-.324	.374	.863**	.615	.[a]	1.000	-.648	.925**	.555
	HEARTRTE	-.608*	-.350	.444	-.252	.[a]	-.648	1.000	-.794*	-.664
	TOTPOINT	-.442	.407	.746*	.514	.[a]	.925**	-.794*	1.000	.648
	MINUTES	-.355	.167	.675*	.359	.[a]	.555	-.664	.648	1.000
Sig. (2-tailed)	SOM	.	.131	.124	.109	.	.396	.047	.234	.349
	COG	.131	.	.814	.002	.	.321	.292	.277	.668
	SELFCON	.124	.814	.	.317	.	.003	.171	.021	.046
	ANXIETY	.109	.002	.317	.	.	.078	.455	.157	.342
	ZONE4	.	.	.	.	.	.	.	.	.
	PERFORM	.396	.321	.003	.078	.	.	.059	.000	.121
	HEARTRTE	.047	.292	.171	.455	.	.059	.	.011	.051
	TOTPOINT	.234	.277	.021	.157	.	.000	.011	.	.059
	MINUTES	.349	.668	.046	.342	.	.121	.051	.059	.
N	SOM	11	11	11	11	11	9	11	9	9
	COG	11	11	11	11	11	9	11	9	9
	SELFCON	11	11	11	11	11	9	11	9	9
	ANXIETY	11	11	11	11	11	9	11	9	9
	ZONE4	11	11	11	11	11	9	11	9	9
	PERFORM	9	9	9	9	9	9	9	9	9
	HEARTRTE	11	11	11	11	11	9	11	9	9
	TOTPOINT	9	9	9	9	9	9	9	9	9
	MINUTES	9	9	9	9	9	9	9	9	9

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

b. GAME = 3

Correlations[a]

		SOM	COG	SELFCON	ANXIETY	ZONE4	PERFORM	HEARTRTE	TOTPOINT	MINUTES
Pearson Correlation	SOM	1.000	.695*	-.336	.803**	.115	-.278	.632	-.234	-.239
	COG	.695*	1.000	-.477	.746*	.294	.166	.444	.106	-.180
	SELFCON	-.336	-.477	1.000	.113	-.139	.078	-.183	.103	.598
	ANXIETY	.803**	.746*	.113	1.000	.170	.001	.528	.001	.115
	ZONE4	.115	.294	-.139	.170	1.000	.373	.533	.322	.065
	PERFORM	-.278	.166	.078	.001	.373	1.000	-.289	.977**	.387
	HEARTRTE	.632	.444	-.183	.528	.533	-.289	1.000	-.338	-.354
	TOTPOINT	-.234	.106	.103	.001	.322	.977**	-.338	1.000	.486
	MINUTES	-.239	-.180	.598	.115	.065	.387	-.354	.486	1.000
Sig. (2-tailed)	SOM	.	.026	.343	.005	.752	.437	.050	.515	.506
	COG	.026	.	.164	.013	.409	.647	.199	.770	.619
	SELFCON	.343	.164	.	.755	.701	.831	.612	.778	.068
	ANXIETY	.005	.013	.755	.	.639	.998	.117	.997	.752
	ZONE4	.752	.409	.701	.639	.	.289	.112	.364	.859
	PERFORM	.437	.647	.831	.998	.289	.	.419	.000	.240
	HEARTRTE	.050	.199	.612	.117	.112	.419	.	.340	.315
	TOTPOINT	.515	.770	.778	.997	.364	.000	.340	.	.130
	MINUTES	.506	.619	.068	.752	.859	.240	.315	.130	.
N	SOM	10	10	10	10	10	10	10	10	10
	COG	10	10	10	10	10	10	10	10	10
	SELFCON	10	10	10	10	10	10	10	10	10
	ANXIETY	10	10	10	10	10	10	10	10	10
	ZONE4	10	10	10	10	10	10	10	10	10
	PERFORM	10	10	10	10	10	11	10	11	11
	HEARTRTE	10	10	10	10	10	10	10	10	10
	TOTPOINT	10	10	10	10	10	11	10	11	11
	MINUTES	10	10	10	10	10	11	10	11	11

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

a. GAME = 4

Correlations[a]

		SOM	COG	SELFCON	ANXIETY	ZONE4	PERFORM	HEARTRTE	TOTPOINT	MINUTES
Pearson Correlation	SOM	1.000	.669*	-.862**	.731*	.010	-.440	.124	-.278	-.590
	COG	.669*	1.000	-.635*	.878**	.134	-.204	-.083	-.199	-.470
	SELFCON	-.862**	-.635*	1.000	-.451	-.260	.235	-.462	.155	.528
	ANXIETY	.731*	.878**	-.451	1.000	-.112	-.383	-.353	-.292	-.494
	ZONE4	.010	.134	-.260	-.112	1.000	.214	.421	.179	.454
	PERFORM	-.440	-.204	.235	-.383	.214	1.000	.134	.931**	.547
	HEARTRTE	.124	-.083	-.462	-.353	.421	.134	1.000	-.064	-.130
	TOTPOINT	-.278	-.199	.155	-.292	.179	.931**	-.064	1.000	.634
	MINUTES	-.590	-.470	.528	-.494	.454	.547	-.130	.634	1.000
Sig. (2-tailed)	SOM	.	.024	.001	.011	.976	.235	.717	.469	.094
	COG	.024	.	.036	.000	.694	.599	.808	.608	.202
	SELFCON	.001	.036	.	.164	.439	.542	.152	.690	.144
	ANXIETY	.011	.000	.164	.	.744	.309	.287	.445	.177
	ZONE4	.976	.694	.439	.744	.	.580	.197	.646	.220
	PERFORM	.235	.599	.542	.309	.580	.	.731	.000	.128
	HEARTRTE	.717	.808	.152	.287	.197	.731	.	.870	.740
	TOTPOINT	.469	.608	.690	.445	.646	.000	.870	.	.067
	MINUTES	.094	.202	.144	.177	.220	.128	.740	.067	.
N	SOM	11	11	11	11	11	9	11	9	9
	COG	11	11	11	11	11	9	11	9	9
	SELFCON	11	11	11	11	11	9	11	9	9
	ANXIETY	11	11	11	11	11	9	11	9	9
	ZONE4	11	11	11	11	11	9	11	9	9
	PERFORM	9	9	9	9	9	9	9	9	9
	HEARTRTE	11	11	11	11	11	9	11	9	9
	TOTPOINT	9	9	9	9	9	9	9	9	9
	MINUTES	9	9	9	9	9	9	9	9	9

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

a. GAME = 5

VITA

Regina LaShon Clark was born on January 17, 1970, in Saginaw, Michigan. She attended public schools in the Buena Vista Township area and graduated from Buena Vista High School in June 1988. In the fall of 1988 she entered the University of Tennessee, Knoxville, on a basketball scholarship. While pursuing a Psychology degree, Regina was apart of the 1989 and 1991 Lady Volunteer National Championship teams.

She graduated from the University of Tennessee, Knoxville, with a Bachelor of Arts degree in Psychology on May 15, 1992. On June 22, 1992, she began working as a Special Agent with the Tennessee Valley Authority-Office of the Inspector General. While employed with TVA-OIG, Regina decided to pursue a Master of Arts degree in Experimental Psychology. In August 1994, she enrolled at the University of Tennessee, Knoxville, as a part-time graduate student. Although she worked full-time and traveled extensively, Regina's persistence never faded.

On May 1, 1993, Regina married Jeffery Allan Faulkerson, a native of Kingsport, Tennessee.