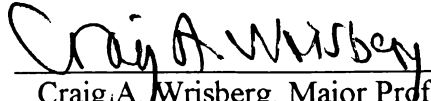
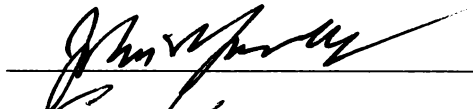
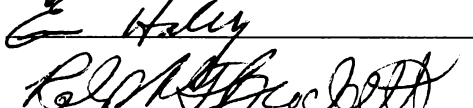
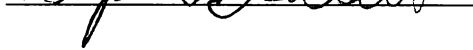


To the Graduate Council:

I am submitting herewith a dissertation written by Peter Ronald Giacobbi, Jr. entitled "Athletic Coachability Scale: Construct Conceptualization and Psychometric Analyses." I have examined the final copy for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.


Craig A. Wrisberg, Major Professor

We have read this dissertation
and recommend its acceptance.

Accepted for the Council:


Associate Vice Chancellor and
Dean of The Graduate School

**THE ATHLETIC COACHABILITY SCALE: CONSTRUCT
CONCEPTUALIZATION AND PSYCHOMETRIC ANALYSES**

A Dissertation

Presented For The

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Peter Ronald Giacobbi, Jr.

May, 2000

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DEDICATION

I dedicate this dissertation to the memories of my grandfathers, Peter Giacobbi and Bernard DeJoseph. They were loving, hard working men who lived great lives and raised tremendous families. Both men died at different times during my studies here at the University of Tennessee. I honor and cherish their memories and all they symbolize in my life.

ACKNOWLEDGMENTS

This is to acknowledge the many individuals who have contributed to my academic work here at the University of Tennessee.

I would like to thank my entire doctoral committee for their contributions to my dissertation and scholarly development. My deepest gratitude goes to Dr. Craig Wrisberg for his sincere friendship, guidance, and encouragement throughout my doctoral work. I would also like to thank Dr. John Lounsbury for his advice and assistance with applied psychometrics and personality assessment while Dr. John Eric Haley's knowledge and help with qualitative methodologies were invaluable experiences for me. Finally, Dr. Ralph Brockett's discussion in the trans-college seminar inspired me to think about and pursue a mixed-method approach in my dissertation. All four individuals deserve sincere praise and thanks for the work they have done with other students and the help they have given me. In addition to my doctoral committee, I would like to thank Ann Reed in the Statistical Consulting Center for her expertise and help on various projects including my dissertation during the past three years.

I would also like to express my appreciation to Dr. Joy DeSensi, Dr. Bill Morgan, and the rest of the faculty, staff, and students in Cultural Studies for their tireless dedication to high academic values and excellence. I would particularly like to thank Emily Roper, Karen Appleby, Joe Whitney, and Ted Butryn for much professional advice and support in the last three years. In addition, various staff members including June Oakey, Joe Allen, Glenda Dills, and Kay Bess all deserve recognition for the help they've given me.

I would like to declare my appreciation to the many coaches and athletes who

have made my research possible. I would especially like to thank the coaches and athletes at the University of Tennessee who agreed to be interviewed and fill out the Athletic Coachability Scale. I wish all of you the best in your pursuit of excellence.

Finally, I'd like to thank my family, especially my parents, for all of their support throughout the years. I cannot begin to say how appreciative I am for the life my great parents have given me.

ABSTRACT

Recent research indicates that coaches consider “coachability” to be an important predictor of athletic success (Giacobbi, Whitney, Roper, & Butryn, 1999; Kuchenbecker, 1999). The results of these studies also show that coaches regularly use the term “coachability” to describe the personalities of particular athletes. In the sport psychology literature, coachability was first discussed by Ogilvie and Tutko (1969) who asserted that “...coachability is one of the most essential qualities for truly great athletic effort. Those men who are labeled great pros, with rare exceptions, remain highly coachable men” (p. 26). Since that time, little research attention has been given to the systematic examination of the “coachability” construct in sport. Researchers appear to have little idea of what behaviors are associated with coachability or whether this construct can predict sport performance. Therefore, the purposes of this study were to develop a measure of “coachability” and to assess its psychometric properties. Consistent with the recommendations of Strean (1998), scale items were developed from qualitative interviews with coaches (Giacobbi et. al., 1999) and athletes (Giacobbi, Haley, & Whitney, 1998). In study one, a 44-item scale was developed (The Athletic Coachability Scale) which was administered to 170 college athletes representing a variety of sports. The results of principal components factor analysis with a varimax rotation produced a five-component solution accounting for 43% of the response variance. These factors were labeled “intensity of effort” (11 items), “trust/respect for the coach” (7 items), “openness to learning” (4 items), “coping with criticism” (3 items), and “working with teammates” (2 items). All subscale alpha reliability coefficients exceeded the .70

criterion advocated by Nunnally (1978). In study two, the revised 30-item Athletic Coachability Scale (ACS) and the Task and Ego Orientation Scale for Sport (TEOSQ; Duda and Nicholls, 1992) was administered to 120 athletes. Principal components factor analysis with a varimax rotation produced a six-component solution accounting for 59% of the response variance. These components were labeled “intensity of effort” (5 items), “reactions to coaching feedback” (4 items), “openness to learning” (3 items), “trust/respect for the coach” (4 items), “coping with criticism” (4 items), “and working with teammates” (4 items). Correlational analyses between the emergent ACS subscale scores and the subscales scores of the TEOSQ (task and ego orientation) revealed significant positive relationships between a task orientation and the intensity of effort ($\rho=.377$), reactions to coaching feedback ($\rho=.453$), trust/respect for the coach ($\rho=.277$), working with teammates ($\rho=.378$), and total ACS score ($\rho=.458$). It was concluded that the initial evidence from the two studies support a six-component conceptualization of the coachability construct. However, future research should include efforts to address issues of social-desirability, the creation of a coach rating form, and performance assessments.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION AND PURPOSE	1
Introduction	1
Statement of the Problem	2
The Purposes of the Studies One and Two	3
Research Hypothesis	5
Assumptions Regarding Participants Response's on the Athletic Coachability Scale	5
Delimitations of the Study	6
Limitations of the Study	6
Significance of the Study	7
II. REVIEW OF LITERATURE	8
Introduction	8
Definitions of Personality	8
Theories of Personality	12
Dispositional Theories	12
Situational Theories	16
Interactional Psychology	18
Personality Traits, States, and Constructs	19
An Assumption About Personality Traits and Behavior	21
Current Trends in Personality Psychology	22
Important Methodological, Epistemological, and Ontological Considerations	23
Sport Personology Research	27
Athletic Coachability	32
Summary and Conclusions	34
III. STUDY ONE	37
Introduction	37
Initial Interview Studies	37
Operational Definition of Coachability	41
The Establishment of a Nomological Network	43
Item Development	46
Item Scaling Scoring Procedures	48
Data Collection	49
Approval of Human Subjects Committee	49
Permission of Head Coaches	49
Administration of the ACS	50
Participants	50

Participation Elimination	51
Statistical Analysis	51
Study One Results	52
Descriptive Statistics	53
Preliminary Analysis	53
Factor Analysis	53
Principal Components Analysis	53
Principal Factor Analysis Results	57
Internal Consistency	60
Study One - Discussion	60
Summary of Descriptive Results	61
Summary of Principal Components and Factor Analysis	62
 IV. STUDY TWO	 67
Introduction	67
Measures and Procedures	67
The ACS (Revised Version)	67
The TEOSQ	68
Participants	69
Procedure	69
Statistical Analysis	69
Study Two Results	70
Descriptive Statistics	70
Preliminary Analyses	70
Factor Analysis	72
Principal Components Analysis	72
Principal Factor Analyses Results	74
Internal Consistency	78
Correlational Analyses	78
Study Two Discussion	80
Summary of Descriptive Statistics	80
Summary of Factor Analytic Results Study Two	82
Internal Consistency – Study Two	84
Validity Evidence	85
 V. GENERAL DISCUSSION, RECOMMENDED FUTURE RESEARCH DIRECTIONS, AND CONCLUSION	 87
General Discussion	87
Summary and Recommended Future Research	91
Conclusion	93
 REFERENCES	 95
APPENDICES	112
APPENDIX A – THE ACS - VERSION ONE	113
APPENDIX B – CORRELATION COEFFICIENTS - STUDY ONE	120

APPENDIX C - THE ACS - VERSION TWO	126
APPENDIX D - CORRELATION COEFFICIENTS – STUDY TWO	131
VITA	134

LIST OF TABLES

TABLE	PAGE
1. Cattell's Primary Factors of the 16 PF Questionnaire	15
2. Second Order Factors of the 16PF	16
3. Study One ACS Subscale Means and Standard Deviations	54
4. Principal Components Analysis – Study One	55
5. Rotated Component Matrix – Study One	58
6. Rotation Sums of Square Loadings – Study One	59
7. ACS Item Means and Standard Deviations – Study Two	71
8. Crosstabulated Participant Mean Ratings for Demographic Items	72
9. Principal Components Analysis – Study Two	73
10. Rotated Component Matrix – Study Two	75
11. Rotation Sums of Square Loadings – Study Two	76
12. Spearman's rho Correlations Between ACS and TEOSQ Subscales	79
13. Spearman's rho Correlations Between ACS Subscales and Importance Ratings	80

LIST OF FIGURES

FIGURE	PAGE
1. Conceptual Model of Coachability and Its Relationship to Other Personality Traits and Contextual Influences	44
2. Cattell's Scree Plot – Study One	56
3. Cattell's Scree Plot – Study Two	73
4. Conceptual Model of Coachability Number Two	84

Chapter 1

INTRODUCTION AND PURPOSE

Introduction

One of the most common questions asked by those in and out of sport is whether there is a personality profile associated with sport success. For instance, some people ask if the highly skilled athlete is more driven, committed, or competitive than the average performer. Coaches are also interested in attaining answers to questions that will help them understand their players or screen potential recruits (Singer, 1988; Summitt, 1998; Vealey, 1992). Bruce Ogilvie and Tom Tutko (1966) attempted to address the issue of athlete's personalities in their book Problem Athletes and How to Handle Them. They began the second chapter by asserting that "...coachability is one of the most essential qualities for truly great athletic effort. Those men [sic] who are labeled great pros, with rare exceptions, remain highly coachable men [sic]" (Ogilvie & Tutko, 1966, p. 26). With no empirical data to support this claim and a dearth of research examining coachability in sport, researchers and practitioners in sport psychology have only a vague idea of what the label "coachability" actually means in terms of specific behaviors and are even less certain that "coachability" can predict sport success. However, coaches regularly use the label "coachable" to describe particular athletes and some coaches use their judgments about an athlete's personality in making recruiting decisions (Giacobbi, Roper, Whitney, & Butryn, 1999; Summitt, 1998). Therefore, the purposes of the present investigation were to conceptualize, operationalize, and develop a measure of the

coachability construct in sport.

Statement of the Problem

In order to advance the discipline of sport psychology, researchers must continually refine measurement technologies and methods of analysis, keeping in mind the limits and proper use of psychological tests (Marsh, 1998; Schutz, 1999; Singer, 1988). In the past, many researchers in sport psychology have utilized psychological tests with questionable psychometric properties and have often failed to provide an adequate theoretical framework for the use of selected instruments (Gill, Dziewaltowski, & Deeter, 1988; Nelson, 1989; Vealey, 1986). In addition, many psychologists have administered personality measures to “normal” samples of athletes that were created and validated on clinical populations (Weinberg & Gould, 1995). Vealey (1986) expressed concern about utilizing general psychological measures in the context of sport and contended that major advances in sport psychology research “await sport-specific conceptualization and measurement instrumentation” (p. 222). Vealey’s (1986) call for researchers to explore constructs that are relevant to sport behavior and performance did result in several important conceptual and assessment improvements in sport psychology. However, Weinberg and Gould (1995) cautioned sport psychologists about the gap between the research and practice of sport psychology and pointed out that published scientific knowledge often does not inform the practices of coaches, athletes, and applied sport psychologists.

Gould and Weinberg (1995) recommend that researchers take an “active approach” to knowledge construction and practice in sport psychology by applying

scientific findings in appropriate ways and by carefully assessing conditions where accepted research results are not in accord with the realities of the sport context. Another way to bridge the gap between science and practice may involve a dynamic interplay between researchers and individuals directly involved in sport (e.g., coaches and athletes) that leads to the development of important research questions. As I have noted elsewhere, coaches and athletes often ask the most perplexing questions concerning the influence of psychological variables on sport performance (Giacobbi, 2000). By listening closely to the experiences of coaches and athletes, researchers can develop ecologically-valid research questions and help bridge the gap between research and practice in sport psychology.

One example of the research/practice gap involves the use of terminology by researchers that describes constructs that are different or inconsistent with the labels used by coaches and athletes (e.g., anxiety, perceptions of competence, task and ego goal orientation, intrinsic and extrinsic motivation, self-efficacy, etc.). In sport, many coaches use the word “coachability” to describe particular athletes yet researchers have devoted very little research to this construct. To date, the meaning and behaviors associated with the “coachability” construct have not been systematically examined and no measure currently exists that adequately assesses this construct.

The Purpose of Studies One and Two

The overall purposes of the present research endeavor (study one and study two) were to develop a valid and reliable instrument of “coachability” in sport, assess its internal factor structure, and determine the relationship between athlete’s responses to

this instrument and to the subscales of the Task and Ego Orientation for Sport Questionnaire (TEOSQ) by Duda and Nicholls (1992) as well as to other predicted behavioral indicators of “coachability.” The specific objectives were:

- 1) To develop an Athletic Coachability Scale (ACS) that allows an accurate evaluation of the degree to which an athlete is “coachable.”
- 2) To assess the reliability and validity of the ACS using coefficient alpha and factor analytic techniques.
- 3) To determine the relationship between participant’s scores on the subscales of the ACS and their participation in extra instructional assistance (e.g., attendance at sport camps, extra coaching, use of a sport psychologist).
- 4) To assess the relationship between participant’s scores on the subscales of the ACS and on self-reported ratings of the degree of importance attached to their sport participation.
- 5) To assess relationships between participant’s scores on the subscales of the ACS and on the subscales of the TEOSQ (Duda & Nicholls, 1992).

To achieve these objectives, two studies were undertaken. The first study represented an attempt to assess the reliability and factor structure of the original items derived from the ACS. The second study replicated study one and assessed the relationship between the derived subscales of the ACS with the TEOSQ (Duda & Nicholls, 1992). In addition, study two involved a more precise assessment of the relationships between ACS subscale scores and predicted behavioral indicators of coachability (e.g., attendance at sport camps, extra instructional assistance, degree of

importance attached to sport participation).

Research Hypotheses

Although the present investigation was exploratory in nature, the following hypotheses were tested:

- 1) The scale items of the ACS demonstrate acceptable reliability as assessed by computations of Cronbach's (1955) alpha.
- 2) Factor analytic findings reveal an interpretable factor structure that is consistent with the operational definition and conceptual model of "coachability."
- 3) There exists a significant positive relationship between subscale scores on the ACS and athlete's self-reported use of a sport psychologist, attendance at sport camps, and extra coaching.
- 4) Scores on the ACS are significantly and positively related to athlete's ratings of the degree of importance of sport participation and skill improvement.
- 5) Finally, significant and positive relationships exist between subscale scores of the ACS and the task orientation component of the TEOSQ (Duda & Nicholls, 1992).

Assumptions Regarding Participants Responses on the

Athletic Coachability Scale

The following assumptions (adapted from Martin, 1995) were applied to the present study.

- 1) Each participant completed the surveys to the best of his or her ability.
- 2) All participants responded truthfully when completing the surveys.

3) Incomplete responses to the questionnaires indicated that the person was not interested in participating in the study.

Delimitations of the Study

The present studies were delimited in the following ways. First, the participants were collegiate athletes from NCAA Division I, II, and III institutions. Second, due to the exploratory nature of both studies, athletes from a variety of different sports were chosen. These sports included track and field, volleyball, basketball, swimming and diving, baseball, softball, soccer, rowing, and tennis. Third, no control was exercised over the amount and quality of differences (both within and between teams) in the feedback athletes received from their coaches. Many items on the ACS require participants to indicate how they react to the feedback they receive from their coaches. Variations in the amount and quality of feedback individual athletes receive from their respective coaches might affect the participant's perceptions of coach feedback, which would then result in added item and scale variance.

Limitations of the Study

The following limitations applied to the present study. Since all participants were competing at the college level, the final scale may not generalize to other populations of athletes at the youth, high school, and professional levels. Further empirical scrutiny of the ACS is needed to assess the reliability and validity of the scale with other populations. Although every effort was made to ensure an equal number of men and women as participants, the availability of male athletes was limited in study one of data collection and the availability of Division I male athletes in study two was

limited. Similarly, the majority of athletes in both studies were Euro-Americans. Both the under representation of males and of non-Euro-American individuals warrant future empirical scrutiny and assessments of the factor structure of the ACS. External factors beyond the control of the author at the time of the test administration may also have influenced the results obtained. Specifically, some teams were given the scale during a team meeting while others filled it out before or after a practice session.

Significance of the Study

The ACS was developed to help coaches and sport psychology researchers gain a better understanding of the psychological characteristic athlete coachability. The development of a valid and reliable instrument may help sport psychologists gain a better understanding of how certain behaviors in the context of sport may influence or predict sport performance. With this knowledge, applied sport psychologists may be able to provide more effective recommendations to coaches and athletes regarding ways to enhance their interpersonal relationships and/or athlete performance.

The upcoming chapter II will review the relevant personality and sport psychology literature. This will include a discussion of important methodological, epistemological, and ontological considerations for the present study. Chapter III will present the results of two qualitative studies that lead to an operational definition of coachability and the development of the ACS. This will be followed by the methods, procedures, results, and discussion of Study One. The last two chapters (IV and V) will include Study Two and a general discussion respectively.

Chapter II

REVIEW OF LITERATURE

Introduction

This chapter includes the major definitions and theories of personality psychology. A complete review of this literature is beyond the scope of this manuscript. Therefore, only theories most relevant to the current research are presented. This is followed by some basic assumptions regarding the relationship between personality and behavior and a discussion about methodological and epistemological considerations for the present study. Finally, a summary of some important research in the area of sport personology (the study of personality in sport) is presented.

Definitions of Personality

There is little consensus in the personality literature as to the definition of personality. For instance, Allport (1937) found no less than 50 definitions of personality in an exhaustive literature search. Allport defines personality as “the dynamic organization within the individual of those psychophysical systems that determine his [sic] characteristic behavior and thought” (1961, p. 28). Guilford, on the other hand, defines personality as “a person’s unique pattern of traits” (1959, p. 5). A more extensive definition is offered by Maddi (1976) who claims that personality is “a stable set of characteristics and tendencies that determine those commonalities and differences in the psychological behavior (thoughts, feelings, and actions) of people that have continuity in time and that may or may not be easily understood in terms of the social and biological pressures of the immediate situation alone” (p. 9). Hollander (1967) stated that

personality is “the sum total of an individual’s characteristics which make him [sic] unique” (p. 274) while McClelland (1951) states that personality is “...the most adequate conceptualization of a person’s behavior in all its detail” (p.69). Finally, Lazarus and Monat define personality as “the underlying, relatively stable, psychological structure and processes that organize human experience and shape a person’s activities and reactions to the environment” (1979, p. 1).

As noted by Vealey (1992), the many and diverse definitions of personality may help explain the contradictory findings and debates that have occurred in personality psychology. Vealey (1992) also concurs with Pervin (1970) who claims that how researchers define personality reflects the kind of behaviors researchers measure and the types of techniques they use to study behavior. For instance, Allport’s (1961) definition focuses on behaviors that are characteristic of an individual and how these behaviors are explained by “psychological systems.” Guilford focuses on the behavioral consequences of these traits while Maddi and Lazarus and Monat view personality as a constellation of stable characteristics impinging on behavior, experiences and reactions (Vealey, 1992).

The lack of a consensual definition of personality has lead some researchers to identify common features of the various definitions. For instance, Vealey (1992) and Weinberg and Gould (1995) note that models for understanding personality, such as the one put forth by Hollander (1967), may be useful to researchers investigating personality in sport. Hollander (1967) conceptualizes personality as a three level process operating within the social environment. He incorporates the notion of a core personality structure followed by typical responses, role-related behaviors, and the social environment.

Hollander's (1967) model is based on the observation that many definitions of personality assume the existence of a stable internal core containing components (e.g., attitudes, values, motives, and interests) that are for the most part stable or unchanging (Allport, 1937; Cattell, 1965; Maddi, 1976). One's psychological core is presumed to be the result of early interactions of the person with the environment and includes a person's perceptions about the world and him or herself. One's self-concept is the most important aspect of the psychological core (Hollander, 1967). At the next level are predictable behaviors emanating and reflecting one's psychological core. An individual's "typical responses" are often good indicators of one's psychological core but this isn't always true. For instance, football players are often very calm (psychological core) and do not get angered easily but their behaviors change dramatically in competition (Weinberg & Gould, 1995). One's typical responses" are directly observable and somewhat predictable behaviors that may include one's level of motivation in sport or exercise settings. Finally, the outer ring in Hollander's (1967) model represents daily role-related behaviors that are largely influenced by the social environment. Based upon Hollander's (1967) model, personality can be viewed as a continuum from the internally driven core that is the most inflexible and difficult for others to know to typical responses that are most influenced by the social environment (Weinberg & Gould, 1995). Therefore, the role-related behaviors of athletes are predicted to result from a complex interaction between a person's core characteristics (e.g., self-concept), typical responses (e.g., behaviors towards coaches, teammates, etc.), and the unique socio-cultural context of sport (Vealey, 1992).

Hollander's (1967) model provides a useful approach to the study of personality because personality is characterized as a consistent yet dynamic internal process manifested by directly observable external responses that are reciprocally influenced by social, contextual, and/or cultural forces within the environment (Vealey, 1992). Furthermore, Hollander's approach may be particularly useful to sport psychologists who are most interested in typical responses and role-related behaviors that are directly observable in the sport context. By focusing on the two outer levels in Hollander's (1967) model, researchers implicitly assume that directly observable behaviors and responses on self-report questionnaires reflect one's internal core traits and dispositions. However, single measures of any personality trait require follow-up assessments using multiple methods over different time periods (Epstein, 1979). For instance, assessments of personality over multiple time periods utilizing multiple methods, such as interviews, objective tests, and other data (e.g., significant other ratings) are more likely to enhance the predictive estimates of an individual's behavior over time. As discussed later in this chapter, these observations have important implications for researchers who are attempting to assess personality in sport.

Hollander's (1967) definition and model of personality were adopted for the present study with a specific focus on typical responses and role-related behaviors. It was not assumed that a single measure of "coachability" reflects an athlete's internal traits or dispositions. Rather, assessments of "coachability" were posited to reflect the participant's most likely behaviors (typical responses) in the context of their current situation. This viewpoint was based upon the assumptions of Hogan's (1988) item

response theory that views personality test responses to reflect an individual's most likely and predicted behavior rather than his or her internal traits and dispositions. Further empirical scrutiny of the scale developed in the present study (The ACS) is necessary to assess the degree to which assessments of "coachability" are related to an athlete's core personality dispositions. Thus, the ACS is presumed to be a highly contextualized, sport specific, measure of an athlete's behavioral tendencies in sport.

Theories of Personality

There are many broad theoretical perspectives in psychology that have contributed to our understanding of individual differences. The purpose of this section is to review the theoretical paradigms in personality deemed most relevant to the current investigation. The specific approaches discussed here fall under the broad headings of dispositional, situational, and interactional theories. For a more complete review of the personality psychology literature, the reader is encouraged to explore other sources (See Hogan, Johnson, & Briggs, 1997 for example). Following the review of personality theories is a short discussion of the relationships and differences between personality traits, states, and constructs.

Dispositional Theories of Personality

Personality traits, often referred to as dispositions, are enduring consistent patterns of thoughts, feelings, and behaviors that help to distinguish people from one another (Johnson, 1997). The "pure trait" model postulates that people show powerful consistencies in their behavior across time and across a diverse variety of situations (Alston, 1975; Mischel, 1968). Trait definitions emphasize the person as opposed to the

situation and invariably involve comparisons among people (Johnson, 1997). For instance, referring to a person named Smith as “extroverted” means that he is more talkative and outgoing in most situations than some of his peers. If Smith’s frequent conversations with strangers become less frequent, then it is no longer possible to distinguish him from others along the extroversion dimension of personality. As noted by Hanson (1958), traits seem to be required for a science of personality since they are relatively easy to operationalize and measure. However, one of the greatest debates in psychology concerns the relative role of traits or dispositions versus the impact of social context, the situation, or the environment in determining one’s behaviors (Kenrick & Funder, 1988). The trait-situation debate is discussed in more detail later in this paper.

Gordon Allport (1937, 1961), Raymond Cattell (1965), and Hans Eysenck (Eysenck, 1952; Eysenck & Eysenck, 1985) represent the most prominent trait theorists. Allport believed that traits were embedded in the human nervous system and he argued that traits tend to “steer” or guide people to behave in some consistent fashion. Allport (1937) cataloged more than 18,000 traits from a search of word lists and the English dictionary. These trait descriptors included physical, behavioral, moral, and emotional descriptors and stimulated much of the personality research conducted by Cattell and others.

Cattell (1965) relied heavily on factor analysis to reduce the enormous number of traits to smaller lists that share common elements. He distinguished surface traits from source traits in that the former represent characteristic ways of behaving while the latter concern the underlying traits from which surface traits are derived. For instance, a

typically warm and sociable (surface traits) individual would be described as extraverted (source trait). Cattell's research (See Tables 1 and 2) lead him to delineate the existence of 16 dimensions or primary factors that are parsimoniously combined to form four second-order factors. Cattell's work is presented here because it generated some important research that is relevant to the present study. This research is reviewed in more detail in an upcoming section. British psychologist Hans J. Eysenck (Eysenck, 1952; Eysenck & Eysenck, 1985) also utilized factor analytic techniques to study personality and focused much of his research on the relationship between two superordinate trait dimensions: introversion-extraversion and emotional stability-instability. These trait dimensions Eysenck further partitioned into component traits that lead to stereotypical responses (e.g., extraversion leads to sociability, activity, and liveliness). Both Eysenck and Cattell's theories include the extraversion dimension while Eysenck's emotional stability dimension is similar to Cattell's anxiety dimension (Vealey, 1992).

In sport, the exploration of particular traits that characterize different sub-groups of athletes has been the thrust of much research during the better part of the last three decades (Vealey, 1992). Researchers have often attempted to determine whether performance differences exist between different personality types, athletes from different sports, and for athletes and non-athletes. As discussed later, much of this research resulted in meager findings, largely because of methodological, statistical and interpretative shortcomings (Weinberg & Gould, 1995).

Table One

Cattell's Primary Factors

Of the 16 PF Questionnaire

A	Warm, sociable vs. aloof, stiff
B	Mentally bright vs. mentally dull
C	Mature, calm vs. immature, emotional
E	Aggressive, competitive vs. mild, submissive
F	Enthusiastic vs. prudent, serious
G	Conscientious vs. casual, undependable
H	Adventurous vs. shy, timid
I	Sensitive, effeminate vs. tough, realistic
L	Suspecting, jealous vs. accepting, adaptable
M	Imaginative vs. practical
N	Sophisticated vs. simple, unpretentious
O	Timid, insecure vs. confident, self-secure
Q1	Radicalism vs. conservatism
Q2	Self-sufficiency vs. group adherence
Q3	Controlled vs. uncontrolled, lax
Q4	Tense, excitable vs. phlegmatic, relaxed

Table Two

Second Order Factors of the

16 PF Questionnaire and Their Primary Factor Components

Second-order factor	Primary Factor Components
Anxiety (high vs. low)	C, H, L, O, Q3, Q4
Introversion vs. Extroversion	A, E, F, H, Q2
Tough-minded vs. Tender-minded	A, C, E, F, I, M, N
Independence vs. Subduedness	A, E, G, M, I, Q2

Situational Theories

In 1924, John B. Watson announced the battle cry for the behaviorist movement in the following statement:

Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him [sic] to become any type of specialist I might suggest—doctor, lawyer, merchant-chief and, yes even beggar-man and thief, regardless of his [sic] talents, penchants, tendencies, abilities, vocations, and the race of his [sic] ancestors (p. 82).

Watson (1924) proclaimed that situational or environmental variables rather than

dispositional internal variables were most important in shaping a person's behavior. This view was in direct contrast to the psychoanalysts and structuralists of the day. Watson (1924) argued that the focus on unobservable mental structures must give way to a focus on directly observable behaviors which are measurable.

In the 1930's, B.F. Skinner adopted Watson's views and argued that we should begin to study the role that environmental reinforcements, such as parental approval and social custom, have in shaping people's behavior. According to Skinner (1972), adaptation to the environment requires the acceptance of behavioral patterns that ensure survival. In short, behaviorists view social, contextual, and environmental influences as more important for explanations of behavior than personal dispositions/traits.

The early behaviorists laid the foundation for one of the classic debates in psychology: the person-situation personality debate. While it appears evident to most people that individuals possess relatively stable traits, a large amount of psychological research fails to support this view (Epstein, 1979). The two positions were debated for decades leading to Mischel's (1967) critique of over 50 years of personality research in which he concluded "...the concept of personality traits as broad predispositions is thus untenable" (Mischel, 1968, p. 146). According to some psychologists, situationally specific responses tend to have more of an influence on behaviors than do individual traits (Bem, 1972; Peterson, 1968). Mischel (1967) coined the term "personality coefficient" to describe the .30 correlation found between personality measures and behavioral indicators in experimental situations. He accused personality psychologists of committing a fundamental attribution error by imposing broad trait descriptors on

individuals to explain or predict their behaviors when in fact the behaviors are better predicted by situation specific factors. Mischel's (1967) analysis led to a decade of doubt over the validity of personality traits and the traditional methods (i.e., experimental situations, pencil and paper survey questionnaires) that had been used to examine them. It also heightened the debate between those theorists advocating a trait position and those favoring situationism.

Interactional Psychology

In the 1980's, many personality researchers and sport psychologists moved toward a compromise position known as interactionism. In short, the interactionist view of personality is that: 1) behavior is a function of the person and the environment/situation: the person and environment interact to produce behavior (McAdams, 1997), 2) the individual selects environments that allow his or her personal characteristics to thrive (Bowers, 1973; Snyder, 1983), 3) the personal characteristics of an individual can reciprocally alter the situation he or she encounters (Watchel, 1973), 4) an individual's pattern of responses to situations in a particular domain are idiosyncratic (Endler & Magnusson, 1976). For instance, an athlete may be calm during practice, anxious during competition, and incapacitated by spiders while another athlete may be calm during competition, anxious and distracted during practice and a lover of insects. In sport, Martens (1975) was an early advocate of the interactional position and, according to Vealey (1989), 55% of the sport personality literature between 1974 and 1988 utilized the interactional approach while 45% of the studies adopted a trait approach.

Personality Traits, States, and Constructs

As discussed previously, personality traits are enduring consistent patterns of thoughts, feelings, and behaviors that help to distinguish people from one another (Johnson, 1997). Personality states, on the other hand, are behaviors manifested in specific situations (Fridhandler, (1986). Most psychologists view temporal duration as the most frequently described distinction between traits and states (Vealey, 1992). Personality states are more fleeting and situationally dependent (e.g., moods and emotions) while traits endure over time and may even be lifelong characteristics of individuals (Vealey, 1992). In addition to temporal stability, Fridhandler (1986) distinguishes personality traits from personality states based upon continuous versus reactive manifestations, concreteness versus abstractness, and situational causality versus internal/personal causality. From Fridhandler's perspective, dispositions such as extroversion or achievement motivation are viewed as relatively enduring or stable over time, reactive only in relevant circumstances, abstract because they must be inferred from behaviors, and indicative of behaviors that have their origin within the person (Fridhandler, 1986; Vealey, 1992). Personality states, such as situation specific test anxiety, are relatively short-lived, manifested continuously in response to relevant situations (e.g., the nervousness in response to a testing situation), directly observable, and resulting from very specific situations (Fridhandler, 1986; Vealey, 1992). The sport specific conceptualizations of anxiety (Martens, Burton, & Vealey, 1990), sport confidence (Vealey, 1986), and task and ego goal orientations (Duda & Nicholls, 1992) are examples of person and situation factors that combine to produce personality states

and behaviors (Vealey, 1992).

A construct is a hypothetical phenomenon that is assumed to exist based upon some observable and/or measurable relationship with other variables (Reeber, 1995). For instance, IQ is a construct that is assumed to exist because it is based upon IQ test scores, everyday observations, and a positive relationship between scores and achievement related behaviors (e.g., occupation, income, achievement motivation). All personality traits are constructs but not all constructs are personality traits as the IQ example illustrates.

In terms of the present study, “coachability” is assumed to be a situation specific construct that is closely related to several personality traits (achievement motivation, agreeableness, and conscientiousness). Drawing upon Fridhandler’s (1986) conceptual distinction between traits and states and the tenants of interactional psychology discussed earlier (Bowers, 1973; Endler & Hunt, 1966; Rausch, 1965; Watchel, 1973), “coachability” is presumed to be the manifestation of various personality traits that are triggered by certain contextual features of one’s environment (e.g., a motivating coach, the availability of adequate equipment, parental support). It is clear to athletic coaches that individual athletes vary in the degree to which they are “coachable” (Giacobbi, Roper, Whitney, & Butryn, 1999). Moreover, it is presumed that the specific sport context has a significant influence on the manifestation of “coachable” characteristics by athletes. For instance, some coaches are good listeners, give frequent quality feedback, are highly motivating, and elicit tremendous respect from their athletes. The same cannot be said for other coaches. Therefore, certain individual athletes, with certain personality

traits, are expected to display “coachable” characteristics that are triggered by certain sport situations (e.g., the coaches behaviors and the athlete’s perceptions of the coach). This position is consistent with Bem’s (1983) triple typology that emphasizes “how certain kinds of person’s behave in certain kinds of ways in certain kinds of situations” (p. 566). In addition, consistent with the tenants of interactional psychology (Rausch, 1965; Watchel, 1973), the individual athlete, by displaying “coachable” characteristics (e.g., intense effort, trust/respect in the coach, being open to learning), may elicit more attention, feedback, and reinforcement from the coach which may in turn confirm the beliefs of the coach and reinforce the athlete’s behaviors.

An Assumption About Personality Traits and Behavior

Traditional trait theorists consider personality traits to be causal explanations for behavior (Allport, 1937; Cattell, 1957; Eysenck, 1952; Guilford, 1959; Murray, 1938). Specifically, outer traits (Hollander’s outer rings) are descriptions of behaviors that require explanation while inner traits cause or explain outer traits (Johnson, 1997). This causal deterministic view about traits has been challenged by Wiggins (1997) and Hampshire (1952) who conceive of traits as “categorical summaries” (Wiggins, 1997; p. 103) or summary statements that imply manifestations of a trait (behaviors) because of past occurrences. To say that John is aggressive, for example, means that John has been observed engaging in similar aggressive actions over a period of time. In other words, John’s aggressive disposition causes him to behave aggressively and presumably John’s personality test scores will reflect his core personality trait of aggressiveness. In the present investigation, no attempt was made to infer causality from empirical observations

(e.g., test scores) of surface traits. Rather, the position adopted here is in accord with Wiggins (1997) view that traits are categorical summaries that describe the most probable behaviors of athletes (i.e., surface traits or role related behaviors) in the context of competitive sport. Specifically, the disposition to be “coachable” is considered a summary statement of a particular athlete’s most likely public and directly observable behaviors at a certain time and in a specific context (e.g., a competitive sport team).

Applied to the present investigation, Wiggins’ (1997) theories have implications for the assessment of “coachability.” Observations and/or empirical assessments of coachability only allow the coach or sport psychologist to make general inferences or a “best guess” about an athlete’s personality trait structure (psychological core). The relationship between an athlete’s directly observable behaviors in the context of sport (i.e., his or her reactions to the coach or his/her coachability) and his or her core personality structure is an empirical and theoretical question for future researchers. Assessments of “coachability” are descriptions of the most likely behavior that an athlete will demonstrate in his or her current sport context and it is assumed that one’s present behaviors are possible predictors of future behavior.

Current Trends in Personality Psychology

Although the trait-situation personality debate has subsided and most psychologists are more explicitly interactionist in their approach, current trends are leading many researchers back to the study of individual traits (McAdams, 1997). For instance, some researchers have documented longitudinal consistency in a number of individual difference variables as measured by the NEO-PI-R (e.g., Conley, 1985; Costa,

McCrae, & Arenberg, 1980). The “Big Five” trait taxonomy in general, and the NEO-PI-R in particular is now the most influential formulation of individual differences in personality psychology (McAdams, 1997; Wiggins & Trapnell, 1997). Based upon the work of Fiske (1949) and Tupes and Christal (1961), many personality researchers now agree that five factors are the best representation of the human personality structure (Digman, 1990; Goldberg, 1981, 1993; John, 1990; McCrae, 1992; McCrae & Costa, 1987). In addition, Goldberg’s (1981, 1993) extensive work has demonstrated that these five dimensions are encoded in language. Although there have been different factor analytic breakdowns, the most common conceptualization of the “Big Five” is that proposed by McCrae and Costa (1987) and operationalized by the NEO-PI-R. Costa & McCrae (1992) identify the five personality dimensions as (1) neuroticism (N), (2) extraversion (E), (3) openness to experience (O), (4) agreeableness (A), and (5) conscientiousness (C).

Important Methodological, Epistemological, and Ontological Considerations

After the trait-situation debate, many methodological improvements were recommended by researchers in an attempt to increase the predictive power of traditional trait measures of personality (Bem, 1983; Epstein, 1979; 1983). These efforts represent important considerations for sport psychology researchers in general, and the present study in particular. For instance, Bem and Allen (1974) suggest that trait assessments should be coupled with the degree to which a given trait is salient, relevant, and important for a person in a particular time and place in order to increase their predictive validity. In other words, personality measures should include assessments of how

important a given personality trait is to the individual. For instance, a salesperson would need to be extroverted in order to be successful so it would seem that extroversion is a highly important trait for this individual while at work. This same individual may not think that it is important to be extroverted around his neighbors and so he may turn into a recluse because he doesn't see the value in being sociable with those people. In sport, athletes who view their relationship with the coach as important for long-term success may view "coachability" as an important trait and behave in a manner that leads to positive responses from the coach (e.g., listen closely, show respect, etc.). Similarly, athletes who are motivated to improve their sport skills may also display "coachable" characteristics. Other athletes may not share the same motivation and therefore, their behaviors would reflect a lower level of "coachability." In short, assessments of "coachability" should be coupled with participant ratings of the degree of importance they attach to their sport, skill improvement, or their relationship with the coach. This methodological recommendation is incorporated into the present investigation and is discussed more thoroughly in the methods section of study two.

A second important methodological innovation that resulted from the trait-situation controversy was the use of aggregated personality scores and multiple methods in the study of personality. In a series of studies by Epstein (1979; 1980; 1983), it was shown that multiple personality scores averaged across various situations using different methodologies yielded higher predictive estimates of behaviors (stability in personality) than single assessments. Epstein concluded that single measures of personality traits are not valid indicators of behavioral trends because error of measurement negatively

influences the reliability of single measures. It is unrealistic to assume that a single measure of personality will yield high predictive estimates of behavior since behavior is multi-faceted and influenced by a variety of different circumstances. In addition, aggregated scores and multiple means of assessing personality and behavior should result in more accurate predictions of behavior over time (Epstein, 1983). Similarly, as noted by McAdams (1997), personality psychologists are now employing a variety of methods in personality assessment, including naturalistic inquiry and/or experience sampling (Hormuth, 1986), behavioral/genetic methods (Plomin, 1986) structural equation modeling (Judd, Jessor, & Donovan, 1986), and a variety of qualitative methods (Helson, 1982; Mendelsohn, 1985; Runyan, 1982; Wrightsman, 1981). However, few researchers have attempted to combine various methods of personality assessment (e.g., surveys, interviews, naturalistic inquiry) into a line of research or a single study. Rather, many researchers adopt a “monomethod” or methodological “purist” position that involves the adoption of a single method, along with its underlying assumptions, in the exploration of a specific research topic (Tashakkori and Teddlie 1998, p. 17). Notwithstanding, there is precedent for mixed method research in the social sciences. Specifically, Tashakkori and Teddlie (1998) define mixed method studies as research that “...combine the qualitative and quantitative approaches into the research of a single study or a multi-phased study” (p. 18).

Researchers who adopt pragmatic paradigmatic philosophies and combine the quantitative and qualitative research approaches reject dualistic conceptions that the two methods are incompatible (Guba, 1987; Lincoln & Guba, 1985; Smith, 1983). Rather,

pragmatic research philosophies emphasize the “similar fundamental values” that exist between both research approaches (Tashakkori & Teddlie, 1998, p. 12). The similar fundamental values include beliefs in the value-ladenness of inquiry, belief in the theory-ladenness of facts, belief in multiple constructions of reality, and finally, belief in the undetermination of theory by fact (Reichardt & Rallis, 1994; Tashakkori & Teddlie, 1998). In other words, pragmatic research approaches acknowledge that research is a value laden process influenced by the theories, hypotheses, or frameworks adopted by the investigator, and understandings of reality are multiple and constructed (Reichardt & Rallis, 1994; Tashakkori & Teddlie, 1998). Furthermore, pragmatic research philosophies agree with the principle of the underdetermination of theory by fact in that multiple theories can explain any given set of data (Reichardt & Rallis, 1994; Tashakkori & Teddlie, 1998). In short, pragmatic researchers tend to adopt whatever methodological approach works for a given research question and this often involves the use of both qualitative and quantitative research methods (Reichardt & Rallis, 1994; Tashakkori & Teddlie, 1998).

The present quantitative studies were based upon two qualitative interview studies conducted with athletes (Giacobbi, Haley, & Whitney, 1998) and coaches (Giacobbi, Roper, Whitney, & Butryn, 1999). This research design was consistent with a sequential mixed-method design described by Tashakkori and Teddlie (1998) in that qualitative methods were used to develop quantitative survey measures. In the sport psychology literature, Streat (1998) has advocated the use of qualitative research methods (or interviews) in the exploration of new constructs and in the development of psychological

instruments. The methods used to develop the Athletic Coachability Scale (ACS) will be explicitly presented which is rare in research studies that involve the development of psychological instruments (Dunn, Bouffard, and Rogers, 1999). Similarly, a thorough review of the sport psychology literature indicates that no survey measures have previously been developed (or reported in the sport psychology literature) from the results of qualitative interviews.

Sport Personology Research

The study of personality variables related to sport behavior, sometimes referred to as sport personology, is perhaps the oldest line of systematic investigation in the field of sport psychology (Landers, 1983; Vealey, 1989). Fisher (1984) documented over 1000 published studies in this area during the 1960's and 1970's and characterized the majority of this research as a search for between-group comparisons (e.g., high performers compared with lesser skilled athletes). As noted by Singer (1988), these studies were often motivated by research attempts that would allow for the delineation and description of specific trait attributes associated with different subgroups of athletes or allow for prediction of behavior and/or performance in sport. Utilizing traditional nomothetic trait inventories such as the 16PF or the MMPI, the results from these studies revealed some interesting findings (e.g., athletes were shown to be more extroverted and emotionally stable than non-athletes) but overall the results were far from conclusive and some have characterized this literature as confusing (Morgan, 1980; Singer, 1988; Vealey, 1992). Many researchers advocated the complete abandonment of trait measures (Martens, 1975; Rushall, 1976) while others cited a variety of statistical and methodological difficulties

that plagued previous studies in this area (Carron, 1980; Heyman, 1982; Morgan, 1980). For instance, Morgan (1980) argued that the failure to find consistent descriptive and predictive traits associated with certain subgroups of athletes was due to problems such as poor or unclear operational definitions, small samples, lack of a theoretical framework for studying a particular group or using a certain personality test, the use of univariate as opposed to multivariate statistics, and, finally, a disregard for response distortion by participants. Since Morgan's (1980) sport personality critique, researchers have modified their methods but there is still considerable debate as to whether and to what degree personality can predict various outcomes in sport (Rowley, Landers, Kylo, and Etnier, 1995; Vealey, 1992).

The most extensive line of sport personality research was conducted by Morgan and colleagues (Morgan, 1979; 1985; Morgan, Brown, Raglin, O'Connor & Ellickson, 1987; Morgan & Johnson, 1977, 1978) with college swimmers, rowers, and elite wrestlers. Morgan's (1985) mental health model states that "positive mental health enhances the likelihood of success in sport, whereas psychopathology is associated with a greater incidence of failure" (p. 79). Morgan et. al., (1977, 1978, 1979, 1987) showed that successful, as opposed to less successful athletes, possessed a different pattern of mood states as assessed by the Profile of Mood States (McNair, Lorr, & Droppleman, 1981). Successful athletes were found to possess the "iceberg personality profile" characterized by scores above population norms on vigor and below population norms on depression, fatigue, tension, and confusion. These findings constituted strong support for the mental health model (Cox, 1990; Gill, 1986).

Although Morgan's (1985) mental health model has contributed significantly to our understanding of the relationship between personality and sport performance, more recent critiques of this line of research have suggested some cautions. For instance, a meta-analysis of 33 studies that utilized the POMS showed that the magnitude of effect or the amount of variance explained by the iceberg profile (in terms of sport performance) was less than 1% (Rowley, Landers, Kylo, and Etnier, 1995). These results along with critiques leveled by Rowley, Landers, Kylo, and Etnier, (1995), Gill (1986), and Vealey (1992) raised serious questions about the viability of the POMS in predicting athletic success. Among other criticisms, these researchers downplayed the importance of the finding that positive mental health is associated with success in athletics and pointed out that psychopathology is inversely related to success in almost any domain. Vealey (1992) issued a call for sport psychology researchers to "move beyond the mental health model and focus on sport-specific attributes of personality other than the absence of psychopathology" (p. 46). Vealey (1992) advocated the systematic study of various personality manifestations and/or sport specific-constructs that have theoretical and empirical significance to sport. For instance, sport-specific conceptualizations and assessment instruments for anxiety (Martens, Vealey, & Burton, 1990) and sport-confidence (Vealey, 1986, 1988; Vealey & Campbell, 1988) have been shown to predict sport behavior and performance. Other examples include self-efficacy (McAuley, 1985; Gould & Weiss, 1981), attentional styles (Nideffer, 1976), attributions (McAuley, 1991; McAuley & Duncan, 1989) intrinsic and extrinsic motivation (Gould, 1982; Vallerand, Deci, & Ryan, 1987; Vallerand & Losier, 1999), and achievement goals (Duda, 1993;

Roberts, 1993). All of these constructs have been explored by researchers in the sport and exercise sciences and have been shown to be important predictors of various sport outcomes (e.g., performance, persistence, etc). Although a review of all of these research findings is beyond the scope of this paper, the important point is that sport researchers are moving away from general personality measures toward the use of sport specific instruments. In turn, this trend has lead to some important advances in theory, research, and assessment in sport psychology. Thus, it appears that the continued study of sport-specific constructs is necessary to further advance our understanding of how manifestations of personality can predict sport behavior.

Of particular relevance to the present investigation has been the study of achievement goal theory first examined in academic settings by Nicholls, (1984, 1989) and more recently extended to sport by Duda and colleagues (Duda, 1989, 1993; Duda & Nicholls, 1992; Duda, Olson, & Templin, 1991; Duda & White, 1992). Goal perspective theories of achievement motivation posit the existence of two types of goals in achievement situations, task goals and ego involvement goals (Nicholls, 1989). These two goal orientations reflect individual differences in the perception of one's competence and the definition of success. A task-orientation emphasizes task involvement, personal improvement, working hard, and immersing oneself in the activity itself. In addition, a highly task-oriented individual views success in terms of improvements relative to previous performance attempts. An ego-involved individual places greater emphasis on superior competence and often in relation to the competence of others. The ego-involved

individual perceives great success and competence when he or she defeats someone else in a competitive situation (Duda, 1993).

These social-cognitive theories of achievement motivation offer specific predictions about the relationship between goal orientations, cognitions, affect, and behaviors in achievement situations (e.g., sport). For instance, a task orientation is predicted to correspond to a strong work ethic, a problem-solving approach and/or a general interest in learning, optimal performance, task choices that are consistent with one's level of performance capability, and a high level of persistence following failure (Duda, 1993). Because a task-involved individual's concern is with skill improvement, feelings of competence are predicted to be strengthened when participating in various achievement related tasks (Duda, 1993). As will be shown later in this chapter, the operational definition of "coachability" is consistent with the definition of a task orientation.

Because ego-involved individuals construe their personal competence in comparison to others, less secure perceptions of competence result. Highly ego-involved individuals with questions or concerns about their level of competence are predicted to demonstrate lower levels of achievement-oriented behaviors (e.g., less effort and persistence, claims of lack of interest) and less persistence after failure. In addition, highly ego-involved individuals who question their competence tend to choose extremely easy or very difficult achievement related challenges (Duda, 1993).

In general, a plethora of sport-specific research studies support the predictions of achievement goal theory (See Duda, 1998 for a complete review). For example,

individuals with a task orientation (which involves a more process-oriented focus and participation in activities for their own sake rather than as a means to an end) have reported greater enjoyment, increased investment of effort, and more positive affect compared to highly ego-involved individuals (Boyd & Yin, 1996; Duda, Chi, Newton, Walling, & Catley, 1995; Hall & Earles, 1996). Similarly, Hall and Kerr (1997) showed that British junior fencers between the ages of 10 and 18 who demonstrated higher ego orientation scores on the Task and Ego Orientation for Sport Questionnaire or TEOSQ by Duda & Nicholls (1992) also experienced higher levels of cognitive anxiety one and two days prior to a competitive event. In addition, fencers with higher task orientation scores demonstrated lower scores on the cognitive anxiety subscale of the Competitive Sport Anxiety Inventory-2 or CSAI-2 (Martens, Vealey, & Burton, 1990). Interestingly, researchers who have examined goal orientations have focused exclusively on self-reported motivational indicators and not on behavior. Therefore, as noted by Duda (1998), there is a need to assess the relationships of task and/or ego orientations with behavioral indices (e.g., performance, significant other ratings of motivation).

Athletic Coachability

In the sport psychology literature, there is a dearth of research examining “coachability” in sport. A thorough review of the relevant databases (e.g., Sport Discus, Psychinfo, and Eric) revealed only four published works mention the word “coachability.” Ogilvie and Tutko (1966) and Tutko and Richards (1971), all clinical psychologists, were probably the first psychologists to use the word “coachability” in the sport sciences. As noted in the introduction to the present dissertation, Ogilvie and

Tutko (1966) claimed that "...coachability is one of the most essential qualities for truly great athletic effort. Those men [sic] who are labeled great pros, with rare exceptions, remain highly coachable men [sic]" (Ogilvie & Tutko; 1966, p. 26). In addition, the "coachable" athlete respects the coach and accepts his or her advice, feedback, and the rules of the sport. A "coachable" athlete also feels free to talk to the coach and exchange ideas concerning the game (Tutko & Richards, 1971). More recently, Dr. Ronn Jenkins the diving coach at West Chester University of Pennsylvania has observed that an atmosphere of "openness and mutual exchange" is one important characteristic of his work with "coachable" athletes (Jenkins, 1988; p. 9).

Williams (1985) developed the label "trusting/coachable" from assessments based upon Cattell's-16 PF with 96 national and club level athletes and non-athletes. The purpose of this study was to develop a personality profile that distinguished elite athletes from lesser skilled and non-athletes. The results showed that elite national level athletes were significantly different from club and non-athletic groups with regard to emotional stability, self-confidence, coachability, and the mental toughness factors. However, since the 16PF does not use these factor labels (See Tables 1 and 2), it is unclear how Williams derived these profiles. The label "trusting/coachable" was apparently inferred from factor L of Cattell's 16 PF (Suspecting, jealous vs. accepting, adaptable) and therefore, may not accurately represent the meanings that coaches and athletes use to describe this construct.

Finally, Smith, Schutz, Smoll, and Ptacek (1995) developed the Athletic Coping Skills Inventory-28 (ACSI-28) and assessed its factor structure in a series of studies with

high school, college, and professional athletes. The ACSI-28 is comprised of eight subscales labeled coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability. The summed scale scores yield a “personal coping resource score” which is purported to reflect a multidimensional sport specific psychological skills construct. Extensive psychometric testing of the ACSI-28 suggested support for its factorial validity and reliability. In addition, convergent and discriminant validity has been obtained through significant positive and negative correlations with the ACSI-28 and several other instruments including the self-control schedule (Rosenbaum, 1980) and the Washington Self-Description Questionnaire (Smoll, Smith, Barnett, & Everett, 1993). Performance assessments were also investigated as Smith et. al., (1995) obtained coaches ratings of performance and physical talent (on six point Likert scales) and then subtracted the talent ratings from performance ratings to identify underachievers, normal achievers, and overachievers. The results showed that overachievers differed significantly from underachievers on the coachability, concentration, coping with adversity subscales, as well as total personal coping resources scores. Thus, these findings suggest support for Ogilvie and Tutko’s (1966) assertion that “coachability” is related to performance. In addition, coachability demonstrated small and significant correlations with self-control (.28), self-efficacy (.26), and self-esteem (.25).

Summary and Conclusions

It is clear that research approaches which focus on sport-specific constructs have the potential to yield higher predictive estimates of relevant outcomes in sport (Marsh,

1998; Smith, et. al., 1995). Previous studies that have examined relationships between personality and performance and the trait-state controversy have produced a variety of important advances. Unfortunately, much of the early sport personality research was characterized by a “shotgun” approach that involved the use of general psychological tests to examine subgroups of athletes. Straub (1977) noted the problems with this research by stating:

The research in this area has been the “shotgun” variety. By that I mean the investigators grabbed the nearest and most convenient personality test, and the closest sport group, and with little or no theoretical basis for their selection fired into the air to see what they could bring down. It isn’t surprising that firing into the air at different times and at different places, and using different ammunition, should result in different findings. In fact, it would be surprising if the results weren’t contradictory and somewhat confusing (p. 177).

Other lessons learned from the nearly four decades of personality research in sport include the need for clear operational definitions of variables and/or constructs, the recommended use of multivariate statistical methods, the establishment of “nomological validity” and the continued study of sport specific constructs (Auweele, De Cuyper, Van Mele, & Rzewnicki, 1993; Messick, 1989; Vealey, 1992). All of these methodological and theoretical considerations were incorporated in the present research. With regard to the “coachability” construct, a research approach was used that examined the personal

meanings of this construct from the perspectives of sport participants. A qualitative methodology was chosen as the appropriate means of achieving a basic understanding of this construct in sport (Stearns, 1998).

CHAPTER III

STUDY ONE

Introduction

The purpose of this study was to develop a valid and reliable measure of athletic “coachability.” This chapter describes the following steps taken to develop the Athletic Coachability Scale (ACS): (a) initial interview studies to develop the instrument, (b) determination of the major dimensions of coachability, (c) development of a conceptual framework, operational definitions, and nomological network, and, (d) item development. In addition, this chapter will discuss the participants, procedures, and data analyses for Study One.

Initial Interview Studies

Two semi-structured interview studies by Giacobbi, Haley, and Whitney, (1998) and Giacobbi, Roper, Whitney, and Butryn, (1999) were undertaken and together these projects formed the foundation of the present research. The former study was undertaken in an effort to assess the meanings, descriptions, and behavioral indicators that Division I college athletes ascribe to openness in sport. Participants were asked to describe individual, coaching, and team factors that influence their perceived levels of openness to learning new skills. Although coachability was not the focus of the interviews, many athletes and coaches described open athletes or those eager to learn new skills as being “coachable” (Giacobbi et. al., 1999). For instance, one athlete who was asked to define openness to learning in sport said:

To be coachable. You definitely have to be coachable. If you want

to get better you got to be willing to try new things. You just can't be thinking that what you're doing is right. You have to be willing to try all kinds of stuff and eventually down the road you'll find that it will help you.

The results of this study showed that athletes who were identified by their coaches as being "open and eager to learn new skills" were personally motivated to learn new skills, trusted their coaches, and demonstrated a variety of behaviors that indicated their openness. For instance, one decathlete shared the following opinion that was indicative of his motivation:

I think that overall you have to want to become better...you know in the decathlon you have ten different things to do. You better be willing. If you want to be a great decathlete you gotta be willing to try all these things, new drills or whatever it takes.

The "trust" theme also emerged as an important mediator of the degree to which athletes were open to the advice and feedback of their coach. This athlete's quote clearly illustrates this point:

You have to be open to the fact that its going to be a painful process and you've got to really trust that your coach knows what's best in that situation because its something new that you haven't done before and so you don't have any idea, you can only trust his knowledge and you don't have the knowledge yourself.

The participants also shared a variety of behaviors they felt characterized an

athlete who was open to learning new skills (e.g., seeking advice from many sources, making eye contact, listening closely when being instructed, attempting to apply techniques or work on the feedback they were given by coaches). According to the participants' coaches, the athletes who were interviewed consistently demonstrate the behaviors that were discussed.

A follow-up focus group meeting was conducted with four of the twelve participants in the interview study. During this meeting, the major results were shared in an effort to seek verification and gain new insights about the openness construct in sport. During this meeting, the participants confirmed the major themes and emphasized that the motivational (intensity of effort) dimension was the most important determinant of an athlete's success.

Ten Division One college coaches were then interviewed and asked to describe how they felt athletes made progress or improved in their respective sports, and to discuss the distinguishing characteristics or personalities of successful college athletes (Giacobbi et. al., 1999). The major themes that emerged from these interviews were "motivation/competitiveness and coachability." A closer analysis of the coachability theme lead to further specification of the dimensions of coachability utilized in the present investigation (See Figure 1).

The coaches indicated that successful college athletes were motivated, competitive, driven, inquisitive, attentive to instruction, and they generally showed trust in their coaches. Athletes having these characteristics were described as being "coachable" by over half the coaches and interestingly enough, two individuals used the

terms “openness” and “coachability” synonymously. When asked to share his views on what it meant to be open to learning in sport, a soccer coach said:

We call it coachability and...wow. Well first of all it's recognizing that this is not a zero sum game. The game is endlessly challenging and your mastery of the skills of the game is never complete. You can always get better at every aspect of the game...

In addition, several coaches stated that “coachable” athletes tended to work harder on the feedback and sport advice they were given as opposed to less “coachable” athletes. Many of the coaches described their relationships with “coachable” athletes as being a “partnership” while one coach described a current professional athlete as a “student of the game.” A follow-up mail out survey to a non-random sample of male and female coaches in the Southeastern Conference clearly confirmed these findings. The results of the interview study were sent to the participants in the form of a newsletter in an effort to gain verification of the major themes. The coaches were encouraged to share some of their thoughts and insights about the study. The comments of several coaches that responded appeared to confirm the research findings.

A recent study by Kuchenbecker (1999) also appeared to confirm the Giacobbi et. al., (1999) findings. Six-hundred and fifty eight coaches from a variety of different competitive levels (e.g., youth, high school, college, etc.) were surveyed and asked to choose from a list of several dozen physical and psychological attributes, the characteristics they felt were most important for sport success. The coaches indicated that loving to play the game, having a positive attitude, and being coachable were chosen

as the most important determinants of success (Kuchenbecker, 1999). Of particular interest to the present investigation was the finding that coaches considered “coachability” to be an important factor in determining athletic success.

Based upon the results of the interview studies, it is clear that coachability is an important construct in the sport context that has not been systematically studied by sport psychology researchers. Coaches regularly use the term “coachable” or “non-coachable” to describe athletes. However, to date, sport psychologists only have a vague notion of the behaviors that are associated with these terms. From the Giacobbi et. al., (1998, 1999) studies, a better understanding of this construct was developed but more research is needed to quantify and validate the coachability construct. Therefore, an operational definition and conceptual model of coachability was developed from the Giacobbi et. al., (1998, 1999) studies which aided in the development of the Athletic Coachability Scale (ACS).

Operational Definition of Coachability

An important first step in the development of a psychological instrument is the logical analysis of the construct intended for assessment (Nunnally & Bernstein, 1994). This involves careful scrutiny of the construct, its definition, and its possible relationships to other similarly-defined constructs (Cronbach, 1971; Messick, 1989; Pedhazur et al., 1991). For the purposes of the present study, an operational definition and conceptual model of coachability (See Figure 1) was developed based upon the results of the coach and athlete interview studies conducted by Giacobbi et. al., (1998, 1999). Specifically, coachability is conceptualized as a multidimensional, sport-specific construct

characterized by the motivation to improve one's sport skills, inquisitiveness, openness to learning, and trust in and respect for the coach and her or his training process. More specifically, coachable athletes tend to be open to a variety of sources of information related to their sport (e.g., books, other coaches, the media) and they are dedicated to the process of learning and improvement. Coachable athletes are generally willing to exert considerable effort to change their sport skills and mechanics in order to improve their performance and they demonstrate trust and respect for their coaches by being more open to advice, feedback, suggestions, and criticism than athletes who are not coachable. After receiving feedback, coachable athletes work persistently to apply the coaches' suggestions to the training process and they frequently turn coaching feedback into quick results on the field or in the gym. In addition, coachable athletes feel free and comfortable talking to their coach about the training process and giving honest feedback to the coach about certain drills or techniques. Often they view the coach as a partner in the process of improvement. Furthermore, coachable athletes view criticism as a chance to learn and develop their skills and they often display the same attitude and characteristics towards their teammates and other coaches.

In sum, the three hypothesized dimensions of coachability identified for the present investigation are openness to learning new skills, intensity of effort, and trust/respect for the coach (See Figure 1). The following definitions were specifically developed for the three dimensions of coachability:

- 1) Openness to learning new skills – A willingness, desire, and search to learn new sport skills from a variety of different sources including the coach, one's

family and teammates, the media and other coaches.

- 2) Intensity of effort – The degree of effort an athlete directs towards the development and/or improvement of his or her sport skills. Also, the amount of effort an athlete exerts after being given feedback from coaches during practice sessions.
- 3) Trust and respect for the coach – The degree of trust and respect an athlete exhibits towards his or coach (es) as indicated by how closely he or she listens to the coach (es) and a general willingness to perform practice activities and engage the coach (es) with questions and feedback.

The Establishment of a Nomological Network

During the development and validation of a psychological test, it is important that the researcher develop a theory concerning the nature of the construct under study and its proposed relationship with other personality constructs (Nunnally & Bernstein, 1994). Although the present study will not test all of the hypothesized relationships presented in Figure 1, it is important to explicitly state how various personality traits are manifested in the context of sport. Future research may help to establish some of the theoretical postulates being advanced.

In the present investigation, coachability is theoretically conceptualized as a combination of intensity of effort, trust/respect for the coach, and openness to learn sport skills. These three dimensions of coachability are hypothesized to be orthogonal in that an individual can give intense effort during practice or be open to learn new skills but lack trust/respect for the coach. The intensity of effort dimension of coachability is

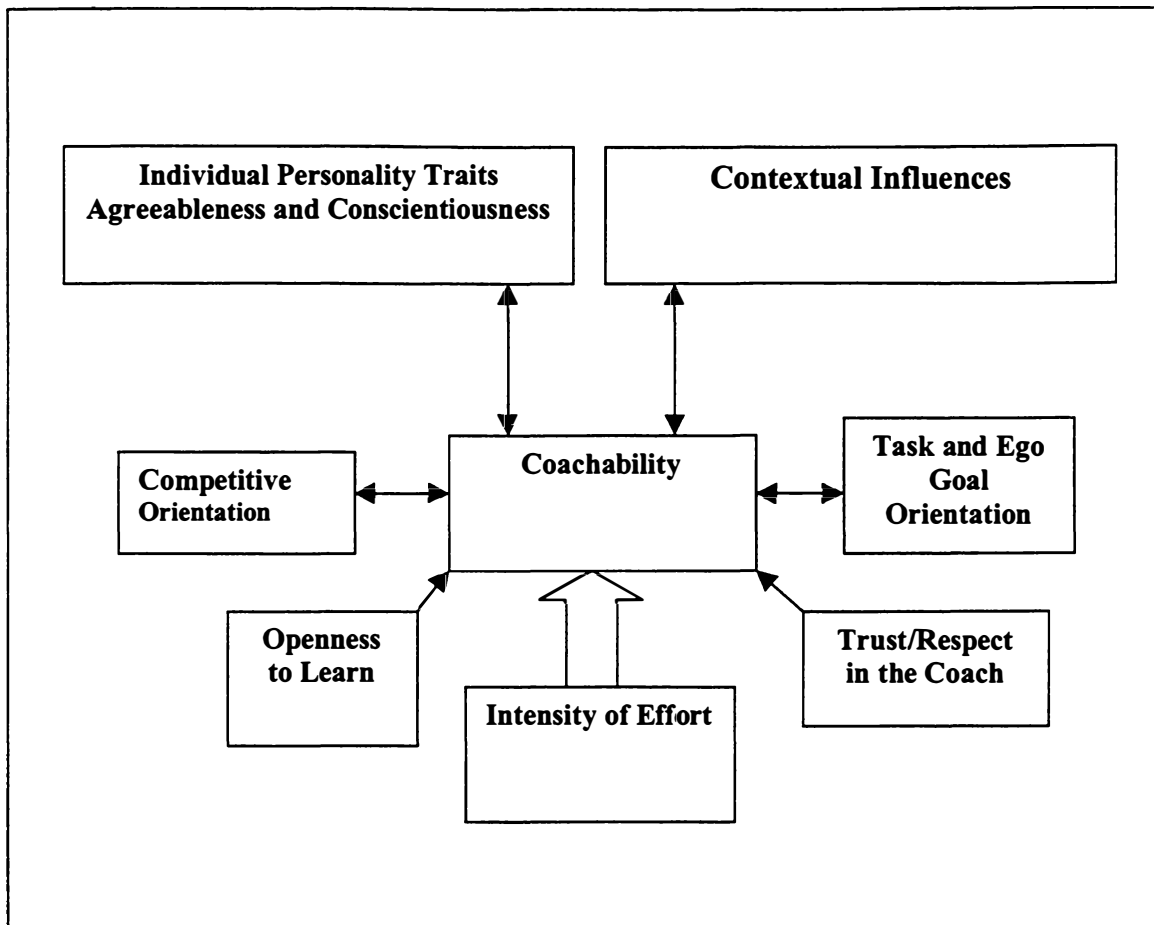


Figure 1. Conceptual Model of Coachability and Its Relationship with Other Personality Traits and Contextual Influences

predicted to be the most important aspect of coachability since it is defined as the degree of effort an athlete exerts during practice sessions. Common sense and the results of the Giacobbi et. al., (1998; 1999) interview studies suggest that this motivational component of coachability should be the strongest indicator of athletic effort and persistence.

With regard to personality, it was hypothesized that the coachability construct would be closely related to the agreeableness and conscientiousness facet scales on the

NEO-PI-R (Costa & McCrae, 1985, 1989, 1992). Specifically, it was predicted that “coachable” athletes would display relatively higher scores on the domain scales of trust and achievement striving that represent the facet scales of “agreeableness” and “conscientiousness” respectively. Put another way, “coachability” was assumed to be a sport specific construct that is manifested by the trust and achievement striving personality traits. An individual who is trusting and motivated to succeed in sport would be assumed to display coachable characteristics in an athletic setting. These hypotheses were based on the findings by Giacobbi et al., (1998, 1999) that suggested that “coachable” athletes trust their coaches and are highly motivated to achieve athletic success. Furthermore, a variety of contextual factors can potentially influence the level of “coachability” an athlete exhibits. For instance, the emphasis, priorities, values, and means of communication of a given coach and athletic department may influence one’s “coachability.”

In the sport realm, it was further hypothesized that “coachability” would be related to a task goal orientation as operationalized by the Task and Ego Orientation in Sport Questionnaire (TEOSQ) developed by Duda and Nicholls (1992). Achievement goal theory (Ames, 1992; Dweck, 1986; Nicholls, 1984, 1989) posits that adoption of a task goal orientation is positively related to a problem solving approach to learning; a view that is consistent with the current definition of “coachability.” Finally, Giacobbi et. al., (1999) found that college coaches viewed “coachable” athletes to be highly competitive. Thus, it was also hypothesized that a positive relationship would be found between “coachability” and competitive orientation as operationalized by Vealey (1986)

and/or Gill (1988).

Item development

Items for the Athletic Coachability Index (ACI) were generated as a result of in-depth qualitative interviews conducted with athletes (Giacobbi, Haley, & Whitney, 1998) and coaches (Giacobbi, Roper, Whitney, & Butryn, 1999). The operational definition of coachability discussed previously and the conceptual model displayed in Figure 1 also aided the process.

During the interview study of athletes, participants described their perceptions of what influenced their level of openness towards the coach and learning new skills. Similarly, the coaches in the Giacobbi, Roper, Whitney, & Butryn, (1999) study gave descriptions of the “coachable” athlete. Quotes and adjectives from both studies were used to create items which increased the likelihood that the test would be relevant for athletes who completed the survey in the future (Dunn, Bouffard, & Rogers, 1999). For instance, athletes in the Giacobbi et. al., (1998) study were asked how they would know someone who was open to learning new skills. One participant stated “You can tell by a person’s desire to want to learn. If he constantly says ‘show me one little tip that’s going to make me better. I think that would show you he’s really open-minded.” Similarly, a coach from the Giacobbi et. al., (1999) study described one particularly successful and coachable athlete as “super inquisitive” and went on to call her a “student of the game.” The following items representing the openness to learn new skills theme from the Giacobbi et. al., (1998) study were included on the first draft of the ACS: “I consider myself a student of my sport.” And, “I frequently seek out new and different sources of

information about my sport.” A total of 16 items representing the openness to learn new skills dimension of coachability were generated as a result of this process. These included items 1, 2, 3, 6, 8, 13, 14, 15, 18, 19, 21, 26, 28, 32, 35, and 41 (See Appendix A).

Items representing trust/respect for the coach were developed by the common emergent theme of trust in both Giacobbi et. al., (1998, 1998) studies. One athlete indicated that trust was a key element in her success by saying “...you’ve got to really trust that your coach knows best...” This theme lead to the inclusion of several items assessing an athlete’s level of trust/respect in the coach. Examples included, “I trust, without reservation the training methods of my coach” and “I view the relationship I have with my coach as a partnership.” Twelve items were generated representing the trust/respect dimension and included items 7, 9, 12, 16, 20, 23, 25, 27, 36, 37, 39, and 43.

Finally, items representing the intensity of effort dimension of coachability were developed in a similar fashion as described above. For instance, the following quote was thematized by Giacobbi et. al., (1999) under the heading intensity of effort:

...the players that have improved the most with us are obviously the ones who are receptive to coaching, that are hard working, that are completely committed to becoming a better player...

Similarly, many coaches described the coachable athlete as being “driven” or “motivated.” Two items representing the intensity of effort dimension were “After the coach gives me sport advice, I work real hard on what he or she told me to do” and “During practice I am willing to try anything to improve my sport skills.” Fourteen items

were generated representing this dimension including 4, 5, 10, 11, 17, 22, 24, 30, 31, 34, 38, 40, 42, and 44.

As noted by Nunnally and Bernstein (1994), exploratory scale development should include variables with known properties that have been established through previous psychometric testing. Therefore, two items from Smith et al.'s, (1995) Athletic Coping Skills Inventory-28 (ACSI-28) were slightly modified and added to the ACS. In the present study, items 29 and 33 were adapted from the ACSI-28 (See Appendix A). For instance, item 29 "When my coach tells me how to correct a mistake I've made, I tend to take it personally and feel upset" was added to the ACS. Item 33 was changed from "If a coach criticizes or yells at me, I correct the mistake without getting upset about it" to "If my coach criticizes or yells at me, I always correct my mistake without getting frustrated or mad."

Due to the exploratory nature of this investigation and the uncertainty of how well the conceptual model would be supported by the factor analytic results, the items were ordered in an arbitrary manner. However, an examination of the items in Appendix A reveals that there is adequate variability in the order of the items represented by the respective dimensions of coachability.

Item Scaling and Scoring Procedures

The final scale was anchored on a seven-point Likert scale with scores of +3 indicating very strong agreement, scores of -3 indicating very strong disagreement and a score of 0 representing neutrality (See Appendix A). The scale yields a total coachability score by summing all items on the scale as well as subscale scores obtained by summing

the values corresponding to items within the emergent themes and dividing this number by the total number of items in that subscale. Ten items were worded negatively so reverse scoring procedures were required for these items.

The inventory packet for both Studies One and Two included an informational packet stating that the individual's participation was completely voluntary, that he or she may withdraw at any time, and that assured confidentiality (See Appendix One). Page two requested respondents to indicate their age, sport, gender, number of years participated in their sport, whether and how often they participate in certain sport related training, as well as how many years they had been playing under their current coach.² The latter question was included in an attempt to ascertain the degree of familiarity between participants and the coaches.

Data Collection

Approval of Human Subjects Committee

The University of Tennessee Human Subjects Committee was provided with appropriate information and documentation concerning this study. The committee reviewed this information and issued a letter of approval to conduct the study. After Study One data collection was completed, the committee was provided a copy of the changes that were made to the ACS and its cover page, and a copy of the TEOSQ by Duda & Nicholls (1992).

Permission From Head Coaches

Letters on university letterhead were mailed to coaches explaining the nature of the study. These letters were followed by phone calls several days later to answer any

questions and to schedule appointments to meet with the teams.

Administration of the ACS

The administration of the ACS occurred during times that were convenient to both the coach and the primary investigator. In all but two cases, scale administration occurred prior to or following a team practice. On these two occasions the coaches requested that the administration occur prior to a team meeting held at night. The primary investigator administered the inventory to all participants in order to ensure that standardized procedures and verbal instructions were followed throughout the study. On each occasion, the coaches introduced the investigator prior to scale administration. All athletes were then informed that their participation was completely voluntary and they could withdraw from the study at any time without penalty. The participants were told that the ACS was a measure of how athletes learn sport skills. The participants were assured that their responses would be kept completely confidential, that there were no right or wrong answers, and that they should answer each question according to how they felt at the current time. With few exceptions, participants completed the ACS in approximately 10 minutes.

Participants

The participants in Study One were 170 college athletes (115 females and 55 males) from NCAA Division I (N=124) and Division III (N=46) programs who participated in the sports of basketball (N=13), rowing (N=34), swimming (N=40), soccer (N=33), volleyball (N=13), softball (N=13), and track and field (N=24). The choice of research participants was based upon the availability and willingness of coaches and

athletes to participate. The participants had been with their current coaches an average of two years while their average age was 19.94 years. The average age of the female athletes in this sample was 19.58 years while the male average was 20.30 years.

Participant Elimination

Surveys with missing data (N=9) were dropped from subsequent analyses. Thus, a correlation matrix was derived using only complete data.

Statistical Analysis

As discussed previously, the first version of the ACS was an empirically derived set of items. It was intended that the size of this item set would eventually be reduced by identifying, through reliability estimates, principal components and exploratory factor analysis, item clusters corresponding to the hypothesized components of coachability.

The analysis began with the condensation of variance by Principle Component or PrC analysis. The PrC method of condensing variance or “eigenanalysis” is an iterative approach that yields successive components beginning with the component that explains the most variance (Nunnally & Bernstein, 1994). Independent of the variance condensation stage, there must be some determination of the number of components to be retained (rotated) for further analysis. The following six criteria were considered in determining the number of components to rotate: a) the number of principal components with eigenvalues greater than 1.0, b) the scree plot test, c) the percent of variance accounted for by each component, d) the total percent of variance accounted for by the retained principal components, e) the interpretability of the retained principal components or the degree of consistency between the results and the conceptual model presented in

Figure 1, and f) the reproduced correlation matrix was examined to determine the percentage of residuals greater than .05 (Johnson, 1998).

A second exploratory factor analysis was then conducted in order to transform the initial components into more meaningful linear combinations that partitioned the variance more usefully, thus strengthening the relationship between variables and components (Nunnally & Bernstein, 1994). Information derived from the principal components analysis described above was used to define the factor structure of the ACS. Only those items with loadings greater than .50 were used to define the components.

Estimates of internal item consistency were assessed using Cronbach's (1951) coefficient alpha. Alpha is based on the domain-sampling model of measurement error and it assumes that the average correlation between items is a good estimate of some hypothetical correlation among all possible items in a domain (Nunnally & Bernstein, 1994). All that is needed to compute alpha is the individual item variances, the variance in observed scores, and the total number of items. Coefficient alpha is computed for any new measure and a total scale coefficient greater than .80 is generally considered an acceptable level of reliability (Nunnally & Bernstein, 1994). Subscale reliabilities greater than .70 is the criterion advocated by Nunnally (1978).

Study One Results

The data were analyzed to derive descriptive statistics, factor analytic results internal consistency estimates, item variability, and subscale intercorrelations. In addition, open-ended feedback was categorized for possible item modifications during Study Two of this investigation.

Descriptive Statistics

Table 3 shows the individual item means and standard deviations for all of the original 44 items. As shown, item means ranged between 3.60 (X26) and 6.20 (X31) and all standard deviations approximated or exceeded a value greater than one. Overall, the data indicate that participants utilized all choices within the Likert scale range of the ACS items with the exception of items 13, 14, and 36, where the range was between three and seven. In addition, 72.4% of the participants reported that they had attended sport camps in the past while 77.6% reported that they often seek extra instructional assistance related to their sport. Finally, 31.8% of the participants were starters, 18.8% were non-starters, and 49.4% reported that starter status was not relevant to their particular sport team.

Preliminary Analyses

Bartlett's Test for Sphericity was used to test the hypothesis that the correlation matrix was an identity matrix (all correlations = 0). The p-value for this test was $<.001$ so the hypothesis was rejected. Next, the results of the Kaiser-Meyer- Olkin (KMO) measure of sampling adequacy showed that the magnitude of the observed correlations with the partial correlations was .783. Furthermore, an examination of the correlation matrix showed a consistent pattern of correlations between many of the ACS items. Therefore, factor analysis for these data was deemed appropriate (Kaiser, 1974).

Factor Analysis

Principal Components Analysis

Both principal components and principal components factor analysis with a varimax rotation were used to examine the dimensionality of the ACS. As shown in

Table 3

Study One ACS

Subscale Means and Standard Deviations

Item	M	SD
X1	4.22	1.47
X2	5.11	1.28
X3	4.35	1.59
X4	6.06	1.05
X5	4.48	1.48
X6	4.94	1.41
X7	4.24	1.43
X8	4.69	1.30
X9	5.84	1.43
X10	4.77	1.33
X11	5.35	1.38
X12	5.90	1.21
X13	5.84	.94
X14	5.65	.99
X15	4.44	1.25
X16	5.22	1.56
X17	5.50	1.05
X18	4.11	1.48
X19	4.67	1.25
X20	5.16	1.48
X21	5.94	1.02
X22	5.97	.91
X23	5.28	1.51
X24	5.68	1.06
X25	4.38	1.56
X26	3.60	1.53
X27	4.12	1.38
X28	4.84	1.33
X29	5.22	1.33
X30	6.11	.99
X31	6.20	.93
X32	4.20	1.78
X33	4.01	1.36
X34	4.64	1.20
X35	5.13	1.19
X36	5.44	1.10
X37	4.77	1.37
X38	5.37	1.14
X39	4.63	1.63
X40	5.86	.95
X41	3.72	1.45
X42	4.45	1.49
X43	4.78	1.69
X44	4.44	1.61

Table 4, principal components analysis resulted in 12 components with eigenvalues greater than 1.0 accounting for over 65% of the response variance. Kaiser's (1963) rule of retaining components with eigenvalues greater than one would have produced several components with too few items. Therefore, as discussed in a previous section, other methods were used to determine the number of components to retain (e.g., examination of the scree plot, interpretability of the rotated factor matrix). An examination of eigenvalues from Cattell's scree plot test (Figure 2) indicated a discontinuity after the first, third, and seventh factors. The three, seven, and twelve component solutions were rotated to simple structure by the varimax method and evaluated for ease of interpretability (Comrey, 1978; Kaiser, 1963). Furthermore, the reproduced correlation matrix controlling the number of components at three, seven, and twelve, respectively, showed that the optimal fit controlled the number of factors at seven, with 208 or 21% of the residuals having

Table 4

Principal Components Analysis – Study One

Component	Total	% Variance	Cumulative %
1	8.85	20.12	20.12
2	3.40	7.73	27.86
3	3.21	7.29	35.16
4	2.42	5.52	40.16
5	2.00	4.54	45.22
6	1.69	3.86	49.08
7	1.40	3.19	52.28
8	1.33	3.03	55.31
9	1.26	2.86	58.18
10	1.24	2.81	61.01
11	1.11	2.53	63.54
12	1.05	2.39	65.94

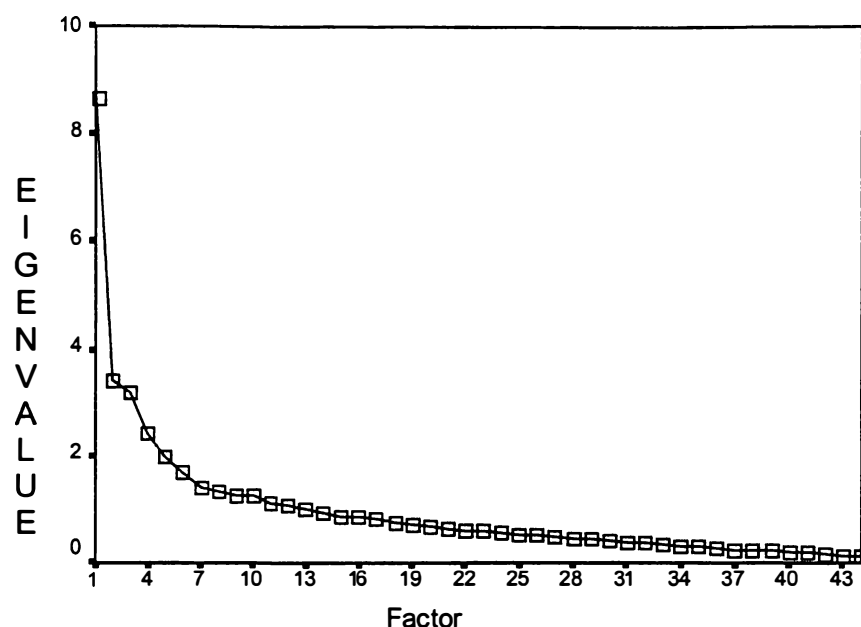


Figure 2. Cattell's Scree Plot – Study One

values less than .05. This result was compared to 24% for the 12-factor model and 46% for the three-factor model. A larger percentage of residuals with values greater than .05 indicates that the factor analytic model did not fit the data well (Johnson, 1998). Based upon the above observations, the scree plot results, and the overall interpretability of the factor analytic results, the number of components were controlled at seven.

The anti-image matrix can be used as an initial screening tool to help reduce the number of items (Johnson, 1998). It assesses the partial correlations for individual variables (Kaiser, 1974) and, according to Kaiser (1974), values less than .50 on the diagonal should be considered for elimination since they are highly correlated with unique components or are not explained well by the common components. The anti-image matrix revealed that items 18 and 44 had values less than .50. In addition an

examination of the rotated component matrix (Table 5) revealed that item 18 loaded on an uninterpretable component and item 44 failed to load highly on any component. Therefore, these two items were dropped from future versions of the ACS.

Principal Factor Analysis Results

A seven-factor principal component factor analysis with a varimax rotation was performed to transform the initial matrix to orthogonal simple structure. The varimax rotated principal factor analysis resulted in five interpretable components that accounted for 43% of the response variance. Table 5 shows the item loadings on each of the seven components while Table 6 shows the component labels, eigenvalues and the percent of variance explained by each component. As shown, the first component (items 24, 30, 22, 17, 40, 14, 31, 13, 4, 12, 38, and 36 of the first version of the ACS in Appendix A) was comprised of items describing an athlete's efforts during practice and accounted for 14% of the response variance (See Appendix A for version one of ACS). Component I was labeled "intensity of effort." Interestingly, several items from the originally hypothesized dimension of "openness to learning" loaded on the intensity of effort scale. Component II (items 12, 43, 20, 39, 23, 9, and 7) accounted for 10% of the response variance and the original label of "trust/respect in the coach" was retained since most of the items assessed the relationship between the athletes and their coaches. Component III (items 26, 3, 15, 28, and 32) was labeled "openness to learning" because the items reflected a general openness to learn from a variety of different sources including books and other media. Component III accounted for 8% of the response variance. Component IV (items 29, 33, and 37), which accounted for 7% of the response variance

Table 5

Rotated Component Matrix – Study One

	I	II	III	IV	V	VI	VII
X24	.722	.317	-.005	.106	-.107	-.096	-.080
X30	.697	.112	-.014	-.032	.254	-.048	-.089
X22	.689	.152	-.006	.154	.148	-.003	-.079
X17	.638	-.063	-.084	-.027	-.073	.337	-.061
X40	.619	-.027	.147	.103	-.246	-.030	-.092
X14	.598	-.060	.241	.141	.121	-.005	-.123
X31	.584	-.082	.384	-.055	.196	-.047	.154
X13	.563	-.048	.240	-.059	-.028	-.093	-.070
X4	.560	-.083	-.088	-.084	.161	-.037	-.251
X12	.550	.527	-.022	-.136	-.038	-.090	-.088
X38	.547	-.094	-.025	.370	-.040	-.025	-.068
X36	.536	.334	.143	.110	-.104	.254	-.126
X11	.480	.205	-.075	-.124	.395	-.012	.262
X43	.130	.841	-.092	-.050	-.077	-.050	-.124
X20	.155	.833	-.026	.116	-.050	.111	-.020
X39	-.060	.791	.147	-.030	.174	-.036	-.037
X23	.361	.704	.131	.103	-.057	.223	-.002
X9	.306	.699	-.015	-.076	-.086	.191	-.051
X7	-.027	.559	-.020	.325	.174	-.246	-.237
X27	-.003	.398	.227	.118	.093	-.298	.149
X26	-.049	.125	.806	-.002	-.073	-.033	-.002
X3	-.044	.200	.797	-.015	-.012	-.004	-.001
X15	.273	-.087	.719	.115	.113	-.001	-.080
X28	.318	-.017	.598	.250	.231	-.098	-.078
X32	-.029	-.034	.540	-.213	-.087	-.027	.206
X35	.427	-.039	.472	.128	.146	.108	-.053
X33	.058	-.046	-.072	.706	-.073	-.021	-.088
X37	-.095	.111	-.083	.639	-.107	.212	.185
X29	-.096	-.059	-.018	.612	-.038	.234	.213
X34	.322	-.074	.213	.345	.322	-.193	-.026
X44	.205	.221	.205	.316	-.155	-.093	.145
X8	.135	-.019	.157	-.005	.778	-.005	-.033
X19	-.018	-.032	.221	-.150	.737	-.009	-.022
X21	.337	.200	.171	-.046	.401	-.069	-.049
X10	.358	.250	-.027	-.085	.379	-.107	-.001
X25	-.091	.130	-.097	-.070	-.165	.554	.165
X1	.114	-.170	.107	.160	-.008	.538	-.107
X42	.151	.118	-.055	.391	.266	.536	-.086
X41	-.131	-.093	-.003	-.070	.343	.508	.103
X2	.266	-.037	.105	.302	.163	-.444	-.151
X16	.286	.192	-.061	.281	-.285	.359	.220
X6	-.059	-.009	.120	.219	-.008	-.071	.700
X18	-.067	-.175	-.005	-.096	-.014	-.043	.665
X5	-.001	-.062	-.100	.265	.179	.300	.503

Table 6

Rotation Sums of Square Loadings – Study One

Component	Eigenvalue	% of Variance	Cumulative % of Variance
I - Intensity of Effort	6.00	13.64	13.64
II – Trust/Respect in Coach	4.46	10.15	23.79
III - Openness to Learning	3.36	7.65	31.44
IV - Coping with Criticism	2.57	5.85	37.22
V - Working with Teammates	2.55	5.81	43.11
VI	2.21	5.03	48.15
VII	1.82	4.13	52.28

was labeled “coping with criticism” because the items reflected an athlete’s reaction to criticism from the coach. Finally, component V (items 8 and 19) accounted for 6% of the response variance and was labeled “working with teammates.” The items from components IV and V were predicted to load on the “trust/respect for coach” and “openness to learning” components respectively. Two additional components were not easily interpretable and therefore not labeled. Oddly enough, these two components were comprised of all reverse coded items.

The final communalities (ranging from 0 to 1) were used to determine the amount of individual item-variance explained by common components (Johnson, 1998). Individual items with relatively low final communality estimates (compared to other items) or non-unique item loadings were considered for item elimination. As a result, items 1, 10, 13, 21, 27, 32, and 44 were dropped from subsequent versions of the ACS.

Internal Consistency

Measures of internal consistency were analyzed for the ACS by calculating Cronbach's (1951) alpha coefficient. Alpha's were computed for subscales that emerged during factor analysis. Also computed was the overall scale alpha, item-total correlations, and each item's contribution to the overall subscale alpha. All individual item contributions to the overall alpha exceeded .80 while the overall scale alpha was .88. Alpha reliabilities for the five subscales were .86 for intensity of effort, .87 for trust/respect in the coach, .82 for openness to learning, .70 for coping with criticism, and .81 for working with teammates.

Study One Discussion

The purposes of Study One were to develop and assess the psychometric properties of an instrument that measured athletic "coachability." To achieve these purposes, the major themes and quotes from the two Giacobbi et. al., (1998; 1999) interview studies were utilized to create the 44-item ACS. This scale was administered to 170 college athletes from NCAA Division I and III programs who represented a variety of sports. Participant responses were analyzed for reliability and factor structure using Cronbach's (1951) alpha and principal components and principal factor analysis. In addition, various demographic statistics (mean item responses, age, gender, number of sport camps attended, and status on the team) were assessed. In this chapter, a review of the results of the descriptive analysis is presented followed by the factor analytic findings. This overview is followed by the changes made to the ACS for study two.

Summary of Descriptive Results

Several items on the cover page of the ACS attempted to ascertain the amount of extra sport-related instructional assistance participants in study one received. As reported, a significant percentage (72.4%) of the participants reported that they had attended sport camps in the past while 77.6% reported that they sought extra instructional assistance related to their sport. This finding was important and indicated that college athletes currently attend or have attended sport camps and/or frequently seek extra help with their sport skills. The open-ended nature of the questions on the cover page revealed a flaw in the means of ascertaining how many sport camps participants had attended. Specifically, some respondents indicated that they attended camps “a few times a year” while others answered with a number. Therefore, a precise assessment of the relationship between the number of sport camps athletes had attended and their scores on the emergent subscales of the ACS was not possible. However, the yes or no question assessing whether the participants had attended sport camps in the past warranted a closer examination of the degree of “extra instructional assistance” that athletes received.

Although assessments of racial, ethnic and gender differences were not a focus of the present investigation, two areas of concern are worth mentioning based upon the descriptive results and the researcher’s informal observations. First, the descriptive results revealed that the majority of the participants in Study One were females. This gender imbalance stemmed largely from the fact that the coaches representing male athletes were in many cases unwilling to allow their teams to participate in the study. Second, the vast majority of the participants in Study 1 were Caucasian and again this

shortcoming was related to the availability of African-American, Hispanic, or athletes from other racial and ethnic backgrounds on the various teams. In study Two an attempt will be made to include a larger sample of males and athletes from a variety of racial and ethnic backgrounds.

Summary of Principal Components and Factor Analytic Results

One purpose of principal components analysis is to transform a set of correlated response variables into a smaller set of uncorrelated response variables called principal components (Johnson, 1998). The principal components allow the researcher to estimate the number of underlying components that best represents the data set. The components are then factor analyzed to explain the nature of the relationship between the variables by examining patterns of correlations among the variables (Johnson, 1998).

The present study was intended to reduce the ACS item set into several meaningful and interpretable orthogonal components that represent the hypothesized dimensions of athletic “coachability.” The results of the principal components analysis revealed that the dimensionality of the original 44 response variables could be reduced to seven components accounting for 52% of the variance. These seven components were then analyzed using factor analytic procedures. The results of this analysis suggested partial support for the conceptual model developed from the qualitative interviews (i.e., the pattern of item loadings on the first three components of the rotated component matrix reflected intensity of effort, trust/respect in the coach, and openness to learning). The remaining four emergent components were somewhat of a surprise but they were interpretable. Specifically, component IV, coping with criticism, consisted of the items

that were adapted from the Smith et. al.'s, (1995) ACSI-28 and as shown these items explained nearly 6% of the response variance. Similarly, component V explained approximately 6% of the response variance and it consisted of items assessing the working relationship between teammates.

The remaining two components consisted of all negatively-worded items and according to Lounsbury, (Personal Communication, March 9, 2000) and others (Marsh, 1996; Marsh & Grayson, 1995) it is not uncommon for reverse scored items to form their own components. An examination of the items comprising components VI and VII revealed that several of the items may have been difficult for respondents to understand. Another interpretation of the content of these two components involves an athlete's general willingness to change, adapt to new practice routines, or try new techniques when one is performing well. It is possible that these two components assess separate constructs related to adaptation or openness to changing one's sport skills. Although this possibility was acknowledged, the decision was made to drop the items representing components VI and VII in Study Two for the sake of scale brevity.

The finding that the conceptual model was partially supported offers promise for Strean's (1998) advocacy of the use of qualitative methods to explore new constructs and develop survey measures. This finding also suggests support for the use of multiple data collection methods advocated by Denzin, (1970), Jick (1979), Tashakkori and Teddlie (1998), and Healey & Stewart, (1991) and warrants further mult-method approaches to the study of behavior in sport.

Finally, the factor analytic results demonstrated that "coachability" as assessed by

the ACS is a much more complex construct than the “coachability” subscale on the ACSI-28 (Smith et. al., 1995). The items representing Smith et. al.’s (1995) “coachability” subscale primarily relate to an athlete’s reactions to coaching criticism. Although reactions to coaching criticism are an important aspect of coachability, the factor analytic findings revealed that “coachability” also involves an athlete’s desire to learn, work with teammates, relationship with the coach, and an interest in a variety of materials related to their sport.

A cursory examination of the items representing the “intensity of effort” and “trust/respect for the coach” components revealed some similarity in item content. For instance, item 24 “After the coach gives me sport advice, I work real hard on what he or she told me to do” is very similar to item 24 “I frequently let my coach know how I am doing in terms of improving my sport skills.” Both items reflect the working relationship between the coach and athlete. Similarly, item 12 loaded highly on components I and II indicating the possibility that these two factors assessed similar aspects of coachability. In other words, “intensity of effort” may be related to “trust/respect in the coach” which contradicts the notion that the two dimensions are orthogonal. However, closer examination of the items comprising these two components suggests otherwise. First, the items representing “intensity of effort” clearly assess an athlete’s efforts and behaviors during practice. Often times, these efforts are directly related to how an athlete reacts to a coaches’ advice and feedback concerning sport skills. The items representing the “trust/respect in the coach” component assessed the more meaningful characteristics of the relationship between the coach and athlete (e.g., trust in the coach and his or her

training methods). For instance, the words “trust” and “respect” appear in items 9 and 23 while items 39 and 20 ask respondents to assess their relationship with the coach. Items 7 and 24 actually highlight this distinction between an athlete’s working relationship with the coach (intensity of effort) and the relationship between coach and athlete (trust/respect). An athlete’s responses to feedback from the coach during practice are distinct from his or her comfort in sharing opinions with the coach and the deeper more meaningful aspects of the relationship between coach and athlete. The patterns of component loadings reflect these differences. Second, on statistical grounds, an examination of the correlation matrix and the rotated component matrix reveals low and negative correlations between the items comprising components one and two. In addition, the high component loadings (all greater than .500) indicate that these items are assessing different aspects of the “coachability” construct. The only item to exhibit non-unique item loadings (high loadings on more than one factor) was item 12. Finally, common experience suggests that an athlete doesn’t necessarily have to like or respect his or her coach in order to demonstrate motivation and/or respond with intense effort to the coaches’ feedback. An athlete can have very little respect or a poor working relationship with his or her coach but still respond to coaching feedback with intense effort. Therefore, these two dimensions of coachability appear for the most part to be orthogonal.

Although the dimensions of coachability within the conceptual model (See Figure 1) were partially supported, only 30% of the response variance was explained by the three rotated components. It is likely that the large number of items that either didn’t

load significantly on common components (9 items), revealed low final communality estimates (7 items), or showed values less than .50 on the anti-image matrix (2 items) all contributed to the amount of unaccounted for variance. The remaining 26-items were retained for further analysis. These items from the first five rotated components, accounted for 43% of the response variance. In addition, four additional items were added to increase the amount of variance explained by factors III, IV, and V and they consisted of items 18, 26, 27, and 28 in version two of the ACS (See Appendix C). The latter three items were grouped together because each was predicted to load on different components (openness to learning new skills, coping with criticism, and working with teammates respectively).

CHAPTER IV

STUDY TWO

Introduction

The purpose of Study Two was to reassess the psychometric properties of the revised ACS with a second sample of athletes. In this chapter, a description is given of the changes that were made to the ACS following Study One, the psychometric properties of the Task and Ego Orientation Scale for Sport (TEOSQ) by Duda and Nicholls (1992), the characteristics of the second sample of athletes, and the procedures used to collect and analyze Study-Two data.

Measures and Procedures

The ACS (Revised Version)

As discussed in the previous chapter, changes in the cover page were necessary in order to more carefully examine the relationship between subscales of the ACS and ratings that assess the degree of importance participants attached to sport participation (Bem & Allen, 1974). Specifically, three items were added that required participants to rate the importance of each of the following: First, “Compared to other aspects of your life (e.g., friends, family, social life), please rate how important your sport is to you.” Second, “Compared to other athletes you know, please rate how many sport camps you have attended in the past.” And third, “Compared to other athletes you know, how often do you seek extra instructional assistance (e.g., extra coaching or working with a sport psychologist) related to your sport.” It is predicted that participants who attach greater importance to being perceived as “coachable” will score higher on these ratings.

As discussed in the previous chapter, 18 items from version one of the ACS were deleted. Four new items were added and predicted to load on the coping with criticism (Item 27), working with teammates (Items 18 and 28), and openness to learning components (Item 26). Thus, the revised version consisted of 30 items (See Appendix C).

The Task and Ego Orientation for Sport Questionnaire (TEOSQ)

The TEOSQ is a 13-item questionnaire developed by Duda and Nicholls (1992). The scale is comprised of two independent subscales that assess the tendency of individuals to be task or ego involved in competitive sport. When completing the instrument, participants are asked to respond to the stem “What is sport success? When do you feel most successful in sport? In other words, when do you feel a sport activity has gone really well for you? I feel most successful in sport when...” and indicate their agreement with items that reflect an ego orientation (e.g., I’m the only one who can do a particular skill or play” or “I am the best) and a task orientation (e.g., “I learn a new skill which makes me want to practice more” or “I learn a skill by trying hard”). Previous research has demonstrated a stable factor structure with a variety of populations and the two subscales have been shown to have high internal consistency and acceptable test-retest reliability (Duda, 1998). Evidence for predictive and concurrent validity TEOSQ has also been demonstrated (White & Duda, 1993).

Participants responded to each of the 13-items on a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). A mean scale score was computed for all participants by summing the item responses and dividing this value by the number of

items. Cronbach's (1955) alpha coefficients for task and ego orientation in the present investigation were found to be .71 and .86 respectively.

Participants

The participants in Study Two were 118 college athletes who represented NCAA Division I (N=47), II (N=27), and III (N=44) programs and two (N=2) athletes who competed on an international level but currently train with their former college coach (N=120). There were 67 males and 53 females with an average age of 19.94. The average age for the male participants was 20.08 while the female average was 19.75. The participants represented the sports of baseball (N=52), diving (N=10), tennis (N=15), golf (N=9), soccer (N=14), softball (N=10), and volleyball (N=10).

Procedure

The procedures for Study Two were essentially the same as those used in Study One. Specifically, the arrangements made with coaches, scale administration, and reviews of the inventories were followed as described in study one. In one situation, an assistant coach, who is also a doctoral student in the University of Tennessee sport psychology program, made arrangements for data collection by seeking verbal permission from the head coach.

Statistical Analysis

The data analyses for Study Two were identical to those described in Study One and included the computations of descriptive statistics, principal components, principal components factor analysis, and coefficient alpha. The six criteria used for determining the number of components in Study One were also used in Study Two (Johnson, 1998;

Tinsley & Tinsley, 1987). Component scores for the ACS components were computed by summing the items with component loadings greater than .50 and dividing this number by the number of items. With regard to the TEOSQ, mean scale scores (i.e., sum of item responses/number of items) were obtained for both subscales (task and ego orientation). Spearman's rho correlations were then computed to assess relationships between the emergent ACS component scores and the subscale scores (task and ego orientation) of the TEOSQ.

Study Two Results

Descriptive Statistics

Table 7 shows the individual item means and standard deviations for the revised 30-item ACS. As shown, item means ranged between 4.02 (item 9) and 6.36 (item 29) and standard deviations ranged between .89 (item 29) and 1.57 (item 7). The participants in Study Two reported that they had been with their current coach an average of 2.25 years (SD = 1.98). The mean rating for the cover page question concerning the relative importance attached to sport participation was slightly above average (M=5.42; SD = 1.04) while the participants also reported attending an average number of sport camps compared to other athletes (M = 4.15; SD = 1.74) and seeking slightly less than average extra instructional assistance (M = 3.84; SD = .12). Table 8 shows the participant ratings on the cover page by division and gender. Multivariate comparisons revealed no significant differences between participant ratings by gender and Division.

Preliminary Analyses

Bartlett's Test for Sphericity was used to test the hypothesis that the correlation

Table 7

ACS Item Means and Standard Deviations - Study Two

Item	Mean	Standard Deviation
X1	4.40	1.49
X2	5.90	1.10
X3	5.07	1.15
X4	4.89	1.08
X5	6.00	1.15
X6	6.04	1.02
X7	4.18	1.57
X8	4.68	1.55
X9	4.02	1.34
X10	5.23	1.25
X11	4.79	.97
X12	5.58	1.14
X13	5.68	.98
X14	5.75	1.17
X15	5.33	1.19
X16	5.44	1.22
X17	6.12	1.04
X18	5.36	1.23
X19	4.33	1.36
X20	5.41	1.15
X21	5.30	1.28
X22	5.62	.94
X23	4.94	1.59
X24	5.92	.91
X25	5.07	1.40
X26	5.55	1.44
X27	5.36	1.18
X28	5.04	1.03
X29	6.36	.89
X30	6.06	.97

Table 8

Crosstabulated Participant Mean Ratings for Demographic Items

	Division I	Division II	Division III	Males	Females
Degree of Importance	5.61	5.88	4.93	5.49	5.33
Number of Camps	3.91	4.44	4.25	4.10	4.22
Extra Instruction	4.00	3.88	3.63	3.63	4.14

matrix was an identity matrix (all correlations = 0). The p-value for this test was <.001 so the hypothesis was rejected. The results of the Kaiser-Meyer-Olkin measure of sampling adequacy showed that the magnitude of the observed correlations with the partial correlations was .82. In addition, an examination of the correlation matrix (See Appendix C) revealed a pattern of significant correlations between various items and negative correlations between other items. Based upon these findings, a factor analysis for the data was deemed appropriate (Kaiser, 1974).

Factor Analysis

Principal Components Analysis

Principal components and principal components factor analysis with a varimax rotation were used to examine the dimensionality of the revised ACS. An examination of Table 9 reveals that seven eigenvalues were greater than 1.0 accounting for 66% of the response variance. An examination of the scree plot in Figure 3 shows a discontinuity after the first, second, third, fourth, and seventh components. Similar to the statistical procedures employed in Study One, a variety of different factor solutions were rotated to simple structure by the varimax method (Comrey, 1978; Kaiser, 1963). Specifically, the

Table 9

Principal Components Analysis – Study Two

Components	Eigenvalue	% of Variance	Cumulative %
I	8.85	28.48	20.48
II	3.16	10.53	39.02
III	2.24	7.48	46.51
IV	1.94	6.47	52.98
V	1.53	5.12	58.10
VI	1.33	4.44	62.54
VII	1.19	3.98	66.53

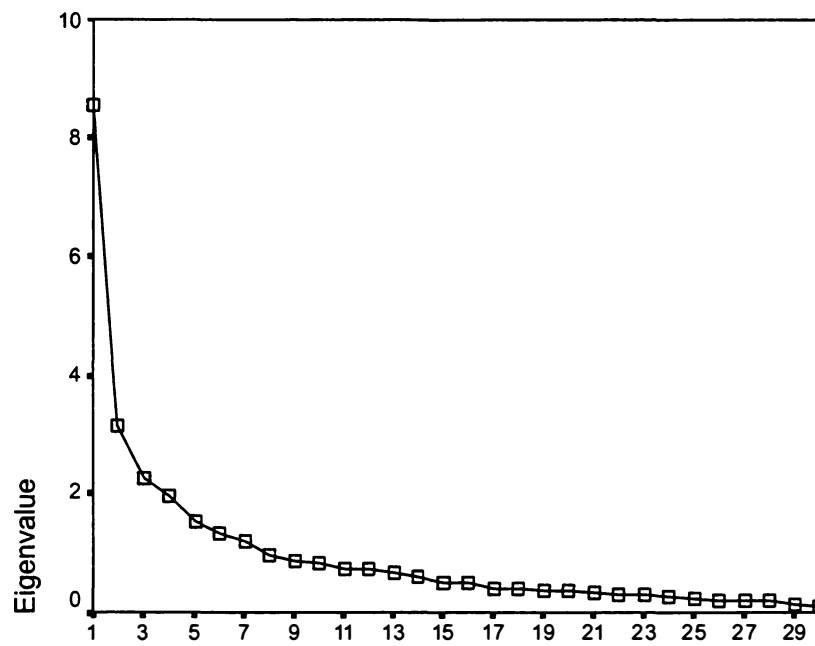


Figure 3 - Cattell's Scree Plot for Study Two

number of factors were rotated at three, four, five, six, and seven factors and evaluated for interpretability and optimal data fit. The reproduced correlation matrix was examined along with the other criteria discussed previously to determine the most appropriate number of components in subsequent factor analysis (Johnson, 1998). The reproduced correlation matrix revealed that the optimal fit for factor analysis controlled the number of components at seven, as 129 or 29% of residuals were less than .05. In addition, the seven-component solution was most interpretable and revealed components with unique item loadings. Controlling the number of components at six resulted in 45% of the residuals in the reproduced correlation matrix less than .05. A progressively greater number of residuals showed values less than .05 when controlling the number of components at five, four, and three respectively. An examination of the anti-image matrix revealed no partial correlations less than .50 on the diagonal (Kaiser, 1974). Finally, item loadings greater than or equal to .50 on the rotated-component matrix were retained for further analyses.

Principal Factor Analysis Results

A seven-factor principal factor analysis with a varimax rotation was performed to transform the initial matrix to orthogonal simple structure. The rotated principal factor analysis resulted in six interpretable components, accounting for 59% of the response variance. Table 10 shows the item loadings on each of the seven rotated components while Table 11 shows the item labels, eigenvalues, percent and cumulative percent of variance explained by each component. Table 11 also presents the new item labels that were created as a result of the results from Study Two. As shown in Table 10,

Table 10

Rotated Component Matrix – Study Two

	I	II	III	IV	V	VI	VII
X30	.745	.227	-.089	-.088	.104	.111	.202
X29	.653	-.041	-.093	-.011	.352	.157	-.020
X14	.586	.300	.280	.398	.106	-.131	-.034
X26	.560	.128	.282	-.159	-.202	-.085	.175
X24	.548	.318	-.043	.424	.180	-.025	-.237
X2	.532	.265	.211	-.052	-.064	.185	-.034
X22	.514	.467	-.081	.147	.233	.139	.208
X20	.194	.786	-.005	.148	.135	.205	-.099
X13	.281	.739	-.023	.142	.124	-.031	.139
X21	.100	.679	-.036	.268	.147	.151	.362
X10	-.075	.672	-.057	-.147	-.038	.171	.215
X17	.341	.513	-.051	.120	.129	-.005	.329
X7	-.099	-.028	.860	-.007	.039	-.030	-.021
X1	.158	.108	.806	.117	-.016	-.131	-.076
X9	.119	-.061	.779	.170	.160	.102	-.136
X15	.509	-.086	.545	-.073	-.025	-.021	-.048
X23	-.093	-.010	.144	.786	-.021	.182	-.068
X25	-.062	.298	.183	.688	.045	.206	.176
X12	-.033	.191	-.005	.631	.128	.348	.355
X3	.258	-.094	-.043	.599	.232	-.220	.354
X11	-.037	.157	.107	-.035	.856	-.065	-.007
X4	-.081	-.026	.110	-.092	.828	-.069	.141
X18	.304	.232	-.102	-.040	.656	-.061	.165
X28	.288	.211	.377	.220	.533	.169	-.044
X8	-.059	-.016	-.140	-.041	-.007	.773	.254
X19	-.084	.328	.135	.285	-.022	.640	-.261
X16	.309	.196	-.141	.158	-.005	.627	.194
X27	.307	.159	.200	.312	-.025	.603	-.013
X5	-.052	.266	-.079	.235	.113	.130	.795
X6	.168	.345	-.020	.253	.112	.153	.769

Table 11

Rotation Sums of Square Loadings – Study Two

Component	Eigenvalue	% of Variance	Cumulative % of Variance
I - Intensity of Effort	3.53	11.79	11.79
II - Reactions to Coach Feedback	3.53	11.78	23.57
III – Openness to Learning	2.86	9.55	33.12
IV - Trust/Respect for Coach	2.82	9.41	42.44
V – Working with Teammates	2.62	8.73	51.27
VI - Coping with Criticism	2.24	7.76	59.04

items 30, 29, 14, 26, 24, 2, and 22 revealed loadings on component I greater than .50, accounting for nearly 12% of the response variance. These items corresponded to the original intensity of effort component in Study One with the exception of item 15 which originally loaded on the “openness to learning” component. Item 15 also had a loading greater than .40 under component III, openness to learning. Component II consisted of items 20, 13, 21, 10, and 17, none of which loaded on component II from Study One and all of which pertain to an athlete’s reactions to coaching feedback. Component II accounted for 12% of the response variance. Items comprising component III (accounting for 10% of the response variance) were identical to the openness to learning component in Study One (items 7, 1, 9, and 15). Items 23, 25, 12 and 3 (Component IV) consisted of the original trust/respect for the coach component accounting for 9% of the response variance. Items that loaded on component V, accounting for 9% of the response variance, consisted of items 4, 11, 18, and 28. These items were those that comprised the original working with teammates component in addition to the newly added item 28.

Component VI, accounted for 8% of the response variance and (items 8, 16, 19, and 27) corresponded to the coping with criticism component from Study One. Finally, component VII consisted of two items (5 and 6) that originally loaded under the trust/respect in the coach component but these items will be dropped from future version of the ACS because they formed their own factor. It is important to note that three items (15, 22, and 24) had high loadings on more than one component. Therefore, it is recommended that future versions of the ACS not include these items. The final communality estimates revealed only one item (item 10) with a relatively lower individual item variance estimate than the other items. The remainder of the items exhibited estimates between .40 and .70.

In summary, the results of Study Two support a six-component 24-item version of the Athletic Coachability Scale that is very similar to the model that resulted from Study One. The one exception concerned component II which was reevaluated after Study Two. The items comprising this component appear to reflect an athlete's response to coaching feedback. Only the items that make up the components discussed above were utilized to gain estimates of internal consistency.

Finally, multiple means comparison testing between male and female and Division I, and a combined Division II/III on the subscale responses of the ACS revealed no significant differences between these groups of athletes. In other words, for the athletes in this sample, there were no significant ACS response differences for male and female and athletes from different levels of sport participation (Division I, II and III).

Internal Consistency

Cronbach Alpha was computed for the emergent subscales that resulted from the factor analytic results. Only those items that exhibited unique loadings greater than .50 were utilized in this analysis. In addition, individual item-total correlations and the overall scale alpha were computed.

All individual item contributions to the overall alpha exceeded .80 while the overall scale alpha was .85. The subscale alpha's all exceeded the .70 criterion advocated by Nunnally (1978). These coefficients were .77 for intensity of effort, .79 for reactions to coaching feedback, .82 for openness to learning, .76 for trust/respect for the coach, .78 for working with teammates, and finally, .71 for coping with criticism.

Correlational Analyses

A series of Spearman's rho correlations were computed to assess relationships between emergent ACS subscale scores (Intensity of Effort, Reactions to Feedback, Openness to Learning, Trust/Respect for the Coach, Working with Teammates, Coping with Criticism, and total ACS score) and the subscales on the TEOSQ (Task and Ego Orientation). As shown in Table 12, significant correlations were obtained for several subscales of the ACS and TEOSQ subscales. Specifically, a task orientation was significantly related to intensity of effort, reactions to coaching feedback, trust/respect in the coach, working with teammates, and total ACS score. The significant correlations were low to moderate in size, ranging from .277 between trust/respect in the coach and a task orientation to .453 between a task orientation and reactions to coach feedback. The

Table 12

Spearman's rho Correlations Between

ACS and TEOSQ Subscales

ACS Subscales	Task Orientation	Ego Orientation
Intensity of Effort	0.377**	-0.059
Reactions to Coach Feedback	0.453**	-0.159
Openness to Learning	0.108	0.022
Trust/Respect for Coach	0.277**	-0.071
Work with Teammates	0.378**	-0.252**
Coping with Criticism	0.179	-0.128
Total ACS Score	0.458**	-0.166

* - Significant at the .05 level, ** Significant at the .01 level – Two-Tailed

largest correlation was revealed between a task orientation and total ACS score. The correlations were generally low and negative between the ACS subscale scores and an ego orientation with the exception of a significant negative correlation between an ego-orientation and working with teammates.

Finally, correlations were computed to assess relationships between ACS subscale scores and participant's ratings of the degree of importance attached to sport participation, the relative number of camps attended, the amount of extra instructional assistance and total and emergent ACS subscales. As shown in Table 13, the majority of correlations were low ranging from .000 to .327. Relative importance revealed the most consistent pattern of significant correlations that ranged between .171 (reactions to coach feedback) and .274 (openness to learning) while total ACS score demonstrated

Table 13

Spearman's rho Correlations between
ACS Subscales and Importance Ratings

ACS Subscales		# of Importance Camps	Extra Instruction
Intensity of Effort	0.252**	0.113	0.204*
Reactions to Coach Feedback	0.171	0.052	0.148
Openness to Learning	0.274**	0.027	0.106
Trust/Respect in Coach	0.245**	0.051	0.179
Working with Teammates	0.155	0.000	0.191*
Coping with Criticism	0.095	0.096	0.055
Total ACS Score	0.327**	0.088	0.257**

* - Significant at the .05 level, ** Significant at the .01 level – Two-Tailed

the highest magnitude correlation with relative importance of sport participation. With regard to extra instructional assistance, significant correlations with ACS subscales and total ACS score ranged between .191 and .257 while non-significant relationships were demonstrated between number of camps attended and ACS subscales.

Study Two Discussion

Summary of Descriptive Results

An examination of the mean item responses from Study Two revealed that the participants generally answered the ACS items on the positive pole of the Likert scale. The standard deviations however showed that participant's varied between three and seven on the Likert scale with a relatively small number of negative responses. This positive response bias may have been due to a variety of factors including the social desirability effect and characteristics of the athletes in the present study. Specifically, the

athletes in this sample may have been concerned that their responses would be used to judge them in some way even though participants were assured of confidentiality. The range restriction demonstrated in the present study was similar to that reported by Smith et. al., (1995) for their “coachability” subscale which contributed to a relatively lower test-retest reliability coefficient. Therefore, it appears that assessments of “coachability” may be prone to respondents answering in a socially desirable manner. Future psychometric examinations of the ACS should account for this effect. Another possible explanation for the range restriction in the present study could be that the college athletes in this sample were relatively more coachable (compared to other samples of athletes) as measured by the ACS. Again, further empirical scrutiny of the ACS is needed with other samples of athletes possessing a variety of different personal, contextual, and skill characteristics.

The response ratings on the cover page revealed that the college athletes in this sample viewed their sport participation to be moderate to high in importance while they reported attending an average number of sport camps and having received less than average extra instructional assistance. These descriptive results are somewhat surprising but may be due to the relative percentages of Division I, II, and III athletes that comprised the sample. It might be expected that including a higher percentage of Division I athletes in future samples would result in relatively higher importance ratings.

As discussed in the literature review of this dissertation, the inclusion of a rating scale (See Appendix C) to assess the relative importance of sport participation was intended to reflect Bem and Allen’s (1974) suggestion regarding trait assessments.

Specifically, Bem and Allen (1974) recommend that assessments of various aspects of personality should be coupled with ratings that ascertain how important or relevant a given trait is to that particular individual. As indicated by the low and significant correlations (.16 to .35) between athlete's ratings on the cover page questions and the ACS total and subscale scores, Bem and Allen's (1974) recommendations were supported but only to a small extent. Future research may require adjustments or changes to questions assessing the importance of sport participation, "coachability" and/or respondent's relationships with coaches. The decision to include the word of the construct being assessed requires careful consideration from the investigator (Lounsbury, Personal Communication). It is also possible that other methods of assessing the degree of importance athletes place on their sport participation and relationship with the coach (e.g., significant other ratings, coach ratings) would yield a higher correlation with ACS scores.

Summary of Factor Analytic Results – Study Two

As discussed by Messick (1989), there are a variety of ways to demonstrate the validity of a test and/or construct. One method includes an examination of the internal structure of a test (i.e., internal consistency and factor structure). The factor analytic results from Study Two offered partial support for the findings from Study One. Specifically, five of the six extracted components of coachability were supported (intensity of effort, trust/respect in the coach, openness to learning, working with teammates, and coping with criticism) with item loadings nearly identical for the two studies. The intensity of effort component was further differentiated in Study Two as

half of the items from the original component reflected practice efforts and the other half loaded under a new component labeled reactions to coaching feedback. These inconsistencies between Studies One and Two warrant further analysis of the ACS. This is to be expected since the construct and scale validation process often necessitates ongoing modifications and assessments with various samples (Messick, 1989; Schutz, 1999). Similarly, the non-unique item loadings for items 15, 22, and 24 were somewhat surprising. These items were predicted to load on the openness to learning (item 15), and intensity of effort (22 and 24) components.

The similarity between components II (reactions to coaching) and IV (relationship with coach) and the inconsistencies between studies One and Two point to the need for further assessments of the factor structure of the ACS. It is possible that a confirmatory factor analysis may demonstrate that the items from components II and IV should be combined, modified, or dropped. A confirmatory factor analysis would help establish how well the ACS item set conforms to the underlying theoretical model of coachability (Hoyle, 1995).

It is interesting that the items pertaining to coaching were further differentiated in Study Two. A closer examination of the individual items revealed a somewhat distinct difference between components II and IV. Specifically, component IV appears to assess an athlete's relationship with the coach while component II is concerned with how an athlete reacts to coaching feedback. As pointed out in the discussion from Study One, an athlete's relationship with the coach is very complex. An athlete may often feel compelled to work hard and thus respond to coaching feedback with intense effort.

These reactions don't always amount to trust and respect in the coach. Therefore, it makes sense that intensity of effort, reactions to coaching feedback, and trust/respect for the coach formed separate components within a scale that assess "coachability."

The final 24 item scale from Study Two consisted of the following components: intensity of effort (5 items), reactions to coaching feedback (4 items), openness to learning (3 items), trust/respect in the coach (4 items), working with teammates (4 items), and coping with criticism (4 items). As shown in Figure 4, the final conceptual

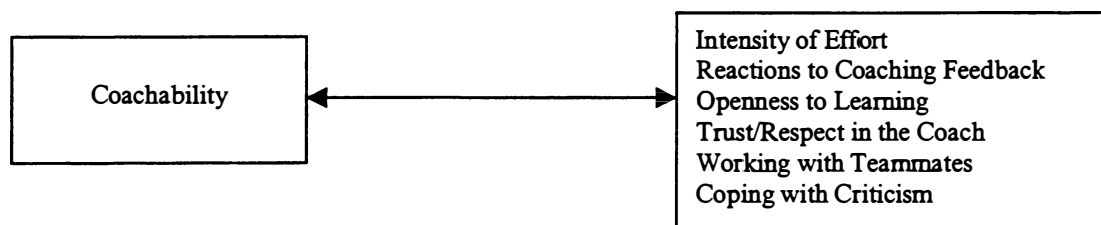


Figure 4 – Conceptual Model of Coachability Number Two

model of coachability predicts that this construct is defined by the six components revealed in the present studies.

Internal Consistency – Study Two

Another form of validity evidence involves the demonstration of internal consistency of item responses on a test (Messick, 1989). Cronbach alpha estimates of internal consistency for the present study demonstrated acceptable levels as the subscale coefficients all exceeded .70 (Nunnally, 1978) and ranged from .71 for coping with criticism to .82 for openness to learning. This was a pleasant surprise because of the small number of items per subscale. As discussed by Nunnally & Bernstein (1994),

subscales (components) with a small number of items often lead to underestimates of coefficient alpha. In addition, the overall scale alpha was .85 which indicates that the instrument as a whole was shown to have adequate estimates of internal consistency.

Validity Evidence

The most common form of validity evidence for a new scale and construct involves an assessment of relationships between the construct of interest (in this case scores on the ACS) and other established constructs and/or known behavioral indicators (Cronbach & Meehl, 1955; Embretson, 1983; Messick, 1989; Schutz, 1999). Cronbach and Meehl (1955) first described this process as the development of a *nomothetic network* while Embretson (1983) refers to the notion of a *nomothetic span*. The basic idea behind these conceptions of “nomological validity” is that the construct being studied offers empirically testable hypotheses between test scores and other established tests (Messick, 1989; p. 48). In the present study, an attempt was made to assess relationships between ACS subscales and two well established constructs (task and ego orientation) as measured by the TEOSQ (Duda & Nicholls, 1992) and other possible indicators (importance ratings) of “coachability.” The results supported the predicted relationships between a task orientation and the subscales of the ACS. Specifically, moderate and significant correlations were demonstrated between a task orientation and intensity of effort, reactions to coaching feedback, working with teammates, and total ACS scores. This pattern of correlations provided initial support for the convergent validity of the ACS. However, these findings should be viewed with caution since the highest correlations only shared approximately 15 to 20% of common variance. The pattern of

correlations between ACS subscales and scores on the ego orientation scale of the TEOSQ were surprising. Specifically, the low and negative correlations between an ego orientation and “coachability” demonstrates discriminant validity evidence for the ACS.

Finally, another form of validity evidence for the “coachability” construct was demonstrated by the pattern of correlations between ACS subscales and athletes cover page ratings. Athletes who rated their sport participation as relatively important (compared to other aspects of their lives) also scored significantly, but only slightly, higher on the ACS. Consistent with the correlations revealed between ACS subscales and a task orientation, these results indicate that ACS scores are correlated with aspects of an athlete’s motivation.

CHAPTER V
GENERAL DISCUSSION, RECOMMENDED FUTURE RESEARCH
DIRECTIONS, AND CONCLUSION

The overall purposes of the present research studies were to develop a measure of athletic “coachability” and assess its internal factor structure and reliability.

Furthermore, Study Two was intended to replicate Study One and assess relationships between the emergent “coachability” subscales and subscale scores of the TEOSQ (task and ego motives in sport) as well as other hypothesized indicators of “coachability.”

This chapter contains a general discussion of both studies. The present results are evaluated and compared with the findings of the Giacobbi et. al., (1999) interview studies and with other relevant studies. This is followed by a discussion of the theoretical implications of these results and suggested future research.

General Discussion

The present studies offer preliminary support for the coachability construct as operationalized by the ACS. The two studies showed similar internal consistency estimates and factor analytic results. Notable exceptions to this trend include the new component II that included several items from the original intensity of effort component and some inconsistencies with the openness to learning component. Specifically, the final component II appears to reflect an athlete’s reactions to coaching feedback while item 15 loaded highly on components I and III.

Perhaps the most stringent test of the validity of the ACS concerns how representative the instrument is with coaches and athletes definitions of “coachability.”

Therefore, a comparison of the final model of “coachability” to the interview findings of Giacobbi et. al., (1998, 1999) is warranted. Overall, the factor analytic results supported the findings from the interview studies. Specifically, the intensity of effort component explained the most variance in the present studies. This finding was in accord with the athlete’s statements during the focus group meeting from interview study one concerning the relative importance of individual motivation. Next, the importance of trust in both interview studies was clearly supported as the trust/respect for the coach component emerged consistently in both factor analytic models. Finally, examples of individual athlete and coach testimonials regarding the importance of listening closely to feedback and instructions, working with teammates, and responding effectively to coaches’ criticism suggest support for the present findings. Overall, these results support the qualitative interview findings with coaches and athletes and the use of qualitative research methods in the study of new constructs. Future mixed-model and/or mixed-method research in the sport and exercise sciences is warranted.

The present research results are consistent with the recommendations and observations of Orlick (1990). Specifically, Orlick (1990) contends that “being open to the input of others” is an essential quality of success in sport (pp. 11). Orlick (1990) offered the following testimonial of an NHL coach to support this claim:

Our superstars can handle constructive criticism...They can even handle unfair criticism...If they make a mistake, they acknowledge it and do everything in their power to not make it

again...A person with star potential will not become a star if, when

I criticize him or point out a mistake, he tries to fight me (pp. 11).

In short, it appears that coping with criticism and openness to the feedback and input of others are important characteristics of high-level performers. Future research investigators in sport psychology should explore these observations and pay particular attention to developmental considerations that influence the degree to which an athlete is open to learning, feedback, and criticism from others.

Although overall support for the results of the interview studies was demonstrated in the present research, certain aspects of the interview studies were not represented in the factor analytic studies. For instance, Giacobbi et. al., (1998) showed that the family was an important influence on the development of “openness” for many athletes. In this study, some athletes stated that their parents had encouraged them to listen, respect, and be open to the views and opinions of others. This finding was not adequately represented in the first version of the ACS and could be attributed to the relatively fewer number of items (compared to other aspects of coachability) representing the family. Furthermore, the family could be one developmental antecedent of openness to learning and feedback as high-level performers may have certain familial influences that distinguish them from their less-successful counterparts.

Another cautionary note concerning the present line of research is warranted. Specifically, the qualitative interview studies were conducted with Division I college athletes and coaches while a substantial portion of the sample in the factor analytic studies represented Division III programs. It was assumed that the qualitative interview

results and the development of the ACS would adequately represent the experiences of college athletes at all levels. This assumption may have been unwarranted and could have influenced the results and/or inconsistent factor analytic findings. Future qualitative research and comparisons of athletes' responses on the ACS could help clarify how well the interview results generalize to other athletic samples (e.g., high school, Divisions I and II athletes).

The present research does offer sport psychology researchers some important theoretical speculations. The correlations between ACS and TEOSQ subscale scores revealed that a task-orientation is related to athletes' practice efforts, reactions to coaching feedback, and their working relationships with teammates. An ego-orientation was not significantly related to any ACS subscale except the negative correlation revealed for working with teammates. Based upon previous findings, a task-orientation, as compared to an ego-orientation, has been shown to be related to greater enjoyment, increased effort, and more positive affect (Boyd & Yin, 1996; Duda, Chi, Newton, Walling, & Catley, 1995; Hall & Earles, 1996). Similarly, Hall and Kerr (1997) demonstrated an inverse relationship between scores on the task-orientation scale and state-anxiety scores and a positive relationship between ego-orientation and state-anxiety scale scores. What follows is that athletes who score higher on the ACS may give more effort and experience greater enjoyment than lower scoring individuals. Furthermore, athletes who score lower on the ACS may experience higher levels of state-anxiety than higher scoring individuals.

In light of the present study and the conceptual model discussed earlier in this dissertation, the preceding theoretical predictions should be assessed concurrently with assessments of various contextual factors (e.g., the emphasis and priorities of the coach and athletic department). Consistent with the predictions of interactional psychology (Bowers, 1973; Endler & Hunt, 1966; Rausch, 1965; Watchel, 1973) and Bem's (1983) theory of "triple-typology," it could be that coaches who emphasize skill development, as opposed to winning, may elicit "coachable" characteristics and behaviors in athletes to a greater extent. Specifically, a coach who emphasizes skill development might give more frequent quality feedback to individual performers. Athletes who receive more frequent quality feedback may perceive their coaches more positively, exert more effort in response to coaches' instructions and develop better relationships with them. In short, "coachability" is a sport specific construct that is quite possibly influenced by the values and communication style of the coach as well as others involved within an athletic program (e.g., athletic directors, trainers, etc.).

Summary and Recommended Future Research

The findings of the present studies should be viewed with some caution. Although some consistencies were demonstrated in the results of Studies One and Two, the inconsistencies revealed between the trust/respect for coach, intensity of effort, and reactions to coaching feedback components necessitate further assessments with a variety of athletic samples. The remaining three components (openness to learning, working with teammates, and coping with criticism) demonstrated relatively consistent item loadings between both studies. The use of structural equation modeling has become a

recent trend in studies assessing the factorial validity of psychological instruments (Marsh, 1998) and it appears to be a fruitful approach to assess the fit between the ACS item set and the conceptual model presented in this study. In addition, further psychometric examinations of the ACS are needed to assess its test-retest reliability and more closely examine the relationship between “coachability” and various other personality trait (e.g., trait and state anxiety, agreeableness, conscientiousness) and state (e.g., affect and enjoyment associated with sport participation, state-anxiety) measures.

Another approach to further substantiate the validity of the “coachability” construct and the ACS would be to correlate ACS subscale scores with other known behavioral indicators of “coachability.” For instance, observational techniques could be employed using an instrument such as the Coaching Behavior Assessment System (Smith, Smoll, & Hunt, 1977) to control for the quantity and quality of coach feedback given to various athletic samples. By making such contrasts and comparing scoring differences on the ACS of athletes who receive varying amounts of quality feedback, researchers could control for situational characteristics that might influence the degree to which an athlete is “coachable.” Other observational techniques might also include the development of a system to study athlete’s reactions to coaching.

It is strongly recommended that a shortened and modified version of the ACS be created for coaches with the pronouns changed to he or she. The coaches could fill out this instrument responding to his or her perceptions of an athlete’s effort, reactions to coaching feedback, degree of trust, working relationship with coaches, and ability to cope with criticism. The coaches’ and athletes’ ratings could be compared and correlational

analyses would yield values pertaining to the degree of agreement between the two. This methodological technique could help alleviate the issue of socially desirable responding that is pervasive in all social science research and possibly offer further validity evidence for the “coachability” construct as operationalized by the ACS.

Finally, from an applied perspective, it is recommended that practitioners avoid using the ACS to make important decisions regarding recruitment or status on a team. This instrument is still in its early stages of development and much future validation work remains to be performed. The ACS is primarily intended for use as a research tool to help investigators in sport psychology develop a more thorough understanding of individual differences and the way personality traits are manifested in the context of sport. Future researchers may wish to examine how well the ACS can predict or is related to various sport outcomes (e.g., performance, persistence, and enjoyment) because perhaps the strongest evidence supporting the validity of a psychological test may lie within applied settings where performance differences between individuals is a concern. After the ACS is proven to possess predictive utility, coaches and sport psychologists may wish to use the scale, along with other sources of information (e.g., performance statistics, interviews), to gain feedback about athletes.

Conclusion

The results of the present research demonstrate that the “coachability” construct, as operationalized by the ACS, is defined by the following components: intensity of effort, reactions to coach feedback, openness to learning, trust/respect for the coach, working with teammates, and coping with criticism. It was also shown that several of

these components (e.g., intensity of effort, reactions to coach feedback, trust/respect for the coach, and working with teammates) and the total ACS score were related to a task-goal orientation. Therefore, the ACS is a viable instrument for future investigators wishing to assess the “coachability” construct with different athletic populations.

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APPENDICES

APPENDIX A

THE ACS – VERSION ONE

Introduction

Thank-you for agreeing to complete this survey. The purpose of this survey is to help sport psychologists understand the experiences of college athletes. We are hoping to better understand what helps athletes learn new sport skills.

Your Involvement in this Study

You are being asked to complete this survey by indicating how strongly you agree or disagree with a number of statements that will follow. This survey only needs to be completed once and it should take you approximately 10 minutes.

Possible Risks and Benefits of this Study

There are no physical or psychological risks associated with completing this survey. The benefits associated with this research project will be made available to sport psychologists, coaches, and athletes. This study will help sport psychologists understand how athletes can improve their mental and physical skills.

Confidentiality

The information you share will be kept completely confidential. You are not being asked to identify yourself or your school affiliation anywhere on this survey. In addition, the data will be stored securely and will be made available only to persons conducting this study. No references will be made in oral or written reports that will link you (the participants) to this study.

Compensation

You will receive no compensation for agreeing to participate in this study. If you would like to have access to the final results of this survey you may contact me at the address listed below. You will be sent the final results of this survey with no reference to the responses to any individual or team. If you desire to see the final results you will be given a summary of the overall findings from all athletes who participate from around the country.

Questions or Comments in the Future

If you have questions at any time about this study or any of the procedures used you may contact the primary researcher Peter Giacobbi at 349 HPER Building, The

University of Tennessee, Knoxville, 37996-2700 or by calling (423) 974-9973. If you have any questions about your rights as a participant, contact Compliance Section at (423) 974-3466.

Participation

Your participation in this study is voluntary and you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at anytime without penalty. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed. Return of the completed survey (questionnaire) constitutes your consent to participate.

Thank-you

The Survey of Athletic Experiences – A Study About How Athletes
Learn Sport Skills – Version One

Thank-you for participating in this project. You are one of hundreds of athletes from around the country participating in this study. **None of your responses to this survey will be shared with your coach or anyone else. All information on this survey will be kept completely confidential and there is no need to put your name anywhere on this survey.**

Your age: _____

Your Gender: _____

Your Sport: _____

Do you play for a Division One, Two, or Three Program? _____

Number of Years you've participated in this sport overall: _____

How long have you played under your current coach? _____

Have you ever attended a sport camp related to your sport? Yes or No. If yes approximately how many have you attended? _____

Do you receive any special instructional assistance or coaching aside from your normal practice with the team you are currently playing on? Yes or No. If yes how often do you receive this instruction? _____

Are you a starter on your current team? Yes or No or Not Applicable

Please turn the page, read the directions, and begin answering the questions.

Directions – The statements that follow are typical ways athletes describe some of their sport experiences. Please read each statement and decide how strongly you agree or disagree with each statement at the current time. Then circle the number that corresponds with your answer. There are no right or wrong answers and do not spend too much time on any one question. Some of these questions may be repetitive but please answer them carefully and honestly. Use the following scale to answer your questions:

-3 Disagree Very Strongly
-2 Disagree Strongly
-1 Disagree
0 Neutral
+1 Agree
+2 Agree Strongly
+3 Agree Very Strongly

Answer these questions as they apply to you right now on your current sport team.

- | | |
|---|---------------------|
| 1. When I'm playing or performing well, I find it difficult to try different ways of executing my sport skills. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 2. I like to continually think of better ways of practicing rather than following the usual ways. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 3. I frequently read books or magazines about my sport. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 4. During practice, I am willing to try anything to improve my sport skills. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 5. It is very difficult to change the way I execute my sport skills during practice. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 6. I become uncomfortable when my coach changes the practice routine. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 7. I frequently let my coach know how I am doing in terms of improving my sport skills. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 8. I often get advice from my teammates about my sport skills. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 9. I highly respect the knowledge and experience of my coach. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |
| 10. I have many questions about my sport skills that I'm always seeking answers to. | -3 -2 -1 0 +1 +2 +3 |
| <hr/> | |

-3 Disagree Very Strongly
-2 Disagree Strongly
-1 Disagree
0 Neutral
+1 Agree
+2 Agree Strongly
+3 Agree Very Strongly

11. I am willing to completely change my sport skills in order to improve.	-3	-2	-1	0	+1	+2	+3
12. I place a very high value on the advice and feedback my coach gives me.	-3	-2	-1	0	+1	+2	+3
13. I consider myself a student of my sport.	-3	-2	-1	0	+1	+2	+3
14. I frequently think of ways to improve at my sport.	-3	-2	-1	0	+1	+2	+3
15. I frequently seek out new and different sources of information about my sport.	-3	-2	-1	0	+1	+2	+3
16. If my coach criticizes me, I stop listening for a while.	-3	-2	-1	0	+1	+2	+3
17. Even if my coaches' advice is not helping me right away, I continue to work on what I was told.	-3	-2	-1	0	+1	+2	+3
18. I prefer practice to be familiar and predictable.	-3	-2	-1	0	+1	+2	+3
19. The athletes I work or train with (my teammates) frequently give me sport advice.	-3	-2	-1	0	+1	+2	+3
20. Overall, I have a very good working relationship with my coach.	-3	-2	-1	0	+1	+2	+3
21. Overall, I have a very good working relationship with my teammates.	-3	-2	-1	0	+1	+2	+3
22. I am always willing to try new drills or techniques to help improve my sport skills.	-3	-2	-1	0	+1	+2	+3
23. I trust, without reservation, the training methods of my coach.	-3	-2	-1	0	+1	+2	+3
24. After the coach gives me sport advice, I work real hard on what he or she told me to do.	-3	-2	-1	0	+1	+2	+3

-3 Disagree Very Strongly
-2 Disagree Strongly
-1 Disagree
0 Neutral
+1 Agree
+2 Agree Strongly
+3 Agree Very Strongly

25. I listen to the advice of my coach only if I think it will help my sport skills.	-3	-2	-1	0	+1	+2	+3
26. I frequently read books about famous athletes in my sport.	-3	-2	-1	0	+1	+2	+3
27. If something is not working during practice, I tell my coach right away.	-3	-2	-1	0	+1	+2	+3
28. I am very open to information from many different sources (e.g., books, magazines, coaches) concerning my sport skills.	-3	-2	-1	0	+1	+2	+3
29. When my coach tells me how to correct a mistake I've made, I tend to take it personally and feel angry or upset.	-3	-2	-1	0	+1	+2	+3
30. It is very important for my coach to think of me as an athlete who is willing to do what it takes to get better.	-3	-2	-1	0	+1	+2	+3
31. There is always something new to learn in my sport.	-3	-2	-1	0	+1	+2	+3
32. Members of my family frequently give me sport related advice.	-3	-2	-1	0	+1	+2	+3
33. If my coach criticizes or yells at me, I always correct my mistake without getting frustrated or mad.	-3	-2	-1	0	+1	+2	+3
34. I enjoy the challenge of learning new sport skills more than almost anything else.	-3	-2	-1	0	+1	+2	+3
35. I enjoy learning about my sport from many different coaches or people.	-3	-2	-1	0	+1	+2	+3
36. I always listen closely to my coaches' instructions during practice.	-3	-2	-1	0	+1	+2	+3

-3 Disagree Very Strongly
-2 Disagree Strongly
-1 Disagree
0 Neutral
+1 Agree
+2 Agree Strongly
+3 Agree Very Strongly

37. When my coach criticizes me, I usually get frustrated or mad.	-3	-2	-1	0	+1	+2	+3
38. I am eager to learn new skills or techniques in my sport even if I have to wait to see improvements in my sport performance.	-3	-2	-1	0	+1	+2	+3
39. I feel totally comfortable sharing my opinions with the coach.	-3	-2	-1	0	+1	+2	+3
40. Even when I'm playing or performing well, I always try hard to improve.	-3	-2	-1	0	+1	+2	+3
41. I am very selective about who I take sport advice from.	-3	-2	-1	0	+1	+2	+3
42. As the season progresses, I become less willing to try new or different techniques with my game.	-3	-2	-1	0	+1	+2	+3
43. I view the relationship I have with my coach as a partnership.	-3	-2	-1	0	+1	+2	+3
44. I never complain or feel resentful when my coach makes practice really difficult.	-3	-2	-1	0	+1	+2	+3

Feedback, Questions or Concerns - Please feel free to provide any feedback or questions you may have about this survey on this page.

APPENDIX B

CORRELATION COEFFICIENTS – STUDY ONE

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.00	0.011	0.008	0.108	0.271**	0.120	-0.072	0.046	0.084	-0.072	-0.011
X2		1.000	0.095	0.239**	-0.046	0.036	0.223**	0.096	0.023	0.200**	0.053
X3			1.000	0.148	-0.044	0.062	0.078	0.121	0.169**	0.136	0.103
X4				1.000	-0.047	-0.081	0.076	0.135	0.230**	0.305	0.325**
X5					1.000	0.372**	-0.013	0.069	-0.015	0.021	0.170*
X6						1.000	-0.002	0.051	0.007	-0.042	0.047
X7							1.000	0.114	0.261**	0.191*	0.024
X8								1.000	0.044	0.249**	0.342**
X9									1.000	0.205**	0.294**
X10										.000	0.294**
X11											1.000

* Significance Level .05, ** Significance Level .01, (2-Tailed)

Correlation Coefficients – Study One

	X12	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23
X1	-0.008	0.065	0.103	0.120	0.141	0.168*	0.021	-0.014	0.004	-0.022	0.052	0.125
X2	0.095	0.255**	0.283**	0.169*	-0.09	0.039	0.040	0.105	-0.001	0.086	0.204**	0.056
X3	0.167*	0.179*	0.191*	0.541**	0.033	0.081	-0.089	0.209*	0.194*	0.223**	0.099	0.254**
X4	0.273**	0.301**	0.434**	0.214**	0.098	0.257**	-0.091	0.088	0.152*	0.233**	0.381**	0.278**
X5	-0.04	-0.105	0.076	0.009	0.174*	0.155*	0.266**	0.012	0.009	0.054	0.118	0.049
X6	0.097	0.050	0.082	0.061	0.246**	0.103	0.335**	0.036	0.033	0.087	0.172*	0.057
X7	0.133	0.082	0.090	0.126	0.096	-0.005	-0.194	0.015	0.465**	0.159*	0.163*	0.252**
X8	0.071	0.172*	0.210*	0.246**	-0.130	0.061	-0.092	0.692**	0.078	0.323**	0.157*	0.092
X9	0.585**	0.179*	0.079	0.117	0.182*	0.322**	-0.134	0.009	0.621**	0.135	0.259**	0.676**
X10	0.243**	0.187*	0.239**	0.174*	0.071	0.159*	-0.020	0.203**	0.213**	0.246**	0.340**	0.200**
X11	0.454**	0.252*	0.271**	0.137	0.009	0.270*	0.067	0.213**	0.179*	0.144	0.334**	0.320**
X12	1.00	0.312**	0.307**	0.140	0.242**	0.347**	-0.119	0.019	0.504**	0.234**	0.312**	0.560**
X13		1.00	0.490**	0.309**	0.193*	0.324**	-0.051	0.126	0.158*	0.192*	0.297**	0.239**
X14			1.00	0.380**	0.124	0.259**	-0.146	0.076	0.099	0.166*	0.394**	0.212**
X15				1.00	0.017	0.145	-0.033	0.163*	0.112	0.268*	0.301**	0.253**
X16					1.00	0.337**	-0.004	-0.203	0.192*	0.127	0.288**	0.302**
X17						1.00	-0.036	-0.014	0.203**	0.170*	0.465**	0.292**
X18							1.00	-0.022	-0.091	-0.003	-0.042	-0.172
X19								1.00	0.061	.303**	0.086	-0.014
X20									1.00	0.306**	0.237**	0.598**
X21										1.00	0.408**	0.244**
X22											1.00	0.406**
X23												1.00

* Significance Level .05, ** Significance Level .01, (2-Tailed)

Correlation Coefficients – Study One

	X24	X25	X26	X27	X28	X29	X30	X31
X1	0.106	0.115	0.043	-0.175	0.126	0.094	-0.042	0.052
X2	0.135	-0.146	0.124	0.138	0.187*	0.009	0.106	0.177*
X3	0.069	0.108	0.702**	0.196*	0.482**	0.129	0.090	0.326**
X4	0.417**	0.021	0.151*	0.107	0.310**	0.082	0.332**	0.285**
X5	-0.012	0.151*	-0.062	0.086	-0.034	0.241**	-0.005	0.040
X6	0.090	0.178*	0.000	0.127	0.095	0.201**	-0.008	0.129
X7	0.090	-0.079	0.078	0.342**	0.126	0.051	0.151*	0.033
X8	0.042	-0.081	0.228**	0.132	0.286**	0.019	0.268**	0.243**
X9	0.375**	0.132	0.142	0.111	0.068	0.117	0.195*	0.168*
X10	0.207**	0.031	0.137	0.191*	0.147	-0.094	0.288**	0.297**
X11	0.324**	-0.019	0.142	0.100	0.084	0.108	0.505**	0.310**
X12	0.521**	0.116	0.072	0.109	0.178*	0.079	0.451**	0.349**
X13	0.373**	0.057	0.189*	0.137	0.286**	0.066	0.334**	0.383**
X14	0.389**	0.044	0.181*	0.096	0.313**	0.148	0.369**	0.411**
X15	0.232**	0.051	0.535**	0.222**	0.524**	0.070	0.196*	0.454**
X16	0.337**	0.362**	-0.043	0.028	0.139	0.315**	0.200*	0.182*
X17	0.519**	0.262**	0.009	-0.039	0.219**	0.184*	0.352**	0.321**
X18	0.007	0.037	-0.017	0.002	0.021	0.163*	-0.530	0.014
X19	-0.040	-0.066	0.197**	0.057	0.257**	-0.027	0.086	0.151*
X20	0.394**	0.133	0.120	0.228**	0.159*	0.166*	0.196*	0.201*
X21	0.292**	0.014	0.188*	0.080	0.379**	0.126	0.413**	0.381**
X22	0.543**	0.118	0.086	0.063	0.414**	0.116	0.464**	0.452**
X23	0.565**	0.272**	0.281**	0.234**	0.168*	0.203**	0.270**	0.302**
X24	1.00	0.164	0.050	0.142	0.237**	0.236**	0.479**	0.381**
X25		1.00	0.037	0.016	0.163*	0.163*	0.052	0.044
X26			1.00	0.218**	0.474**	0.029	0.103	0.307**
X27				1.00	0.164*	-0.044	0.097	0.158*
X28					1.00	0.192*	0.303**	0.474**
X29						1.00	0.088	0.040
X30							1.00	0.546**
X31								1.00

* Significance Level .05, ** Significance Level .01, (2-Tailed)

Correlation Coefficients – Study One

	X32	X33	X34	X35	X36	X37	X38
X1	-0.024	0.039	0.043	0.265**	0.147	0.095	0.082
X2	0.000	0.093	0.302**	0.164*	0.038	0.022	0.172*
X3	0.309**	0.078	0.150	0.279**	0.177*	0.050	0.065
X4	0.065	0.065	0.204**	0.233**	0.346**	0.067	0.279**
X5	-0.008	0.095	0.079	0.039	0.025	0.274**	0.062
X6	0.143	0.150	0.084	0.190*	0.043	0.211**	0.189*
X7	-0.119	0.095	0.076	0.015	0.154*	0.040	0.051
X8	0.146	-0.004	0.249**	0.156*	0.058	-0.022	0.193*
X9	-0.069	0.017	0.019	0.078	0.523**	0.117	0.213**
X10	0.119	-0.043	0.151*	0.206**	0.243**	-0.015	0.186*
X11	0.050	0.072	0.239**	0.165*	0.210**	0.026	0.227**
X12	0.011	0.062	0.086	0.132	0.469**	0.115	0.248**
X13	0.114	0.103	0.219**	0.361**	0.273**	0.059	0.237**
X14	0.230**	0.127	0.206**	0.305**	0.348**	0.107	0.257**
X15	0.305**	0.140	0.265**	0.401**	0.349**	0.003	0.232**
X16	-0.086	0.247**	-0.128	0.059	0.180*	0.366**	0.240**
X17	-0.107	0.080	0.120	0.289**	0.414**	0.147	0.332**
X18	0.029	0.084	0.042	0.075	-0.146	0.082	-0.091
X19	0.175*	-0.145	0.161*	0.160*	-0.096	-0.138	0.007
X20	-0.053	0.086	0.053	0.124	0.373**	0.211**	0.187*
X21	0.055	-0.033	0.176*	0.225**	0.222**	0.049	0.282**
X22	-0.004	0.133	0.361**	0.388**	0.373**	0.094	0.405**
X23	-0.036	0.201**	0.130	0.169*	0.463**	0.181*	0.305**
X24	-0.004	0.142	0.215**	0.308**	0.496**	0.230**	0.413**
X25	-0.021	0.135	0.020	0.140	0.222**	0.122	0.121
X26	0.293**	0.066	0.203**	0.351**	0.127	-0.029	0.066
X27	0.083	0.096	0.062	0.065	0.195*	0.039	0.075
X28	0.165*	0.171*	0.285**	0.419**	0.248**	0.123	0.244**
X29	-0.031	0.384**	0.145	0.070	0.189*	0.522**	0.232**
X30	0.041	0.06	0.275**	0.297**	0.316**	0.083	0.417**
X31	0.191*	0.034	0.282**	0.441**	0.284**	0.030	0.332**
X32	1.00	-0.028	0.066	0.204**	0.065	-0.068	-0.031
X33		1.00	0.269**	0.126	0.105	0.423**	0.262**
X34			1.00	0.428**	0.196*	0.026	0.300**
X35				1.00	0.332**	0.019	0.315**
X36					1.00	0.225**	0.368**
X37						1.00	0.332**
X38							1.00

* Significance Level .05, ** Significance Level .01, (2-Tailed)

Correlation Coefficients – Study One

	X39	X40	X41	X42	X43	X44
X1	-0.083	0.161*	0.158*	0.255**	-0.100	0.084
X2	0.060	0.216**	-0.094	-0.013	0.085	0.040
X3	0.236**	0.102	-0.037	0.037	0.160*	0.163*
X4	0.079	0.361**	0.069	0.195*	0.259**	0.108
X5	-0.095	0.001	0.119	0.283**	-0.073	0.011
X6	0.001	0.055	0.101	0.088	-0.027	0.140
X7	0.464**	0.038	-0.039	0.165	0.493**	0.127
X8	0.092	-0.038	0.140	0.090	0.063	0.005
X9	0.424**	0.149	-0.060	0.149	0.534**	0.160*
X10	0.236**	0.082	-0.078	0.246**	0.268**	0.036
X11	0.180*	0.081	0.071	0.164*	0.146	0.121
X12	0.305**	0.280**	0.026	0.158*	0.433**	0.175*
X13	0.062	0.298**	-0.122	0.119	0.189*	0.159*
X14	-0.020	0.375**	0.016	0.204**	0.102	0.103
X15	0.218**	0.243**	-0.024	0.151*	0.198*	0.161*
X16	0.065	0.199**	0.097	0.238**	0.146	0.189*
X17	0.022	0.368**	0.024	0.242**	0.068	0.108
X18	-0.120	-0.035	0.074	0.051	-0.199	0.031
X19	0.188*	-0.081	0.114	0.007	0.097	-0.017
X20	0.617**	0.128	0.122	0.213**	0.765**	0.250**
X21	0.192*	0.234**	0.175*	0.180*	0.251**	0.134
X22	0.117	0.369**	0.000	0.168*	0.293**	0.243**
X23	0.509**	0.195*	0.131	0.225**	0.596**	0.314**
X24	0.243**	0.481**	0.063	0.146	0.328**	0.262**
X25	0.073	0.086	0.227**	0.273**	0.083	0.076
X26	0.142	0.104	-0.043	-0.012	0.114	0.186*
X27	0.301**	0.071	0.014	0.001	0.310**	0.026
X28	0.094	0.268**	0.128	0.216**	0.174*	0.202**
X29	0.024	0.070	0.065	0.283**	0.006	0.217**
X30	0.065	0.291**	0.037	0.128	0.155**	0.105
X31	0.113	0.261**	0.057	0.120	0.183*	0.152*
X32	0.118	0.061	0.125	-0.110	0.046	0.023
X33	0.032	0.061	0.106	0.248**	0.058	0.248**
X34	0.077	0.117	0.042	0.105	0.031	0.227**
X35	0.114	0.261**	0.079	0.184*	0.178*	0.202**
X36	0.163*	0.333**	0.002	0.305**	0.314**	0.167*

* Significance Level .05, ** Significance Level .01, (2-Tailed)

Correlation Coefficients – Study One

	X39	X40	X41	X42	X43	X44
X37	0.030	0.098*	0.096	0.282**	0.057	0.140
X38	0.106	0.341**	-0.038	0.148	0.168*	0.323**
X39	1.00	-0.020	0.132	0.141	0.701**	0.131
X40		1.00	-0.188	0.090	0.099	0.188*
X41			1.00	0.269**	0.088	-0.014
X42				1.00	0.119	-0.003
X43					1.00	-0.005
X44						1.00

* Significance Level .05, ** Significance Level .01, (2-Tailed)

APPENDIX C

THE ACS – VERSION TWO

Thank-you for participating in this project. You are one of hundreds of athletes from around the country participating in this study. None of your responses to this survey will be shared with your coach or anyone else. All information on this survey will be kept completely confidential and there is no need to put your name anywhere on this survey.

Your age: _____

Your Gender: _____

Your Sport: _____

Compared to other aspects of your life (e.g., friends, family, social life), please rate how important your sport is to you. Circle a number below.

Not Very Important Average Very Important

1-----2-----3-----4-----5-----6-----7

Compared to other athletes you know, please rate how many sport camps you have attended in the past. Circle a number below.

Not Very Many Some A Lot

1-----2-----3-----4-----5-----6-----7

How long have you played under your current coach? _____

Compared to other athletes you know, how often do you seek out extra instructional assistance (e.g., extra coaching or working with a sport psychologist) related to your sport?

Not Very Often Some A Lot

1-----2-----3-----4-----5-----6-----7

Please turn the page, read the directions, and begin answering the questions.

Directions – The statements that follow are typical ways athletes describe some of their sport experiences. Please read each statement and decide how strongly you agree or disagree with each statement at the current time. Then circle the number that corresponds with your answer. There are no right or wrong answers and do not spend too much time on any one question. Some of these questions may be repetitive but please answer them carefully and honestly. Use the following scale to answer your questions:

-3 Disagree Very Strongly
-2 Disagree Strongly
-1 Disagree
0 Neutral
+1 Agree
+2 Agree Strongly
+3 Agree Very Strongly

Answer these questions as they apply to you right now on your current sport team.

- | | |
|---|---------------------|
| 1. I <u>frequently</u> read books or magazines about my sport. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 2. During practice, I am willing to try <u>anything</u> to improve my skills. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 3. I frequently let my coach know how I am doing in terms of improving my sport skills. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 4. I often get advice from my teammates about my sport skills. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 5. I <u>highly</u> respect the knowledge and experience of my coach. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 6. I place a <u>very high</u> value on the advice and feedback my coach gives me. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 7. I frequently read books about famous athletes in my sport. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 8. When my coach criticizes me, I usually get frustrated or mad. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 9. I frequently seek out <u>new and different</u> sources of information about my sport. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 10. Even if my coaches' advice is not helping me right away, I continue to work on what I was told. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 11. The athletes I work or train with (my teammates) frequently give me sport advice. | -3 -2 -1 0 +1 +2 +3 |
| <hr style="border-top: 1px dashed black;"/> | |
| 12. Overall, I have a very good working relationship with my coach. | -3 -2 -1 0 +1 +2 +3 |

-3 Disagree Very Strongly
-2 Disagree Strongly
-1 Disagree
0 Neutral
+1 Agree
+2 Agree Strongly
+3 Agree Very Strongly

- | | | | | | | | |
|--|----|----|----|---|----|----|----|
| 13. After the coach gives me sport advice, I work real hard on what he or she told me to do. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 14. I frequently think of ways to improve at my sport. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 15. I am <u>very</u> open to information from many different sources (e.g., books, magazines, coaches) concerning my sport skills. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 16. When my coach tells me how to correct a mistake I've made, I tend to take it personally and feel angry or upset. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 17. It is <u>very</u> important for my coach to think of me as an athlete who is willing to do what it takes to get better. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 18. I <u>don't</u> learn very much about my sport from my teammates. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 19. If my coach criticizes or yells at me, I always correct my mistake without getting frustrated or mad. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 20. I <u>always</u> listen closely to my coaches' instructions during practice. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 21. I trust, without reservation, the training methods of my coach. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 22. I am eager to learn new skills or techniques in my sport even if I have to wait to see improvements in my sport performance. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 23. I feel <u>totally</u> comfortable sharing my opinions with the coach. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 24. Even when I'm playing or performing well, I <u>always</u> try hard to improve. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| <hr/> | | | | | | | |
| 25. I view the relationship I have with my coach as a partnership. | -3 | -2 | -1 | 0 | +1 | +2 | +3 |

-3 Disagree Very Strongly
-2 Disagree Strongly
-1 Disagree
0 Neutral
+1 Agree
+2 Agree Strongly
+3 Agree Very Strongly

26. Watching myself perform on videotape is <u>very</u> helpful and productive for me.	-3	-2	-1	0	+1	+2	+3
27. When my coach criticizes me, I become motivated to work harder.	-3	-2	-1	0	+1	+2	+3
28. I enjoy talking to my teammates about how to improve my sport skills.	-3	-2	-1	0	+1	+2	+3
29. There is always something new to learn in my sport.	-3	-2	-1	0	+1	+2	+3
30. I am always willing to try new drills or techniques to help improve my sport skills.	-3	-2	-1	0	+1	+2	+3

The Task and Ego Orientation Scale for Sport Questionnaire (TEOSQ)

WHAT IS SPORT SUCCESS?

When do you feel most successful in sport? In other words, when do you feel a sport activity has gone really well for you?

I feel most successful in sport when.....	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am the only one who can do a particular skill or play.	1	2	3	4	5
2. I learn a new skill which makes me want to practice more.	1	2	3	4	5
3. I perform a skill better than my friends.	1	2	3	4	5
4. Other people cannot do something as well as I can.	1	2	3	4	5
5. I learn something that is fun to do.	1	2	3	4	5
6. Other people mess up, and I don't.	1	2	3	4	5
7. I learn a new skill by trying hard.	1	2	3	4	5
8. I work really hard.	1	2	3	4	5
9. I score the most points/goals or win the most competitions.	1	2	3	4	5
10. I learn something and it makes me want to go and practice more.	1	2	3	4	5
11. I am the best.	1	2	3	4	5
12. I learn a skill which makes me feel really good.	1	2	3	4	5
13. I do my very best.	1	2	3	4	5

On the scale below, please show us how successful you think you will be in your next (or current) season.

Not at all Successful	Not very successful	Maybe a little successful	Somewhat successful	Mostly Successful	Really Quite Successful	Highly Successful
1	2	3	4	5	6	7

APPENDIX D

CORRELATION COEFFICIENTS STUDY TWO

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.000	0.271**	0.172	0.131	0.039	0.087	0.658**	-0.114	0.583**	0.123	0.053
X2		1.000	0.170	0.188*	0.165	0.263**	0.207*	0.120	0.205*	0.227*	0.145
X3			1.000	0.356	0.360**	0.367**	0.099	-0.076	0.102	0.017	0.193*
X4				1.000	0.215*	0.216*	0.149	-0.061	0.158	0.105	0.677**
X5					1.000	0.819**	-0.088	0.254**	-0.054	0.227*	0.104
X6						1.000	0.037	0.257**	0.024	0.332**	0.151
X7							1.000	-0.107	0.612**	-0.056	0.167
X8								1.000	-0.065	0.159	-0.138
X9									1.000	-0.033	0.157
X10										1.000	0.081
X11											1.000

* Significance Level .05, ** Significance Level .01, (2-Tailed)

Correlation Matrix – Study Two

	X12	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23
X1	0.120	0.208*	0.448**	0.446**	-0.007	0.186*	0.050	0.048	0.085	0.065	0.157	0.179
X2	0.262**	0.327*	0.487**	0.310*	0.259**	0.306**	0.184*	0.198	0.338**	0.314**	0.393**	0.130
X3	0.426**	0.242*	0.361**	0.245*	0.065	0.256**	0.252**	0.037	0.027	0.216*	0.265**	0.427**
X4	0.194**	0.164	0.204*	0.178	0.011	0.249**	0.469**	-0.004	0.144	0.169	0.264**	0.079
X5	0.473**	0.377**	0.180*	0.043	0.362**	0.403**	0.295**	0.075	0.277**	0.560**	0.355**	0.220*
X6	0.568**	0.454**	0.274*	0.161	0.373**	0.503**	0.306**	0.098	0.340**	0.608**	0.468**	0.243**
X7	-0.032	0.032	0.306**	0.482**	-0.086	0.098	0.030	0.061	0.064	0.013	0.109	0.118
X8	0.309**	0.071	-0.056	-0.029	0.449**	0.128	0.188*	0.312	0.13	0.209*	0.131	0.105
X9	0.067	0.044	0.305**	0.389**	-0.022	0.045	0.080	0.197	0.08	-0.024	0.153	0.244**
X10	0.233*	0.494**	0.136	0.111	0.232*	0.392**	0.215*	0.204	0.390**	0.444**	0.443**	0.045
X11	0.170	0.236*	0.168	0.067	-0.035	0.140	0.460**	0.027	0.181*	0.211*	0.279**	-0.400
X12	1.000	0.359**	0.325**	0.084	0.426**	0.268**	0.210*	0.332**	0.279**	0.448**	0.251**	0.494**
X13		1.000	0.485**	0.276**	0.290**	0.420**	0.378**	.228*	0.617**	0.527**	0.494**	0.084
X14			1.000	0.443**	0.238**	0.392**	0.328**	0.129	0.384**	0.322**	0.456**	0.316**
X15				1.000	0.128	0.282**	0.185*	0.071	0.228*	0.102	0.396**	0.205*
X16					1.000	0.257**	0.263**	0.382**	0.402**	0.317**	0.376**	0.271**
X17						1.000	0.327**	0.117	0.441**	0.530**	0.514**	0.180*
X18							1.000	-0.028	0.374**	0.372**	0.443**	0.126
X19								1.000	0.416**	0.256**	0.176	0.298**
X20									1.000	0.590**	0.491**	0.200*
X21										1.000	0.524**	0.275**
X22											1.000	0.331**
X23												1.000

* Significance Level .05, ** Significance Level .01, (2-Tailed)

Correlation Matrix – Study Two

	X24	X25	X26	X27	X28	X29	X30
X1	0.151	0.229*	0.214*	0.099	0.304**	0.200*	0.246**
X2	0.348**	0.075	0.326**	0.422**	0.356**	0.220*	0.534**
X3	0.251**	0.266**	0.081	0.164	0.244**	0.160	0.264**
X4	0.220*	0.110	-0.026	0.070	0.433**	0.257**	0.190*
X5	0.119	0.353**	0.126	0.184*	0.134	0.089	0.254**
X6	0.227*	0.460**	0.246**	0.271**	0.237**	0.194*	0.384**
X7	0.102	0.085	0.229*	0.175	0.326**	0.190*	0.107
X8	0.054	0.158	0.007	0.342**	0.035	0.108	0.153
X9	0.179	0.249**	0.171	0.231*	0.429**	0.271**	0.204*
X10	0.110	0.224*	0.226*	0.201*	0.252**	0.147	0.289**
X11	0.170	0.091	-0.013	0.045	0.442**	0.231*	0.067
X12	0.291**	0.565**	0.043	0.442**	0.272**	0.109	0.244**
X13	0.428**	0.296**	0.230*	0.215*	0.269**	0.236**	0.380**
X14	0.544**	0.317**	0.302*	0.263*	0.431**	0.380**	0.498**
X15	0.254**	0.161	0.401**	0.353**	0.392**	0.301**	0.400**
X16	0.216*	0.273**	0.170	0.395**	0.164	0.263**	0.347**
X17	0.385**	0.227*	0.165	0.273**	0.305**	0.210*	0.459**
X18	0.328**	0.144	0.046	0.079	0.409**	0.363**	0.328**
X19	0.207*	0.285**	0.081	0.488**	0.210*	0.078	0.046
X20	0.449**	0.291*	0.159	0.298**	0.344**	0.151	0.355**
X21	0.332**	0.494**	0.120	0.310**	0.325**	0.119	0.431**
X22	0.403**	0.351**	0.350**	0.386**	0.447**	0.382**	0.592**
X23	0.244*	0.569**	0.025	0.335**	0.313**	0.062	0.240**
X24	1.000	0.363**	0.215*	0.388**	0.331**	0.452**	0.390**
X25		1.000	0.042	0.372**	0.352**	0.105	0.168
X26			1.000	0.303**	0.142	0.284**	0.350**
X27				1.000	0.330**	0.180*	0.327**
X28					1.000	0.401**	0.472**
X29						1.000	0.499**
X30							1.000

* Significance Level .05, ** Significance Level .01, (2-Tailed)

VITA

Peter R. Giacobbi, Jr. was born in Syracuse, New York, January 19, 1964. He grew up in Camillus, a suburb outside of Syracuse where he attended West Genesee High School. In May 1982, he graduated from West Genesee and attended Centenary College of Louisiana for one year. He then transferred to the State University of New York (SUNY) at Oswego. After one year at SUNY-Oswego, he moved to Florida where he worked as an assistant golf professional. In 1987 he moved back to Syracuse where he worked as an assistant teacher in a Head Start preschool program and completed an Associate of Arts in Humanities in May of 1990 from Onondaga Community College. In November 1990, Peter took a job as a child-care worker at Elmcrest Children's Center in Syracuse, N.Y. Concurrently he was employed as a teaching professional at Westvale Golf Club in Camillus, N.Y. and worked full time towards his Bachelor of Science degree at SUNY-Oswego.

Following completion of the requirements for a Bachelor of Science in Psychology from SUNY-Oswego, Peter began his graduate studies at Miami University in Ohio and completed a Master of Science degree in sport psychology in 1997. After serving as an adjunct professor at Miami for one year, he began his doctoral studies in sport psychology at the University of Tennessee. During this time he served as a sport psychology consultant for the men's varsity golf team, taught a variety of physical activity courses, taught lecture courses in human motor behavior and skill acquisition, served as the graduate student representative on the College of Education Ph.D. coordinating committee, and was elected as a regional student representative for the Association for the Advancement of Applied Sport Psychology. In May of 2000, Peter

completed requirements for the Ph.D. degree in Education with a concentration in cultural studies and a specialization in sport psychology.