A Comparison of Six Personality Factors Between Professional, College, and High School Basketball Players

William G. Bowe Jr.

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A COMPARISON OF SIX PERSONALITY FACTORS BETWEEN PROFESSIONAL, COLLEGE, AND HIGH SCHOOL BASKETBALL PLAYERS

A Thesis

Presented to the Department of Physical Education and Sport

State University of New York
College at Brockport
Brockport, New York

In Partial Fulfillment of the Requirements for the Degree

Master of Science in Education (Physical Education)

by

William G. Bowe, Jr.

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Chairperson, Department of Physical Education and Sport
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I especially want to thank Dr. Daniel Smith for all his guidance and support as my thesis advisor. His expertise in the area of Sport Psychology and his never-ending assistance was instrumental in my completing my thesis.
This investigation was concerned with comparing six personality factors among professional, college, and high school basketball players. The different factors measured include competitive trait anxiety, trait self-confidence, concentration, mental preparation skills, achievement motivation levels, and leadership skills. A self-evaluation questionnaire was administered to five basketball teams (two high school, two college, and one professional). Each subject's questionnaire was scored and a Mental Toughness Profile for each athlete was developed. The purpose of this investigation was to determine if there is a difference in personality factors among basketball players at the professional, collegiate, and high school levels.
An Analysis Of Variance (ANOVA) was used to determine differences in each of the six personality factors between each of three groups. Also used was a Multiple Comparison Test for the ANOVA. The statistical significance of the results was determined using the .05 level.

The results of this investigation indicated that there are personality differences between professional, college, and high school basketball players. A significant difference was demonstrated between all three groups in all the factors except leadership skills.

The Multiple Comparison Test revealed that high school and professional basketball players differed significantly in all of the categories except leadership skills. The high school and college players differed significantly only in concentration skills and average scores for the combination of all six subscales. College and professional players differed significantly only in trait self-confidence.

One conclusion in this investigation was that the Mental Toughness Profile used was a strong predictor of skill level when comparing professional and high school basketball players.
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CHAPTER 1

Introduction

One popular issue in sport psychology deals with relationships between personality factors and sport participation. Certain personality factors are important to achieving success. It is also believed that personality factors can be developed or at least somewhat modified through sport participation (Carron, 1980).

Among the better known theories of motivation and personality is Abraham Maslow’s hierarchy of needs. Maslow (1962) asserts that people attempt to satisfy their needs according to a system of priorities. These priorities can be broken down into two general categories - one being deficiency needs and the other being growth needs. Deficiency needs are safety and security along with physiological needs such as hunger, thirst, and sex.

While Maslow’s theory makes sense, there is little support for the hierarchy he proposes. Evidence (Martens, 1982) indicates three prominent needs which athletes seek to fulfill through participating in sports. Playing for fun meets the need for stimulation and excitement. Being with other people meets the need for affiliation with others and for belonging to a group. Lastly, a necessary feeling of worthiness is achieved when competence is demonstrated.

It has been some time since Maslow formulated his
hierarchy of needs, and the relatively new field of sport psychology breaks down personality into factors which can be related to sport motivation. Personality factors which I will discuss in this thesis include anxiety, confidence, concentration, mental preparation, achievement motivation, and leadership. These factors were investigated to determine if there are personality differences in professional, college, and high school basketball players.

Purpose

The purpose of this investigation was to determine if there is a difference in personality factors between basketball players at the professional, collegiate, and high school levels. The personality factors measured included competitive trait anxiety, trait self-confidence, concentration, mental preparation skills, achievement motivation, and leadership skills.

Rationale

In this investigation it is hypothesized that personality factors differ from one skill level to another. Therefore, coaches can motivate from weaknesses found in the athlete's mental toughness profile, and better deal with such deficiencies on an individual basis. Each athlete responds in different ways in various situations, whether in practice or games. By determining strengths and weaknesses in personality factors, coaches can better motivate their athletes
to achieve athletic excellence.

In addition, it will be determined if athletes competing at higher levels possess superior personality traits in the six areas investigated. If so, those advanced level personality traits may be a prerequisite for competing at these levels.

Hypothesis

High school, college, and professional athletes differ in six key personality traits which may underlie their motivational levels.

Delimitations

1. The investigation was delimited to one professional, two collegiate, and two high school teams.
2. The inventory used to measure personality factors was limited to six different traits.
3. The subject pool for this investigation was limited to males.

Limitations

1. The teams measured at each of the three skill levels may not be representative of all teams in these levels.
2. Four of the six inventory sub-scales do not have established reliability or validity scores.
3. Social desirability factors could influence the scores on each of the subscales.

Definitions

**Anxiety**: Consciously perceived feelings of tension accompanied by arousal of the autonomic nervous system.

**Competition**: The striving to outdo another, as for supremacy.

**Concentration**: The ability to focus one’s efforts on a specific task.

**Confidence**: Feelings from personal success or accomplishments.

**Extrinsic Motivation**: Desire to succeed which comes from others through positive and negative reinforcements, or from desire for material things, such as money, trophies, etc.

**Intrinsic Motivation**: The inner drive to be competent and self-determining, to be successful.

**Leadership**: The influencing of individuals and groups toward a common goal (Barrow, 1976).

**Motivation**: The intensity and direction of behavior, the inner urge to act with a sense of purpose.

**Personality**: The underlying, relatively stable psychological structure and processes that organize human experience and shape a person’s activities and reactions to the environment (Horn, 1992).

**Self-Esteem**: The element of self-concept where individuals formulate a judgement of their own worth (Fox, 1990).
CHAPTER 2

Review of Literature

It is necessary to define people's needs and wants to fully understand how and why they are motivated. Motivation is a complex phenomenon. Biological complexities of the human organism, social determinants of behavior, and environmental influences of culture, parents, and climate are all involved (Frost, 1971).

Numerous aspects of personality development and motivation support these concepts. In an attempt to explain the phenomena of motivation, we use such words as instincts, tendencies, incentives, urges, drives, desires, and needs. Variables can disrupt one's behavior and influence it. Many concepts influence behavior. If the state of equilibrium (homeostasis) is influenced, then behavior is influenced. Some arousal is necessary for this to occur. To understand motivation, it is necessary to analyze ways in which behavior is initiated.

The need for security and survival is a motive in situations where it is not already satisfied. There is not a basic need for comfort, but for challenge. Social incentives influence man's behavior more than one realizes. To be liked, to be part of a group, to be invited to social functions, to be popular - these factors influence one's decisions and actions.
Different urges, drives, and needs influence an individual in given situations. Sometimes these support each other, and other times they conflict. Conflicting motives can cause inconsistent and unpredictable behavior.

Loyalties to various individuals and groups with whom one works can cause problems in decision making. To be motivated by a superior can, at times, create conflict with others. Motives pertaining to the self are the strongest influences on behavior. We all develop a concept of self that includes both how we perceive ourselves and how others perceive us.

The need for challenge and a feeling of achievement is a powerful determinant of behavior and motivation. Coaches and athletes, have testified that the reaction to challenge and the impelling need for achievement were two basic motivating forces which caused athletes and teams to perform unusually well (Frost, 1971). Peak performances resulted when athletes with strong competitive urges were challenged to exceed average norms. Pride, self-actualization, self-fulfillment, and self-realization are long-term motivational forces. The need to feel accomplished and significant is basic.

People are motivated for different reasons. Interscholastic sports have an advantage over most academic subjects in the area of motivation. The fact that students participate voluntarily is an indication that they have already been motivated to some extent (Moore, 1960).
There are various reasons why athletes join teams. Reasons for participation at the high school level include enjoyment, feeling a part of a team, desire to learn an activity, curiosity, and peer and parental pressure. At the college level, there is a great desire and love of the sport. In a non-scholarship situation, the athlete devotes countless hours on an activity that can only give back what is put in by effort, dedication, and discipline. For professional athletes, in many cases, their activity is now a business and they are in it for the money. The sport is now often considered a job instead of an activity they once loved and admired.

It is essential for a coach to provide athletes with some form of stimulation to encourage involvement and growth. To discover what motivates each individual is a very difficult task since each athlete is different. The coach decides which motivational techniques will be necessary to help each athlete improve and excel.

To understand motivation, we must review its major types. Intrinsic motivation is thought to have the most sustaining effect on learning, in turn on performance. A person who undertakes an activity for the best reason, a true love of the activity, demonstrates intrinsic motivation (Singer, 1975). This type of motivation requires no material rewards, but may meet the needs of some people. These needs, described by Maslow (1943), fall under the following headings with number one being of the highest
priority and must be satisfied first.

1). Physiological
2). Safety
3). Love
4). Esteem needs
5). Self-Actualization

Physiological or biological needs and urges were, at first, thought to be the only motives traced to activity. These primary drives are those initiated by receptors that receive information and transmit it to the central nervous system (Llewellyn & Blucker, 1982).

Psychological needs are probably the most complex. Usually, an unconscious process, attempts to probe motives unknown to the individual and is difficult to explain (Cratty, 1983). Two major psychological needs are described by Cratty (1983). The first need is to acquire inanimate objects, to arrange things, and to keep things tidy. Athletes want to be offered a set of rules and a structured situation. They want to be able to collect memorabilia and arrange scrapbooks.

The second psychological need is the yearning to explore, to ask questions, to satisfy curiosity, and to engage in the cognitive process. Today's athletes want to know and understand why they train, what the game plan is, and how they are going to handle challenges. Most research
focuses on the social needs of people. These needs involve relationships with other people.

According to Cratty (1983), athletics tend to provide for the following social needs: first is the need for prestige, enhancement of the self, achievement, recognition, and exhibition; second, is the need to exercise power over others, to dominate or to be submissive; third is the need to affiliate, to form affectionate relationships, to be friendly, and to cooperate with others; last is the need to defend status, avoid humiliation, and to overcome defeat.

Extrinsically motivated athletes have been rewarded in different ways. Professional athletes receive financial bonuses for reaching goals. A few collegiate athletes can become professionals and receive money as an extrinsic reward. High school athletes can work hard and gain academic or athletic scholarships. Coaches use other extrinsic motives to excite athletes, such as trophies, patches, and ribbons. An incentive is an external force promoting activity and achievement (Llewellyn & Blucker, 1982).

Needs and incentives may co-exist or mingle to a different degree in each individual. They not only influence athletic participation, but also influence attitudes that govern all phases of action. The intensity with which an athlete participates may depend on the form of incentives (Gallon, 1980).
Teenage athletes may be influenced most by the following factors:

1. Public Recognition: The use of record boards, newspaper articles, and television coverage increases the amount of exposure for athletes which in turn can increase their motivation.

2. Parental Recognition: Parental approval is a strong motivating factor for some athletes.

3. Peer Recognition: Peer recognition helps to satisfy the sense of belonging and affiliation.

Praise, pep talks, and inspiring speeches are verbal motivation behaviors. Sometimes a simple statement will motivate a team or individual. Timing is key, for too much praise can be harmful (Tutko & Richards, 1971).

Behavior motivation uses gimmicks, slogans, and non-traditional ideas. Anytime a coach uses a fresh idea to promote activity, it allows the athlete to respond to a new situation in a different way. The Hawthorne Effect suggests that giving people a sense of uniqueness will produce a more productive response.

The use of routine can be another behavioral motivator. Emphasis on routine is important when discussing performance techniques. Sound teaching techniques should remain constant in order to keep consistency in performance (Tutko & Richards, 1971). Literature dealing with the Mental Toughness Profile will now be reviewed.
The inventory has six sub-scales for measuring "mental toughness."

1. Trait Anxiety

Spielberger (1966), a psychologist noted for his extensive work in the area of anxiety and behavior, was the first researcher to clearly differentiate between two types of anxiety - state and trait anxiety. He defined state anxiety (A-state) as a transitory emotional state or condition that is characterized by subjective, consciously perceived feelings of tension and apprehension, accompanied by or associated with activation of arousal of the autonomic nervous system. He further defines trait anxiety (A-trait) as the predisposition to perceive certain situations as threatening and responding to them with varying levels of state anxiety. In other words, trait anxiety (A-trait) is comparable to any relatively stable personality trait whereas state anxiety (A-state) is a temporary condition caused by one's immediate perception of the environment (Llewellyn & Blucker, 1982).

Within this investigation, trait anxiety was measured because of its stability and the fact that it can be measured at any time, not just prior to competition.

Anxiety can also be described as cognitive or somatic. Cognitive anxiety is the mental component and is caused by negative worry. Somatic anxiety has physiological and affective elements that develop directly from physical arousal.
Other terms closely related to anxiety are stress, threat, and arousal. Stress involves the perception of a substantial imbalance between environment demand and response capabilities. Threat is the perception of physical or psychological danger, and arousal is the state of the organism ranging from deep sleep to intense excitement.

There are obviously a large number of factors which produce feelings of nervousness, stress, or state anxiety in competition. Passer (1984), in his summary of research on sport, provided a list that included, (1) whether the activity is an individual or team sport (individual sports are more stressful), (2) the degree of importance of the games or competition, (3) the outcome (winning decreases stress, losing or tying increases it), (4) the level of self-esteem possessed (stress is greatest with low self-esteem), (5) the expectations held for success (lower expectations possesses greater stress), (6) the level of sport anxiety.

The SCAT (Sport Competition Anxiety Test) is used to measure this sub-scale. Evidence for concurrent validity of SCAT was obtained by demonstrating significant relationships between competitive A-trait as measured by SCAT, and other personality constructs (Martens, Vealey, Burton, 1990). These constructs included four general A-trait inventories and five selected personality inventories which should demonstrate predictable relationships with A-trait.

The three general A-trait inventories used were the Children’s Manifest Anxiety Scale Short Form (CMAS) (Levy, 1958), the General Anxiety Scale for Children (GASC) (Sarason et. al.,1960), and the Trait Anxiety Inventory for
The correlation coefficients of .28 to .46 between the general A-trait scales and a sport-specific A-trait scale support the concurrent validity of SCAT.

SCAT's reliability was assessed by test-retest using analysis of variance (ANOVA) techniques. The test-retest reliability of SCAT was assessed for four samples of boys and girls, grades 5 to 6 and 8 to 9, from Champaign-Urbana Illinois, public schools. Each sample completed SCAT and then was retested at one of four subsequent time intervals (one hour, one day, one week, and one month). Test-retest reliability ranged from .57 to .93 with the mean of .77 for all samples combined. These are acceptable levels of test-retest reliability significant at the p< .01 level of confidence.

2. Trait Self-Confidence

Self-confidence should be viewed as a major component of motivation. One will select a task that he/she is more confident in and do it with much greater intensity. All athletes will persist in their efforts to learn a new and difficult skill or cope with a new situation if they have the confidence that they will eventually master it (Carron, 1984). There is an increase in self-confidence because of its importance in any individual's attempt to cope with situations which are anxiety-producing.

Feelings of self-confidence arise from performance accomplishments, and/or arousal (Bandura, 1977).
Performance accomplishments are especially powerful because they are based upon personal experiences which have been successful. Actually doing a skill, best instills confidence. Basketball players will be less tentative, less hesitant, less cautious, and will play with greater intensity if they are confident about their abilities.

Self-confidence may have a positive effect on motivation and performance. Confidence on its own, without capability, cannot produce success. But, self-confidence and the expectation of a successful outcome do lead to greater persistence and effort in the face of adversity (Bandura, 1977).

Martens (1987) states that competitive stress is the negative emotional reaction a child feels when his/her self-esteem is threatened. This personal threat occurs when the young athlete perceives an imbalance between the performance demands of competition and his/her own ability to successfully meet those demands, under conditions where the consequences of failure are thought to be important.

Similar to the forms of anxiety mentioned in the previous section, self-confidence can also be divided into two types: state and trait self-confidence. Vealey (1986) narrowed these terms even more by adopting the constructs of trait sport-confidence (SC-trait) and state sport-confidence. Trait sport-confidence (SC-trait) is "the belief or degree of certainty individuals usually possess about their ability to be successful in sport" (Vealey, 1986, p.223). In contrast state sport-confidence is "the
belief or degree of certainty individuals possess at one particular moment about their ability to be successful in sport" (Vealey, 1986, p.223).

Vealey (1986) found a significant relationship between competitive A-trait and trait sport-confidence (SC-trait), in the development of the Trait Sport-Confidence Inventory (TSCI), $r = -.28$, $p < .001$. As predicted, competitive A-trait was negatively related to the disposition of SC-trait (Vealey, 1986).

The trait self-confidence and trait anxiety inventories used in this investigation have established reliability and validity. The next four subscales were designed by Smith (1994). These are currently being validated. Preliminary indications show that these four subscales have excellent variability and differentiation ability.

3. Concentration

Focus of attention is not a motivator in the strict sense of the term. Nonetheless, it is highly associated with motivation because increased arousal, which is a natural consequence of all competition, directly influences attention and the ability to concentrate (Carron, 1984). The ability to concentrate and to focus attention on a task are associated with performance success. The pass receiver who drops an easy pass, the basketball player who commits a careless foul because he/she is preoccupied with a previously missed free throw, and the golfer who misses a short putt because he/she is distracted by noise are a few examples of the negative effects of lack of concentration.
A number of studies have examined the impact of attentional focus upon performance (Nideffer, 1976; Morgan, 1978). Concentration and ability to focus attention are necessary for performance effectiveness. There are individual differences in attention styles, as well as differences in the attentional style most appropriate for various sport tasks.

4. Mental Preparation

The basic skills of Psychological Skills Training (PST) are imagery, psychic energy management, stress management, attention, and goal-setting. All of these skills are interrelated and the development of any one helps the development of another (Martens, 1987).

The subject of imagery is receiving a great deal of attention in applied sport psychology. Imagery is an experience similar to a sensory experience (seeing, feeling, hearing), but arising in the absence of the usual external stimuli (Martens, 1982).

The ability to image the execution of complex sport skills has aided the performance of numerous successful athletes. High jumper Dwight Stones, golfer Jack Nicklaus, tennis star Chris Evert Lloyd, and skier Jean Claude-Killy all acknowledge using imagery in their training (Smith, 1991; Martens & Burton, 1984; Suinn, 1983).

A single, comprehensive explanation of how imagery affects physical and psychological skills is not available. Imagery may function as a means of rehearsal, or it may act to motivate the performer. Some researchers found imagery
helpful in anxiety and stress reduction in sport (Lang, 1977; Suinn, 1972).

Imagery may also be a valuable tool for developing self-confidence (Smith, 1991). Maltz (1960) refers to our brain and nervous systems as a highly complex servomechanism which acts as a goal-setting machine, steering toward the direction of a goal. Imagery may make the path to the goal more efficient, which in turn enhances performance and self-confidence. Regardless, of how one presents the case; imagery appears to aid the performer in the development and refining of physical as well as psychological skills.

Managing psychic energy is the process of gaining control of one’s thoughts. Psychic energy is the vigor, vitality, and intensity with which the mind functions and is the bedrock of motivation (Martens, 1987).

Psychic energy also is either positive or negative, and thus is associated with various emotions such as excitement and happiness on the positive end and anxiety and anger on the negative end.

Next, stress management occurs when there is an imbalance between what individuals perceive is being demanded of them and what they perceive their capabilities are, when they also perceive the outcome to be important. Attentional skills include the mental process whereby athletes direct and maintain awareness of stimuli detected by the senses. The final aspect of the Psychological Skills Training investigated was the athlete’s goal-setting abilities. Goal-setting can help athletes to perform better, can reduce anxiety, can build self-confidence, and can increase satisfaction.
One explanation for this is the belief that goals enhance motivation. Several researchers have concluded that goal-setting is a powerful mechanism for motivation. Setting goals provides the structure for motivation since it lends direction to the athlete's effort over a period of time (Martens, 1987; Archer, 1987; Carron, 1978). Goal setting gives an athlete a sense of control and positive direction, as well as an incentive for action.

5. Achievement Motivation

Atkinson (1966) and McClelland (1961) feel that the competitiveness needed to achieve, which is a characteristic of behavior in business, school, athletics, and a wide variety of other situations, is the result of two personality dispositions which operate simultaneously within the individual. One of these, motive for success (or need for achievement as it is also called), is a disposition to get involved in achievement situations. The other, the motive to avoid failure (or fear of failure), is a disposition to avoid entering into achievement situations. In other words, in any achievement situation, the opportunity for success and its accompanying rewards and satisfactions contributes positively to an overall desire to get involved. At the same time, concerns about possible failure and its accompanying embarrassment and dissatisfaction produce reluctance on the part of the individual to do so (Carron, 1984).

Essentially, it is proposed that the personality dispositions and the situational factors jointly influence
achievement motivation (Carron, 1984). This is an important concept to measure because an athlete whose motivation is to succeed will see winning as a consequence of their ability and blame failure on insufficient effort, while, athletes whose motives are to avoid failure attribute losing to a lack of ability and their rare wins to luck or an easy opponent (Martens, 1987).

6. Leadership

Leadership has been generally thought of as "the behavioral process influencing individuals and groups toward set goals" (Barrow, 1977, p.433). The type of leadership behavior exhibited by athletes or coaches will have significant impact on the people around them, both their performance and their psychological well-being. Martens (1987), defines leadership as knowing how to chart a course, thereby giving others direction through a vision of what "can be". A team without a leader is like a ship without a rudder. Secondly, leadership includes developing the social and psychological environment to achieve goals that the leader has charted (Martens, 1987).

One cannot become a leader until the team members acknowledge or legitimize his/her authority. This authority is power, which becomes usable only when team members acknowledge that authority. The following are four components of an effective leader: leader qualities, style of leadership, nature of the situation, and followers characteristics (Martens, 1987).
Methods and Procedures

The purpose of this investigation was to determine if there are personality factor differences at the high school, college, and professional levels in the sport of basketball. The different factors measured include trait anxiety, trait self-confidence, concentration or focus, mental preparation skills, achievement motivation level, and leadership skills.

Instruments For Data Collection

This self-evaluation questionnaire was created by Smith (1994). The inventory is broken down into three sections. Section one includes ten questions. Each question is rank ordered from hardly ever (1-3) to sometimes (4-7) to always (8-10) according to the amount the subject agrees with each question. This inventory measures the amount of trait anxiety experienced by athletes and is entitled the Sport Competition Anxiety Test (SCAT) (Martens, Burton, & Vealey, 1990).

Section two includes twelve questions to gage trait self-confidence (Vealey, 1986). Answers are broken down into low (1-3), medium (4-7), and high (8-10). This section of self-report questions are based on how confident players generally feel when competing in basketball compared to the most confident player they know.
Section three includes twenty-three questions to rate individuals on various aspects of basketball competition. The four subscales that are included here are concentration, mental preparation skills, achievement motivation, and leadership skills. These answers are broken down into strongly disagreeing (1-5) to strongly agreeing (6-10), on the Likert Scale, according to their level of agreement with each statement.

Administration Of The Instrument

The questionnaire was administered to each of the five teams. The inventory took approximately fifteen minutes to complete, although as much time as needed was given. General directions were discussed for each of the three sections. For example, that it was important for each person to answer each question according to how he actually felt and not simply what he felt sounded good. Also mentioned was that there were no right or wrong answers.

Subjects

The interscholastic subjects totaled twenty-seven. All were varsity players from Canandaigua Academy or West Irondequoit High School. The inventory was administered in December of 1992. Both teams had competed in seven contests by this time.

The intercollegiate subjects totaled twenty-nine. All
were varsity players from the State University of New York at Brockport or Rochester Institute of Technology. The inventory was administered during January of 1993. SUNY Brockport had competed in seven contests while RIT had competed in six.

The professional team administered this inventory was a National Basketball Association (NBA) team. The inventory was given in October 1992 to nineteen players during the pre-season training camp. This sample included all returning players plus free agents.

Analysis Of The Data

The inventories for each subject were scored and a Mental Toughness Profile for each athlete was developed (Smith, 1994). This profile included each individual's score for each of six personality factors on a one hundred point scale. One can then examine the mean score and an explanation of the relationship of each score above or below the mean. To conclude, a total mental toughness score was calculated from the average of all six personality factors for each player. Each player was given the option of placing his name on the questionnaire and seeing a copy of his profile sheet. The coach was also given the opportunity to view the overall team means.

An analysis of variance was used to determine significant differences in each of the six personality factors between each of the three groups. Thus, it was a 3 x 6 design (differences in the six factors were compared for each of the three groups).
CHAPTER 4

RESULTS

This study was concerned with comparing six personality factors among professional, college, and high school basketball players. The different factors measured include competitive trait anxiety, trait self-confidence, concentration or focus, mental preparation skills, achievement motivation level, and leadership skills. A self-evaluation questionnaire was administered to five basketball teams (two high school, two college and one professional). Each subject’s questionnaire was scored and a Mental Toughness Profile for each athlete was developed. The purpose of this investigation was to determine if there is a difference in personality factors among basketball players at the professional, collegiate, and high school levels.

In this chapter, the results of the study will be presented and discussed briefly. An Analysis Of Variance (ANOVA) was used to determine differences in each of the six personality factors between each of the three groups. Also used was a Multiple Comparison Test for the ANOVA. This analytic tool allows the researcher to compare one experimental group to another. The statistical significance of all the following results was determined using the .05 level.
KEY

GROUP 1 = High School Subjects
GROUP 2 = College Subjects
GROUP 3 = Professional Subjects

TOUGH 1 = Competitive Trait Anxiety
TOUGH 2 = Trait Self-Confidence
TOUGH 3 = Concentration
TOUGH 4 = Mental Preparation Skills
TOUGH 5 = Achievement Motivation Level
TOUGH 6 = Leadership Skills
TOUGH 7 = Average Scores From Each Category
1. Analysis Of Variance

Analysis of variance (ANOVA) was used to determine differences in each of the six personality factors among each of the three groups. Thus, it was a 3x6 design (differences in the six factors were compared for each of the three groups).

When comparing competitive trait anxiety there was a significant difference (.035) among professional, college, and high school basketball players (Table 1).

TABLE 1
ANALYSIS OF VARIANCE

TOUGH 1 = COMPETITIVE TRAIT ANXIETY

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MEAN</th>
<th>STD. DEV.</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>48.82</td>
<td>16.49</td>
<td>22</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>57.42</td>
<td>15.71</td>
<td>31</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>61.48</td>
<td>15.83</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>1796.66</td>
<td>2</td>
<td>898.33</td>
<td>3.52</td>
<td>.035</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
A significant difference (.002) was also found in trait self-confidence between the three groups of basketball players (Table 2).

### Table 2

**Analysis of Variance**

TOUGH 2 = TRAIT SELF-CONFIDENCE

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>66.73</td>
<td>11.45</td>
<td>22</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>73.52</td>
<td>13.14</td>
<td>31</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>79.06</td>
<td>14.94</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>2309.36</td>
<td>2</td>
<td>1154.68</td>
<td>7.11</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
There was a significant difference (.001) in the main effects between the professional, college, and high school basketball players for concentration skills (Table 3).

### TABLE 3

**ANALYSIS OF VARIANCE**

TOUGH 3 = CONCENTRATION

<table>
<thead>
<tr>
<th>GROUP  1</th>
<th>MEAN</th>
<th>STD. DEV.</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>61.05</td>
<td>17.43</td>
<td>22</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>73.29</td>
<td>14.27</td>
<td>31</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>79.06</td>
<td>14.94</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>3510.59</td>
<td>1755.29</td>
<td>7.33</td>
<td>.001</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
There was a significant difference (.047) between the three groups of players for their mental preparation skills (Table 4).

TABLE 4

ANALYSIS OF VARIANCE

TOUGH 4 = MENTAL PREPARATION SKILLS

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MEAN</th>
<th>STD. DEV.</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>66.91</td>
<td>13.73</td>
<td>22</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>73.29</td>
<td>13.54</td>
<td>31</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>77.94</td>
<td>14.88</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>1240.60</td>
<td>620.30</td>
<td>3.19</td>
<td>.047</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
There was a significant difference (.043) in achievement motivation levels among the professional, college, and high school basketball players in this investigation (Table 5).

**TABLE 5**

**TOUGH 5 = ACHIEVEMENT MOTIVATION LEVELS**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MEAN</th>
<th>STD. DEV.</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>55.59</td>
<td>12.31</td>
<td>22</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>61.71</td>
<td>14.77</td>
<td>31</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>67.00</td>
<td>14.89</td>
<td>18</td>
</tr>
</tbody>
</table>

**SUM OF SQUARES**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>2</td>
<td>652.80</td>
<td>3.29</td>
<td>.043</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
In the area of leadership skills, there was no significant difference (.099) among the three groups of basketball players (Table 6).

**TABLE 6**

**ANALYSIS OF VARIANCE**

**TOUGH 6 = LEADERSHIP SKILLS**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MEAN</th>
<th>STD.DEV.</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP 1</td>
<td>57.09</td>
<td>16.86</td>
<td>22</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>63.97</td>
<td>13.58</td>
<td>31</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>67.67</td>
<td>17.68</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN EFFECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUP</td>
<td>1185.61</td>
<td>2</td>
<td>592.80</td>
<td>2.40</td>
</tr>
</tbody>
</table>
Examining the average scores of all of the personality factors, there was a significant difference (.000) between the professional, high school, and college basketball players (Table 7).

**TABLE 7**

**ANALYSIS OF VARIANCE**

**TOUGH 7 = AVERAGE SCORES OF ALL OF THE PERSONALITY FACTORS**

<table>
<thead>
<tr>
<th>GROUP 1</th>
<th>MEAN</th>
<th>STD. DEV.</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>59.50</td>
<td>8.70</td>
<td>22</td>
</tr>
<tr>
<td>GROUP 2</td>
<td>67.26</td>
<td>8.79</td>
<td>31</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>72.72</td>
<td>11.35</td>
<td>18</td>
</tr>
</tbody>
</table>

**SUM OF SQUARES** **DF** **MEAN SQUARE** **F** **SIG OF F**

**MAIN EFFECTS**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>1787.88</td>
<td>2</td>
<td>893.94</td>
<td>9.97</td>
<td>.000</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
There was a significant difference among professional, college, and high school basketball players in competitive trait anxiety (.035) (Table 1), mental preparation skills (.047) (Table 4), and achievement motivation levels (.043) (Table 5). The comparison between the three groups of basketball players was also significant in trait self-confidence (.002) (Table 2), concentration skills (.001) (Table 3), and average scores of all of the personality factors (.000) (Table 7). The main effect for the groups was not statistically significant in the component of leadership skills (.099) (Table 6).

2. Multiple Comparision Test For The ANOVA

This type of analysis allows the investigator to compare one experimental group to another. For example, it answers the question, does group one significantly differ from group two, and does group one significantly differ from group three. It is a direct comparison between two groups.
There was a significant difference (.016) between high school and professional basketball players in the area of competitive trait anxiety. Comparisons between high school and college players was approaching significance (.060). Possibly, with a larger sampling, the results would have been significant. However, there was no significant difference between the college and professional basketball players (Table 8).

**TABLE 8**

MULTIPLE COMPARISONS FOR ANOVA

TOUGH 1 = COMPETITIVE TRAIT ANXIETY

<table>
<thead>
<tr>
<th>COMPARISON BETWEEN</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>951.97</td>
<td>1</td>
<td>951.97</td>
<td>3.70</td>
<td>.060</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>216.32</td>
<td>1</td>
<td>216.32</td>
<td>0.87</td>
<td>.355</td>
</tr>
<tr>
<td>1 &amp; 3</td>
<td>1662.72</td>
<td>1</td>
<td>1662.72</td>
<td>6.34</td>
<td>.016</td>
</tr>
</tbody>
</table>

*underlined comparisons are significant
There was a significant difference (.036) in trait self-confidence between college and professional basketball players. Also, a significant difference (.000) was found between professional and high school players. The high school and college players approached a significant difference (.056) in trait self-confidence (Table 9).

**TABLE 9**

MULTIPLE COMPARISONS FOR ANOVA

TOUGH 2 = TRAIT SELF-CONFIDENCE

<table>
<thead>
<tr>
<th>COMPARISON</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>593.06</td>
<td>1</td>
<td>593.06</td>
<td>3.81</td>
<td>.056</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>819.65</td>
<td>1</td>
<td>819.65</td>
<td>4.64</td>
<td>.036</td>
</tr>
<tr>
<td>1 &amp; 3</td>
<td>2309.24</td>
<td>1</td>
<td>2309.24</td>
<td>14.95</td>
<td>.000</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
There was a significant difference (.007) in concentration levels between the high school and college basketball players. The results also showed a significant difference (.001) between the high school and professional basketball players. There was no significant difference found between the college and professional basketball players (Table 10).

**TABLE 10**

MULTIPLE COMPARISONS FOR ANOVA

TOUGH 3 = CONCENTRATION

<table>
<thead>
<tr>
<th>COMPARISON</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>1929.38</td>
<td>1</td>
<td>1929.38</td>
<td>7.88</td>
<td>.007</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>378.51</td>
<td>1</td>
<td>378.51</td>
<td>1.80</td>
<td>.187</td>
</tr>
<tr>
<td>1 &amp; 3</td>
<td>3211.20</td>
<td>1</td>
<td>3211.20</td>
<td>11.99</td>
<td>.001</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
The results of this investigation demonstrate a significant difference (.020) in mental preparation skills between high school and professional basketball players. No significant difference was found between the professional and college players, as well as between the college and high school players (Table 11).

**TABLE 11**

MULTIPLE COMPARISONS FOR ANOVA

TOUGH 4 = MENTAL PREPARATION SKILLS

<table>
<thead>
<tr>
<th>COMPARISON</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>523.98</td>
<td>1</td>
<td>523.98</td>
<td>2.83</td>
<td>.099</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>246.67</td>
<td>1</td>
<td>246.67</td>
<td>1.25</td>
<td>.269</td>
</tr>
<tr>
<td>1 &amp; 3</td>
<td>1205.61</td>
<td>1</td>
<td>1205.61</td>
<td>5.93</td>
<td>.020</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
There was a significant difference (.012) in achievement motivation levels between the high school and professional basketball players. However, none was evident between the high school and college or between the college and professional players (Table 12).

**TABLE 12**

MULTIPLE COMPARISONS FOR ANOVA

TOUGH 5 = ACHIEVEMENT MOTIVATION LEVELS

<table>
<thead>
<tr>
<th>COMPARISON</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARES</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>481.77</td>
<td>1</td>
<td>481.77</td>
<td>2.58</td>
<td>.118</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>318.72</td>
<td>1</td>
<td>318.72</td>
<td>1.45</td>
<td>.234</td>
</tr>
<tr>
<td>1 &amp; 3</td>
<td>1288.66</td>
<td>1</td>
<td>1288.66</td>
<td>7.05</td>
<td>.012</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant
There was no significant differences between any of the three groups of basketball players for their level of leadership skills (Table 13).

**TABLE 13**

**MULTIPLE COMPARISONS FOR ANOVA**

**TOUGH 6 = LEADERSHIP SKILLS**

<table>
<thead>
<tr>
<th>BETWEEN</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>608.54</td>
<td>1</td>
<td>608.54</td>
<td>2.70</td>
<td>.107</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>155.81</td>
<td>1</td>
<td>155.81</td>
<td>0.68</td>
<td>.415</td>
</tr>
<tr>
<td>1 &amp; 3</td>
<td>1107.28</td>
<td>1</td>
<td>1107.28</td>
<td>3.73</td>
<td>.061</td>
</tr>
</tbody>
</table>
There was a significant difference between the high school and college players' average scores (.002) and the high school and professional players' average scores (.000) for the combination of all six scales. The difference between the college and professional athletes did not show statistical significance (.066) (Table 14).

**TABLE 14**

**MULTIPLE COMPARISONS FOR ANOVA**

**TOUGH 7 = AVERAGE SCORES**

**COMPARISON**

<table>
<thead>
<tr>
<th>BETWEEN</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARES</th>
<th>F</th>
<th>SIG OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2</td>
<td>774.49</td>
<td>1</td>
<td>774.49</td>
<td>10.12</td>
<td>.002</td>
</tr>
<tr>
<td>2 &amp; 3</td>
<td>340.00</td>
<td>1</td>
<td>340.00</td>
<td>3.55</td>
<td>.066</td>
</tr>
<tr>
<td>1 &amp; 3</td>
<td>1730.79</td>
<td>1</td>
<td>1730.79</td>
<td>17.40</td>
<td>.000</td>
</tr>
</tbody>
</table>

* underlined comparisons are significant

**SUMMARY OF MULTIPLE COMPARISONS FOR ANOVA**

The high school and professional athletes differed significantly in competitive trait anxiety (.016), trait self-confidence (.000), concentration (.001), mental preparation skills (.020), achievement motivation (.012) and
the average scores for the combination of the six subscales (.000). No significant difference was found in leadership skills between the professional and high school players.

The high school and college players differed significantly in concentration skills (.007) and the average scores for the combination of the six subscales (.002). However, the college and high school players approached statistical significance in competitive trait anxiety (.060) and trait self-confidence (.056). No significant difference was found in mental preparation skills (.099), achievement motivation (.118) and leadership skills (.107) between the high school and college athletes.

College and professional players differed significantly only in trait self-confidence (.036).

GROUP MEANS

Using group means, the following graphs exhibit the differences between high school, college, and professional basketball players when comparing certain personality factors.
TOUGH 1

COMPARISON OF GROUP MEANS FOR COMPETITIVE TRAIT ANXIETY

Series 1

Series 2

Series 3

- High School
- College
- Professional
TOUGH 2
Comparison of Group Means for Trait Self-Confidence

Series 1: 66.73
Series 2: 73.52
Series 3: 79.06

Legend:
- High School
- College
- Professional
TOUGH 3
COMPARISON OF GROUP MEANS FOR CONCENTRATION

Series 1: High School
Series 2: College
Series 3: Professional
TOUGH 4

COMPARISON OF GROUP MEANS FOR MENTAL PREPARATION SKILLS

Series 1

- High School

Series 2

- College

Series 3

- Professional

66.91

73.29

77.94
TOUGH 5

COMPARISON OF GROUP MEANS FOR ACHIEVEMENT MOTIVATION

Series 1
Series 2
Series 3

55.59
61.71
67

High School  College  Professional
TOUGH 6
COMPARISON OF GROUP MEANS FOR LEADERSHIP SKILLS

Series 1  Series 2  Series 3

- High School  - College  - Professional
TOUGH 7
COMPARISON OF GROUP MEANS TOTAL MENTAL TOUGHNESS SCORE

Series 1  Series 2  Series 3
Professional  College  Professional
CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion of Results

The results of this investigation indicated that there are some personality differences between professional, college, and high school basketball players. The personality factors measured included competitive trait anxiety, trait self-confidence, concentration or focus, mental preparation skills, achievement motivation level, and leadership skills. A significant difference was demonstrated between all three groups in all the personality factors except leadership skills.

A Multiple Comparison Test revealed a significant difference between high school and professional basketball players in all of the categories except leadership skills. The high school and college players differed significantly in concentration skills and the average scores for the combination of the six subscales, but no significant difference was found in mental preparation skills, achievement motivation, and leadership skill between them. College and professional players differed significantly only in trait self-confidence.
Competitive Trait Anxiety

Research in competitive trait anxiety has revealed equivocal results and provide no support for a significant relationship between competitive trait anxiety and ability (Smith, 1983; Miller & Miller, 1985; Passer, 1984; Gould et al., 1983; Power, 1982; Martens, Vealey, & Burton, 1990) however, this investigation demonstrated significant differences among and between high school, college, and professional basketball players in competitive trait anxiety.

A significant difference was found between all three groups (Table 1) and a Multiple Comparison Test also showed high school and professional basketball players differed significantly and high school and college players approached statistical significance (.060) (Table 8).

It seems only logical that professional basketball players would handle stress and anxiety significantly better than high school and college players. Professional athletes are far more experienced and seasoned, which should enable them to cope with anxiety.

Trait Self-Confidence

In this investigation, professional basketball players were significantly more confident than both the college and high school players (Table 9). These results are
consistent with much of the research completed comparing sport ability and trait self-confidence.

Gould et al. (1981), found that successful wrestlers reported a much higher level of self-confidence than nonsuccessful wrestlers. Mahoney and Avener (1977) conducted an exploratory study examining situational factors concerning successful and unsuccessful elite gymnasts. They found U.S. Olympic qualifiers to be more self-confident than non qualifiers.

However, this investigator is cautious to point out that unsuccessful athletes are not synonymous with college and high school athletes. But, I believe it is safe to assume that the professional basketball players used in this study have more skill and therefore had more success experiences than the Division III college and high school players.

Concentration

Comparisons of concentration levels of the three groups revealed that high school basketball players differed significantly from both the college and professional players (Table 10). One explanation for the significant difference could be the experience and skill of the professional and college athletes compared to the high school players. However, Van Schoyck and Gasha (1981) found that attentional focus did not vary with tennis skill level when they examined beginning, intermediate, and advanced tennis players.
Adams (1991) also did not find any significant differences in concentration levels between elite, nonelite, and nonathletes in her investigation.

One could argue that the equivocal results could stem from this investigation's use of professional basketball players in the sampling. Since playing professional basketball is their main source of income for which some players make an extraordinary salary, money could aid in their concentration levels.

**Mental Preparation Skills**

This investigation demonstrated a significant difference in mental preparation skills between high school and professional basketball players (Table 11). One explanation for these results could be the notion that high school athletes may not be exposed to Psychological Skills Training (PST) as many professional athletes are. More and more professional athletes take part in a structured PST organized by sport psychologists. In fact, this professional basketball team was undergoing an extensive psychological skills training program at the time they completed the questionnaire.

No significant difference was found between the college and professional athletes in this investigation (Table 11). A reason for this could lie in the sampling used. One of the college basketball teams utilized had an extensive PST because their former coach was a sport psychologist.
Generally speaking though, many college coaches are adapting some form of PST. By introducing mental imagery, goal-setting, or stress management.

Achievement Motivation

There was a significant difference in achievement motivation levels between the high school and professional basketball players used in this investigation. No significant difference was evident between the high school and college nor between the college and professional players (Table 12).

These results differ slightly from Bird's (1980) study which yielded no significant differences in overall sport motivation among three distinctly different performance groups in soccer. However, in terms of the mastery facet of sport motivation, Bird's study revealed that professional soccer players were significantly different from both collegiate and juvenile players.

One explanation for this could be, once an athlete has reached the professional level, maintenance of "skill mastery" is an important motivational factor. Professional athletes must maintain mastery of their skills in order to continue playing and therefore survive in their employment.
Leadership Skills

In this investigation, leadership skills was the only psychological factor examined that revealed no significant difference between the three groups (Table 13).

These results seem quite logical. Within the constructs of any team, at any level of competition, leaders emerge to aid the coach in fostering the team. The qualities those leaders possess are confidence, optimism, motivation to achieve success, intelligence, and/or assertiveness to name a few (Martens, 1987).

Unlike other psychological factors, these leadership qualities are not necessarily bound by success. As an athlete becomes more skillful and successful, he/she does not necessarily become a better leader. Every team has a mixture of leaders and followers, therefore, no significant differences should be found in leadership skills between high school, college, and professional basketball players.

Average Scores for the Combination of all Six Subscales

There was a significant difference between the high school and college players' scores and the high school and professional players' scores for the combination of all six subscales. The difference between the college and professional athletes approached statistical significance (.066) (Table 14).
When examining psychological state and trait profiles, research suggests that elite, high-level performers can be distinguished from lower-level performers (Morgan & Costill, 1972; Morgan & Pollock, 1977). Nevertheless, the ability to distinguish between successful and unsuccessful athletes in any particular sport using personality traits only has rarely been particularly successful (Morgan, 1980).

One exception to the general rule that skill level cannot be differentiated as a function of personality may occur when elite athletes are compared with athletes of lesser ability. Silva (1984) provides a plausible explanation for this phenomenon. He explains, as the elite athlete moves up the athletic pyramid of success, athletic participants become more alike in their personality and psychological traits. At the base or entry level of sport, athletes have different personalities. However, through a process of "natural selection", certain personality traits will enhance an athlete's likelihood of advancing to a higher level, while other traits will detract. Consequently, as athletes reach a new plateau of success (ex. collegiate to national, or national to Olympic), they become more alike or more homogenous in their personality traits (Cox, 1994).
Conclusions

Since 1960, several comprehensive literature reviews have attempted to clarify the relationship between personality and sport performance. Most have concluded that there is a positive relationship between personality and some aspect of athletic performance (Cox, 1994). Even though the relationship between sport performance and personality is still far from crystal clear, some general conclusions can be made, especially when dealing with personality of athletes who differ in skill level. The conclusions based on this investigation are as follows:

1. Professional basketball players had significantly different personality profiles than high school basketball players except when examining leadership skills.

2. Professional and college basketball players differed significantly only in trait self-confidence.

3. College and high school basketball players significantly differed in concentration skills and average scores for the combination of all six subscales.
4. Competitive trait anxiety and trait self-confidence, though not significantly different, approached a statistical significance between high school and college basketball players.

5. The Mental Toughness Profile used in this investigation is a strong predictor of skill level when comparing professional and high school basketball players.

Recommendations

After the results and conclusions of this research, the following recommendations for further research are suggested:

1. To further investigate using the Mental Toughness Profile in other team or individual sports.

2. To further investigate with the Mental Toughness Profile involving female athletes (both team and individual sports).

3. To further investigations comparing male to female athletes in both team and individual sports, using the Mental Toughness Profile.
4. Repeat the same investigation, but utilize a larger sampling.
REFERENCES


