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**SOURCES OF SPORT-CONFIDENCE OF SENIOR ADULT, COLLEGE,
AND HIGH SCHOOL ATHLETES**

By

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A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

Department of Kinesiology

2000

ABSTRACT

SOURCES OF SPORT-CONFIDENCE OF SENIOR ADULT, COLLEGE, AND HIGH SCHOOL ATHLETES

By

Rodney Carlton Wilson

The purposes of this dissertation were to assess and analyze the sources and levels of self-confidence of senior adult (aging) athletes. Secondly, the author of this dissertation also examined the influence of gender and sport participation levels (senior adults, college, high school) within a single sport on the perceived importance of various sources of sport-confidence. This dissertation was conducted utilizing the sources of sport-confidence framework (Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998), which included the nine-factored sources of the sport-confidence model, and athletic characteristics and organizational cultures as influences of sources of confidence in one's sport. The results did not replicate the nine sources of sport-confidence contained in the factor structure of the Sources of Sport-Confidence Questionnaire (SSCQ) with samples of senior adult, college and high school athletes. The results revealed that a modified six-factor model (SSCQ-M) was needed to explain the sources of sport-confidence, as well as its factor structure cross-sectionally. The regression analysis indicated that physical / mental preparation was the best predictor of sport-confidence of senior adult, college, and high school athletes. Multivariate and univariate analyses of variances, and Tukey's Post-Hoc analysis, also found that the perceived importance of various sources of sport-confidence differed between and within

gender, and between participation levels in the sport of track and field. The six-factor model appeared to be stable across gender and sport-participation levels and supported Atchley's (1989) continuity theory of aging.

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DEDICATION

To GOD for everything possible and more, in the past, present, and future to come. You get the credit and victory. Without you there is nothing.....

To my parents Alfonzo Lee Wilson and Dorothy Marian Small Wilson, and my brother Bernard Wendell Wilson, for your many years of inspiration, love, patience, sacrifice, support, and wisdom which enables me to be where I am today. This is dedicated to the legacy in which you continue to leave in your pursuits of lifelong excellence, continued hope, and uplifting faith. Much you have given to me, much is to be given by me to others; this is what you have taught me. I will make you proud. I love you all forever.....

To my nephew Braxton Ralphonzo Lamar Wilson and my niece Bria D' Nicole Wilson; may you keep the candle burning with faith, legacy, and love.....

To Sook Yeng and Beverly, thank you.....

ACKNOWLEDGMENTS

It Takes a Village To Raise a Man. My village includes, my eternal gratitude extends, and for whom I am wholeheartedly indebted:

To GOD and the entire Wilson-Small family for divine illumination, and guiding the improbable, the impossible, and everything imaginable and unimaginable.

To my dissertation committee chairperson and director, Dr. Deborah L. Feltz, for her dedication, expertise, foresight, patience, support, and wisdom in directing me throughout the entire doctoral experience; which is much more than just this dissertation.

To my dissertation committee: Drs. Martha E. Ewing, Lawrence B. Schiamberg, and Mary Clearing-Sky; Dr. Robin Vealey, and other Kinesiology professors for their championing, guidance, legacy, love, sagacity, and work throughout the entire doctoral experience; again which is much more than just this dissertation.

To the following individuals and organizations who have eternally enriched my life: Drs. Franklin Boster, Melvin Buschman, Michael Clark, Georgia Johnson, Robert Malina, Lynette Overby, Yevonne Smith, V. Dianne Ullibbarri; Mr. James Bibbs, Patricia Collins, Douglas Ferris, Lori Gano-Overway, Darroll Gatson, Angela Goodman, Bernice Holland, Claude Holland, David Kinnunen, Kathy Lanese, Dawn Lewis, Michelle Magyar, Richard Mann, Dennis Myers, Jennifer Pressner, J. Kimball Spaulsbury, James Stinzi, Lansing Legends and Over The Hill Track Clubs, USA Track and Field, and the Michigan Senior Olympics.

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CHAPTER I

INTRODUCTION

The number of senior men and women competing in sports has increased dramatically over the past 25 years. Many of these athletes, often termed masters athletes or Senior Olympians, compete with nearly the same enthusiasm and intensity as young athletes, in spite of the various age-related cognitive, physical, and social changes. The high-level sport participation of these senior adult athletes seem to counteract the negative cultural beliefs about the deleterious effects of aging of older adults and subsequent disengagement from society. However, the motivational variables involved in sport participation by these individuals have rarely been studied.

Lawrence and Scheid's (1990) book "Running and Racing After 35" was designed to be the first comprehensive review on the effect of the aging process on competitive running and the strategies competitive runners could adopt to avoid the negative effects of aging. Yet, no mention of psychological factors affecting aging and performance are mentioned. Despite the detailed research describing the impact of the gradual physiological diminishment upon performance, aging masters and senior athletes appear to maintain successful standards and perform reasonably (Rodgers & Welch, 1991; Shephard, 1978; Sova, 1995). There may be psychological explanations for their performances, including self-confidence, which is one of the most frequently cited psychological factors thought to affect athletic performance (Feltz, 1988).

One's belief in one's ability to accomplish a certain level of performance has been referred to as self-confidence or self-efficacy (Bandura, 1977; Feltz, 1988; Maddux, 1995). Self-efficacy has been the term used most often in the research literature in sport and includes the belief about one's capability to (a) exercise

control over events which affect one's life and (b) mobilize the motivation, cognitive resources, and courses of action needed to exercise control over task demands (Bandura, 1990; Maddux, 1995). Vealey (1986) uses the term, sport-confidence, in her conceptual framework to assess one's perceived capability to accomplish the goal of performing successfully in one's sport. Whether the term self-confidence, sport-confidence or self-efficacy is used, the phenomenon of interest is the cognitive process by which people make judgments about their capabilities to accomplish a particular goal (Feltz & Chase, 1998). This cognitive process should be examined across the life span because people may make personal judgments about their capabilities based on different sources of information at different age stages.

Common to Bandura's (1977) and Vealey's (1986) conceptual frameworks is the treatment of self-confidence as a cognitive mediator of a person's motivation, thought patterns, emotional reactions, and behavior within a goal striving framework. Thus, diverse sources of information about one's capability are processed, weighed, and integrated to form confidence judgments, the consequences of which are influential in determining one's thought and behavior patterns, and emotional reactions (Bandura 1977, 1986, 1997). Bandura hypothesized that self-efficacy affects choice of activities, effort, persistence, and achievement. Compared with persons who doubt their capabilities, those with higher self-efficacy for accomplishing a task participate more readily, work harder, persist longer when they encounter difficulties, and achieve at a higher level. This cognitive process involved here should be examined across the life span because people may make personal judgments about their capabilities based on different sources of information at different age stages.

Sources of Efficacy / Confidence Information

Based on self-efficacy theory, people acquire information to appraise self-efficacy from their past performance experiences, vicarious (observational) experiences, physiological states, forms of persuasion, emotional states, and imaginal experiences (Bandura, 1986; Maddux, 1995; Schunk, 1995).

Information from performance experiences offers reliable guides for assessing self-efficacy (Schunk, 1995). Success at a skill strengthens self-efficacy expectations for that task; whereas, perceptions of failure diminish self-efficacy expectancy (Bandura, 1986; Maddux, 1995). Although successes and failures may raise or lower efficacy, once a strong sense of efficacy is developed, established, or entrenched, a failure may not have much impact.

One also acquires self-efficacy information from knowledge of others through social comparisons (Bandura, 1986; Schunk, 1995). Vicarious experiences (observational learning, modeling, and imitation) influence self-efficacy expectancy when one observes the performance of other athletes, sees what other athletes are able to do, notes the consequences of their behavior, and then uses this performance and training information to form expectancies about one's own behavior and its consequences (Maddux, 1995). Although vicarious sources of efficacy information are generally weaker than performance accomplishments, their influence on self-efficacy can be enhanced by a number of factors, such as perceived similarity to the observed individual (Bandura, 1986).

Physiological states refer to the influence upon self-efficacy by one's association of aversive physiological arousal with poor behavioral performance, perceived incompetence, and perceived failure. Likewise, comfortable physiological sensations are more likely to lead one to feel confident in one's ability in the situation at hand (Maddux, 1995). Physiological sources of self-

efficacy are not limited to autonomic arousal. An athlete may use his or her perceived level of fatigue, fitness, and pain in strength, speed, and endurance activities as indicants of physical inefficacy (Feltz, 1988). Research by Wilson, Feltz, and Fitzpatrick (1996) has shown that senior adult athletes rely on physiological information in the formation of their efficacy judgments in performing a sport skill.

Forms of persuasion, another source of efficacy information, include verbal persuasion from one's self-talk or others, non-verbal persuasion, and social persuasion from perceived significant or nonsignificant others. Forms of persuasion appear to be less potent sources, albeit moderately effective sources (at times), of enduring change in self-efficacy expectancies than are performance experiences and vicarious experiences. The potency of these forms of persuasion as a source of self-efficacy judgments are influenced by such factors as the expertise, trustworthiness, and attractiveness of the source (Maddux, 1995).

Emotional states refer to the concept that emotional experiences or moods can be additional sources of information about self-efficacy. One is more likely to have positive self-efficacious beliefs when one's affect is positive than when it is negative. For example, both anxiety and depression may have a deleterious impact on an athlete's self-efficacy (Maddux & Meier, 1995; Williams, 1995). Schunk (1995) states that emotional symptoms signaling anxiety might be interpreted to mean that one lacks skills, which in turn affects and impacts self-efficacy.

Lastly, a person can generate beliefs about personal efficacy or inefficacy by imagining oneself or others behaving effectively or ineffectively in future performance situations (Cervone, 1989; Williams, 1995). These images may be derived from actual or vicarious experiences with situations similar to the one



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anticipated, or they may be induced by verbal persuasion (Maddux, 1995).

Self-Confidence In Sport

Previous research has supported Bandura's (1977, 1986, 1997) sources of efficacy in physical activity and sport situations (e.g., Feltz 1982; Feltz & Riessinger, 1990; George, 1994; McAuley, 1985). Past research, in sport as well as in other domains, has shown that one's performance experience has been the most dependably robust source of information used to form a judgment of efficacy because it relies on one's own experiences of personal mastery (Bandura, 1986; Feltz, 1988). However, the research with athletes has been limited in exploring the sources of information one uses to determine self-efficacy beliefs (Chase, Feltz, Tully, & Lirgg, 1996). Within the conceptual framework of sport-confidence, Vealey and her colleagues (1998) extended the sources of self-confidence beyond self-efficacy theory to identify the most salient sources of confidence for athletes based on the unique sociocultural aspects of sport competition.

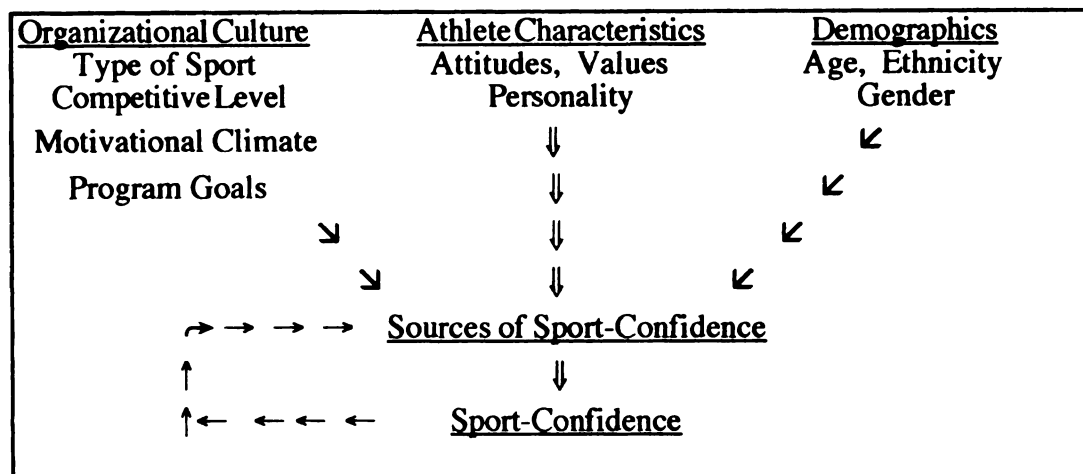
Sport-confidence conceptual framework. Trait and state self-confidence were initially investigated by Vealey (1986) to provide an operationalization of self-confidence in sport situations that could be employed across sports. She developed an interactional, general sport model of self-confidence and instrumentation in which sport confidence was conceptualized into trait and state components. Trait sport confidence referred to the confidence an athlete generally had about competing in his or her sport; whereas state sport confidence referred to the confidence an athlete had about competing within a specific sport situation.

Vealey's work advanced to identifying, developing, and examining the sport-confidence framework in which the athlete's self-confidence could be adequately predicted and measured (Vealey, 1986, 1988; Vealey, Hayashi,

Garner-Holman, & Giacobbi, 1998). This updated (modified) model, as illustrated in Figure 1, adds sources of sport confidence, organizational culture, and athlete characteristics as antecedents of sport confidence.

Figure 1

The Modified Conceptual Framework of Sport Confidence (Vealey et al., 1998).



Vealey et al.'s model (1998) predicted that organizational culture and athlete characteristics influence sources of sport-confidence, which in turn, influence sport-confidence levels. Organizational culture includes such factors as competitive level, motivational climate, type of sport, and the goals of particular sport programs. A track and field program for senior adult athletes has a different organizational culture than a high school program. Individual sports have a different organizational culture than team sports. Athlete characteristics include all of the personality characteristics, attitudes, and values of individual athletes, as well as demographic factors such as age, gender, and ethnicity.

Vealey et al. (1998) developed the Sources of Sport-Confidence Questionnaire (SSCQ) to measure sources of sport-confidence information.

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Through confirmatory factor analysis, they identified nine sources of sport-confidence for high school and intercollegiate athletes: Mastery, Demonstration of Ability, Physical / Mental Preparation, Physical Self-Presentation, Social Support, Coaches' Leadership, Vicarious Experience, Environmental Comfort, and Situational Favorableness. Mastery is a source of sport-confidence that is derived from mastering or improving skills. Demonstration of Ability becomes a source of confidence when athletes show off their skills to others or demonstrate more ability than opponents. Physical / Mental Preparation involves feeling physically and mentally prepared with an optimal focus for performance, and Physical Self-Presentation is defined as athletes' perceptions of their physical selves. Social Support involves perceiving social support from significant others in sport, such as coaches, family, and teammates. Coaches' Leadership is a source of confidence derived from the athlete believing in the coaches' skills in decision making and leadership. Vicarious Experience involves gaining confidence from watching others, such as teammates or friends, perform successfully. Environmental Comfort is a source of sport confidence that comes from feeling comfortable in a competitive environment such as the particular field, gymnasium, or pool where competition will occur. Finally, Situational Favorableness involves gaining confidence by feeling that the breaks of the situation are going in one's favor.

Their findings showed (in order of importance) that physical / mental preparation, social support, mastery, demonstration of ability, and physical self-presentation were the most important sources of sport-confidence. They also found certain athlete characteristics and organizational contexts that differentially influenced some of these sources. For instance, at the college level, female athletes relied on physical self-presentation and social support as sources of

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confidence more than male athletes.

At the high school level, using varsity basketball players, gender differences were again found for social support, with females relying on this source of confidence more so than males, but no differences were found for physical self-presentation. In addition, male basketball players reported demonstrating ability as a more important source of confidence than female basketball players. The different results between college and high school level athletes may also have been influenced by the different types of sports in which athletes were competing. At the college level, participants competed in cross-country, swimming, gymnastics, and tennis which are individual sports compared to a team sport--basketball--at the high school level. As Vealey et al. (1998) noted, "This mixing of sport level and sport type precludes any definitive interpretation of how these factors influence athletes' sources of sport-confidence and how these sources interrelate to other constructs in the conceptual model" (p. 75). In terms of gender differences, further research is needed to determine whether these differences are influenced by sport, age, or level of participation.

In addition, to enhance our understanding of the dynamic influences of sociocultural contexts, organizational culture, and athlete characteristics on sources of sport-confidence, research should be extended to include athletes of other ages and levels of participation. For instance, older adult athletes are a group who may rely on different sources of confidence than those found by Vealey et al. (1998) or may find some sources more pertinent than athletes of other ages of development. The age at which older adult athletes first entered competition in their primary sport may also influence their reliance on certain sources of confidence over other sources. At present, very little is known about the self-confidence of older adult athletes and how their confidence is derived.

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Self-Efficacy and Senior Adult Athletes

Most studies dealing with self-confidence or self-efficacy and older adults have concerned themselves with exercise, behavior changes, and the promotion of healthy behavior (Clark, 1996; McAuley, Bane, & Mihalko, 1995; McAuley, Lox, & Duncan, 1993; Wolinsky, Stump, & Clark, 1995). Most of these older adults were initially sedentary individuals who were recruited and studied within a comprehensive exercise program and regimen. As expected, there were significant physiological changes, and as Bandura (1977, 1986, 1997) hypothesized, self-efficacy increased as experience in the exercise programs increased (McAuley, 1992).

Some studies examined self-reported reasons for participation in a sporting activity by older adult athletes, better known as Senior Olympians or masters athletes (Fontaine & Hurd, 1992), while other studies examined social resources of masters athletes (Golding & Underleider, 1991). O'Brien (1991) found that sport and physical recreation may be an important type of coping strategy for some older adults who find meaning and a sense of achievement in challenging themselves physically.

At this present time, only one study has examined sources of self-efficacy/self-confidence for sport among older adults. Wilson et al. (1996) identified sources of self-confidence for masters pentathletes attending a national championship meet. They found that previous performances, being in good physical condition, and having a positive personal life (environmental stability and social support) were related to one's self-efficacy for sport competition. The sample size in Wilson et al.'s (1996) study was very small ($N = 17$) and the instrument to assess self-confidence sources were not as extensive nor psychometrically tested as Vealey et al.'s (1998) SSCQ.

Therefore, the purposes of this study were to assess and analyze the sources and levels of self-confidence of senior adult (aging) athletes using the SSCQ and test the factorial validity of the SSCQ with this population. Secondly, this study also sought to examine the influence of gender and sport participation levels (senior adults, college, high school) within a single sport on the perceived importance of various sources of sport-confidence. This study was conducted utilizing the sources of sport-confidence framework (Vealey et al., 1998) which considered athletic characteristics and organizational cultures as influences of sources of confidence in one's sport.

At this present time, as previously noted, no research has extended the study of sources of self-confidence in identifying the most salient confidence information for senior adult athletes, and how confidence information influences the sport-confidence of these athletes. Finally, no study has compared the sources of sport-confidence across the athlete characteristics of gender and age-participation category within a single sport to determine how these characteristics influence confidence information.

Research Questions

This dissertation identified and assessed the most salient confidence information for senior adult athletes within two phases. Phase I examined the influence of the sources of self-confidence upon sport-confidence of senior adult athletes, and Phase II examined the influence of gender and sport participation levels (senior adults, college, high school) within a single sport on the perceived importance of various sources of sport confidence by researching and answering the following four questions:

Phase I:

1. Could the factor structure of the SSCQ be replicated with a sample of senior adult athletes?
2. What were the most important sources of sport-confidence of senior adult athletes?
3. What sources of confidence information best predicted the sport-confidence of senior adult athletes?

Phase II:

4. Did the perceived importance of various sources of sport-confidence differ by gender and sport participation levels within a specific sport?

Delimitations

In Phase I, this was delimited to a sample of 216 senior adult athletes aged 50 years and above from three different sports: (a) swimming, (b) tennis, and (c) track and field. Results can only be generalized to samples of this particular age group in these three sports. In Phase II, this study was delimited to a sample of 167 senior adult athletes, 111 intercollegiate athletes, and 148 high school athletes. All participation levels of athletes competed in the sport of track and field.

Definition of Terms

1. **Masters Athletes**-- Athletes whose competitions are divided into 5 to 10 year age groups initially starting at the age of 30. Many of the masters athletes compete in Senior Olympic sport competitions.
2. **Self-Confidence**-- In sport, it is used interchangeably with self-efficacy (Feltz, 1988).
3. **Self-Efficacy**-- Refers to a judgment of one's capability to successfully

execute a specific task (Bandura, 1977, 1986, 1997).

4. **Senior Olympians**-- Athletes who are aged 50 and above and participate in 5 to 10 year age-groups competitions. In this study, they are also referred to as senior adult athletes.
5. **Sport Confidence**-- A term defined by Vealey (1986) referring to the unique self-confidence one has in performing in a sport.

Basic Assumption

Self reports represented true indications of perceptions of confidence and perceptions of sources of confidence. In addition, the participants in this study were assumed to not differ significantly from other volunteer samples of senior adults, college, and high school athletes.

Limitations

The following issues are acknowledged as limitations to the internal and external validities of this study:

1. Accessibility to swimmers and tennis players was limited and were, therefore, underrepresented in the sample of senior adults athletes.
2. There were significantly fewer overall senior adult female athletes compared to males which restricted the number of female athletes participating in this study and the gender comparisons that could be made.
3. Athletes were informed about the nature of the study and may have been reluctant to indicate negative attitudes and negative self-perceptions. Negative self- perceptions may have been perceived as personal weaknesses which may negatively influence performance.
4. The nature of this study did not permit random sampling. Purposive sampling was used which may have created a biased sample.

CHAPTER II

REVIEW OF LITERATURE

The literature examining the psychosocial aspects of sport and exercise among older adults has been growing steadily. However, available literature on masters or senior adult athletes has been limited. Therefore, the majority of this chapter focuses on the literature of non-athletic aging adults. The parameters of this chapter examine ideas that revolve around and include the theoretical frameworks of self-efficacy (Bandura, 1977, 1986, 1997) and sport-confidence (Vealey, 1986, 1988; Vealey et al., 1998). This chapter presents selective literature from the following areas: (a) cognitive changes as a result of aging, (b) physical health and functioning as a result of aging, (c) theoretical social changes related to aging, and (d) physical activity and sport research of masters athletes and Senior Olympians. Prior to describing these literatures, a brief overview of self-efficacy is presented.

Overview of Self-Efficacy Theory

Self-efficacy is defined as a judgment or belief about one's capacity to successfully perform a task at given levels. Efficacy is not just knowing what behavior is appropriate, instead it involves organizing cognitive, social, and behavioral subskills into action. These beliefs influence one's behavior patterns, thought patterns, and emotional reactions in various situations. One acquires information to appraise self-efficacy from one's prior performance experiences, vicarious (observational) experiences, physiological states, forms of persuasion, emotional states, and imaginal experiences (Bandura, 1986; Maddux, 1995; Schunk, 1995).

Figure 2

The Relationship Between Major Sources of Efficacy Information, Efficacy Expectations, and Performance.

Performance Accomplishments	➡	Thought Patterns
Vicarious Experiences	➡	➡ (> Choice, Effort)
Physiological States	➡ Efficacy	➡ Behavior Patterns
Forms of Persuasion	➡ Expectations	➡ (> Goals, Worry)
Emotional States	➡	➡ Emotional Reactions
Imaginal Experiences	➡	(> Anger, Fear)

Performance accomplishments. Information from this source of efficacy offers reliable guides for assessing one's capability (Schunk, 1995). Success at a task, behavior, or skill strengthens self-efficacy expectations for that specific endeavor, whereas perceptions of failure diminish self-efficacy expectancy (Bandura, 1986; Maddux, 1995). Performance accomplishments on difficult tasks, tasks independently attempted, and tasks accomplished early in learning with only occasional failures carry greater efficacy value than accomplishments on easy tasks, tasks accomplished with external aids, or tasks in which repeated failures are experienced early in the learning process. Although successes and failures may raise or lower efficacy, once a strong sense of efficacy is established a failure may not have much impact (Bandura, 1986; Feltz, 1988; Maddux, 1995).

Vicarious experiences. One acquires self-efficacy information from knowledge of others through social comparisons (Schunk, 1995). Vicarious experiences (observational learning, modeling, and imitation) influence self-

efficacy expectancy when individuals observe the behavior of others, see what they are able to do, note the consequences of their behavior, and then use this information to form expectancies about their behavior and their consequences (Maddux, 1995). Visualizing or watching other people perform successfully may increase self-efficacy, while observing others perform unsuccessfully may lower expectations (Bandura, 1986). Although vicarious sources of efficacy information are generally weaker than performance accomplishments, their influence on self-efficacy can be enhanced by a number of factors. For example, the less experience one has had with a task or situation, the more one will rely on others to judge one's own capabilities (Bandura, 1986). Perceived similarity to models may be influential when individuals are uncertain about their capabilities, such as when they lack task familiarity and have little information to use in judging efficacy. Mastery models demonstrate faultless performance, but the highest degree of model-observer similarity is attained through self-modeling (Schunk, 1995).

Physiological states. This source of information refers to the influence upon self-efficacy by the association of aversive physiological arousal with poor behavioral performance, perceived incompetence, and perceived failure. Likewise, comfortable physiological sensations are more likely to lead one to feel confident in one's ability in the situation at hand (Maddux, 1995). Physiological sources of self-efficacy are not limited to autonomic arousal. A person may use his or her perceived level of fatigue, fitness, and pain in strength, speed, and endurance activities as indicants of physical inefficacy (Feltz, 1988). Research by Wilson, Feltz, and Fitzpatrick (1996) has shown that older adult athletes rely on physiological information in the formation of their efficacy judgments in performing a sport skill.

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Persuasion. Forms of persuasion include verbal persuasion from one's self-talk or others, non-verbal persuasion, and social persuasion from perceived significant or nonsignificant others. Forms of persuasion appear to be less potent sources, albeit moderately effective sources (at times), of enduring change in self-efficacy expectancies than performance experiences and vicarious experiences. The potency of these forms of persuasion as a source of self-efficacy expectancies should be influenced by such factors as the expertness, trustworthiness, and attractiveness of the source (Maddux, 1995). One may receive persuasive information from others that he or she is capable of performing a task. Such feedback may increase self-efficacy, but this increase will be temporary if subsequent efforts turn out poorly (Schunk, 1995).

Emotional states. This source of information refers to the concept that emotional experiences or moods can be an additional source of information about self-efficacy. One is more likely to have self-efficacious beliefs when one's affect is positive than when it is negative. For example, both anxiety and depression may have a deleterious impact on one's self-efficacy (Maddux & Meier, 1995; Williams, 1995). Schunk (1995) states that emotional symptoms signaling anxiety might be interpreted to mean that one lacks skills, which in turn affects and impacts self-efficacy.

Imaginal experiences. Information from this source presents the concept that one has a tremendous capacity for symbolic cognitive activity. Maddux (1995) elucidates that one is capable of the anticipatory visualization of possible situations and events, and one's own behavioral and emotional reactions to these situations and events, as well as the possible consequences of one's behavior. A person can generate beliefs about personal efficacy or inefficacy by imagining oneself or others behaving effectively or ineffectively in future situations

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(Cervone, 1989; Williams, 1995). Such images may be derived from actual or vicarious experiences with situations similar to the one anticipated, or they may be induced by verbal persuasion.

Sources of efficacy information influence the self-efficacy beliefs of aging adults in many ways. Bandura (1997) suggests that older adults can maintain their sense of efficacy through a number of strategies including selective integration of multifaceted efficacy information. He states, "By weighting heavily the domains of functioning at which they excel and minimizing those they consider of lesser import, people can preserve their sense of efficacy amidst a decline of functioning in their advanced years" (p. 210). Other processes for maintaining one's sense of efficacy include making favorable social comparisons, being selective in one's pursuits, and adopting new roles in which one can be more successful, such as transferring from an athletic role to a coaching role. How well one can adapt in order to maintain one's sense of personal efficacy will influence how one thinks about the cognitive, physical, and social changes that occur during one's later years.

Cognitive Changes as a Result of Aging

Intellectual development encompasses different types of abilities that vary in how heavily they draw on such component cognitive processes as attention, memory, timesharing, information integration, and level of knowledge and expertise. Some cognitive functioning improves, others remain stable, and still others decline for people as they age. The improvements in cognitive functioning are maintained well into advanced age. Under an unhurried pace, the trained elderly are just about as adept cognitively as young adults, but under severe time pressure, the cognitive gains by the elderly are much smaller than those of young adults. Declines in cognitive functioning with age partly reflect disuse of latent

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capacity and a drop-off in cognitive efficiency at the upper limits of cognitive strain (Bandura, 1997). Elders who maintain high levels of intellectual functioning into very advanced age have educated themselves, pursued intellectually stimulating activities, exhibited flexibility and satisfaction with their life accomplishments in mid-life, and maintained lifestyles that preserve their physical health (Bandura, 1997; Schaie, 1995; Schaie & Willis, 1991).

However, research has demonstrated that the brain becomes physiologically smaller and slower in its functioning. For example, the average 75 year-old has 92% of his or her brain weight as compared to age 30 (Hess & Markson, 1992). This results in the possible diminishing of mental and psychological functioning, which in turn, results in the possible diminishment of neurological and overall motor functioning. Slowing of brain processes may be due in part to reduced production of neurotransmitters and to reduced blood flow (Blair, 1990). Compensatory mechanisms in brain functioning may help to maintain the quality of thinking in older adults, despite these quantitative losses (Kart, Metress, & Metress, 1992). In addition, there are declines associated with aging in the information-processing capacities of older adults. Older people tend to judge changes in their intellectual capabilities largely in terms of their memory performance. Experimental testing of older adults reveals deficits in their abilities to receive information, store it in memory, and organize and interpret it. Age-related memory decrements are associated with the type of processing operations required by the task rather than specific stores or systems. However, most older adults learn to adapt, and develop strategies and ways to compensate for memory loss and slower speed in thinking (Bandura, 1997; Craik, 1994; Craik & Jacoby, 1996). Many older adults develop or intensify their aesthetic, philosophical, and spiritual interests and values in later life, as well.

Motor-skill acquisition and development depends on the coordination of the brain, central and peripheral nervous systems, and the skeletal muscles unique to that particular individual. The documented problems with motor skills in senior adults are concerns with reaction time and movement time and not of acquisition and development (Schaie & Willis, 1991). Schmidt (1988) writes that reaction time may not be slowing due to aging, but could be related to the “cautious nature” of the older individual. The senior adult might be unwilling to make errors on a task, which gives the appearance of being slow.

Spirduso, Schoenfelder-Zohdi, Choi, and Jay (1995) investigated age-related differences in finger tapping speed with respect to warm-up and fatigue effects. Analyses revealed that the senior subjects performed significantly less taps and longer press times than the younger subjects. One explanation for slower reaction times, as well as for the longer press times, was that the senior adults exerted more force possibly because of tactile sensibility impairment due to small motor units innervating large numbers of muscle fibers. Thus, the smaller number of motor units with enlarged fiber-to-neuron ratios made it more difficult to control muscular force which impaired dexterity.

Exercise appeared to improve brain functioning and mental abilities through the increased delivery of oxygen (Lewis, 1994; Bradley, 1996). Kart, Metress, & Metress (1992) documented that exercise reduced anxiety and relieved tension. The authors reported that men who jogged three times per week had less depression than a sedentary control group. Documented research has reported that exercise retards harmful chemicals released and speeds up the metabolism of chemicals released as part of the stress response, which in turn lifts depression (Ostrow, 1984).

Information that is relevant for judging one's own cognitive capabilities is

not inherently enlightening nor instructive for the individual. It becomes instructive only through cognitive positive psychological benefits attributed to regular activity and exercise appraisal. A host of factors, including personal, social, situational, and temporal circumstances under which events occur, affect how personal experiences are cognitively appraised. When experience contradicts firmly held judgments of self-efficacy, people may not change their beliefs about themselves if the conditions of performance are such as to lead them to discount the import of the experience. In such instances, generalized changes in self-efficacy require powerful confirmatory experiences in which people successfully manage task demands that far exceed those commonly encountered in their daily lives (Bandura, 1986). In this instance, as previous reviews have shown, senior adults who are positively efficacious about their abilities to perform tasks, in spite of apparent cognitive changes which may require extra information processing time, will attempt to successfully perform those tasks. Self-efficacy mediates and assists with the cognitive changes of senior adults that occur as a result of normal aging.

Physical Health and Functioning Changes as a Result of Aging

Bandura (1997) asserts that misappraisals of capabilities with aging occur in physical and health functioning as well as in cognitive functioning. Declines in stamina and functional health status are attributed, all too often, solely to biological aging. Some of the declines in physical stamina reflect decrements in physical efficacy. The reduction of strength and stamina by a sedentary lifestyle is more likely to be attributed to biological aging by older than younger people (Bandura, 1997). Physical inactivity has more profound effects than simply sapping neuromuscular strength and stamina. Bandura (1997) believes that physical inactivity weakens the functioning of biological systems, resulting in

negative changes in cellular and metabolic processes, loss in lean body mass, cardiovascular decline, and diminished immuno-competence.

Declines in physical functions commonly attributed to aging are similar to those produced by physical inactivity (Bandura, 1997; Schiamberg, 1993). Previous studies have documented many physiological changes possibly associated with aging due to sedentary lifestyles (DeVries & Hales, 1982; Evans, 1995; Hoeger & Hoeger, 1996; Spirduso et al., 1995), as well as from “normal” or usual aging (Rowe & Kahn, 1999). Usual aging refers to fully functioning older adults who are at a substantial risk for disease, disability, or premature death due to general declines in recuperative power, and common and risky abnormalities that occur in middle age and old age adults. Some abnormalities include modest increases in blood sugar and blood pressure which may be considered by some health providers to be normal and age-related, and carry no risks (Rowe & Kahn, 1999).

All physiological changes include (a) a gradual decrease in muscle mass (known as sarcopenia), between age 20 and 60 years, then rapid diminishment from age 60 to 90 years with declines in lean body tissue of about 15% to 30% (Wilmore & Costill, 1994); (b) 0.5% of bone loss per year in men and women after age 30, increasing to 3% bone loss per year in women after menopause; (c) a steady decrease in water content, elasticity in ligaments, tendons, and cartilage; (d) a loss of balance, coordination, flexibility, and muscular functioning (Blair, 1990; Stamford, 1988); (e) a decline in the neuro-muscular system, motor skills, reaction time, and physical speed (McArdle, Katch, & Katch, 1991, chap. 30); (f) a reduction in plasma potassium production, cardiac rates, and cardiac output. All of these factors greatly contribute to lower basal metabolic rates in sedentary senior adults. Paradoxically, there is a steady increase in body mass index,

weight, and subcutaneous fatty tissue (Ward, Hubert, Shi, & Bloch, 1994).

Functional declines in bodily functions, due to a sedentary lifestyle, can be reversed or greatly attenuated by a physically active lifestyle (Bandura, 1997; Schiamberg, 1993). Most older adults settle into a sedentary lifestyle believing in the inevitable and unchangeable withering of their physical capabilities. Regular exercise provides a reliable means for improving health and extending life (Bandura, 1997; Schiamberg, 1993; Winett, 1996). Regular exercise is an important part of aging successfully. Instilling personal efficacy to exercise some control over health habits clearly can benefit people at all ages and socioeconomic levels. With the development of functional limitations over time, elders who have a low sense of personal efficacy give up trying to manage on their own and suffer a lowered quality of life (Bandura, 1997; Zautra, Reich, & Newsom, 1995). However, elders with similar levels of physical impairment but with belief in their efficacy to produce desired results and cope with stressors enjoy greater autonomy and psychological well-being. As aches and pains increase with advancing age, physical states gain importance as sources of efficacy information (Bandura, 1997).

Perceptions of control can also influence one's sense of physical health and functioning. Rowe and Kahn (1987) examined psychosocial factors in health, and autonomy and control, among older people and concluded that perceived lack of control has adverse effects on emotional states, performance, subjective well-being, and on physiological factors. Menec and Chipperfield (1997) examined the potential mediating role of exercising and participation in nonphysical leisure activities as well as the relationship between perceived control and well-being in seniors. The results indicated that an internal health locus of control was positively related to exercising and participation in leisure activities. General locus

of control was related to activity level. Exercising and leisure activity participation were predictive of better perceived health and greater life satisfaction. These results suggested that exercise and activity level can potentially mediate between perceptions of control and well-being.

Research by Wolinsky, Stump, and Clark (1995) found that people who do not suffer from lower body limitations, perceived themselves as being in very good health and in control of their health, appeared to function better than their peers, and probably maintained a higher standard of living. Wolinsky et al. (1995) also documented that higher levels of physical activity and exercise in older adults induced improvements in functional status, anxiety, depression, and mobility.

In addition to perceptions of control, self-efficacy has been shown to correlate with exercise and perception of one's physical self. McAuley, Bane, and Mihalko (1995) examined self-efficacy, outcome expectations, physique anxiety, and anthropometric variables of 114 sedentary middle-aged adult participants within a 5-month (20 week) exercise program and found that both acute bouts and long-term participation in exercise resulted in significant increases in self-efficacy. The changes in efficacy and initial positive outcome expectations were significant predictors of reductions in physique anxiety.

Bosscher, Van Der AA, Van Dasler, Deeg, and Smit, (1995) studied 124 men and women aged 55-85 years, examining the relationship between physical performance and physical self-efficacy beliefs. The authors hypothesized that subjects who performed better on physical tasks would show more positive beliefs of physical self-efficacy. The data revealed that gender was a significant predictor of physical self-efficacy in most of the tests. The authors found that their prediction was moderated by subject age, such that older men had more

negative beliefs of physical self-efficacy than older women.

Bandura (1986) asserts that perceived self-efficacy and beliefs about locus of (control) outcome causality must be distinguished. Convictions that outcomes are determined by one's own actions can either be demoralizing or heartening depending on the level of self-judged efficacy. Loss of control due to lack of self-efficacy may have different emotional and behavioral consequences than loss of control due to interference by powerful others. It is possible that lack of control may be sufficient to put a halt to action, but that full sustained engagement may require additional self-system supports, such as perceived autonomy or feelings of connectedness to important others in the social context (Skinner, 1992). In the reviewed literature, it has been shown that if older adults feel that they are in control of their actions (daily activities, health, and exercise regimens) and outcome, and demonstrate higher levels of efficacy, these older adults appear to be healthier cognitively, physically, and socially.

Theoretical Social Changes Related to Aging

There are many documented social theories of aging that are germane to this dissertation. Selectively, it is important to narrow the scope and focus, and trace some of the major perspectives of how older adults maintain a sense of personal agency and exercise it in ways that give their lives meaning and purpose.

Disengagement theory was introduced and discussed during the late 1950's and early 1960's as a theory of aging. Disengagement theory emphasizes fundamental changes in both the patterns and activity levels of older adults (Johnson & Barer, 1992; Moody, 1994). Disengagement occurs when society and older adult individuals experience mutual and irrevocable separation, such as in the case of retirement from work. Individuals who disengage, drop large numbers of their previously customary activities, and their overall activity level

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decreases dramatically. Disengagement is efficiently functional for both society and the older adult. This theory also emphasizes the older adult's conscious awareness of the mortality of life, an increased preference for introspection, and a lessening of adaptive energy (Cumming & Henry, 1961). Hoeger and Hoeger (1996) state, "Sedentary people stop living at age 60 but choose to be buried at age 70" (p. 275). In this case, the words "choose to" are important because disengagement theory presupposes that the older adult voluntarily retires from all activity.

In the 1950's, the activity theory of optimum aging (Havinghurst, Neugarten, & Tobin, 1963) became widely used among practitioners and professionals. Developed on the precepts of the disengagement theory which observed society's "mutual withdrawal" by the older adult, activity theory postulates that "withdrawal" proceeds against the desires of the aging person, and those persons who age optimally are those who manage to resist the shrinkage of their social worlds by finding substitutes for the interactions they are forced to relinquish, such as those that face retirement or the deaths of significant others (Neugarten, 1995; Tobin, 1995). Activity theory is concerned with the relationship between social activity and life satisfaction in old age.

In order to fully understand activity theory, it is important to break the theory down into four major components. These components are activity, equilibrium, adaptation to role loss, and life satisfaction (Atchley, 1995). The value of activity is seen as providing roles for the individual, which are necessary in maintaining a healthy concept. Activity as a homeostatic equilibrium theory, presumes that individuals are motivated to cope with losses by restoring the previous equilibrium. Whatever equilibrium the person achieved in middle age should be maintained into old age. (Atchley, 1999). Role loss is assumed to be a

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common experience for the aging adult because of the mutual and reciprocal withdrawal of society and the aging adult, due to retirement, ill health, or the surrendering of life in the preparation for death. This appears to be a false presumption because the aging adult, in the attempt to remain active, minimizes role losses for maximal achievements.

The life satisfaction construct addresses the level of subjective well-being experiences by the individual, not the evaluation of specific objective circumstances. Life satisfaction is comprised of five elements: zest and enthusiasm, resolution and fortitude, a feeling of accomplishment, self-esteem, and optimism.

The four components of activity theory are comparable to the sixth, seventh, and eighth psychoanalytic stages of human development as proposed by Erikson (1963, 1979, 1982). He refers to these dramatic shifts in emphasis in adult human development and aging as: identity versus intimacy, generativity versus stagnation, and integrity versus despair. Identity is defined as the process of deciding “who one is”. It begins in adolescence, continues into adulthood, and into old age. Intimacy is the primary psychosocial issue in the young adult’s thoughts about feelings, marriage, and family. It begins in adolescence and may continue into adulthood. Generativity includes the education of one’s children, productivity and creativity in one’s work, and a continuing revitalization of one’s spirit that allows for fresh and active participation in all facets of life. Manifestations of the generativity crisis include feverish attempts at self-improvement. Successful resolution of the generativity crisis involves the human virtues of caring, giving, and teaching. This occurs during the middle years (45-65) of life. The concept of integrity versus despair refers to the belief that when elderly individuals in their latter years (above 65) look at their lives in reflection,

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and decide if their lives have been well-ordered and meaningful (integrity) or if their lives have been unproductive and meaningless, which results in despair. Erikson (1963, 1979, 1982) emphasizes that human development is dominated by these dramatic shifts in emphasis, and that each individual struggles to reconcile earlier themes in order to bring into balance a lifelong sense of trustworthy wholeness and an opposing sense of bleak fragmentation.

By the late 1970's, activity theory lost its momentum, reformulated, and evolved into a new theory named interactionalist theory. The term "interactionalist" is a convergence of two concepts: (1) Symbolic interaction in the form of relation between the self and one's perceived role; (2) Social interaction in the form of role supports going from others to the older adult. This reformulation attempted to explain why increases in activity levels produced increases in perceived life satisfaction, and declines in activity levels appeared to lower life satisfaction. Health and not activity level, as explained by Atchley (1995), is the strongest predictor of life satisfaction but when health was controlled for, activity level is significantly related to morale; specifically for adults older than 75 years of age. To date, researchers are identifying specific conditions under which activity is strongly related to life satisfaction, but as the list of specifications grow, activity theory as a general theory of aging is diminishing (Atchley, 1995).

Presently, continuity theory (Atchley, 1995, 1999) holds that middle-aged and older adults make adaptive choices that attempt to preserve and maintain internal and external structures while achieving goals in spite of constantly changing circumstances. They prefer to accomplish this objective by the use of strategies that are closely related to their past experiences, comparable to Bandura's (1977, 1986, 1997) concepts of performance accomplishments, by applying familiar knowledge and skills in familiar areas. Inevitable change is

observed as maintaining their self-concepts and self-confidences over extended periods of time while striving for personal goals, in spite of constant role, physical, and other life event changes. It is upon this theory of aging that this dissertation has based its foundation in examining senior adult athletes' sources of sport-confidence.

Physical Activity and Sport Research of Masters Athletes and Senior Olympians

Several authors have studied extensively the effect and relationship of aging upon physiological training and sport performance (Shephard, 1978; Vaccaro, Ostrove, Vandervelden, Goldfarb, Clarke, & Dummer, 1984; Wilmore & Costill, 1994). The underlying basis for their research revolves around the premise that voluntary participation in strenuous activity on a regular basis is an unusual pattern of behavior that is not observed in most aging animals. Studies have shown that humans and lower animal forms tend to decrease their activity as they grow older, which means that older men and women who choose to participate in competitive sports or to train exhaustively do not follow natural human behavior patterns (Wilmore & Costill, 1994). The researchers found that despite age-related changes in performance due to physical diminishment produced by normal aging, the effectiveness of serious training (which resulted in changes in body composition, and increases in respiratory and cardiovascular fitness) was consistently influential in helping senior adult athletes achieve or maintain high level age-group performances in swimming and track and field. These changes included increases in lean body tissue, muscular strength and flexibility, reaction time, and overall speed. The effectiveness of serious training was physiologically consistent and incrementally comparable across all age levels of younger and older athletes.

Effective strategies for competition by senior adult athletes also

compensated for age-related changes in performance due to physical diminishment. Over & Thomas (1995) examined the psychomotor performances of 172 younger ($M = 33.6$ years) and older golfers ($M = 62.3$ years) and found that, consistent with age-related declines in physical strength, older golfers drove the ball a shorter distance from the tee than younger golfers. The differences in psychomotor and psychological skills found between younger and older golfers suggest that older golfers employ tactics and strategies that compensate for a reduction in explosive strength with age. The older golfers adopted a more conservative approach in playing golf, were less likely to be seeking improvement, experienced fewer negative emotions and cognitions, and had a greater reliance on psychomotor and psychological skills which appeared to improve or remain stable with age.

Other research examining the emotional and psychological foundations of senior adult athletes included the social support of significant others. Fontaine and Hurd (1992) examined self-reported reasons for participation in sporting activities by Senior Olympians. They found that health, personal challenge, recreation, competition, social support, and public recognition were the top six reasons for participation in a regular exercise program and sport. Golding and Underleider (1991) examined social resources of older adult athletes and found that social support was associated with the social context of exercise. Social support was independently associated with favorable mood, and physical activity was sufficient protection against undesirable mood states. O'Brien (1991) found that sport and physical recreation may be an important type of coping strategy for older adults who find meaning and a sense of achievement in challenging themselves physically.

Harada (1994) examined activity participation and attitudes toward

participation among 166 masters-level track and field athletes and 273 elderly university students in Japan. Harada (1994) found continuity in sport participation was noted to a greater degree among masters athletes compared to elderly university students. Masters athletes viewed sport participation as a serious and competitive pursuit, while senior university students had a more recreational view of activity involvement. Harada (1994) suggested that qualitative data were needed to fully understand patterns of sport involvement and exercise adherence across the life course. Langley and Knight (1999) pursued the qualitative research suggested by Harada. The authors used data sources centered on a timeline describing significant events across the lifespans, narrative segments from three interviews involving the participant's life story and sport participation patterns, and participant observation of tennis play. From these methods, they determined that participation patterns and overall adult development could be understood in terms of the framework outlined in continuity theory (Atchley, 1995, 1999). The authors also stated that successful involvement in sport appeared to mediate past and continuing patterns of social relationships, the development of personal identity (which is comparable to the Erikson's personality construct of identity versus intimacy), and a general propensity for lifelong activity.

Smith and Storandt (1997) examined the histories of competitive sport involvement, health beliefs, reasons for exercising, and personality of three groups of varied older adults: masters athletes, noncompetitors, and nonexercisers. They found that competitors rated gaining or maintaining muscle mass, preparation for competition, social reasons, mood improvement, stress reduction, and exercise significantly more important than the noncompetitors and nonexercisers. The authors purposely focused on motivation to exercise and not

on reasons for competition. They wrote, “It is impossible to determine from this study whether these are lifelong views that could contribute to the decline in sports competition in young and later older adulthood or whether they represent beliefs developed in later life. It appears that the motivation underlying physical activity by older competitors is more varied than that of older exercisers who do not compete. The latter tended to focus primarily on the health benefits of exercise, whereas older competitors cited additional reasons related to socialization and competency” (p. 108).

Gill, Williams, Dowd, Beaudoin, and Martin (1996) examined competitive orientation and participant motivation of four different adult sport and exercise programs. The four sport and exercise programs included a running club, exercise classes, cardiac rehabilitation program, and senior games. They found that seniors who participated in a competitive event scored the highest on the competition, mastery, affiliation and social recognition scales for participant motivation. They scored the lowest on appearance and weight motive scales. The authors also concluded that “older adult sport and exercise participants have multiple motives and more diverse competitive orientations than suggested by the reports on more limited samples in the existing research” (p. 317).

Wilson, Feltz, and Fitzpatrick (1996) examined other motives for older adult participation and competition in view of the fact that their research was the only study which examined sources of self-efficacy / self-confidence for sport among older adults. Wilson et al. (1996) identified sources of self-confidence for masters pentathletes attending a national championship meet. They found that previous performances, being in good physical condition, and having a positive personal life (environmental stability and social support) were related to one’s self-efficacy for sport competition. The sample size in Wilson et al.’s (1996)

study was very small ($N = 17$) and the instrument to assess self-confidence sources was not as extensive nor psychometrically tested as Vealey et al.'s (1998) SSCQ. Another major point is that the psychological factors that motivate these older athletes, in general, to compete are not clearly defined, but these athletes' goals probably do not differ substantially from those of their younger counterparts (Wilmore & Costill, 1994). The initial focus of this dissertation is to assess and examine these unknown psychological factors of motivation; factors known as sources of sport-confidence. A secondary focus, is to examine these unknown psychological sources for age-related differences.

This chapter reviewed the cognitive, physical, and social changes that occur with aging and the efficacious ways that one can adapt to these changes. Older adults who compete in sports may have found a successful avenue for maintaining their sense of personal efficacy. Sport participation provides an activity that helps these individuals maintain or improve their physical functioning, mental health, control, social support, and life satisfaction.

CHAPTER III

METHODOLOGY

This dissertation was conducted in two phases. Phase I was designed to measure the perceived sources and levels of sport-confidence of senior adult athletes by utilizing exploratory and confirmatory factor analyses, and regression analysis. Phase I was designed to analyze research questions #1, #2, and #3 (p. 11). Phase II was designed to compare the sources of sport-confidence across gender and age participation categories within the a single sport so as to control for sport specific influences on sport-confidence. A 3 x 2 sport participation level (senior adults, college, high school) by gender design, was conducted by analyzing the influence of gender and sport participation level upon the sources of sport-confidence within the sport of track and field. Phase II utilized multivariate analysis of variance (MANOVA) and post-hoc analysis in the examination of the research question #4 (p.11).

Phase I: Senior Adult Athletes

Participants

The participants in Phase I were 216 senior adult athletes representing the sports of swimming ($n = 23$), tennis ($n = 26$), and track and field ($n = 167$). The ages of the participants ranged from 50 to 96 years ($M = 64.29$; $SD = 10.10$). An attempt to obtain an equal distribution of males and females from each sport was unsuccessful, due to the fact that there were, on average, less females than males in competition. Overall, men ($n = 159$) outnumbered women ($n = 57$) 74% to 26% for a 3 to 1 ratio. Eighty-three percent of the participants were Caucasian-American. The next largest participant contingent consisted of African-Americans (11%). Overall, senior adult athletes averaged 23.49 years ($SD = 15.5$) spent in

competition and 6.99 hours ($SD = 4.33$) per week practicing their sport. Most of the senior adult athletes achieved master's degree level work and the income level ranged between \$25,000 and \$49,999. A breakdown of 5-year age groups by gender and primary sport is contained in Table 9 in Appendix A. A further description of demographic characteristics by gender and primary sport is provided in Table 10 of Appendix B.

Measures

Background Questionnaire. Background information consisted of the participant's demographics. The demographics included the participant's gender, age, ethnicity, sport participation level and primary sport, amount of time practicing and participating in his or her primary sport, as well as education and socioeconomic level. The background questionnaire is contained in Appendix C.

SSCQ. The SSCQ (Vealey et al., 1998) included 43 items with nine subscales representing the nine sources of sport-confidence. The participants were asked to think about a time when they felt very confident when competing in their sport and what types of things made them feel confident in those situations. Next, participants were asked to respond to each of the 43 items by indicating how important the source represented by that particular item was in helping them feel self-confident when competing in their sport. The stem used to precede the inventory items was, "I usually gain self-confidence in my sport when I...." Participants responded by circling a number on a 7-point Likert scale ranging from 1 (not at all important) to 7 (of highest importance). At the end of the inventory, participants were invited to list, in an open-ended format, any other sources of sport-confidence that they used when competing in sport. Only three seniors responded to the open-ended format. See Appendix D for the questionnaire.

The Trait-Sport Confidence Inventory (TSCI). The TSCI measured the sport-confidence trait (SC-trait), or dispositional sport-confidence, which is the degree of certainty that athletes usually possess about their ability to be successful in sport (Vealey, 1986). The inventory contained 13 questions using a 9-point Likert scale ranging from low to high. Participants were asked how confident they generally felt by asking them to compare their confidence in certain performance areas to the most confident athlete they know. Cronbach's (1951) alpha coefficient of .97, using the present sample, supports the internal consistency of the TSCI. All gender and primary sport levels reported consistently high levels of confidence in their respective sports. MANOVA revealed no significant differences among gender and primary sport levels (see Appendix E for the questionnaire).

Recruitment and Procedure

Approval to conduct this study was granted by the Institutional Review Board (see Appendix F). For the track and field sample, a local USA Track and Field (USATF) directory was utilized to find participants, however, most of the participants were located through personal contacts as well as the numerous recommendations of senior adult athletes. The researcher distributed and mailed research packets to these contacts consisting of an introductory cover letter (see Appendix G), an informed consent form (see Appendix H), the Background Questionnaire, the SSCQ, the TSCI, and a self-addressed stamped envelope. There were 230 packets mailed to track and field participants with a return of 160. Sixteen packets were returned due to no forwarding address. Thus, the return rate for track and field participants was 74.8%. Track and field data came from 38 US states, the District of Columbia, and Canada, thereby insuring a geographically varied participant sample.

For the swimming and tennis sample, the Michigan Senior Olympics headquarters was contacted. A follow-up letter was sent to the director of the Michigan Senior Olympics explaining the dissertation and seeking permission to survey their athletes (see Appendix I). Permission was granted by telephone, and two hundred packets were delivered to the Michigan Senior Olympics headquarters containing the same material as provided to the track and field participants. Only the cover letter was changed (see Appendix J). Forty-one (20.50%) packets were returned, of which 21 were swimmers, and 20 were tennis players. The final 2 swimming and 6 tennis participants were recommended by other senior adult athletes, and volunteered to complete packets given to them by the researcher.

Treatment of the Data

In order to answer the first research question, “Could the factor structure of the SSCQ be replicated with a sample of senior adult athletes?” Exploratory (EFA) and confirmatory factor (CFA) analyses were performed using several indices of fit, and internal consistency measures of reliability for the SSCQ subscales were also calculated. To answer the second research question, “What were the most important sources of sport-confidence of senior adult athletes?”, means and standard deviations for all subscales resulting from the CFA were calculated and reported in rank order of importance. For research question #3, “What sources of confidence best predicted the sport-confidence of senior adult athletes?”, stepwise regression was utilized.

Phase II: Senior Adult, College, and High School Track and Field Athletes

Participants

The participants of Phase II of this dissertation were 167 senior adult, 111

intercollegiate, and 148 high school track and field athletes. An attempt was made to obtain an equal distribution of males and females at each level of participation but was unsuccessful due to the fact that there were, on average, less females than males in competition. Senior adult males ($n = 132$) outnumbered senior adult females ($n = 35$) 79% to 21%. College males ($n = 68$) outnumbered college females ($n = 43$) 61% to 39%. High school males ($n = 82$) outnumbered high school females ($n = 66$) 55% to 45%.

Once again, the overwhelming majority of the track and field participants were Caucasian-American (seniors - 83%, college - 80%, high school - 58%). Thirty-one percent of the high school athletes were African-Americans, compared to 12% each for the seniors and collegians. Collegiate Asian Americans constituted 4%, compared to 3% of the high school participants, and 1% of the seniors.

The age range of the senior adult track and field athletes was 50 to 96 years old with a mean age of 63.47 years ($SD = 10.13$). The age range of the college athletes was 18 to 24 years old, with a mean age of 19.78 years ($SD = 1.34$). The age range of the high school athletes was 14 to 19 years old, with a mean age of 16.05 years ($SD = 1.12$).

Overall, senior track and field athletes averaged 21.94 years ($SD = 14.22$) participating in the sport compared to 7.16 years ($SD = 2.92$) for the college sample, and 3.51 years ($SD = 2.43$) for the high school participants. Overall, the college participants averaged 15.49 hours ($SD = 4.85$) per week practicing track and field, compared to 11.21 hours ($SD = 3.19$) for the high school sample, and 7.46 hours ($SD = 4.49$) for the senior adult sample. A further description of demographic characteristics by gender and sport participation level is provided in Table 11 of Appendix K.

Recruitment and Procedure

The track and field senior adult athletes from Phase I were used in Phase II. The intercollegiate athletes were recruited from midwestern NCAA Division I (Michigan) and NCAA Division III (Ohio) universities, and a midwestern NJCAA Division II (Michigan) community college. The researcher recruited midwest collegiate and high school coaches through personal contacts and telephone contacts, as well as through coaches' recommendations of other coaches and teams. The collegiate and high school athletes were recruited by their respective coaches for participation in the study. The high school athletes were recruited from comparable high school Division I state championship team finalists in Michigan and Ohio. The measures were the same as those used in Phase I.

All participants were asked to participate in a study concerning sources of sport-confidence. The researcher distributed as well as mailed research packets consisting of an introductory cover letter (see Appendix L), an informed consent form, an individual demographics page, the SSCQ and the TSCI. The consent form was completed and returned to the researcher separately from the completed demographics sheet and both questionnaires for assessment and analysis.

Treatment of the Data

In order to answer the fourth research question, "Did the perceived importance of various sources of sport-confidence differ by gender and sport participation levels within a specific sport?", several preliminary analyses were performed. First, as performed in Phase I, EFA and CFA were utilized in order to determine the validity of the factor structure of the SSCQ for the combined collegiate and high school sample. Once a valid structure of the subscales was confirmed, a 3 x 2 by sport participation level by gender factorial design was

analyzed using MANOVA with Tukey's Post-Hoc follow-up analysis in the case of significant multivariate findings. In addition, stepwise regression analyses were used to determine what sources of confidence information best predicted the sport-confidence scores for male and female track and field participants, and for athletes at the three different levels of participation.

CHAPTER IV

RESULTS

Phase I: Senior Adult Athletes

In order to answer the first research question, “Could the factor structure of the SSCQ be replicated with a sample of senior adult athletes?”, CFA based on data from senior adult athletes ($N = 216$) were performed, utilizing the Analysis of Moment Structures 3.61 (AMOS) maximum likelihood procedures (Arbuckle, 1997). Consistent with general practice in structural equation modeling (SEM) procedures, two alternative models, as well as the a priori specified model, were tested using all 43 items. In the first CFA, a nine-factor, 43 item model was tested. In the second analysis, a single factor (unidimensional) model was tested, utilizing all 43 items. Lastly, drawing upon the results of an exploratory factor analysis, a modified six-factor, 21 item model was tested. Table 1 displays the results of all senior adult athlete factor models and analyses.

Table 1

Results of All Senior Adult SSCQ Factor Analysis Models.

Models	Factors	Items	GFI	NFI	CFI	RMR	RMSEA	ChiSq/df
Vealey et al.	9	43	.800	-----	-----	.060	-----	1.800
SA Hypoth.	9	43	.652	.752	.834	.169	.083	2.478
Unidimensional	1	43	.363	.351	.389	.351	.156	6.194
SA Modified	6	21	.885	.920	.965	.119	.058	1.717

(SA = Senior Adults. Hypoth. = Hypothesized. Vealey et al (1998) $N = 208$; SA $N = 216$.)

Confirmatory Factor Analyses

The hypothesized model. A nine factor model of the SSCQ (Mastery, Demonstration of Ability, Physical / Mental Preparation, Physical Self-Presentation, Social Support, Coaches' Leadership, Vicarious Experience, Environmental Comfort, and Situational Favorableness) was hypothesized. The factors of Mastery and Physical / Mental Preparation demonstrated the strongest correlation with each other ($r = .66$), and the factors of Coaches Leadership and Social Support demonstrated the next highest correlation ($r = .60$).

Because several indexes were available to evaluate the fit of the model, and there were no clear indications about which fit indices are best, multiple indicators were used to examine the fit (Kline, 1991; Ullman, 1996). The fit indices included the chi-square statistic (χ^2), the ratio of the χ^2 to degrees of freedom (χ^2 / df), the Goodness of Fit (GFI), the Normal Fit (NFI), the Comparative Fit (CFI), the Root Mean Square Residual (RMR), and the Root Mean Square Residual Error of Approximation (RMSEA).

A model which produces a nonsignificant χ^2 is considered to fit the data well. The χ^2 , however, is very sensitive to sample size and is not considered to be a good index of fit when using large sample sizes (Kline, 1991; Ullman, 1996). The χ^2 / df can be used in such cases and shows a good fit the closer it is to zero. Values less than 2.00 represent an adequate fit.

The goodness of fit index (GFI) is a measure of the relative amount of variances and covariances jointly accounted for by the model. The Bentler-Bonett (1980) normed fit index (NFI) evaluated the estimated model by comparing the χ^2 value of the hypothesized model to the χ^2 value of the independence model. The independence model was based on the hypothesis that all variables were

uncorrelated, and that all observations were independent of one another. This meant that a participant's scores on the dependent measures were not influenced by other participants scores on the dependent measures. The comparative fit index (CFI; Bentler, 1990) also assessed the fit but employed a noncentral χ^2 distribution with noncentrality parameters. The larger the GFI, NFI, and CFI, the better the fit. GFI, NFI, AND CFI values of .90 and greater indicate a good model fit (Bentler & Bonett, 1980; Kline, 1991; Smith, Smoll, & Schultz, 1990, Ullman, 1996), while a value of less than .80 was indicative of a poor model fit (Kim & Gill, 1997; Smith, Smoll, & Schultz, 1990). Root mean square residual (RMR) and root mean square error of approximation (RMSEA) are indices based on residuals as well as errors of approximation. A good fitting model would have a smaller RMR and RMSEA, with desired values closer to zero (Kline, 1991; McAuley, Duncan, & Tammen, 1989; Jöreskog & Sörbom, 1995).

The chi-square for the independence model was easily rejected, $\chi^2(903, N = 216) = 8231.36$, $\chi^2 / df = 9.12$, $p < .01$. The chi-square for the hypothesized model was tested and was not found to provide a good fit for the data, $\chi^2(825, N = 216) = 2044.03$, $p < .01$.

Overall, the results demonstrated a poor fit of the data to the model. As can be seen in Table 1, none of the fit indexes reached a level of .90 nor were the residual measures low enough to indicate an adequate fit. The fit of the data fared worse than the Vealey et al. (1998) model of the SSCQ. Therefore, the factor structure of the SSCQ was unable to be replicated with a sample of senior adult athletes and further analysis, in the form of model modification, was examined.

Unidimensional model. This alternative single-factor model was tested in order to be certain that the SSCQ was not unidimensional. The results

corroborated the hypothesis, $\chi^2(862, N = 216) = 5338.83, p < .01, \chi^2/df = 6.19$. All measures were far worse than the originally hypothesized model, so the hypothesized model was modified (see Table 1).

Six-factor model. There are at least two reasons for modifying a SEM model: to improve fit (in exploratory work) and to test hypotheses (in theoretical work). Both of these reasons were employed in modifying the model. Modification was also used to answer the second research question, “What were the sources of sport-confidence of senior adult athletes?”

First, exploratory principal components factor analysis yielded six factors and 21 items. The six factors displayed eigenvalues of 1.00 and higher. All six factors accounted for 80.25% of the overall variability in scores, with two factors (Mastery and Physical Self-Presentation) and 20 items dropped due to loadings of .30 on more than one factor. The third factor, Situational Favorableness, which consisted of two items, was dropped due to an unacceptable inter-item correlation of .44, as well as an unacceptable alpha (inter-item reliability) level of .60. The remaining factors and items were the same as Vealey et al. (1998) with Vicarious Experience (two items) being retained due to an acceptable inter-item correlation of .75, as well as, an acceptable alpha (inter-item reliability) level of .86. Tabachnick and Fidell (1996) explained, “If two variables load on a factor, then whether or not it is reliable depends on the pattern of the correlations of these two variables with each other and with other variables in R. If the two variables are highly correlated with each other (say, $r > .70$) and relatively uncorrelated with other variables, the factor may be reliable.” The correlation of item 37 with the other SSCQ-Modified (SSCQ-M) items ranged from .17 to .45, and the correlation of item 41 with the other SSCQ-M items ranged from .15 to .37.

Table 2 shows all intrascale item correlations of the SSCQ-M.

Table 2

SSCO-M Intrascale Item Correlations.

SSCO-M Subscales and Items		Correlations				
Coaches' Leadership		SQ 9	SQ 18	SQ 27	SQ 34	SQ 43
SQ 9	1.000					
SQ 18	.821	1.000				
SQ 27	.800	.899	1.000			
SQ 34	.797	.849	.910	1.000		
SQ 43	.830	.871	.944	.908	1.000	
Demonstration of Ability		SQ 11	SQ 29	SQ 36	SQ 40	
SQ 11	1.000					
SQ 29	.606	1.000				
SQ 36	.722	.697	1.000			
SQ 40	.642	.740	.758	1.000		
Physical / Mental Preparation		SQ 13	SQ 22	SQ 31	SQ 38	
SQ 13	1.000					
SQ 22	.524	1.000				
SQ 31	.674	.727	1.000			
SQ 38	.423	.580	.606	1.000		
Social Support		SQ 1	SQ 10	SQ 19		
SQ 1	1.000					
SQ 10	.659	1.000				
SQ 19	.657	.668	1.000			
Environmental Comfort		SQ 24	SQ 25	SQ 33		
SQ 24	1.000					
SQ 25	.563	1.000				
SQ 33	.720	.561	1.000			
Vicarious Experience		SQ 37	SQ 41			
SQ 37	1.000					
SQ 41	.751	1.000				

Next, these six factors were confirmed using AMOS 3.61 (see Table 2).

Although, the results revealed a significant chi-square, $\chi^2(174, N = 216) = 298.78$, $p < .01$, the $\chi^2 / df = 1.72$ represents adequate fit. The other fit indexes, presented in Table 1, indicated acceptable level criteria were met.

In general, the analyses indicated that the data adequately fit this modified version of the hypothesized model. Therefore, the sources of sport confidence of senior adult athletes included Coaches' Leadership, Demonstration of Ability, Physical / Mental Preparation, Social Support, Environmental Comfort, and Vicarious Experience in the hierarchical order of their exploratory and confirmatory factor loadings (see Tables 3 and 4). The correlations between the SSCQ-M subscales (phi-matrix) are reported in Table 12 in Appendix M.

Table 3

Eigenvalue Factor Loadings (Lambda) and Percentage of Variances for the SSCQ-M Subscales.

<u>SSCQ-M Subscales (Factors)</u>	<u>Eigenvalue</u>	<u>% Variance</u>	<u>Cumulative %</u>
Coaches' Leadership	4.50	21.44	21.44
Demonstration of Ability	3.18	15.14	36.58
Physical / Mental Preparation	2.88	13.73	50.31
Social Support	2.37	11.29	61.60
Environmental Comfort	2.25	10.74	72.33
Vicarious Experience	1.66	7.92	80.25

Table 4

SSCO-M Factor Loadings and Squared Multiple Correlations.

SSCO-M Subscales (Factors) and Items	λ (Lambda)	R Squared
Coaches' Leadership		
Know coach will make good decisions	.91	.84
Know coach is a good leader	.91	.95
Feel coach provides leadership	.91	.94
Have trust in my coach's decisions	.90	.88
Believe in my coach's abilities	.86	.72
Demonstration of Ability		
Prove that I am better than opponents	.90	.77
Show I am one of the best	.87	.76
Demonstrate that I am better than others	.84	.59
Know I can outperform opponents	.81	.67
Physical / Mental Preparation		
Prepare myself mentally and physically	.88	.85
Stay focused on my goals	.82	.63
Know I am mentally prepared	.76	.50
Believe in my ability to give maximum effort	.70	.45
Social Support		
Know I have support from important others	.82	.67
Am told others believe in me and my abilities	.79	.69
Get positive feedback from teammates and friends	.79	.62
Environmental Comfort		
Like the environment where I am performing	.85	.69
Feel comfortable in the environment	.82	.72
Feel everything is going right for me in that situation	.69	.47
Vicarious Experience		
Watch teammates who are at my level perform well	.86	.66
See a friend perform successfully	.81	.85

SSCO-M Subscale Means and Alphas

Subscale means and standard deviations. Tables 5 and 6 display the means, standard deviations of each gender for the six sources of sport-confidence in the revised model. The top three important sources of sport-confidence of senior adults athletes were Physical / Mental Preparation, Social Support, and

Demonstration of Ability.

Males and females did not differ in their respective orders of subscale importance. A one-way MANOVA revealed no significant effect for gender on the SSCQ-M subscales, Wilks Lambda = .96, $F(6, 209) = 1.62$, $p > .05$.

Table 5

Means and (Standard Deviations) of Senior Adult SSCQ-M Subscales.

Subscales	Total	Male (SD)	Female (SD)
Physical / Mental Preparation	5.65	5.61 (1.02)	5.76 (1.02)
Social Support	4.73	4.74 (1.25)	4.71 (1.35)
Demonstration of Ability	4.70	4.70 (1.49)	4.72 (1.69)
Environmental Comfort	4.50	4.49 (1.34)	4.66 (1.25)
Vicarious Experience	4.37	4.41 (1.43)	4.25 (1.51)
Coaches' Leadership	3.54	3.37 (1.90)	4.00 (2.09)
(Senior Adult Total $N = 216$; Males $n = 159$, Females $n = 57$.)			

Table 6

Means and (Standard Deviations) of Primary Sport by Gender.

Subscales	<u>Track and Field</u>		<u>Swimming</u>		<u>Tennis</u>	
	M n = 132	F n = 35	M n = 11	F n = 12	M n = 16	F n = 10
P / MP	5.68 (.96)	5.77 (.93)	5.59 (1.31)	5.33 (1.29)	5.02 (1.12)	6.23 (.78)
SS	4.74 (1.23)	4.93 (1.26)	4.88 (1.24)	4.17 (1.49)	4.65 (1.49)	4.57 (1.43)
DA	4.74 (1.53)	4.81 (1.68)	4.32 (1.19)	3.90 (1.62)	4.58 (1.33)	5.40 (1.53)
EC	4.45 (1.35)	4.79 (1.31)	4.88 (1.34)	4.41 (1.30)	4.10 (1.25)	4.47 (1.06)
VE	4.41 (1.46)	4.36 (1.38)	4.45 (1.54)	3.97 (2.01)	4.34 (1.12)	4.45 (1.32)
CL	3.39 (1.92)	4.35 (1.97)	3.25 (2.21)	2.87 (1.91)	3.25 (1.68)	4.14 (2.42)

(Key: P / MP = Physical / Mental Preparation, SS = Social Support, DA = Demonstration of Ability, EC = Environmental Comfort, VE = Vicarious Experience, CL = Coaches' Leadership.)

Internal consistency. Internal consistency measures of reliability (see Table 13 in Appendix N) for the SSCQ-M subscales were calculated by using Cronbach's (1951) alpha (α) coefficient. All subscale alphas of .70 criterion advocated by Nunnally (1978) were considered as being internally consistent and reliable. The internal consistency measure of reliability for the SSCQ-M subscales ranged from alphas of .83 ("Environmental Comfort") to .97 ("Coaches' Leadership").

Predictors of Sport-Confidence.

The third research question, "What sources of confidence information best

predict the sport-confidence of senior adult athletes?”, was examined using stepwise multiple regression analysis. The six SSCQ-M subscales were the predictor variables and the TSCI was the criterion variable. The stepwise method was used because a new factor structure was being employed. Results found that, Physical / Mental Preparation was the only predictor of sport-confidence. The regression equation was significant, $F(1, 215) = 55.63$, $p < .001$, R Squared = .21.

Phase II: Senior Adult, College, and High School Track and Field Athletes

The fourth research question was, “Did the perceived importance of various sources of sport-confidence differ by gender and sport participation levels within a specific sport?” A CFA of the SSCQ and SSCQ-M was conducted to determine whether either factor structure could be replicated and subsequently used in analyses to compare senior adult, college and high school samples.

The hypothesized model. A nine factor model of the SSCQ: Mastery, Demonstration of Ability, Physical / Mental Preparation, Physical Self-Presentation, Social Support, Coaches’ Leadership, Vicarious Experience, Environmental Comfort, and Situational Favorableness was hypothesized for the combined population of college and high school athletes. Once again, the factors of Mastery and Physical / Mental Preparation demonstrated the strongest relationship with each other.

The chi-square for the independence model that tests the hypothesis was again easily rejected, $\chi^2(903, N = 259) = 7994.67$, $\chi^2 / df = 8.85$, $p < .01$. The chi-square for the hypothesized model was tested and slight support for it was found, $\chi^2(825, N = 216) = 1766.70$, $p < .01$. The χ^2 / df was 2.14.

As previously stated, the larger the GFI, NFI, and CFI, and the lower the RMR and RMSEA, the better the fit. For this sample and model, the results demonstrated a slight improvement from results found with the senior athletes but was still far from an adequate fit of the data to the model (see Table 7). None of the fit indexes reached a level of .90 nor were the residual measures very low so further analysis, in the form of model modification, was examined.

Six-factor SSCQ-M model. The six-factor model obtained from data in Phase I with senior adult athletes, was tested using the combined sample of college and high school track and field athletes. The results revealed a significant chi-square, $\chi^2(174, N = 259) = 340.58, p < .01$. The χ^2 / df was 1.96, representing adequate fit. The other fit indexes, presented in Table 7, indicated that acceptable level criteria were met. In general, the analysis indicated that the data adequately fit this modified version of the hypothesized model. Correlations between SSCQ-M Subscales are listed in Table 14 in Appendix O. The SSCQ-M model, therefore, was the one used to answer Question #4.

Table 7

Results of all SSCQ and SSCQ-M Factor Analysis Models.

Models	Factors	Items	GFI	NFI	CFI	RMR	RMSEA	ChiSq/DF
Vealey et al.	9	43	.800	-----	-----	.060	-----	1.800
C-HS Hypoth.	9	43	.735	.779	.867	.148	.067	2.141
Unidimensional	1	43	.363	.351	.389	.351	.156	6.194
C-HS SSCQ-M	6	21	.893	.871	.948	.143	.061	1.957

(Note: C-HS = College-High School. Hypoth. = Hypothesized. Vealey et al., (1998) $N = 208$; SA $N = 216$; C-HS $N = 259$.)

Multivariate Analysis of Variance

Table 8 shows the means and standard deviations from a 3 x 2 (Sport Participation Level x Gender) MANOVA that was conducted using the SSCQ-M model of sport-confidence.

Table 8

Means and (Standard Deviations) of Sport Participation Level by Gender.

Subscales	<u>Seniors</u>		<u>College</u>		<u>High School</u>	
	M	F	M	F	M	F
	n = 132	n = 35	n = 68	n = 43	n = 82	n = 66
P / MP	5.68 (.96)	5.77 (.93)	5.60 (.91)	5.53 (.72)	5.63 (1.02)	5.35 (.84)
SS	4.74 (1.23)	4.93 (1.26)	5.62 (1.07)	5.39 (.85)	5.38 (1.13)	5.45 (1.14)
DA	4.74 (1.53)	4.81 (1.68)	5.62 (1.07)	5.21 (1.06)	5.48 (1.29)	4.63 (1.51)
EC	4.45 (1.35)	4.79 (1.31)	4.26 (1.31)	4.69 (.91)	4.81 (1.32)	4.45 (1.17)
VE	4.41 (1.46)	4.36 (1.38)	4.59 (1.16)	4.40 (1.18)	5.03 (1.40)	4.54 (1.16)
CL	3.39 (1.92)	4.35 (1.97)	5.21 (1.38)	5.22 (1.20)	5.26 (1.58)	4.89 (1.29)

(Key: P / MP = Physical / Mental Preparation, SS = Social Support, DA = Demonstration of Ability, EC = Environmental Comfort, VE = Vicarious Experience, CL = Coaches' Leadership.)

The MANOVA and subsequent discriminant analyses were significant, Wilks' Lambda = .94, $F(12, 830) = 2.29$, $p = .007$, for the interaction between sport participation level and gender. Coaches' Leadership, $F(2, 420) = 5.38$, $p < .01$; Demonstration of Ability, $F(2, 420) = 3.41$, $p < .04$; and Environmental Comfort, $F(2, 420) = 3.74$, $p < .03$ were the most significant contributors for

gender differences and sport participation levels in sources of sport-confidence.

Follow-up post-hoc analyses were conducted, using Tukey's statistic for unequal subject numbers. Figure 3 displays that between genders, senior adult female athletes were significantly more likely to rely on Coaches' Leadership as a source of sport-confidence than the senior adult males.

Figure 3

Bar Graph of the Means of Coaches' Leadership by Sport Participation Level and Gender.

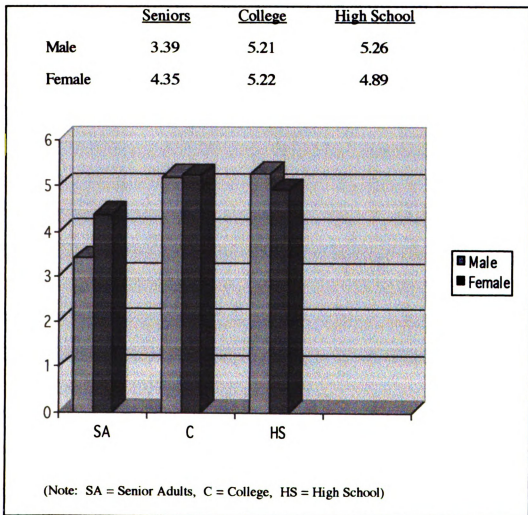
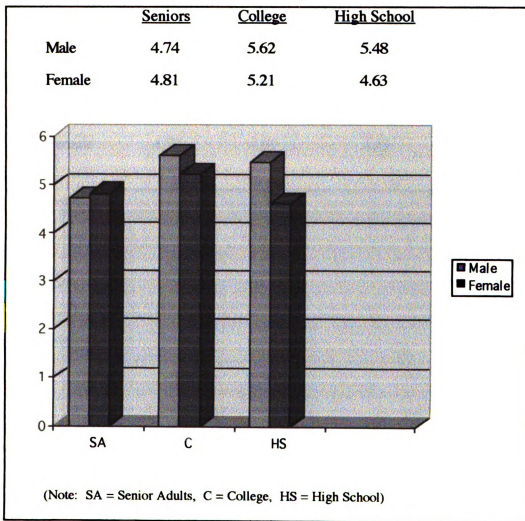


Figure 4 demonstrates that males (college and high school) were significantly more likely than the females (college and high school) to rely on Demonstration of Ability as a source of sport-confidence.

Figure 4

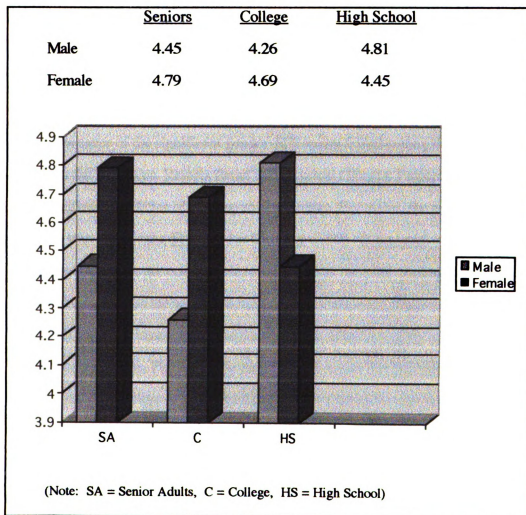
Bar Graph of the Means of Demonstration of Ability by Sport Participation Level and Gender.



Female senior adult and college athletes were more likely than the males to rely on feeling comfortable in the competitive environment as a source of sport-confidence. Specifically, approaching significance ($p = .06$), and as illustrated in Figure 5, college females were more likely to rely on Environmental Comfort than college males. However, high school males demonstrated the opposite result.

Figure 5

Bar Graph of the Means of Environmental Comfort by Sport Participation Level and Gender.



Tukey's Post-Hoc follow-up results within gender and between sport participation levels, revealed that senior adult male athletes were significantly less likely to rely on Coaches' Leadership and Demonstration of Ability as sources of sport-confidence than high school or male college athletes. Male high school athletes were significantly more likely to rely on Environmental Comfort, as a source of sport-confidence, than their male college counterparts. Female college athletes were significantly more likely, than female senior adults, to rely on Coaches' Leadership as a source of sport-confidence. There were no other significant differences among female sport participation levels.

Predictors of Sport-Confidence

As was done in Phase I, the stepwise method was used to predict sport confidence because a new factor structure was being employed for the three levels of participation in track and field. Separate analyses were conducted for males and females because of the significant gender differences found among the means on the subscales. Results found that Physical / Mental Preparation was the only significant predictor of male sport-confidence. For males, the regression equation was significant, $F(1, 281) = 53.50$, $p < .001$, R Squared = .16. The significant equations are comparable to Vealey et al.'s (1998) finding of Physical / Mental Preparation as the sole predictor of sport-confidence of male high school basketball players. Female track and field athletes differed slightly in their sport-confidence predictors. Physical / Mental Preparation and Environmental Comfort were the only predictors of sport-confidence. The regression equation was significant, $F(2, 143) = 14.78$, $p < .001$, R Squared = .17.

In addition, three separate regression analyses by participation level were conducted again because of significant differences found among the means on the subscales. Physical / Mental Preparation and Environmental Comfort were

significant predictors of sport-confidence of high school athletes, $F(1, 147) = 17.89$, $p < .001$, R Squared = .20. However, Physical / Mental Preparation was the only predictor of college athletes, $F(1, 110) = 18.22$, $p < .001$, R Squared = .14, and senior adult athletes, $F(1, 166) = 31.67$, $p < .001$, R Squared = .16.

Overall, comparable to Vealey et al's (1998) study, these results indicate that for the majority of the track and field athletes, higher levels of sport-confidence were related to focusing on physical and mental preparation for competition. In addition, for the high school males and senior adult females, feeling comfortable in the environment was conducive towards being self-confident in competitive situations.

CHAPTER V

DISCUSSION

The purposes of this dissertation were to assess and analyze the sources and levels of self-confidence of senior adult athletes using the SSCQ, and to test the factorial validity of the SSCQ with this population. Secondly, this study examined the influence of gender and sport participation levels (senior adults, college, high school) within a single sport on the perceived importance of various sources of sport-confidence. This study was conducted utilizing the sources of sport-confidence framework (Vealey et al., 1998) which considered athletic characteristics and organizational cultures as influences of sources of confidence in one's sport.

This dissertation was the first study that identified and assessed the most salient confidence information for senior adult athletes, and examined the influence of the sources of self-confidence upon overall sport-confidence of senior adult athletes. From an overall conceptual standpoint, the nine self-confidence sources used by athletes when competing in sport, as defined by Vealey et al. (1998), could not be replicated with a sample of senior adult athletes. The data did not adequately fit the model. Comparably, it must also be noted that the data in Vealey et al.'s (1998) study, although adequate, were "far from exact" in fitting the model.

A modified six-factor CFA model was tested, which resulted in a more adequate fit of the data to the model. Six of the original nine sources of sport-confidence were retained. The remaining three factors (Mastery, Physical Self-Presentation, Situational Favorableness) and 22 items were eliminated due to multiple factor loadings. For example, all of the SSCQ items of Mastery loaded and merged with Physical / Mental Preparation, therefore items of Mastery were

eliminated. This does not mean that the senior adults did not perceive Mastery as being important, it is probably to the contrary. However, it could be posited that the items of Mastery were interpreted as being redundant to, or extensions of, the items of Physical / Mental Preparation. The overall correlation between Mastery and Physical / Mental Preparation was .81, while the correlations between the other SSCQ-M subscales ranged from .19 to .57 (see Table 12 in Appendix M), which also raised the speculation of multicollinearity. The same shift occurred in the linked factor loadings of Mastery - Physical / Mental Preparation with the combined college-high school group.

Considering the results as a whole, there is substantial evidence to support the superiority of the SSCQ-M over the SSCQ for senior adult athletes. Thus, the SSCQ-M appears to be a psychometrically sound questionnaire for use with older adult athletes.

Vealey et al. (1998) found that Physical Self-Presentation was one of the top five sources of sport-confidence of college female athletes, and the least important source of sport-confidence of the high school athletes. The authors stated, "Typically, greater emphasis is placed on body type and presentation in individual sports as compared to the team sport of basketball, so Physical Self-Presentation may be a more salient source for athletes in sports where body type is more highly scrutinized. An alternative explanation may also be that more elite college athletes place greater emphasis on their physical self-presentation and body image as compared to high school athletes (p. 74)." In this dissertation, Physical Self-Presentation was not supported as a source of sport-confidence of senior adult athletes due to multiple factor loadings. Note that these senior adult athletes also competed in individual sports. It could be supposed that physical appearance may not be as important to an older adult athlete as is possibly one's

health, personal challenge, or recreation (Fontaine & Hurd, 1992). In general, physical appearance could be seen as a major by-product of good health in older adults. This speculation needs to be examined with further research.

Finally, Situational Favorableness, which was the least important source of sport-confidence of college athletes, as well as the second least important source among (team) high school athletes in Vealey et al.'s (1998) study, was not a source of sport-confidence of senior adult athletes. Furthermore, it could be speculated that senior adult athletes participating in individual sports may not expect nor rely on "getting breaks from the officials" or "seeing breaks going my way" (SSCQ items), in order to perform successfully. Senior adult athletes probably envision themselves as being in control of their performances as well as their competitive environment.

The top three important sources of sport-confidence of senior adults athletes were Physical / Mental Preparation, Social Support, and Demonstration of Ability. Males and females did not differ in their respective orders of subscale importance. The order is nearly identical to the top three sources of sport-confidence for college athletes in Vealey et al.'s (1998) study, with the exception of Mastery. Mastery led the top three sources of Vealey's high school athletes and was the third most important factor among college athletes, but was not a factor among senior adult athletes.

The fact that Physical / Mental Preparation and Social Support were consistently strong across both studies points to the importance of self-regulatory behavior and cognitions, and a supportive climate in forming confidence beliefs. Bandura (1997) wrote, "There are many facets of athletic skills that can be the focus of attention. The cognitive aspects of performance include such things as plans, strategies, and self-efficacious ideation" (p. 377).

Preparing for all athletic performances is akin to preparing for scholastic examinations. In fact, all athletic competitions are measurable performance examinations of abilities, effort, and the possible defiance of perceived parameters and limits, in order to achieve goals and objectives. Research has shown that proper preparation for scholastic examinations improves performance and overall self-confidence (Holbrook, 1998; McDougall & Granby, 1996). In the case of senior adult athletes, self-regulatory behavior probably resulted in proper self-preparation by focusing on the correct athletic components and physical mechanics needed to successfully compete in sport, and also contributed to overall efficacy. Furthermore, Physical / Mental Preparation was the only predictor of sport-confidence for senior adult athletes. This was comparable to Vealey and her colleagues finding of Physical / Mental Preparation as the sole predictor of sport-confidence of all college and high school athletes.

In this dissertation, both male and female senior adult athletes reported that Social Support was the second most important source of sport-confidence, which was comparable with Vealey and her colleagues' findings. However, Vealey et al., (1998) found that female athletes were more likely than their male counterparts to rely on Social Support as a source of confidence information. They explained, "The Social Support differences are congruent with previous research indicating that social evaluation cues influence the confidence of females more so than the males" (p. 76). The findings of this dissertation, which found no gender significant differences for Social Support, did not support Vealey et al.'s (1998) findings and explanation. In fact, the means of Social Support for both senior adult men and women were identical, and the scores for both genders were above 4.7 on a 7-point Likert scale, with each of the three Social Support items revealing a R-square above .62.

For the senior males, several Social Support mechanisms appeared to have been employed. The scores of the items “I usually gain self-confidence in my sport when: I know I have support from important others, I am told others believe in me and my abilities, and I get positive feedback from team members and friends” indicated a strong relationship between the males and the high extrinsic value placed upon the support of others, including family, who were deemed significantly important. These senior males found it rewarding to have support and be provided with positive feedback from family members and others as they ventured into what was regarded as uncharted waters for people of their age, especially if one considered the small number of people who continue to physically demonstrate their abilities and courage in athletic competition compared to the overall number of persons within a given age grouping or cohort.

This dissertation also examined the influence of gender and sport participation levels (senior adults, college, high school) within a single sport (track and field) on the perceived importance of various sources of sport-confidence. Vealey et al. (1998) performed their study utilizing exploratory factor analysis (EFA) on the individual sport college athletes, and only utilized confirmatory factor analysis (CFA) on the team sport high school athletes. The authors stated, “This mixing of sport level and sport type precludes any definitive interpretation of how these factors influence athletes’ sources of sport-confidence and how these sources interrelate to other constructs in the conceptual model” (p. 75). This dissertation tried to unconfound this problem by examining sport level and gender differences within the same sport.

The Interaction of Sport Participation Level and Gender on the SSCQ-M

Coaches’ Leadership, Demonstration of Ability, and Environmental Comfort were the most significant contributors, in the present study, for the track

and field participation level by gender interactions. For Coaches' Leadership, senior female athletes significantly relied on this factor as a source of sport-confidence more than the senior males, but both were less likely to rely on this source than the college athletes. In nearly one-half of the senior adult male athletes, and over one-third of the senior adult female athletes, coaches were perceived as non-existent or slightly-to-not at all important. Coaches' Leadership, despite being the least important source of sport-confidence, demonstrated the highest phi-matrix correlation with Social Support (see Table 12 in Appendix M). The scope of this relationship appeared to be an enigma, but highlighted a phenomenon in which the climate of senior adult competition led to gains in confidence through competitive camaraderie by way of peer coaches, or from the support and leadership of significant others. Primarily, most senior adult athletes in track and field do not, nor may be financially able to, hire coaches for training. Most coaches volunteered and usually were top level senior adult athletes or competent peers in their respective events.

In terms of Demonstration of Ability, gender differences occurred for college and high school athletes, but not seniors. That is, male college and high school athletes reported Demonstration of Ability as a more important source of sport-confidence than their female counterparts. They also relied on this source more than the male senior athletes (significantly for the college males). Vealey et al. (1998) also found gender differences for Demonstration of Ability, but only for their high school basketball sample. As these authors explained, the extreme normative social comparison expectations that males at college and adolescent ages experience with regard to sport prowess and participation may account for these gender differences. This dissertation's results suggest that the gender differences found for college and high school, but not for senior adults, are

influenced developmentally, rather than being sport-specific. Senior adult males may no longer experience such extreme social comparison expectations or they have learned to focus their efficacy judgments on more controllable sources of information. Because of the culture of senior adult sports, in general, with less social recognition, adulation, and rewards, athletes were possibly more self-regulated, intrinsically motivated, and looked to other means (i.e. personal goals, age-group comparisons, age-graded comparisons, and social comparisons) in defining success.

Environmental Comfort was the third source of confidence information that contributed to the Gender by Sport Participation Level interaction. Females relied increasingly more on Environmental Comfort from senior adult to college levels; whereas, senior and college males relied on this source much less than their high school counterparts. In addition, for high school males and senior adult females specifically, feeling comfortable in the environment appeared to have been conducive towards being self-confident in competitive situations. This in large part may be due to the argument that the athletic environments for high school males appear to be more competitively hostile than their female counterparts because there is so much emphasis placed on outcome and rewards by coaches, teams, media, and society in general. Unlike their college counterparts, these young men are in the initial stages of learning how to compete at higher levels, to adapt to those levels, and to survive in those hostile environments. Research has shown that there are more dropouts from sport participation and competition during the middle and late adolescent years than at any other time period in youth sport. Specifically, children's sport participation generally peaks between the ages of 10 and 13 years and then consistently declines to the age of 18, when a relatively small percentage of youths remain involved in organized sport (Ewing

& Seefeldt, 1989; State of Michigan, 1976; Weinberg & Gould, 1995).

However, most college athletes usually have learned how to navigate outcome-oriented environments due to trial and error experiences and / or exceptional coaching. On the other hand, high school females, may participate and perform well in environments which foster and encourage cooperation, social alliances, and social support. They may participate in sports, or join and belong to teams, because their friends are on the team, or for social status. High school females also generally perform in front of smaller audiences, have less media attention, and have less fan support than the high school males. It is important to note that there are exceptions to this argument, and numerous young females, like Olympic champions Wilma Rudolph and Jackie Joyner Kersee for example, have succeeded in environments where outcome, i.e. winning, was paramount for survival, not only in their respective sport, but in life primarily as a catalyst and secondly as a vehicle to escape their impoverished and decimated environs. Although their media attention generated was probably greater than for other female athletes, their fan support or detractors were usually less arduous or rancorous than their male counterparts.

Senior adult females may find confidence in a comfortable environment for reasons other than relief from performance pressure. It can be argued that since these senior women began competing in track and field at nearly 48 years of age, they may not have had the same exposure to competitive sporting environs as their male counterparts. Initially, the competitive environment may have appeared to be simultaneously foreign or frightening for these women, and the need for learning how to be comfortable for performing within those parameters was tantamount for gaining confidence. Nonetheless, despite not having many coaches or age-related role models, and through trial and error experiences these

women appeared to have been able to compete and perform well. Furthermore, many of these senior women reported that there were very few athletes in their respective locales competing in track and field, and subsequently they had to travel distances in order to compete against other similar age-group athletes. They found that their competitors not only welcomed the competition, but fostered a less hostile climate through both camaraderie and peer coaching, thus providing an environment in which these senior women were able to perform and compete comfortably.

Significant Predictors of the Sport-Confidence

Consistent with the other findings in this dissertation, perceived importance of sources of sport-confidence supported the actual predictiveness of sport-confidence for males. Physical / Mental Preparation was perceived as the most importance source of sport-confidence for males. However, the predictive power of the sources did not totally match perceived importance for females. Although Physical / Mental Preparation was the primary significant predictor of sport confidence, Environmental Comfort was also a significant predictor. This seemed to be a more important source of confidence information for older than younger females; however, the scores for all three groups were above 4.4 on a 7-point Likert scale.

Interestingly, Vealey et al. (1998) found that Physical / Mental Preparation was positively related to sport-confidence while Environmental Comfort was negatively related to sport-confidence. Conversely, this dissertation found that Environmental Comfort was positively related to sport-confidence. Unlike Vealey et al.'s (1998) explanation, it can be debated that Environmental Comfort (although an external factor) may be an important source of confidence for performance-oriented athletes as well, as opposed to outcome-oriented athletes

exclusively, and as demonstrated by this dissertation's findings for senior female athletes.

Implications and Summary

As a novel extension of Vealey et al.'s (1998) work, this dissertation found that the modified six sources of sport-confidence (Physical / Mental Preparation, Social Support, Demonstration of Ability, Environmental Comfort, Vicarious Experience, and Coaches' Leadership) appeared to be stable across primary sport levels, sport participation levels, and gender. These findings also lend support to the continuity theory of aging as proposed by Atchley (1989, 1995, 1999), which holds that middle-aged and older adults make adaptive choices that attempt to preserve and maintain their internal and external structures, continuously throughout their lifetimes.

Future studies should examine other achievement and motivational aspects of senior adult athletes. Schaie and Willis (1991) posited that many people believe that achievement motivation for adults decreases in the second half of life. If by 40 or 45 years of age, the career oriented individual has achieved economic success and security, the need to get ahead may be less essential and that individual may turn more frequently to family or community activities as sources of gratification. The authors also posited that men told fewer stories with achievement themes after middle age, and were summarily replaced with themes of power. It could be supposed that if senior adult athletes have been competitive and driven to gain economic success and security, then they would not necessarily lose their desire to compete, which may cause them to look in other arenas such as sport to fulfill this desire. Examples of this supposition were that the majority of senior adult athletes have been educationally driven and socioeconomically successful. Most senior adult athletes, in this dissertation,

completed the master's level of education and incomes were at middle level. Therefore, it is plausible to assume that these same people (if continuity theory is to be believed) would look for opportunities that would provide the same motivational challenges with similar social comparisons and positive self-appraisal leading towards life satisfaction.

Nevertheless, if Schaie and Willis (1991) are accurate with their postulation, it may be that men tell fewer achievement stories related to their work, but may or may not change the theme if asked about their sport. This would be more true for those who have continued participation or sport competition during their adult years. Perhaps previous research asked only for achievement themes in the work environment and not in the recreation or sport environments. Clearly, research will need to follow people over time to see if their achievement goals change in various domains as they move through adulthood. The outcome of this research might vary depending on whether people have participated in seniors competitions for most of their adult lives or whether they have taken up the sport towards the end of their working years. Finally, future research will have to study developmental changes in senior adult achievement motivation and examine the data longitudinally as Schaie and Willis (1991) have posited.

Conclusion

Since this dissertation corroborates Vealey et al.'s (1998) work, it must be emphasized that the original nine sources of sport-confidence should not be excluded in examining future populations. Research has shown that both novel corroborations and falsifications can help the progress of a research program. The location of novel corroborations indicates a bias of omission and suggests that the limits of a theory or conceptualization need to be extended. Disconfirming or inconsistent observations indicate a bias of commission, and suggests that the

limits need to be tightened (Shadish, 1986). Therefore, the sources of Mastery, Physical Self-Presentation, and Situational Favorableness do have applicability to populations which specifically utilize them in the attainment of success in that particular sport. Several examples include issues of weight, body image and eating disorders (Physical Self-Presentation) with body building, boxing, figure skating, gymnastics, and wrestling. Other examples include the teaching of new skills to youth sport athletes (Mastery); and issues that examine team sports (Situational Favorableness). Each instrument (SSCQ, SSCQ-M) should reflect the population that is being measured in order for practitioners and theorists to be consistently confident with the research as it pertains to issues of validity and reliability.

Further researching of the psychosocial characteristics of senior adult athletes should provide coaches, teachers, practitioners, and sport theorists, a better understanding of the sociocultural aspects of competition, a better understanding of how individual self-confidence is developed and achieved, and provide explanations on how various sources of sport-confidence serve to influence other important self-perceptions and behaviors across the life span.

APPENDICES

Appendix A

Table 9

Primary Sport, Gender, and Age Categories of Senior Adult Athletes.

Age Brackets in years	<u>Primary Sport</u>					
	<u>Swimming</u>		<u>Tennis</u>		<u>Track and Field</u>	
	M	F	M	F	M	F
50-54	1	2	2	2	35	10
55-59	0	2	0	1	19	6
60-64	1	2	1	3	18	5
65-69	2	3	3	2	18	2
70-74	4	1	4	1	23	8
75-79	2	1	4	0	12	3
80-84	1	1	1	1	4	1
85-89	0	0	0	0	2	0
90-94	0	0	1	0	0	0
95-99	0	0	0	0	1	0

Appendix B

Table 10

Demographic Characteristics by Primary Sport and Gender.

<u>Primary Sport Categories</u>						
Variables	<u>Swimming</u>		<u>Tennis</u>		<u>Track and Field</u>	
	M n = 11	F n = 12	M n = 16	F n = 10	M n = 132	F n = 35
<u>Racial Category:</u>						
African American	0	0	1	2	12	8
Asian American	0	1	1	0	1	1
Caucasian	10	10	13	7	114	25
Latino/Latina	1	0	0	0	0	0
Native American	0	1	0	1	3	1
Other	0	0	1	0	2	0
Variables	<u>Swimming</u>		<u>Tennis</u>		<u>Track and Field</u>	
	M n = 11	F n = 12	M n = 16	F n = 10	M n = 132	F n = 35
<u>Mean Years Spent in Competition</u> (SD)	28.27 (22.0)	20.18 (19.0)	38.67 (17.7)	26.50 (6.6)	23.95 (14.3)	14.24 (11.3)
<u>Mean Age Entered Primary Sport</u> (SD)	40.82 (24.5)	44.18 (22.2)	33.31 (20.5)	36.20 (8.2)	38.86 (17.8)	47.79 (13.5)
<u>Mean Hours Per Week Practicing</u> (SD)	5.55 (5.05)	4.00 (2.49)	5.93 (2.81)	6.22 (2.33)	7.49 (4.19)	7.33 (5.56)

Appendix C

PARTICIPANT'S QUESTIONNAIRE

Please check only one answer per question:

1. Gender: _____ (1) Male _____ (2) Female
2. Age (please indicate) _____
3. Ethnic Affiliation:
 _____ (1) African-American _____ (2) Asian-American _____ (3) Caucasian
 _____ (4) Latino / Latina _____ (5) Native American _____ (6) Other _____
4. Primary Sport:
 _____ (1) Track & Field (Cross-Country, Distance Running, Racewalking)
 _____ (2) Swimming _____ (3) Tennis _____ (4) Other _____
5. Sport Participation Level _____ (1) High School _____ (2) College _____ (3) Senior
6. Organization: _____ (1) High School Association _____ (2) NCAA _____ (3) USTA
 _____ (4) Senior Games _____ (5) USATF _____ (6) USS (Swim) _____ (7) Other _____
7. Approximate average number of hours per week spent practicing your sport _____
8. Total number of years spent participating in your sport _____
9. Marital Status: _____ (1) Single _____ (2) Married _____ (3) Divorced _____ (4) Widow(er)
10. Education Background (please check only one):
 _____ (1) High School level work _____ (6) Master's Degree
 _____ (2) High School Diploma _____ (7) Doctoral level work
 _____ (3) Bachelor's level work _____ (8) Doctoral Degree
 _____ (4) Bachelor's Degree _____ (9) Other _____
 _____ (5) Master's level work
11. Income: _____ (1) Under \$25,000 _____ (2) \$25,000-\$49,999
 _____ (3) \$50,000-\$74,999 _____ (4) \$75,000-\$99,999 _____ (5) Over \$100,000
12. Are you presently in competition? _____ (1) Yes _____ (2) No
13. The age at which you first entered your primary sport competition _____

Appendix D

Athlete Self-Rating Scale (SSCQ)

Part 1: We are interested in learning about things you feel are important in helping YOU to be self-confident when participating in your sport.

Think back to times when you felt very confident when participating in your sport. It can be during competition, during practice, or when you were learning your sport. What things made you feel confident in those situations? What things helped you believe in your abilities and gave you confidence that you would be successful?

Listed below are some things that may help athletes feel confident in sport situations. For each statement, circle the number which indicates HOW IMPORTANT THAT IS IN HELPING YOU FEEL CONFIDENT IN YOUR SPORT. Please respond to every question even though they may seem repetitive. There are no right or wrong answers because every athlete is different. Please be honest - your answers will be kept completely confidential.

I usually gain self-confidence in my sport when I...

	not at all important	not very important	slightly important	of average importance	very important	extremely important	of highest importance
1. get positive feedback from my teammates and/or friends.....	1.....	2.....	3.....	4.....	5.....	6.....	7
2. win.....	1.....	2.....	3.....	4.....	5.....	6.....	7
3. keep my focus on the task.....	1.....	2.....	3.....	4.....	5.....	6.....	7
4. psych myself up.....	1.....	2.....	3.....	4.....	5.....	6.....	7
5. master a new skill in my sport.....	1.....	2.....	3.....	4.....	5.....	6.....	7
6. get breaks from officials or referees.....	1.....	2.....	3.....	4.....	5.....	6.....	7
7. perform in an environment (gym, pool, stadium, etc.) that I like and in which I feel comfortable.....	1.....	2.....	3.....	4.....	5.....	6.....	7
8. feel good about my weight.....	1.....	2.....	3.....	4.....	5.....	6.....	7
9. believe in my coach's abilities.....	1.....	2.....	3.....	4.....	5.....	6.....	7
10. know I have support from others than are important to me.....	1.....	2.....	3.....	4.....	5.....	6.....	7
11. demonstrate that I am better than others.....	1.....	2.....	3.....	4.....	5.....	6.....	7
12. see successful performances by other athletes.....	1.....	2.....	3.....	4.....	5.....	6.....	7
13. know that I am mentally prepared for the situation.....	1.....	2.....	3.....	4.....	5.....	6.....	7
14. follow certain rituals (e.g., wearing a lucky shirt, eating certain food, etc.).....	1.....	2.....	3.....	4.....	5.....	6.....	7
15. improve my performance on a skill in my sport.....	1.....	2.....	3.....	4.....	5.....	6.....	7
16. see the breaks are going my way.....	1.....	2.....	3.....	4.....	5.....	6.....	7
17. feel I look good.....	1.....	2.....	3.....	4.....	5.....	6.....	7
18. know my coach will make good decisions.....	1.....	2.....	3.....	4.....	5.....	6.....	7
19. am told that others believe in me and my abilities.....	1.....	2.....	3.....	4.....	5.....	6.....	7
20. show my ability by winning or placing.....	1.....	2.....	3.....	4.....	5.....	6.....	7
21. watch another athlete I admire perform successfully.....	1.....	2.....	3.....	4.....	5.....	6.....	7

Appendix D

I usually gain self-confidence in my sport when I...	not at all important	not very important	slightly important	of average importance	very important	extremely important	of highest importance
22. stay focused on my goals.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
23. improve my skills.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
24. feel comfortable in the environment (gym, pool, stadium, etc.) in which I'm performing.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
25. feel that everything is "going right" for me in that situation.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
26. feel my body looks good.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
27. know my coach is a good leader.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
28. am encouraged by coaches and/or family.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
29. know I can outperform opponents.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
30. watch a teammate perform well.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
31. prepare myself physically and mentally for a situation.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
32. increase the number of skills I can perform.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
33. like the environment where I am performing.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
34. have trust in my coach's decisions.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
35. get positive feedback from coaches and/or family.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
36. prove I am better than my opponents.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
37. see a friend perform successfully.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
38. believe in my ability to give maximum effort to succeed.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
39. receive support and encouragement from others.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
40. show I'm one of the best in my sport.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
41. watch teammates who are at my level perform well.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
42. develop new skills and improve.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....
43. feel my coach provides effective leadership.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....

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Appendix E

TRAIT SPORT-CONFIDENCE INVENTORY

Name: _____

Think about how self-confident you are when you compete in sport.

Answer the questions below based on how confident you generally feel when you compete in your sport. Compare your self-confidence to the most self-confident athlete you know.

Please answer as you really feel, now how you would like to feel. Your answers will be kept completely confidential.

WHEN YOU COMPETE, HOW CONFIDENT DO YOU GENERALLY FEEL? (circle number)

1. Compare your confidence in YOUR ABILITY TO EXECUTE THE SKILLS NECESSARY TO BE SUCCESSFUL to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
2. Compare your confidence in YOUR ABILITY TO MAKE CRITICAL DECISIONS DURING COMPETITION to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
3. Compare your confidence in YOUR ABILITY TO PERFORM UNDER PRESSURE to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
4. Compare your confidence in YOUR ABILITY TO EXECUTE SUCCESSFUL STRATEGY to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
5. Compare your confidence in YOUR ABILITY TO CONCENTRATE WELL ENOUGH TO BE SUCCESSFUL to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
6. Compare your confidence in YOUR ABILITY TO ADAPT TO DIFFERENT GAME SITUATIONS AND STILL BE SUCCESSFUL to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
7. Compare your confidence in YOUR ABILITY TO ACHIEVE YOUR COMPETITIVE GOALS to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
8. Compare your confidence in YOUR ABILITY TO BE SUCCESSFUL to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
9. Compare your confidence in YOUR ABILITY TO CONSISTENTLY BE SUCCESSFUL to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
10. Compare your confidence in YOUR ABILITY TO THINK AND RESPOND SUCCESSFULLY DURING COMPETITION to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
11. Compare your confidence in YOUR ABILITY TO MEET THE CHALLENGE OF COMPETITION to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
12. Compare your confidence in YOUR ABILITY TO BE SUCCESSFUL EVEN WHEN THE ODDS ARE AGAINST YOU to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
13. Compare your confidence in YOUR ABILITY TO BOUNCE BACK FROM PERFORMING POORLY AND BE SUCCESSFUL to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9

Appendix F

**MICHIGAN STATE
UNIVERSITY**

November 9, 1998

TO: Dr. Deborah L. Feltz
138 IM Sports Circle
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MSU

APPROVAL DATE:

RE: **IRB # 98685 CATEGORY: 1-C**

**TITLE: SOURCES OF SPORT-CONFIDENCE OF SENIOR ADULT ATHLETES:
ANALYSIS AND ASSESSMENT**

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project.

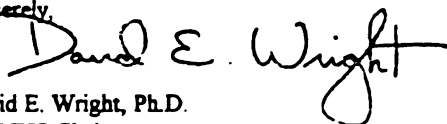
RENEWALS: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Projects continuing beyond one year must be renewed with the green renewal form. A maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for a complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at 517 355-2180 or via email: UCRIHS@pilot.msu.edu. Please note that all UCRIHS forms and instruction are located via the web: <http://www.msu.edu/unit/vprgs/UCRIHS/>

Sincerely,



David E. Wright, Ph.D.
UCRIHS Chair

DEW: db



**OFFICE OF
RESEARCH
AND
GRADUATE
STUDIES**

University Committee on
Research Involving
Human Subjects
(UCRIHS)

Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/353-2976

Appendix G

USATF Introductory Cover Letter

**MICHIGAN STATE UNIVERSITY
DEPARTMENT OF KINESIOLOGY**

Hello,

My name is Rodney C. Wilson, doctoral student, and member of USA Track & Field (male 40-44 age group). I am following up on the 1994 National Weight Pentathlon Championship and 1995 National Masters Championship studies, in which you graciously supplied valuable information. That information has been presented at both the (1998) international and (1996) midwest regional American Alliance of Health, Physical Education, Recreation, and Dance (AAHPERD) conventions.

The information which I am presently collecting will finalize my dissertation concerning the sport-confidence of senior adult athletes. The purpose of this study is to examine the major factors you rely on in your sport competition or participation, and compare them to younger athletes. This is the first and only study of this type in the United States.

Enclosed are 3 brief questionnaires, a consent form, and a self-addressed return envelope. Please return all forms by January 24, 1999. Since I have chosen you to participate in my study, thank you for your support. If you have any questions please contact Rodney C. Wilson at the return address, telephone numbers: (517) 353-0892, (517) 353-0971, or e-mail: wilsonr7@pilot.msu.edu.

**** After finishing the questionnaires, if there are any other motivating factors not listed, please list them at the end of the questionnaires.**

Appendix H

**INFORMED CONSENT FORM
MICHIGAN STATE UNIVERSITY
DEPARTMENT OF KINESIOLOGY**

The purpose of this study is to examine the sources of self-confidence in sport. It is believed that this research project will provide researchers and practitioners with the underlying reasons and influential factors of why individuals compete and participate in sport.

As part of this study, three sets of questionnaires will be administered. The background questionnaire should take approximately 2 minutes to complete. The first athletes' self-rating questionnaire should take approximately 10 minutes to complete, and the second self-rating questionnaire should take approximately 3 minutes to complete. Overall, all questionnaires should take approximately 15 minutes to complete.

Your responses to the questionnaires will remain confidential, and no one except the researcher will have access to the questionnaires. All data from this study will remain anonymous in any report of research findings. Group-based findings will be made available to all who are interested.

Your participation in this study is strictly voluntary, and you may refuse to answer certain questions or discontinue your participation at any time without penalty. Please understand that your participation does not guarantee any beneficial effects.

If you agree to volunteer in this research conducted by Rodney C. Wilson, Doctoral Student, Department of Kinesiology, Michigan State University, please sign your name and date on this form (and mail it back to the researcher if necessary).

If you have any questions concerning your participation please contact Rodney C. Wilson at (517) 353-0892, (517) 353-0971, or e-mail: wilsonr7@pilot.msu.edu.

I fully understand my responsibilities and freely consent to be a participant in the described study.

Signature	Date
** Parent/ Guardian's Signature (if under 18 years of age)**	Date

UCRIHS APPROVAL FOR
THIS project EXPIRES:

NOV 09 1999

SUBMIT RENEWAL APPLICATION
ONE MONTH PRIOR TO
ABOVE DATE TO CONTINUE

Appendix I

Michigan Senior Olympics Cover Letter

**Ms. Marye Miller
Director
Michigan Senior Olympics
312 Woodward Avenue
Rochester, MI 48307
Tel. (248) 608-0250
Fax: (248) 656-3153**

June 5, 1998

Hello Ms. Miller:

My name is Rodney C. Wilson. I am a doctoral student in the Department of Kinesiology at Michigan State University. My cognate and specialty is in Sport Psychology.

Presently, I am in the process of writing my dissertation. My research is focused upon Senior Olympians and Masters Athletes. I am exploring the question of: "What makes these athletes so confident in sport competition despite some of the gradual physiological declines which accompany and transpire due to aging?"

I am interested in writing my dissertation on Michigan Senior Olympians. Previous research has explored Michigan youth sports but not Michigan senior athletes. This novel research will be among the first of its kind. Hopefully, the information generated will provide great insight, and will be a great aid in enhancing physical fitness and sporting opportunities for older adults.

Outside of having a scholarly interest in Senior Olympians, as a fellow masters athlete, I have personal interests in sport. My mother (73 years old) and my father (72 years old) have competed in numerous state (Ohio), regional, and National Senior Olympics. From 1989 to 1996, I have competed in 12 indoor and outdoor USATF Masters National Championships and one (1) WAVA Regional Championship.

I am fascinated with the older athlete, but in order to write my dissertation, I am requesting further information, and I would like to discuss my plans with you. With your permission, I look forward to hearing from you in the near future. Please contact me at the above address, telephone (no answering machine), or facsimile numbers.

Sincerely,

**Rodney C. Wilson
Doctoral Student
Department of Kinesiology
Michigan State University**

Appendix J

Michigan Senior Olympics Participant's Letter

January 13, 1999

Hello,

My name is Rodney C. Wilson. I am doctoral student in the Department of Kinesiology at Michigan State University, and I am very proud to have parents (73 and 74 years old, respectively) who are active National and Ohio Senior Olympians. It is out of honor, love, and respect for my parents that I have been researching and conducting studies of senior adult athletes.

I am following up on the 1994 National Weight Pentathlon Championship and 1995 National Masters Track and Field Championship studies, in which senior adult athletes supplied valuable information. I have presented that information at both the (1998) International and (1996) Midwest District American Alliance of Health, Physical Education, Recreation, and Dance (AAHPERD) conventions.

The information which I am presently collecting will finalize my dissertation concerning the sport-confidence of senior adult athletes. The purpose of this study is to examine the major factors you rely on in your sport competition or participation, and compare them to younger athletes. This is the first and only study of this type in the United States. The Michigan Senior Olympic Organization will have access to the results and conclusions of this study.

Enclosed are 3 brief questionnaires, a consent form, and a self-addressed return envelope. Please return all forms by February 8, 1999. Since I have chosen you to participate in my study, thank you for your support.

Please send your questionnaires or if you have any questions please contact Rodney C. Wilson at the left side return address, telephone numbers: (517) 353-0892, (517) 353-0971, or e-mail: wilsonr7@pilot.msu.edu.

Sincerely,

Rodney C. Wilson

Enclosures

**** After finishing the questionnaires, if there are any other motivating factors not listed, please list them at the end of the questionnaires.**

Appendix K

Table 11

Demographic Characteristics by Sport Participation Level and Gender.

<u>Sport Participation Level Categories</u>						
Variables	<u>Seniors</u>		<u>College</u>		<u>High School</u>	
	M n = 132	F n = 35	M n = 68	F n = 43	M n = 82	F n = 66
<u>Racial Category:</u>						
African American	12	8	10	3	28	19
Asian American	1	1	3	1	2	2
Caucasian	114	25	52	37	44	42
Latino/Latina	0	0	1	1	2	0
Native American	3	1	0	0	1	0
Other	2	0	2	1	5	3
Variables	<u>Seniors</u>		<u>College</u>		<u>High School</u>	
	M n = 132	F n = 35	M n = 68	F n = 43	M n = 82	F n = 66
<u>Mean Years Spent in Competition</u> (SD)	23.95 (14.3)	14.24 (11.3)	6.63 (3.11)	8.00 (2.38)	3.48 (2.72)	3.56 (2.04)
<u>Mean Age Entered Track and Field</u> (SD)	38.86 (17.8)	47.79 (13.5)	13.22 (3.07)	11.65 (2.50)	12.69 (2.77)	12.39 (2.01)
<u>Mean Hours Per Week Practicing</u> (SD)	7.49 (4.19)	7.33 (5.56)	16.51 (5.53)	13.90 (3.01)	11.06 (3.52)	11.39 (2.75)

Appendix L

Parent's Introductory Cover Letter

Dear Parent,

My name is Rodney C. Wilson. I am a doctoral student at Michigan State University majoring in Kinesiology. I am a member of USA Track & Field.

Your son / daughter has been identified by the head track and field coach to participate in a study concerning self-confidence in sport. The focus of this study is to examine the major factors your son / daughter relies on in sport competition.

Enclosed are three brief questionnaires, a consent form, and a self-addressed return envelope. If you agree for your son / daughter to participate in this track and field study, please sign and return all forms by March 15, 1999. If you have any questions please contact Rodney C. Wilson at the telephone numbers: (517) 353-0892, (517) 353-0971, or e-mail: wilsonr7@pilot.msu.edu. Thank you for your assistance and cooperation.

Sincerely,

**Rodney C. Wilson
Doctoral Student**

Appendix M

Table 12

Correlations Between SSCQ-M Subscales / Senior Adult Athlete Six-Factor Phi Matrix.

<u>Factors</u>	<u>DA</u>	<u>SS</u>	<u>CL</u>	<u>VE</u>	<u>EC</u>
P / MP	.27	.19	.35	.34	.47
DA		.35	.18	.28	.36
SS			.57	.55	.46
CL				.49	.43
VE					.53

(Key: P / MP = Physical / Mental Preparation, SS = Social Support, DA = Demonstration of Ability, EC = Environmental Comfort, VE = Vicarious Experience, CL = Coaches' Leadership.)

Appendix N

Table 13

SSCO-M Subscale Internal Consistencies (α -Alpha) of Senior Adult Athletes.

<u>SSCO-Modified Subscales</u>	<u>(α) Alpha</u>	<u>(α) Vealey et al.</u>
Coaches' Leadership	.97	.92
Demonstration of Ability	.90	.86
Vicarious Experience	.86	.90
Social Support	.85	.88
Physical / Mental Preparation	.85	.79
Environmental Comfort	.83	.93
Mastery	----	.88
Situational Favorableness	----	.71
Physical Self-Presentation	----	.78

Appendix O

Table 14

Correlations Between SSCQ-M Subscales / College-High School Athlete Six-Factor Phi Matrix.

<u>Factors</u>	<u>DA</u>	<u>SS</u>	<u>CL</u>	<u>VE</u>	<u>EC</u>
P / MP	.36	.47	.62	.67	.54
DA		.28	.18	.34	.42
SS			.48	.58	.43
CL				.58	.43
VE					.58

(Key: P / MP = Physical / Mental Preparation, SS = Social Support, DA = Demonstration of Ability, EC = Environmental Comfort, VE = Vicarious Experience, CL = Coaches' Leadership.)

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