A STUDY TO EXAMINE THE RELATIONSHIPS BETWEEN ATHLETE ANXIETY AND PERCEIVED COACHING BEHAVIOURS AMONG VARSITY BASKETBALL PLAYERS

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by

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ABSTRACT

The purpose of this study was to examine the relationships between athlete anxiety (total anxiety, somatic anxiety, concentration disruption, and worry) and athlete perceived coaching behaviours (physical training, mental preparation, goal setting, technical skills, competition strategies, personal rapport, and negative personal rapport) among varsity basketball players. Specifically, the purpose was to attempt to cross-validate Bakers, Cote, and Hawes' (2000) findings in a sport-specific setting. A total of 155 varsity female and male *basketball* players completed a questionnaire consisting of the Profile of Mood States (POMS; McNair, Lorr, & Droppleman), the Sport Anxiety Scale (SAS; Smith, Smoll, & Schultz, 1990), and the Coaching Behaviour Scale for Sport (CBS-S; Cote, Yardley, Hay, Sedgwick, & Baker, 1999). Hierarchical linear regressions revealed that only two forms of coaching behaviours were significantly associated with player anxiety. Specifically, the study found a negative significant relationship between perceived physical training and somatic anxiety as well as between competition strategies and concentration disruption. Overall, the results of the study depicted minimal significant findings between athlete anxiety and perceived coaching behaviours. Proposed rationales for the limited findings are provided in the discussion.

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CHAPTER 1: INTRODUCTION

Overview

Worldwide, significant adults such as coaches guide, mentor, and advise athletes on how to control fluctuating levels of anxiety. These coaches can have an astounding affect in the way their athletes think, behave, and perform. The behaviours exhibited by coaches may profoundly influence their athletes. Research has demonstrated, however, that certain behaviours coaches display towards their athletes may detrimentally impact athletic performance (Baker, Cote, & Hawes, 2000; D'Arripe-Longueville, Fournier, & Dubois, 1998; Dieffenbach, Gould, & Moffett, 2003; Hollembeak & Amorose, 2005; Horn, 1987; Kenow & Williams, 1999; Smith, Fry, Ethington, & Li, 2005; Wang, Chen, & Ji, 2004; Wang & Ramsey, 1997). One way coaches can hinder their athletes' performance is by impacting their anxiety levels (Baker, 2000).

Sport performance anxiety has received a substantial amount of interest, attention and research in the field of sport psychology. Although some literature has revealed that competition anxiety may facilitate performance (Butt, Weinberg, & Horn, 2003; Jerome & Williams, 2000; Jones, 1991; Jones & Hanton, 1996; Jones & Swain, 1995; Jones, Swain, & Hardy, 1993; Swain & Jones, 1996), the majority of the literature has demonstrated anxiety's deleterious affects (Collins, Jones, Fairweather, Doolan, & Priestley, 2001; Cottyn, De Clercq, Pannier, Crombez & Lenoir, 2006; Davis & Cox, 2002; Hafvari & Gjesme, 1995; Kais & Raudsepp, 2005; Pijpers, Oudejans, Holsheimer, & Bakker, 2003; Terry & Slade, 1995; Williams & Elliot, 1999; Williams, Vickers, & Rodrigues, 2002). Anxiety is defined as a tendency to assess sport situations as

threatening, consequently responding with psychological and/or physiological reactions (Martens, 1977). These reactions (e.g., high levels of autonomic arousal, worry, increased heart rate, "butterflies", and self-oriented cognitions) disrupt attentional processes often resulting in detrimental performance (Hatzigeorgiadis & Biddle, 2001; Janelle, 2002; Smith, Smoll, & Passer, 2002). Although a variety of reasons exist to explain why athletes develop anxiety issues, one main determinant is the coaches and their behaviours that are demonstrated in their sport (Baker, 2000; Baker, Cote, & Hawes, 2000; Glenn, Horn, Campbell, & Burton, 2003; Gould; Horn, & Spreeman, 1983;; Kenow & Williams, 1992, 1997, 1999; Lewthwaite & Scanlan, 1989; Smith, Smoll, & Weichmen, 1998).

It has been established that behaviours pertaining to coaches' expectations towards athletes (Becker & Solomon, 2005; Chase, Lirgg, & Feltz, 1997; Horn, Lox, & Labrador, 2001; Solomon, 1999, 2001, 2002) and the amount of feedback given (Barker, 2003; Solomon, DiMarco, Ohlson, & Reece, 1998; Solomon, Striegal, Eliot, Heon, Maas, & Wayda, 1996; Westcott, Annesi, La Rosa, Powers & Rosa, 2003) significantly affect athletic performance. Coaches have been also found to have a major impact on athletes' self confidence (Chase, Feltz, Lirgg, 2003; Earles & Chase, 2003; Russell, 2004; Watson, Chemers, & Preiser, 2001), motivation (Amorose & Horn, 2000; Cervello, Rosa, Calvo, Jimenez, & Iglesias, 2007; Cumming, Smoll, Smith, & Grossbard, 2007; Kish & Woodard, 2005; Vazou, Ntoumanis, & Duda, 2006) and anxiety (Baker, 2000; Baker, Cote & Hawes, 2000; Kenow & Williams, 1992, 1997, 1999; Lewthwaite & Scanlan, 1989; Passer, 1983; Vealey, Armstrong, Comar, & Greenleaf, 1998).

The vast majority of research on coaching and athlete anxiety, however, has pertained to athletes' *perceptions* of their coaches' behaviours. Specific models (e.g., cognitive-mediational model, Working model) have been designed to explain how athletes respond to coaches' behaviours based on their own interpretation and recall of those behaviours (Horne, 2002; Smoll & Smith, 1989; Smith, Smoll, & Weichmen, 1998). As Horne (2002) explained, the ultimate effects of coaching behaviours will rely on the interpretation of these behaviours by the athletes.

Although the relationships between athlete anxiety and perceptions of coaching behaviours have been studied extensively (Baker, Cote, & Hawes, 2000; Kenow & Williams, 1992, 1997, 1999; Lewthwaite & Scanlan, 1989; Passer, 1983; Vealey, Armstrong, Comar, and Greenleaf, 1998), there is a lack of research in this area in recent years. One of the more recent studies examined the relationship between coaching behaviours and sport anxiety in athletes from a wide variety of sports (Baker, Cote, & Hawes, 2000). The results revealed that athlete anxiety may be induced based on particular coaching behaviors. The results implied that negative rapport between the athlete and coach contributes to an athlete's anxiety level and that coaches should be wary of this potential detrimental performance impact. Baker, Cote and Hawes' study primarily examined how coaches affect athletes' anxiety levels performing in a multi-sport based setting (i.e. figure skating, hockey, badminton, football). Since team sports may differ characteristically from individual-based sports (i.e. figure skating), it would be interesting to investigate whether coaches enhance player anxiety in a single sport setting, such as basketball. Thus, the current study attempted to cross-validate Baker, Cote, and Hawes' findings in a sport specific setting.

Purpose

This quantitative, cross-sectional survey study examined which specific coaching behaviors were related to performance anxiety in male and female university basketball players. Unlike Baker, Cote, and Hawes' (2000) multi-sport study, the present investigation focused solely on a single sport, *basketball*, in an attempt to determine if their findings can be cross-validated in a different sport context. The primary purpose of this study was to analyze the relationship between perceived coaching behaviours and athlete anxiety among varsity male and female basketball players. The results of this study will provide a foundation for future researchers to explore the area of coaching behaviours and athlete anxiety within other sport specific settings and consequently further knowledge in the coach-athlete spectrum.

Social Relevance

Athletes and coaches may utilize this information to gain further understanding on what precisely induces performance anxiety. By acquiring knowledge in this area, coaches may pinpoint their exact behaviours they display that alter athlete anxiety and consequently may choose to modify their behaviours. Athletes can also gain insight to determine which specific coaching behaviours evoke anxiety. Once players become familiar with coaching behaviours that hinder performance, athletes may communicate to coaches on this issue and reach a consensus on what coaching behaviours will maximize athletic performance. Athletes may also attempt to learn and master coping mechanisms, such as positive self-talk or breathing patterns, that will reduce feelings of anxiousness.

This study's significance is also important since athlete's anxiety has been shown to prohibit peak performances by causing muscle tension, fatigue and coordination difficulties as well as changes in attention, concentration and vision (Weinburg & Gould, 2007). Smoll and Smith (2003) further elucidated that high levels of competition anxiety not only hinders performance, but also makes the competition environment more threatening and unpleasant rather than enjoyable. Since research has revealed that anxiety hinders performance and enjoyment levels, players and coaches should put greater effort in trying to limit high anxiety levels.

Research Question

Does a relationship exist between athletes' perceived frequency of seven coaching behaviours (physical training, mental preparation, goal-setting, technical skills, competition strategies, personal rapport and negative personal rapport) and four forms of sport anxiety (total anxiety, somatic anxiety, concentration disruption, and worry) among a sample of male and female varsity basketball players.

Framework

A conceptual model of sport performance anxiety was presented by Smith, Smoll and Wiechman (1998). The intensity and duration of athlete anxiety are assumed to be influenced by the demands and resources of the competitive environment. A crucial element in this model, however, is the athlete's cognitive *interpretation* of the demands, resources, consequences if the demands are not met, and the personal meaning the consequences may have upon the individual. For example, an athlete competing in a

championship game may define the demands as overwhelming and the resources given by the coach to cope with these demands as minimal. This athlete may then negatively appraise the consequences, and view him/herself incompetent in performing under pressure. Smith, Smoll, and Weichman suggest that a negative appraisal of these variables may lead to an athlete feeling unprepared for a competitive situation, and this may result in feelings of anxiety. For example, a perceived lack of emphasis on activities necessary for competitions, such as physical and mental preparation by the coach can increase athletes' anxiety levels if they feel unprepared in these areas. Since coaches may largely influence the development of their athletes' physical and mental skills, they may also play a major role in increasing anxiety levels in their players. Baker, Cote, and Hawes (2000) also utilized this model to construct their framework of athletes' perceptions.

Limitations

Varsity basketball athletes from the Atlantic University Sport (AUS) conference participated in this study during the 2007-2008 season. Although these participants came from 14 teams (seven male, seven female) across seven universities, one limitation is the geographical boundaries of the athletes studied, being from solely the AUS conference. This limits the generalizability of the findings to the broader college/university population.

Another limitation of this study may be the time of the basketball season in which data collection occurred. For example, responses to data collection may have differed if a team completed the questionnaire during the first week of the season as opposed to the

last week, since feelings and attitudes towards the coach can fluctuate within a season. This timing issue may have altered players' attitudes and views of their coach since teams' win-loss records differed at the time the study was conducted. Related to timing, the circumstance in which athletes filled out the questionnaire, based on pre or post-game, may have also been an additional limitation. Players who filled out the scales prior to their game may have experienced higher pre-competitive anxiety. The athletes who completed the questionnaire following the game, however, may have experienced less anxiety, especially if they prevailed in their competition.

The researcher was not the only person to administer the questionnaires to the athletes. Based on the convenience of the coaching staff, the researcher was only able to administer the study to about half of the teams. For the teams that completed the questionnaire on their own schedule, the team trainer or manager were asked to conduct the survey. This may have altered the way athletes' responded to the items, impacting the validity of results.

Research Assumptions

It is assumed that the athletes responded to the Coaching Behaviour Scale for Sport (CBS-S), Sport Anxiety Scale (SAS) and Profile of Mood States (POMS) honestly. Although the investigator emphasized that the information gathered was anonymous and confidential, the athletes may have felt uneasy responding to questionnaires that were based on an important figure in their life, their coach. Another assumption was made that performance and/or trait anxiety did not influence the responses, given the proximity of

competitions. It is also assumed that the coaches would not verbally persuade the players to answer the questionnaires in a way that would not demean the coach's image.

Definitions

The following anxiety definitions are adopted from Weinburg and Gould (2007, pg 78-83).

- ***Anxiety***: a negative emotional state characterized by nervousness, worry, and apprehension and associated with activation or arousal of the body.
- ***Cognitive anxiety***: the thought component (e.g., worry and apprehension) of anxiety.
- **Somatic anxiety**: the physical component (e.g., sweaty palms, racing heartbeat, butterflies) of anxiety.
- ***State anxiety***: refers to the ever-changing mood component of anxiety. It is situation specific, thus changes from moment to moment.
- ***Trait Anxiety***: part of the personality, an acquired behavioural tendency or disposition that influences behaviour.

The subsequent coaching behaviour definitions are operationalized from Baker, Cote, and Hawes' (2000) study.

- ***Physical training and planning:*** refers to the perceived coaching behaviours designed to enhance the physiological conditioning of the athlete. Specific behaviours include having a yearly training plan and providing structured workouts.

- ***Mental preparation:*** refers to the perceived coaching behaviour designed to help athletes mentally prepare for their sport. Specific behaviours include providing advice on staying positive and focused.
- ***Goal setting:*** refers to the perceived coaching behaviours that aid the athlete in setting and achieving personal goals for sport. Specific behaviours include setting long and short-term goals.
- ***Competition strategies:*** refer to the perceived coaching behaviours designed to prepare the athlete for competition. Specific behaviours include ensuring needs are met at competition and maintaining consistency during competitions.
- ***Technical skills:*** refer to the perceived coaching behaviours that develop the technical aspects of the athlete's sport. Specific behaviours include the use of positive reinforcement and feedback.
- ***Personal rapport:*** refers to the perceived coaching behaviours that develop the positive relationships between athlete and coach. Specific behaviours include developing a sense of trust and confidentiality.
- ***Negative personal rapport:*** refers to the perceived coaching behaviours that develop a negative relationship between athlete and coach. Specific behaviours include yelling when angry and using fear and intimidation.

Summary

Chapter one has provided a brief overview on the research and background pertaining to the impact coaches have on their athletes, specifically anxiety related influences. Additionally, chapter one also discussed the purpose and social relevance for

conducting this study, the research question, the theoretical framework in which this study is based upon, and the limitations and assumptions of the study. This chapter concluded with a list of definitions of terms.

Chapter two will provide an extensive review and discussion of the literature on anxiety and performance, the coach-athlete relationship and most pertinent to this study, a review of research pertaining to coaching behaviours and athlete anxiety.

CHAPTER II: REVIEW OF LITERATURE

Introduction

The previous chapter provided a brief overview of sport performance anxiety as well as its relationship to coaching behaviours. The intent of this literature review is to provide an *overview of the relationship between sport anxiety and athletic performance.* Secondly the review of literature will examine the *coach-athlete relationship* and its *impact on athletic performance.* Thirdly, and more specifically, this chapter will examine the *relationship between sport performance anxiety and athlete perceived coaching behaviours*. Theoretical frameworks and models of research in this area will also constitute a portion within the chapter.

Overview of Anxiety and Performance

Terminology

Anxiety has been of great interest within the sport psychology field for many years and its relationship with athletic performance has also been investigated for a number of decades. Weinburg and Gould (2007, p. 78) defined anxiety as "a negative emotional state characterized by nervousness, worry, and apprehension and associated with activation or arousal of the body." Simply stated, anxiety can be broken down into two components: mental and physical. Cognitive anxiety, the mental component, represents the athletes' worries, concerns, and the reduced capability to concentrate (Krane, 1994). Somatic anxiety on the other hand, the physical component, is defined as

"the physiological and affective elements of the anxiety experience that develop directly from autonomic arousal" (Marents, Vealey, & Burton, 1990, p.6). As Weinburg and Gould state, somatic anxiety is mainly determined by one's perception of change within the body. Another important distinction to make pertaining to anxiety involves the difference between trait and state anxiety.

Trait anxiety refers to an individual being *predisposed* to perceive events as threatening, even though the circumstance may not be psychologically or physically harmful (Speilberger, 1966). For example, an athlete with high trait anxiety would be anxious at practice, game situations, as well as all other athletic situations. Unlike trait anxiety, state anxiety is anxiety relating to worry, nervousness, and apprehension that change from *moment to moment* (Spielberger, 1966). For example, a high school basketball player may only feel anxious when shooting free throws, but may thrive under pressure at the end of a close game.

Within the realm of sport psychology, researchers use the term competitive trait anxiety when discussing the relationship between anxiety and athletic performance. Martens (1977) coined the term competitive trait anxiety when relating anxiety to a sport specific situation. The following section will give an overview of the relationship between athletic performance and competitive trait anxiety.

Sport Anxiety Research

Research has proposed cognitive and physical affects of anxiety on athletic performance (Arent, Rogers, & Landers, 2001; Collins, Jones, Fairweather, Doolan & Priestley, 200; Nieuwenhugs, Pijpers, Oudejans, & Bakker, 2008; Parfitt & Hardy, 1993;

Parfitt & Pates, 1999; Parfitt, Hardy, & Pates, 1995; Pates & Parfitt, 1994; Pijpers, Oudejans, Holsheimer, & Bakker, 2003; Vickers & Williams, 2007; Williams, Vickers, & Rodrigues, 2002). A number of theories exist to explain the relationship between anxiety and athletic performance such as the invertued U hypothesis (Yerkes & Dodson, 1908), the drive theory (Spence & Spence, 1966), the multidimensional anxiety theory (Burton, 1988), the zones of optimal functioning (Hannin, 2000), and the cusp catastrophe model (Hardy, 1990). These models, however, are quite descriptive (Williams, Vickers, & Rodrigues, 2002) and lack specific explanations of how anxiety impacts performance in terms of visual attention, cognitive interference, and muscle coordination. Thus, the following literature will briefly describe how anxiety specifically impacts performance both cognitively and physically.

Cognitively speaking, anxiety has been found to negatively affect performance in terms of visual attention, concentration, and memory (Hatzigeorgiadis & Biddle, 2001; Janelle, 2002; Murray & Janelle, 2003; Pijpers, Oudejans, Holsheimer, & Bakker, 2002; Williams & Elliot, 1999; Williams, Vickers, & Rodrigues, 2002). Abernethy (1991) stated that most information processed by athletes during competition is gathered through perception and visual sensation. Therefore, visual attention is a key determinant to successful athletic performance.

A study conducted by Williams and Elliot (1999) examined the effects of anxiety on visual search strategy in karate. Expert and novice karate athletes were given movement tasks presented under low and high anxiety conditions. Changes in search strategy were found in the anxiety inducing environment. Specifically, there was an increase in search rate (i.e. number of fixations and number of fixation locations) and the

amount of time spent fixating on peripheral display areas such as the arm and fist in high anxiety. The authors proposed that anxiety causes peripheral narrowing which makes the athlete extract more information from central rather than peripheral vision. It has also been previously documented that higher levels of anxiety can lead to this perceptual narrowing (Bacon, 1974; Landers, Min, Qi, & Courtet, 1985). Still pertaining to the relationship between anxiety and vision, in another similar study Janelle, Singer, and Williams (1999) examined if attentional narrowing or hypervigilance (more distractible) caused changes in visual search behaviours. Participants were required to navigate a motor track as rapidly as possible while reacting to both relevant and irrelevant stimulus lights. Results revealed that as anxiety increased, participants took longer to discriminate between relevant and irrelevant cues as well detecting the relevant cues. The anxious participants were more apt to be distracted by more of the irrelevant cues. The authors of these studies concluded that anxiety results in peripheral narrowing as well as focusing on the irrelevant, or distracting, cues as opposed to the relevant ones. Derakshan and Eysenck (2001) further supported that under high anxiety individuals become more distractible and tend to focus on threatening and/or irrelevant cues.

Research has also shown the effects of anxiety on cognitive interference. Cognitive interference refers to the thoughts individuals experience when performing a task (Sarason, Pierce, & Sarason, 1996). Results from research have indicated that highly anxious individuals report worrying more as opposed to the athletes with low anxiety (Blankstein, Toner, & Flett, 1989; Calvo & Ramos, 1989). Eysenck and Calvo (1992) suggested that worrying during a particular task may be detrimental to the quality of information processing. A study by Hatzigeorgiadis and Biddle (2001) investigated

athletes' perceptions of cognitive interference, a component of anxiety, and its effects on concentration and effort. One hundred and fifteen volleyball players were investigated to examine three different kinds of thoughts: 1) performance worries, 2) situation-irrelevant thoughts, and 3) thoughts of escape. Results indicated that all three kinds of thoughts were reported to impact concentration negatively. This would suggest that athletes must be cautious of their thoughts since concentration can be hindered, consequently negatively impacting performance.

The effect anxiety has on performance have been examined extensively when pertaining to motor performance (Collins, Jones, Fairweather, Doolan, & Priestley, 2001; Mullen & Hardy, 2000; Parfitt, Hardy, & Pates, 1995; Parfitt & Pates; 1999; Pates & Parfitt, 1994; Pijpers, Oudejans, Holsheimer, & Bakker, 2002; Weinberg & Hunt, 1976). In an early investigation, Weinburg and Hunt (1976) examined the relationship between anxiety and changes in movement efficiency on a throwing task. Anxiety was induced by giving negative feedback to the 175 participants on the accuracy of a throw. Results demonstrated that anxiety was associated with a less efficient movement pattern resulting in greater and longer muscular effort during the throw.

Later research has also shown that anxiety evokes movements that are less smooth, less efficient in terms of time and energy and less variable (Beauter & Duda, 1985). In a more recent study, with similar findings, Pijpers, Oudejans, Holsheimer, and Bakker (2002) investigated the relationship between anxiety and motor performance. Participants had to perform a wall climbing task within a low- and high-anxiety condition. The researchers manipulated anxiety by using different climbing routes of different heights. Results revealed that higher anxious participants experienced higher heart rates

and blood lactate levels and more muscle fatigue; indicating a higher muscle tension. It was further found that the highly anxious climbers possessed less smooth movement patterns consisting of rigid and jerky movements.

Parfitt and colleagues have specifically examined two sub-components of anxiety, cognitive and somatic, on motor performance tasks. Parfitt and Hardy (1993), Parfitt, Hardy, and Pates (1995), and Pates and Parfitt (1994) all studied the effects of anxiety on anaerobic and working memory tasks in basketball players. Anaerobic task results primarily determined that somatic anxiety is positively related to jump height. Parfitt and Pates (1999) further examined the effects of anxiety on components of performance within basketball players. Twelve basketball players from the University of Wales participated in the study. The participants self-reported their cognitive anxiety and somatic anxiety immediately before going on the court to play. The actual competition was recorded and performance was measured by height jumped, successful passes, and assists. Results found that somatic anxiety, as well as cognitive anxiety, positively predicted performance that involved anaerobic demands, such as height jumped. Cognitive anxiety was not found to be a predictor of the performance scores associated with the successful passes and assists. Collectively, Parfitt and Pates have found that somatic anxiety is positively associated with jumping. These findings suggest that some forms of anxiety may in fact enhance performance.

Despite some evidence that anxiety can enhance performance, the majority of the literature on anxiety and performance has assumed that competitive anxiety negatively impacts athletic performance. However, Jones and colleagues have contradicted this assumption. The majority of their research suggests that anxiety is more facilitative than

debilitative (Butt, Weinberg, & Horn, 2003; Jones, 1991; Jones & Hanton, 1996; Jones, Swain, & Hardy, 1993). Their work, however, emphasizes the individual's interpretation of their anxiety symptoms. If athletes interpret feelings of anxiety as facilitative, then performance could be enhanced as opposed to an athlete perceiving their anxiousness as debilitative. Research related to this area of anxiety has found that athletes who report higher levels of anxiety typically perceive their symptoms as more negative (Butt, Weinberg, & Horn, 2003). This would suggest that feeling smaller doses of anxiety may in fact enhance sport performance. Alternatively, this body of research may suggest that there is a threshold effect in terms of anxiety's positive influence on performance; that is, some anxiety may positively influence performance, but when anxiety levels become too great, performance may be negatively impacted.

Although there are numerous studies indicating anxieties facilitative effects, the majority of the literature previously discussed focused on its debilitative effects such as attentional narrowing, hypervigalence, cognitive interference and muscle tension leading to less movement efficiency and rhythmic movements. Anxiety and its effects may initially derive from various sources. How an athlete's anxiety may be generated will be examined in the following section.

Antecedents of Anxiety

As indicated, competitive anxiety has the capacity to impact performance both positively and negatively. Athletes may experience feelings of anxiousness for various reasons. A vast amount of research has suggested that sport performance anxiety can generate from different sources including type of sport (Hammermeister & Burton, 2001;

Wong, Lox, & Clark, 1993), experience playing and skill level (Campbell & Jones, 1997; Hanton, Thomas, & Maynard, 2004), coping skills (Haney, 2004; Terry, Mayer, & Howe, 1998), roles on team (Sewell & Edmondson, 1996), and goals and expectancies (Krane, Williams, & Feltz, 1992; White, 1998).

Further antecedents of anxiety include the location of competition, the importance of the event and also the uncertainty of competitions (Crocker, 2007; Weinburg & Gould, 2007). Research generally suggests the athletes report feeling higher levels of state anxiety when performing against a hostile crowd, as opposed to a home-team crowd (Bray & Martin, 2003; Courneya & Carron, 1992; Thuot, Kavouras, & Kenefick, 1998). Regardless of competing at home or against an antagonistic opposition crowd, the uncertainty placed upon an event also plays a crucial role in developing anxiety (Weinburg & Gould, 2007). For example, in sports, there are always teams, evenly matched, competing with one another. The uncertainty of winning or losing these events would cause feelings of stress, worry, and anxiety. In addition to the uncertainty, the importance placed on a situation will further increase levels of anxiety (Krane, Joyce, & Rafeld, 1994; Marchant, Morris, & Anderson, 1998). Krane et al. (1994) reported that youth and college level athletes possessed higher state anxiety responses when the competition was deemed as important, as well as when situations within the game were high at stake.

In addition to the 'situational' factors examined above, 'personal' sources of competitive anxiety also influence athletes. An important personal source of anxiety that has been indentified in affecting athletes' anxiety is an individual's type of personality. For example, different aspects of personality that have been found to impact athletic

performance include trait anxiety, self-esteem, and optimism/pessimism. Research that has examined the relationship between self-esteem and performance anxiety has shown that athletes possessing high self-esteem generally feel less anxiety when competing (Hanton, Evans, & Neil, 2003) and vise versa (Martin & Gill, 1991). In a study examining women's softball, athletes identified as optimistic showed lower levels of precompetitive state anxiety then the pessimistic players (Wilson & Steinke, 2002). Weinburg and Gould (2007) additionally noted that highly-trait anxious athletes would perceive a competition as anxiety inducing as opposed to a lower-trait anxious person. Fear of performance failure as well as fear of negative social evaluation could be also considered personal sources of anxiety (Endler, 1978). Dunn (1999) reported that fear of failure and fear of negative social evaluation (e.g., from a coach) are key determinants in causing state anxiety in collegiate hockey players. Thus, coaches have also been identified as one of the sources of anxiety. The following sections will discuss the *coach-athlete relationship* and its role on athletic performance followed, by the *relationship between coaching behaviours and athlete anxiety.*

Coach-Athlete Relationship

Coach-athlete Research

Recently, sport psychologists have expressed a growing interest in relationship issues in sport, with a specific reference to the athlete-coach dyad. According to Lanning (1979), the relationship between coaches and athletes has revolutionized from decades ago. Prior to the 1960's, most coaches were the stubborn, nonnegotiable, unapproachable boss. Since then, major social changes have occurred affecting sports dramatically. For

instance, the movement for individual rights, student rights, women's right, and athletes rights have all impacted the coach-athlete relationship (Scott, 1969). Athletes now often challenge the rules set by the coaching staff. The changing dynamics of this relationship made it difficult for coaches to adapt, since they were no longer in a total position of power. A critical shift from mandatory obedience to a more important interaction between coaches and athletes has evolved. This shift in the coach-athlete relationship spurred the development of several coach-athlete relationships models.

Sport psychology conceptual models have been developed to describe the coach-athlete relationship. Poczwardowski, Barott, and Peregoy (2002) developed a coach-athlete relationship conceptualization that included three key components: 1) an instructive component pertaining to the task being performed 2) a social-psychological component pertaining to cognitive and affective aspects, and 3) a behavioural and spiritual component relating to beliefs of both athlete and coach with regard to their relationship. Another conceptual model defined interpersonal relationships as a relationship in which emotions, thoughts, and behaviours between individuals are mutually and casually interconnected (Jowett, 2001). Specifically, being cared for, liked, valued and trusted has an affirmative effect on coaches' and athletes' interpersonal factors. In congruence to this model, a conceptual framework advanced by Iso-Ahola (1995) depicted that athletic performance is a multiplicative function of intrapersonal and *interpersonal* factors. This framework states that to achieve peak performances, an athlete's intrapersonal factors and interpersonal psychosocial factors (between athlete and coach) are necessary to be developed.

Research has agreed that the relationship established between coaches and athletes play a vital role in athletes' physical and psychosocial development (Jowett, 2003; Jowett & Cockerill, 2002, 2003; Jowett & Meek, 2000; De Swardt, 2004). The relationship between a coach and an athlete is also a decisive factor for optimal performance in competitive sport (Philipee & Seiler, 2006). The relationship may impact an athlete's training regimen and performance results, and more often than not includes aspects relating to the personal life of the athlete (Coackley, 1990). Kincer (2005) further added that not only does a positive relationship enhance performance and increase personal rapport, but the relationship between the athlete and coach is critical for a large team to understand group dynamics. This renewed research and practice focus has recognized the importance of the impact of interpersonal processes on the quality of athletes' and coaches' personal experience and athletic performance. (Jowett & Cockerill, 2003; Poczwardowski, Barott, & Peregoy, 2002; Wylleman, 2000). Since research has demonstrated that the quality of the relationship between coaches and athletes impacts athletes' development and performance, it is prudent to gain insight on what makes the coach-athlete relationship effective (Philippe & Seiler, 2006).

Various studies have been conducted to determine factors that both positively and negatively impact the effectiveness of the coach-athlete relationship. A study conducted by Kenow and William (1999) explored whether coach-athlete compatibility was significantly related to athletes' evaluation of coaching behaviours. Athletes who felt less, as compared to more, compatible with their coach experienced greater cognitive/attentional and somatic effects from their coach's behaviour during game situations. Additionally, it was found that players who felt more compatible also felt

more supported by their coach and evaluated his/her communication ability more favourably. Kenow and Williams pointed that from a practical viewpoint, it would be valuable for coaches to develop rapport as this would enhance the coach-athlete relationship, and consequently athletic performance.

In a related study, Philippe and Seiler (2006) examined the quality of the coach-athlete relationship among swimmers. A semi-structured interview, consisting of seven open ended questions, was used to obtain data from five male elite swimmers, all coached by males. A content analysis revealed that the relationship comprised essential coach-athlete requirements such as social relationships, communication, the setting of objectives/goals, as well as acceptance and respect of roles. The type of relationship reported from the athletes was caring and personal, and played a key role in enhancing performance. It was also noted that swimmers placed a significant importance on interaction patterns, verbal exchanges, as well as maintaining good relations with their coach.

Pertaining to interaction patterns, researchers have examined the role coach-athlete interactions have on performance (D'Arripe-Longueville, Fournier, & Dubois, 1998; D'Arripe-Longueville, Saury, Fournier, & Durand, 2001; Fisher, Mancini, Hirsch, Proulx, & Staurowsky, 1982). Fisher et al. (1982) confirmed that coaches' use of acceptance and praise played an important determinant in performance with high school basketball players. In contrast, D'Arripe-Longueville, Fournier, and Dubois (1998) showed that coaches lacked social support and used more negative feedback with female elite judo athletes. This type of negative relationship has been found to negatively affect

athletes' enjoyment levels and lower their feelings of competence, thus impacting performance (Kavussanu & Roberts, 1996).

Collectively, these studies examined the importance of a solid coach-athlete relationship in terms of enjoyment, compatibility, and interaction patterns - all factors which would consequently impact athletic performance. The coach-athlete relationship, however, may be derived from factors influencing coaching behaviours such as nature of the sport (Rodger, Read, Ian, & Hall, 2007), pressures from the organizational climate (Horne, 2002), coaches self-efficacy (Chase, Feltz, Hayashi, & Hepler, 2005; Earles & Chase, 2003; Watson, Chemers, & Preiser, 2001), and coaches' expectations, reinforcements, and quantity of feedback (Barker, 2003; Horn, Lox, & Labrador, 2001; Smith & Smoll, 1997; Solomon, DiMarco, Ohlson, & Reece, 1998). The quality of the coach-athlete relationship may also derive from athletes' perceptions of coaching behaviours. Athletes perceiving coaching behaviours in a negative manner have been shown to impact the social climate (Wang, Chen, & Ji, 2004), the communication patterns (Wang & Ramsey, 1997), and athletes' motivation (Amorose & Horn, 2000; Hollembeak & Amorose, 2005; Smith, Fry, Ethington, & Li, 2005). Athletes' negative perceptions of coaching behaviours have also been found to have associations with their anxiety levels. The next section, starting with explanations of models, will review the literature on the relationship between *perceived* coaching behaviours and performance anxiety within athletes.

Models

A few models have examined the roles perceptions and coaching behaviours play in sport performance. Smoll and Smith (1989) proposed a cognitive-mediational model that suggested coaches' behaviour may stem from their own personal characteristics (e.g., self-efficacy, personality), as well as situational factors (e.g., organizational pressure, nature of sport). Additionally, a key component to this model is the tendency for players to interpret or perceive the coaching behaviours in an individualized manner. For example, if a coach is providing feedback in a robust, humiliating, manner, one athlete may perceive that as a motivational technique as opposed to another athlete perceiving the situation as demeaning.

In a more recent model, the Working Model (Horne, 2002), antecedent factors that explain why coaches behave in certain ways are also identified. Similar to the cognitive-mediational model discussed above, the Working Model not only discusses such factors as the sociocultural context and the coach's own personal characteristics, but also the role the organizational climate has on a coach. This model suggests that these three factors may be mediated, at least in part, through the coach's expectancies, values, beliefs, and goals. Similar to Smith and Smoll's (1989) cognitive-mediational model, the Working Model also discusses the importance of athletes' perceptions of their coaches' behaviours. This model states that athletes' perceptions of their coach's behaviours affect beliefs, attitudes, perceptions of competence, self-esteem, anxiety and much more. Ultimately, such self perceptions will affect an athlete's own behaviour and more importantly, their performance.

Smith, Smoll and Weichmen (1998) proposed a conceptual model sport performance anxiety. A crucial element in this model, however, is the athlete's cognitive *interpretation* of the demands, resources, consequences if the demands are not met, and the personal meaning the consequences may have upon the individual. For example, an athlete competing in a championship game may define the demands as overwhelming and the resources given by the *coach* to cope with these demands as minimal. This athlete may then negatively appraise the consequences, and view him/herself incompetent in performing under pressure. Smith, Smoll, and Weichman suggest that a negative appraisal of these variables may lead to an athlete feeling unprepared for a competitive situation, and this may result in feelings of anxiety. For example, a perceived lack of emphasis on activities necessary for competitions, such as physical and mental preparation by the coach can increase athletes' anxiety levels if they feel unprepared in these areas. Since coaches may largely influence the development of their athletes' physical and mental skills, they may also play a major role in increasing anxiety levels in their players. Collectively, these models have discussed the importance athletes' perceptions of coaching behaviours have on their mentality, specifically anxiety. The present study uses the theoretical framework of Smith, Smoll and Weichman's (1998) model to examine the relationship between athlete perceived coaching behaviours and player anxiety. The next section will provide the literature based on this area of research.

Athlete Anxiety & Perceived Coaching Behavior

Research

Many external factors can contribute to an athlete's anxiousness. One element of significant influence is the coach and the behaviours demonstrated in the sport environment (Baker, 2000; Baker, Cote, & Hawes, 2000; Gould, Horn, & Spreeman, 1983; Gould & Weinburg, 1985; Kenow & Williams, 1992, 1997,1999; Lewthwaite & Scanlan, 1989; Passer, 1983; Vealey, Armstrong, Comar, & Greenleaf, 1998). The following studies have reported significant relationships between athlete perceived coaching behaviours and player anxiety.

In an early investigation on this topic, Passer (1983) analyzed competitive trait anxiety (CTA) using 316 male youth soccer players prior to the start of a season. Different variables were measured, one being evaluation related worries from their coach. As predicted, athletes possessing high CTA expected more frequent criticism from parents and coaches in the event of performing poorly. The findings supported the general hypothesis that fear of failure and fear of evaluation are significant sources of threat in CTA among youth. Also as predicted, high CTA youth expected the consequences of poor performances to be more aversive as opposed to their low-anxious counterparts. Although players commonly believed that poor performance and mistakes induced infrequent criticism from coaches, youth with high-CTA had greater expectancies than low-CTA children. Passer also indicated that the highly anxious young athletes, compared with their low-anxiety counterparts, expected to receive more frequent overt negative behaviours, in the form of criticism and punitive behaviours, from their

coaches for poor performance. Percival (1971) also conferred in his study that athletes noted criticism from their coach, in the forms of their mannerisms, emotions, verbal presentations and tension levels. The implications of these results suggest that coaches should be aware of the impact their behaviours have on their athletes.

Expanding on Passer's (1983) study that examined a team sport (male soccer players), Lewthwaite and Scanlan (1989) analyzed significant factors related to the levels of dispositional or CTA experienced by young male wrestlers. Similar to Passer's results, multiple regression analyses from questionnaire data revealed that boys with more frequent CTA symptoms possessed precompetitive worries about failure, adult expectations and evaluation. More frequent adult related worries were predicted by greater personal upset for poor performance and perceptions of 1) greater parental and coach shame and upset, 2) more negative adult evaluations, and 3) greater parental pressure.

The previous studies primarily examined young male athletes and their perceptions of how significant adults (coaches) reacted to poor performances. Kenow and Williams (1992) analyzed the relationship between athletes' anxiety, self-confidence, and evaluation of coaching behaviours in 11 female college basketball players from a Southwest NCAA Division III school. It was hypothesized that high-anxious individuals would evaluate coaching behaviours more negatively than the low-anxious athletes. Anxiety was measured by the Sport Competition Anxiety Test (SCAT) which assessed competitive trait anxiety and the coaches behaviours were measured using the Coaching Behaviour Questionnaire (CBQ). Results indicated that high trait-anxious athletes perceived the coaching behaviours more negatively than did low trait-anxious athletes.

Results recommended that coaches should be more supportive and less negative with high anxious and low self-confident athletes. Kenow and Williams further noted the benefits of coaches identifying the athletes who are more susceptible to anxiety issues in competitive sport. They suggested that coaches should become aware of the negative outcomes of their behaviours and be given guidelines to assist them in becoming more supportive and encouraging towards high CTA athletes. One major limitation of this study involved the very small sample size, thus not making the results generalizable to other sport domains. Kenow and Williams (1997) later replicated the cognitive anxiety results among a larger sample. Data once again verified athletes scoring high in cognitive anxiety interpreted their coach's communication behaviours more negatively, as well as the perceived cognitive/attentional effects of their coach's behaviours.

Expanding on their research, Kenow and Williams (1999) again examined the relationship of trait and state anxiety to the evaluation of coaching behaviours. However in this study, an additional measure was used to assess general state anxiety. Using the sample population (female basketball players), Kenow and Williams studied athletes who had at least one full season of playing experience under their current head coach. As in their previous 1992 study, the athletes completed the CBQ and the SCAT, and additionally completed The Competitive State Anxiety Inventory-2 (CSAI-2). The CSAI-2 measures general state anxiety and self-confidence. Results demonstrated that trait anxiety, cognitive and somatic anxiety, and state self-confidence were significantly negatively related to athletes' perception and evaluation of coaching behaviours.

In a more recent investigation pertaining to this area of research, Baker, Cote, and Hawes (2000) examined the relationship between athlete anxiety and coaching

behaviours. Participants consisted of 228 athletes from 15 different sports (varsity and regional level competitors) as opposed to the single sport analyzed in the previous Kenow and William studies (1992, 1997, 1999). The authors also utilized different measures in their questionnaire which consisted of the Sport Anxiety Scale (SAS) and the Coaching Behaviour Scale for Sport (CBS-S). The SAS measures somatic anxiety, cognitive anxiety, worry and concentration disruption, and the CBS-S examines the frequency of seven coaching behaviours: (1) physical training and planning (2) mental preparation (3) goal setting (4) competition strategies (5) technical skills (6) personal rapport (7) negative personal rapport. Regression analyses were utilized to analyze the data, and the results identified two areas significantly associated with athlete anxiety: negative personal rapport and competition strategies behaviours. Athlete anxiety was positively significantly associated with negative personal rapport. Baker et al. suggested that as athlete anxiety increased, so did their perception of their coaches negative personal rapport behaviours such as yelling, or using fear in his/her coaching methods. Athlete anxiety was further found to be negatively associated with competition strategies, and the authors concluded that competition strategies behaviours increased as player anxiety decreased. Baker (2000) explained that competition strategies are behaviours that prepare athletes for competition. Athletes feel that these specific behaviours are useful and necessary to compete, and this ultimately decreases levels of anxiety.

In contrast with Baker, Cote, and Hawes' (2000) findings, Vealey, Armstrong, Comar, and Greenleaf (1998), in a similar study, interestingly found that perceived coaching behaviours were not significant predictors of athlete anxiety. Their study analyzed the relationship between levels of anxiety and burnout experienced by college

athletes, as well as the athletes' perceptions of their coaches' behaviours. It was hypothesized that athletes' perceptions of coaches' use of praise, empathy, and communication ability would be negatively related to athlete anxiety and burnout. In contrast, it was predicted that athletes' perceptions of coaches' use of dispraise, autocratic decision-making styles, and emphasis on winning would be positively related to athlete anxiety and burnout. One hundred and forty nine female college athletes completed four inventories to measure multidimensional components of burnout (i.e., the Eades Athlete Burnout Inventory), multidimensional competitive trait anxiety (i.e., the Sport Anxiety Scale), the amount of empathy perceived by athletes from their coaches (i.e., the Relationship Inventory), and athletes' perception of five coaching behaviours (i.e., the Coaching Behaviour Inventory). It was found that athletes who scored high on the burnout dimensions perceived that their coaches were less empathetic, used minimal praise as a motivational technique, implemented an autocratic coaching style, and emphasized winning as more important than the development of athletes. Results determined that athletes' perception of their coach's behaviour was predictive of athlete burnout. Interestingly, unlike the previous studies mentioned, athletes' perception of their coach's behaviour was not predictive of athlete competitive anxiety, but athlete anxiety was a significant predictor of burnout in athletes.

The previous studies have demonstrated the influences a coach may have on athletes' anxiety level. As Kenow and Williams (1992, 1997) stated, coaches should be cautious of the way they conduct themselves in both a competitive and non competitive setting. They note that leaders should put forth effort in identifying athletes experiencing anxiety. Once they indentify the players who perform with high anxiety, coaches should

encourage and be more supportive to those specific athletes. Since research has shown that coaching behaviours have emotional impacts on their athletes, such as anxiety, the potential value of education programs aimed to train coaches to provide a positive and supportive athletic environment seems logical. For this reason, it is imperative to distinguish whether or not appropriate interventions directed at coaches might reduce the levels of performance anxiety among athletes.

Coach Education Program

The Coach Effectiveness Training (CET) is an intervention that is designed to reduce the levels of athlete's sport anxiety (Smith, Smoll, & Curtis, 1979). CET is additionally intended to increase coaches' ability to effectively relate to young athletes. The foundation of CET consists of a series of behavioural guidelines that are based primarily on (a) social influence techniques that involves principles of positive control rather than aversive control, and (b) the concept of success or 'winning' as giving maximum effort (Smoll & Smith, 1987). This intervention provides coaches with guidelines for fostering positive coach-athlete relationships, for reducing evaluation apprehension, and for enhancing team cohesion. Several features of this program may decrease the anxiety-arousing potential in a sporting environment by promoting positive behavioural interactions among coaches and athletes, by encouraging coaches to focus on personal effort rather than winning, and by placing an emphasis on 'having fun' and self-improvement.

Two studies have tested the effectiveness of CET principles for reducing performance anxiety. Smith, Smoll, and Barnett (1995) assessed CET's effects on

performance trait anxiety in 152 male 10-12 year old baseball players. Outcome measures included the Sport Anxiety Scale and the Children's Sport Competition Anxiety Test. On both trait anxiety scales, significant reductions in anxiety occurred in children who played for the CET-trained coaches. In a more recent study, Conroy and Coatsworth (2004) tested CET principles in a sample of seven coaches and 135 male and female swimmers ranging in age from seven to eighteen years, using the Performance Failure Appraisal Inventory as the outcome measure. They also used the Coaching Behaviour Assessment System to code the observed behaviours of coaches. Although the four trained coaches' observed behaviours were more consistent with CET guidelines than were those of the three control coaches, no evidence for reduced fear of failure was found.

Smith, Smoll, and Cumming (2007) designed a similar intervention, the Mastery Approach to Coaching (MAC), for coaches to test the motivational climate on change in male and female athletes' cognitive and somatic performance anxiety during a basketball season. MAC was designed to reduce anxiety by helping coaches create a mastery task-oriented motivational climate. This mastery climate potentially decreases anxiety by reducing social comparison pressures, and by focusing on controllable effort (Vazou, Ntoumanis, & Duda, 2006). Data indicated that athletes in the intervention condition decreased on all subscales of anxiety score from the preseason to late season. The hierarchical linear modeling analyses also revealed that the athletes in the MAC intervention perceived their coaches as being more mastery-involving as opposed to the athletes in the untreated control group. This study implies it is highly possible for

coaches to decrease their athletes' anxiety levels based on their behaviours of motivational tendencies.

Weinburg and Gould (2007) further noted that an additional method for coaches to alleviate anxiety symptoms within their athletes is to tailor coaching strategies to individuals, and aid in developing performer confidence. They suggest that every individual reacts differently in various situations, and coaches should be cautious when and with whom state anxiety needs to be maintained, reduced or enhanced. For example, a coach should be wary to increase his voice level or his use of negative feedback to an athlete with high performance anxiety in contrast to an individual with low performance anxiety. Weinburg and Gould also explain that one of the most efficient ways for coaches to help reduce anxiety within their athletes is to help them elevate their confidence. Coaches can achieve this by fostering a positive environment, giving frequent and sincere encouragement, and instilling a positive orientation to mistakes and losing.

Coaching education programs, such as the CET and MAC, seem to be valuable in their effectiveness to decrease athletes' anxiety levels. From a practical standpoint, it is necessary for coaches to be given insight into this area. Coaches should be aware that the way in which they act, think, and behave can detrimentally affect the athlete. Coaches are the leaders who are supposed to bring out the best in their athletes. In order to maximal performance, coaches must try to eliminate everything that hinders athletic performance, especially sport performance anxiety.

Study Rationale

The review of literature examined the research relevant to the focus area of coaching behaviours and athlete anxiety. The literature in this field, however, contains several gaps. This section will highlight the two primary limitations in the coaching behaviours and athlete anxiety research spectrum: 1) the lack of comparisons between sports and 2) the inconsistencies of the measures and tools used in the methodological procedures. A rational for the purpose of this current study and how these gaps were addressed within this investigation will be provided.

The relationship between athlete perceived coaching behaviours and athlete anxiety has been studied for the past three to four decades. Although there is an existing body of knowledge in the area of coaching behaviours and athlete anxiety, several gaps in the field exist. One of the limitations includes the lack of comparisons between sports and between individual and team sports. As previously mentioned, many of the sports athletes participate in differ characteristically. The dynamics of the coach- athlete relationship operates differently in various sports. For example, a coach coaching a singles tennis player would have a different magnitude of affect compared to a basketball coach instructing a dozen athletes. The coach and athlete in tennis would have far more encounters and interaction patterns compared to an athlete and coach on a basketball team. Baker, Cote, and Hawes (2000) examined the relationship between athlete anxiety and coaching behaviours among athletes competing in 15 different sports from various age groups and skill levels. Their investigation, along with other studies in this area (Kenow & Williams, 1992, 1997, 1999; Lewthwaite & Scanlan, 1989; Passer, 1983;

Vealey, Armstrong, Comar, & Greenleaf, 1998) failed to compare results from sport to sport within the same age range and skill level. Sports comparisons may have both social and applied relevance to this area of study. For example, individual-sport based varsity coaches (e.g., tennis) may provoke more anxiety within his/her player in contrast with team-sport based varsity coaches (e.g., basketball) due to differences in competitive pressures or quantity/quality of interaction patterns. Therefore, it is necessary that coaching behaviours and athlete anxiety be explored within specific sport contexts. This will subsequently allow for the study of comparing the coach-athlete relationship across sports in order to explore social and applied differences across sports-contexts. Thus, the current study attempted to set the foundation for future comparative research in this area by cross-validating Baker et al's. findings within a sport specific (i.e., basketball) and social context specific (i.e, Atlantic University Sport) investigation.

A second major limitation in the literature pertaining to the area of coaching behaviours and athlete anxiety involves the inconsistencies in conceptualization and operationalization of variables (i.e., the tools and measures utilized) between studies. The majority of the research has involved a quantitative approach to analyzing the coach behaviour-athlete anxiety relationship. Coach behaviours have been measured in pervious studies using scales such as the Coaching Behaviour Questionnaire, the Coaching Behaviour Inventory, and the Coaching Behaviour Scale for Sport (Baker, Cote, & Hawes, 2000; Kenow & Williams, 1992). Athlete anxiety is often measured using scales such as the Sport Competition Anxiety Test, Competitive State Anxiety Inventory-2, and the Sport Anxiety Scale (Baker, Cote, & Hawes, 2000; Kenow & Williams, 1992, 1999). Each of these scales measures the variables differently thus

making it difficult to compare results across studies and to generalize findings to the broader population. In order for future research to replicate or extend previous findings variables must be operationalized consistently with previous methodological procedures. Thus, the current study attempted to cross-validate Baker, Cote, and Hawes' (2000) findings using the same measures: Sport Anxiety Scale and Coaching Behaviour Scale for Sport. Researchers who want to further compare results in the area of coaching behaviours and athlete anxiety should seriously consider using the same instruments. In order to move this area of study further, it is necessary to develop a body of knowledge that can be compared and contrasted.

Summary

This chapter has reviewed literature pertaining to sport performance anxiety and performance, the coach-athlete relationship, and the relationship between coaching behaviours and athletic anxiety. The study rationale was also briefly discussed. The following chapter will present the results of the measures used to determine if there is a relationship between certain coaching behaviours and athletes' anxiety within university basketball players.

CHAPTER III: METHODOLOGY

Introduction

The previous chapter reviewed the literature on performance anxiety, the coach-athlete relationship, and the relationship between athlete perceived coaching behaviours and athlete anxiety. The purpose of this quantitative study was to seek further understanding of the relationships between certain coaching behaviours and athlete anxiety in university basketball players. Specifically, the study's goal was to attempt to cross-validate Baker, Cote, and Hawes' (2000) research findings within the single sport setting of basketball. This study was also designed to provide a foundation for future researchers to explore the area of coaching behaviours and athlete anxiety, and consequently further knowledge in the coach-athlete spectrum. The following chapter describes and outlines the methodology used in this research study. The research design, dependent, independent, and descriptive variables, study population and criterion for selection, instrumentation, respondent recruitment and data collection procedures, and data analysis are also outlined.

Research Design

A one group, cross-sectional design was used in the present study. The survey method of data collection was chosen for this study to provide a larger sample size in order to quantitatively examine the relationships between coaching behaviours and athlete anxiety among university basketball teams.

Dependent, Independent, and Descriptive Variables

The dependent variables included the four forms of anxiety: (1) total anxiety, (2) somatic anxiety, (3) worry and (4) concentration disruption. The independent variables in this study consisted of the seven perceived coaching behaviours: (1) physical training and planning, (2) mental preparation, (3) goal setting, (4) competition strategies, (5) technical skills, (6) personal rapport, and (7) negative personal rapport. Each variable and other related terminology was defined in chapter one. Descriptive variables were also examined including; (1) age, (2) gender, (3) eligibility status, and (4) playing time, denoted by whether a player started the game or came off the bench..

Study Population and Criterion for Selection

A convenience sample of participants included male and female Atlantic University Sport (AUS) university basketball players ranging in age from 19-27. Inclusion criteria included that the participants had been involved with their 2007-2008 basketball team from the start of training camp. This criterion ensured that the sample population had been exposed to the head coach for the same amount of time during the current season, providing equal opportunities to interact with the coach.

Although a sample of convenience, varsity athletes were selected as they are known to have strong relationships with their coaches. This sample was also chosen for this specific study since varsity athletes interact with their coaches on daily basis. Refer to chapter four for sample descriptive statistics.

Instrumentation

This study required participants to complete a questionnaire (see Appendix 3) consisting of demographic information and three scales. The three scales used were the Profile of Mood States (POMS), the Sport Anxiety Scale (SAS) and the Coaching Behaviour Scale for Sport (CBS-S).

Demographic Information

The demographic section of the questionnaire consisted of four variables. These included gender, age, eligibility status, and starting versus a coming off the bench role.

Profile of Mood States

The Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1979) was used to assess the athletes' affect or mood prior to their last practice. The POMS measures six dimensions including: (1) tension-anxiety, (2) depression-dejection, (3) anger-hostility, (4) vigor-activity, (5) fatigue-inertia, and (6) confusion-bewilderment. The POMS contains 65 items which are measured on a five-point Likert-type scale (1= "Not at all, 5= "Extremely"). Internal consistency has been reported for all items as above 0.90 with test-retest reliability ranging between 0.65 for Vigor and 0.74 for Depression (McNair, Lorr, & Droppleman, 1979). *The dimension of tension-anxiety (nine items) was of particular interest to the current study in order to determine whether or not participants had a general disposition of having trait-anxiety which could have influenced their levels of state sport anxiety.* Examples of tension-anxiety items included

if the athletes were feeling 'tense,' 'shaky,' 'on edge,' 'anxious,' etc. In the current study, the tension-anxiety subscale demonstrated good internal consistency (α =.85).

Sport Anxiety Scale

The Sport Anxiety Scale (SAS; Smith, Smoll, & Schultz, 1990) was administered to assess athletes' perceived levels of anxiety prior to or during competition. This multidimensional scale measures trait anxiety in sport situations. This scale includes a sub-scale measuring total anxiety, somatic anxiety and two forms of cognitive anxiety (worry and concentration disruption). The SAS is a 21-item scale which measures these variables on a three-point Likert-type scale (0= "Not at all", 3= "Very much so"). Examples of these items included "I feel nervous," "I have self-doubts," "I feel tense in my stomach," and "My heart races." The SAS demonstrates good reliability (somatic anxiety $r = 0.88$, worry $r = 0.82$, concentration disruption $r = 0.74$). Sufficient test-retest reliability was reported across all forms of anxiety over a seven day period ($r = .85$). Predictive and convergent validity were also reported (Smith, Smoll, & Schultz, 1990). Smith, Smoll, and Wiechman (1998) have also demonstrated good internal consistency (α = .81), convergent and construct validity, as well as relatively high test-retest reliability (α =.85). This current study showed excellent internal consistency for the somatic anxiety subscale (α = 0.89) as well as he worry subscale (α = 0.89). Good internal consistency was demonstrated for the concentration disruption subscale (α = 0.74).

Coaching Behaviour Scale for Sport

The Coaching Behavior Scale for Sport (CBS-S; Cote, Yardley, Hay, Sedgwick, & Baker, 1999) was used to measure how frequently athletes perceived various forms of coaching behaviours during practices and/or games. The CBS-S is a 44 item scale examining the frequency of seven coaching behaviours displayed by their coaches: (1) physical training and planning (2) mental preparation (3) goal setting (4) competition strategies (5) technical skills (6) personal rapport, and (7) negative personal rapport. Items were measured on a seven-point Likert-type scale (1= "Never," 7= "Always"). Examples of these items include "My coach provides me with a detailed physical conditioning program," "My coach provides me with immediate feedback," and "My coach is trustworthy with my personal problems." Cote et al. (1999) reported that the CBS-S has an internal consistency of $\alpha \geq 0.85$ and positive constructs demonstrated good test-retest reliability. They also stated that factor and discriminate validity were supported. Stevens, Baker, and Cote (2006) have further supported the factor structure of the CBS-S and various studies have supported the scales construct and predictive validity (Baker, Cote, & Hawes, 2000; Baker, Yardley, & Cote, 2003). The current study showed excellent internal consistencies for the various coaching behaviour constructs including: physical training & planning ($\alpha = 0.89$), technical skills ($\alpha = 0.89$) mental preparation ($\alpha = 0.92$), goal setting ($\alpha = 0.94$), competition strategies ($\alpha = 0.90$), personal rapport ($\alpha = 0.94$). Good internal consistency was shown for the negative personal rapport construct ($\alpha = 0.81$).

Respondent Recruitment and Data Collection

This study was approved by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) at Memorial University. Upon receiving ethics clearance from Memorial University, the researcher and Athletic Director at Memorial initially corresponded via email with fellow athletic directors of the Atlantic University Sport schools seeking permission to have the investigator approach the coaches and teams to request their participation in the study. The email further requested athletic directors to forward the letter to the head coaches of the male and female basketball teams (see Appendix 1). The researcher followed up by contacting the coaches individually by phone approximately two weeks after the email was sent to determine willingness to participate. With the coaches' approval to participate in the study, another follow up phone call was made for data collection arrangements. The researcher collected data between November, 2007 and March, 2008.

Of the 16 varsity basketball teams available to participate, 14 teams agreed to take part in the study. Since data collection timing depended on the coaching staff's schedule, the researcher conducted the surveys in various locations and times, thus somewhat hindering the validity of the scales utilized, particularly the SAS. This methodological concern, will be address in greater detail in chapter five. The following information outlines the number of teams and locations of data collection obtainment:

1 The researcher administered the questionnaire to *five* of the fourteen teams at Memorial University following their weekend games within one hour of the actual competition.

2 The researcher administered the questionnaire to *three* out of the fourteen teams at their respective universities. Two teams completed the surveys hours before competition. The third team completed the questionnaire the day after competition.

3 The remaining *six* teams completed the questionnaires days following the competition and mailed the surveys back to the researcher, due to time restrictions. The questionnaires were administered by the team trainers/managers, using the protocol provided by the researcher.

Since the researcher was not able to administer the questionnaire to all teams, a protocol was established and used in order for the instructions to be consistent. The protocol consisted of the information sheet (see Appendix 2) being read out loud and thoroughly explained to both athletes and coaches. If neither of the athletes or coaches had any questions or concerns, the athletes completed the questionnaire. Data collection for each team took approximately 10-15 minutes.

Data Analysis

Completed questionnaires were coded by the investigator and entered into the Statistical Packages for the Social Sciences (SPSS version 14.0 for Windows). To minimize human error in the data entry process, the investigator entered all the items into SPSS and verified them on two separate occasions, for quality purposes.

Data were screened for missing and invalid data points and outliers. Descriptive statistics were performed to obtain sample characteristics for demographic and study-related variables in this study. Zero-order correlations determined associations between

socio-demographic factors and study variables. Prior to conducting analyses, all summed variables were transformed into standardized z-scores to remove concerns about scale of measurement.

To determine the association between athlete anxiety (total anxiety, somatic anxiety, concentration disruption, and worry) and athlete perceived coaching behaviours (physical training & planning, technical skills, mental preparation, competition strategies, personal rapport, negative personal rapport, and goal setting) while controlling for socio-demographic variables, a series of hierarchical linear regressions were conducted. Multiple regression analysis was utilized to examine the main dependant variable (anxiety) and two or more predictor variables, or independent variables (socio-demographic & coaching behaviour variables). Specifically, hierarchical regression was used instead of stepwise methods to enable the researcher to enter the prediction variables in blocks based on theory, as opposed to stepwise regression where the order of variables entered are based on purely mathematical criterion (Field, 2005). Hierarchical multiple regressions were also used in this study to be consistent with Baker, Cote, and Hawes' (2000) analytic procedures. For each of the four anxiety variables, the socio-demographic variables were entered in the regression model first, and then the perceived coaching behaviours were entered next. Thus, socio-demographic variables were controlled for in the models.

Summary

Chapter three has outlined the methodology employed in the study. This chapter discussed the research design, independent, dependent, and descriptive variables, study

population and criterion for selection, instrumentation, respondent recruitment and data collection, as well as data analysis.

Chapter four will present the results obtained from this investigation. The major research question stated in chapter one will be answered: Does a relationship exist between the four forms of sport anxiety, (somatic anxiety, total anxiety, concentration disruption, and worry), and athletes' perceived frequency of the seven coaching behaviours, (physical training, mental preparation, goal-setting, technical skills, competition strategies, personal rapport and negative personal rapport).

CHAPTER IV: RESULTS

Introduction

The previous chapter supplied the methodology and research design utilized in this study. This chapter presents the results of the analysis that were performed to meet the objectives of the study. First, the study sample is described followed by the correlations between the socio-demographic variables, anxiety variables and coaching behaviour constructs. Finally, a series of hierarchical linear regressions are discussed which determined relationships between specifically athlete anxiety and athlete perceived coaching behaviours.

Sample Descriptives

Descriptive statistics were performed to obtain sample characteristics for demographic and study-related variables in this study. Data were screened for missing and invalid data points and outliers. The Sport Anxiety Scale (SAS) and Coaching Behaviour Scale for Sport (CBS-S) items were also screened for normality, skewness, and kurtosis. Statistics indicated that these scale items were normally distributed (see Table 1 & 2). Furthermore, list wise deletion was utilized for descriptive statistics as well as for all inferential analysis.

Of the 155 varsity basketball participants in this study, 52.3% (n = 81) of the sample were female compared to the 47.7% (n = 74) that were male. The mean age of the varsity athletes was 21.2 (SD = 1.88) ranging between 19 and 27. The majority of the sample were in their first year of eligibility (32.9%, n = 51), while 18.7% (n = 29) were in

their second year, 17.4% (n = 27) in their third year, 16.8% (n= 26) in their fourth year, and 10.3% (n = 16) in their final fifth year. In terms of playing time, over half of the sample (54.2%, n = 84) came off the bench to play whereas 41.3% (n = 64) of the players were amongst the starting five. Coming off the bench refers to the athletes who enter the game after the competition is underway. The starting five indicates those players who are on the court when the game commences.

Baseline anxiety, operationalized using the Profile of Mood States (POMS), was of interest to the current study in order to determine whether or not participants had a general disposition of having trait-anxiety which could have influenced their levels of state sport anxiety. The dimension of the **tension-anxiety** subscale was solely examined in the POMS (total scores ranging from 1-45 with higher scores indicating greater anxiety levels). The sample had an average score of 22.1 (SD = 6.17) indicating that, overall, they did not possess high levels of trait anxiety.

Sport anxiety, operationalized using the Sport Anxiety Scale (SAS), was the first variable of particular interest in this study. The SAS is a Likert scale ranging from zero to three, with zero indicating feelings of 'not at all' and three indicating feelings of 'very much so.' This scale consisted of 22 items, divided into four subscales; 1) ***Somatic Anxiety*** (total scores ranging from 0-27 with higher scores indicating greater somatic anxiety), 2) ***Worry*** (total scores ranging from 0-21 with higher scores indicating greater worry), 3) ***Concentration Disruption*** (total scores ranging from 0-15 with higher scores indicating greater concentration disruption) 4) ***Total Anxiety*** (sum of all subscales) (see Table 1). The means for each of the 22 items were relatively low, ranging from 0.5-1.7, indicating athletes' low anxiety levels. The highest mean (M = 1.7, SD = 1.06, SAS)

came from item number five, 'I am concerned that I may not do as well in competition as I could,' reflecting the athletes' cognitions of not performing up to their potential. The worry subscale had the highest mean value ($M = 9.2$, $SD = 5.21$), while the concentration disruption subscale and the lowest ($M = 3.9$, $SD = 2.97$). The third subscale, somatic anxiety, had a mean value of 7.9 (SD= 5.66). This data indicates that as a whole, some athletes worried about their performance but had no difficulties with concentration disruption. The fourth subscale, total anxiety, ($M = 21.0$, $SD = 11.58$) was lower than Baker, Cote, and Hawes (2000) total anxiety findings. Reasons for this difference will be postulated upon in chapter five.

Perceived coaching behaviours, operationalized using the Coaching Behaviour Scale for Sport (CBS-S) was the second variable of particular interest in this study (see Table 2). This Likert-type scale ranged from one to seven, with one indicating that athletes 'never' perceived a specific coaching behaviour, and seven, indicating that athletes 'always' perceived a specific coaching behaviour. This scale consisted of 47 items, divided into seven different subscales; 1) ***Physical Training and Planning*** (total scores ranging from 1-49 with higher scores indicating greater perceived physical training and planning), 2) ***Technical Skills*** (total scores ranging from 1-56 with higher scores indicating greater perceived technical skill instruction), 3) ***Mental Preparation*** (scores ranging from 1-42 with higher scores indicating greater perceived mental preparation), 4) ***Competition Strategies*** (total scores ranging from 1-49 with higher scores indicating greater perceived competition preparation), 5) ***Personal Rapport*** (total scores ranging from 1-42 with higher scores indicating greater perceived personal rapport), 6) ***Negative Personal Rapport*** (total scores ranging from 1-56 with higher scores indicating greater

perceived negative personal rapport), and 7) ***Goal Setting*** (total scores ranging from 1-35 with higher scores indicating greater perceived goal setting preparation). The highest mean for any item was 5.2 (*SD* = 1.70) reflecting that athletes perceived their coach as having a 'consistent routine at competition' often.

The means of the seven constructs were also examined. According to the subscale measures, the majority of the subscales had a mean close to the center of the Likert-scale. Athletes' perceptions of their coach giving strategic competition plans had the highest mean value of 5.3 (SD=1.62). This indicates the majority of the athletes selected 'Often' or higher in this construct verifying that their coaches had them prepared for competition. The constructs of mental preparation and goal setting had the lowest mean values of 3.7 (SD= 1.63) indicating that majority of the basketball players selected below "Fairly Often." This representation states that, on average, athletes did not perceive their coaches as providing adequate goal-setting or mental preparation.

Bivariate Analyses

Although no predictions were made about associations between socio-demographic factors (i.e., gender, age, eligibility year, and playing time) and the variables of interest in this study (i.e., sports anxiety and coaching behaviours), some evidence exists to support socio-demographic effects on some of the study variables such as age, sex, and experience level (Clingman & Hilliard, 1994; Hanton, Thomas, & Maynard, 2004; Krane & Williams, 1994; Williams & Elliot, 1999). Consequently, zero-order correlations determined associations between socio-demographic factors and study variables. Cohen (1988) provided guidelines regarding the interpretations for correlations

in psychological research. In addition Field (2005) explains that a correlation coefficient is utilized to measure the size of an effect. These authors suggest that correlation values of ±0.1 represent a small effect, ±0.3 represents a medium effect, and ±0.5 is a large effect size.

As shown in Table 3, gender was significantly associated with worry (r = -.20, $p < .05$) and personal rapport (r = -.21, $p < .05$). The mean value for females for the construct personal rapport was 4.77 (SD = 1.75) and 10.21 (SD = 5.08) for worry. Eligibility year was significantly associated with somatic anxiety (r = -.32, $p < .01$), worry (r = -.28, $p < .01$), and total anxiety (r = -.30, $p < .01$). Therefore as eligibility year increased, levels of somatic anxiety, worry and total anxiety decreased suggesting that anxiety diminishes as athletes' playing experience increases. Playing time was found to be positively related to somatic anxiety (r = .21, $p < .05$), worry (r = -.28, $p < .01$) and total anxiety (r = .24, $p < .01$); however, playing time was negatively associated with perceived mental preparation by the coach (r = -.18, $p < .05$). Finally, age was significantly associated with somatic anxiety (r = -.26, $p < .01$) and worry (r = -.22, $p < .01$). This data indicates that as age increases, somatic anxiety and worry they possessed prior to and during competition decreases.

Baker, Cote, and Hawes' (2000) controlled for gender, sport type, and age in their regression models. Although the correlations between gender and the study variables did not have large effects, to be consistent with Baker, Cote and Hawes (2000), gender was included in the hierarchical regression model. In contrast to Baker et al's study, the current study had a homogenous sample in terms of sport type (i.e., basketball) and age (i.e., all varsity athletes and university students). Sport type was therefore not a socio-

demographic variable in the current study. As previously discussed, experience level has been found to be associated with both sports anxiety and coaching behaviours (Krane & Williams, 1994; Williams & Elliot, 1999). Age, eligibility year, and playing time are socio-demographic variables that would "tap into" the experience level of the athletes. However, including all of these variables in the regression would result in issues of multicolliniarity (e.g., the correlation between age and eligibility year was large: r = .75). Considering the homogeneity of the sample in terms of age, it was felt that eligibility year and playing time would be more valid in the context of varsity basketball to control for experience level. Therefore, based on the correlations and attempt to be as consistent as possible with Baker et al's study, it was decided to statistically control for gender, eligibility year, and playing time in the first step of the regression models to remove their influence on the examined relationships.

Zero-order correlations determined associations between anxiety and perceived coaching behaviours. Specifically, somatic anxiety (r = -.18, $p < .05$) and worry (r = -.19, $p < .05$) were significantly negatively associated with perceived physical training preparation by the coach. The higher the anxiety levels of athletes, the less they perceived their coaches as not preparing them physically. Concentration disruption was also significantly negatively related to physical training (r = -.26, $p < .01$), as well as competition strategies (r = -.23, $p < .01$). Finally, total anxiety was negatively associated with physical training (r = -.25, $p < .01$). This indicates that overall, athletes experiencing greater anxiety perceived that their coaches did not physically prepare them.

Cross-sectional Association of Athlete Anxiety and Athlete Perceived Coaching Behaviours

Prior to conducting analyses, all summed variables were transformed into standardized z-scores to remove concerns about scale of measurement. To determine the association between athlete anxiety and athlete perceived coaching behaviours, while controlling for socio-demographic variables, a series of hierarchical linear regressions were conducted. Multiple regression analysis was utilized to examine the main dependant variable (anxiety) and two or more predictor variables, or independent variables (socio-demographic & coaching behaviour variables). For each of the four anxiety variables, the socio-demographic variables were entered in the regression model first, and then the perceived coaching behaviours were entered next. Thus, socio-demographic variables were controlled for in the models.

To determine the relationship between *total anxiety* and perceived coaching behaviours, a hierarchical linear regression model was computed (Table 4). Results from Step one indicated that total anxiety was not significantly associated with gender (β = -.122, p = .152) or playing time (β = .088, p = .363) but was significantly negatively associated with eligibility year (β = -.255, p = .009). Therefore, as years of eligibility increases, total anxiety decreases. Socio-demographic variables explained 10.8% of the variance in total anxiety. Step two of this model revealed that physical training (β = -.216, p = .056) was the only construct of perceived coaching behaviours approaching significance that was associated with total anxiety, and accounted for 8.1% of the total variance. This finding suggests that as total anxiety increases within the basketball

players, their perception of their coaches' physical training preparation may decrease, suggesting they view their coaches as not preparing them in a physical manner. Overall, this regression model explained 19% of the total variance within total anxiety and perceived coaching behaviours.

To determine the relationship between *somatic anxiety* and perceived coaching behaviours, a second hierarchical linear regression model was computed (Table 5). Step one of this model showed again, that the only socio-demographic variable that was significantly associated with anxiety (somatic) was eligibility year ($\beta = -.305$, $p = .002$), which explained 11.1 % of the variance. Physical anxiety symptoms (e.g., increased heart rate, "butterflies in stomach") decreased as athletes eligibility year increased. This finding suggests that as athletes gained playing experience, they do not possess such feelings of physical anxiety. Step two, accounting for 6.2% of the variance, showed that perceived physical training ($\beta = -.216$, $p = .05$) was the only coaching behaviour construct significantly associated with somatic anxiety. Although not significantly associated, the personal rapport construct was positively associated with somatic anxiety ($\beta = .229$, $p = .117$) which is an interesting finding. This finding suggests that as an athletes somatic anxiety increases, their perception of their coaches personal rapport increases and vice versa. One would assume that an athlete who views their coach as being caring and personal towards them would not feel somatic anxiety. Overall, this regression model explained 17.4% of the total variance within somatic anxiety and perceived coaching behaviours.

To determine the relationship between *concentration disruption* and perceived coaching behaviours, a third hierarchical linear regression model was computed (Table

6). Step one of the model, accounting for 1.9% of the variance, determined that none of the socio-demographic variables were significantly associated with concentration disruption. In Step 2, only competition strategies (β = -.394, p = .024) was significantly associated with concentration disruption. This finding indicates that as athletes' concentration disruption increases, they perceive their coach as not preparing them strategically. Although not significantly related, it is noteworthy that similar to the previous two models, physical training was negatively associated with anxiety (concentration disruption). Step two explained an additional 10.9% and cumulatively, the predictor variables accounted for 12.8% of the variance in this model.

To determine the relationship between *worry* and perceived coaching behaviours, a fourth hierarchical linear regression model was computed (Table 7). Step one, explaining 11% of the variance, revealed that gender (β = -.161, p = .057), and playing time (β = .908, p = .304) were not significantly associated with worry. However, eligibility year was once again significantly negatively associated with anxiety, in this case worry (β = -.228, p = .018). This suggests that the higher the eligibility status, the less the athletes worried about performance. Step two of the model, accounting 5.4% of the variance, revealed that none of the coaching behaviour subscales were significantly associated with worry. Overall, the predictor variables accounted for 16.4% of the variance within worry and perceived coaching behaviours.

Summary

This chapter highlighted the major research findings from this study. It provided the sample descriptives, correlations between the various variables, as well as a series of

hierarchical linear regressions to determine the relationships between with the four forms of anxiety and the seven constructs of coaching behaviours. Results revealed that two forms of coaching behaviour (physical training & competition strategies) were significantly associated with athlete anxiety. Eligibility year, being a descriptive variable, was also significantly associated with athlete anxiety. Chapter five will discuss the study's research findings, recommendations for future studies and a conclusion.

Table 1: Descriptive Statistics for Sport Anxiety Scale (SAS)

	M	*SD*	*Skew.*	*Kurt.*
I feel nervous.	1.3	0.84	0.08	-0.59
I find myself thinking unrelated thoughts.	1.2	0.92	0.47	-0.52
I have self-doubts.	1.2	0.93	0.42	-0.63
My body feels tense.	1.1	0.88	0.53	-0.32
I am concerned that I may not do as well in competition as I could.	1.7	1.06	-0.13	-1.24
My mind wanders during sport competition.	0.8	0.84	0.94	0.34
While performing, I often do not pay attention to what's going on.	0.5	0.80	1.63	2.15
I feel tense in my stomach	0.8	0.89	0.96	0.03
Thoughts of doing poorly interfere with my concentration during competition.	0.9	0.86	0.69	-0.13
I am concerned about choking under pressure.	0.9	0.91	0.67	-0.40
My heart races.	1.1	0.90	0.38	-0.71
I feel my stomach sinking.	0.6	0.81	1.12	0.53
I'm concerned about performing poorly.	1.5	1.04	0.14	-1.13
I have lapses in concentration because of nervousness.	0.8	0.86	0.94	0.12
I sometimes find myself trembling before or during a competitive event.	0.6	0.82	1.31	0.82
I'm worried about reaching my goals.	1.4	0.98	0.19	-0.95
My body feels tight.	0.9	0.90	0.71	-0.24
I'm concerned that others will be disappointed with my performances.	1.6	0.99	-0.05	-1.07
My stomach gets upset before or during competition.	0.6	0.86	1.35	1.12
I'm concerned I won't be able to concentrate.	0.6	0.81	1.43	1.52
My heart pounds before competition.	0.9	0.90	0.78	-0.20
SUBSCALES				
Somatic anxiety	7.9	5.66	0.82	0.51
Worry	9.2	5.21	0.24	-0.86
Concentration disruption	3.9	2.97	0.99	0.60
Total Anxiety	21.00	11.58	0.70	0.13

Note: Items can range from 0 = 'Not at all' to 3 = 'Very much so' with higher scores indicating greater levels of athlete anxiety

Table 2: Descriptive Statistics of Coaching Behaviour Scale for Sport (CBS-S)

	M	*SD*	*Skew.*	*Kurt.*
My coach provides me with a physical conditioning program in which i am confident.	4.6	1.74	-0.15	-1.06
My coach provides me with a physically challenging conditioning program.	4.7	1.70	-0.23	-1.01
My coach provides me with a detailed physical conditioning program.	4.6	1.84	-0.23	-1.17
My coach provides me with a plan for my physical preparation.	4.5	1.83	-0.14	-1.19
My coach ensures that training facilities and equipment are organized.	4.8	1.76	-0.36	-1.03
My coach provides me with structured training sessions.	4.9	1.77	-0.54	-0.78
My coach provides me with an annual training program.	5.1	1.81	-0.81	-0.41
My coach provides me with advice while i'm performing a skill.	4.7	1.78	-0.22	-1.22
My coach gives me specific feedback for correcting technical errors.	4.7	1.88	-0.38	-1.14
My coach gives me reinforcement about correct technique.	4.3	1.87	-0.06	-1.30
My coach provides me with feedback that helps me improve my technique.	4.5	1.90	-0.17	-1.29
My coach provides visual examples to show how a skill should be done.	4.6	1.90	-0.37	-1.04
My coach uses verbal examples that describe how a skill should be done.	5.0	1.67	-0.44	-0.94
My coach makes sure I understand the techniques and strategies i'm being taught.	4.5	1.72	-0.21	-1.07
My coach provides me with immediate feedback.	4.2	1.82	-0.03	-1.18
My coach provides advice on how to perform under pressure.	3.5	1.82	0.26	-1.06
My coach provides advice on how to be mentally tough.	4.0	1.99	0.09	-1.36
My coach provides advice on how to stay confident about my abilities.	3.6	1.93	0.33	-1.02
My coach provides advice on how to stay positive about myself.	3.6	1.85	0.32	-0.88
My coach provides advice on how to stay focused	3.9	1.70	0.23	-0.87
My coach helps me identify strategies to achieve my goals.	3.9	1.74	0.10	-0.99
My coach monitors my progress towards my goals.	3.7	1.68	0.22	-0.99
My coach helps me set short-term goals.	3.7	1.78	0.24	-0.97
My coach helps me identify target dates for attaining my goals.	3.1	1.71	0.49	-0.86
My coach helps me set long-term goals.	3.9	1.89	0.03	-1.13
My coach provides support to attain my goals.	4.0	1.78	0.02	-1.05
My coach helps me focus on the process of performing well.	4.0	1.67	0.08	-0.94
My coach prepares me to face a variety of situations in competition.	4.5	1.70	-0.22	-0.97

Table 2: Descriptive Statistics of Coaching Behaviour Scale for Sport (CBS-S) continued

	M	*SD*	*Skew.*	*Kurt.*
My coach keeps me focused in competitions.	4.2	1.77	-0.04	-1.16
My coach has a consistent routine at competition.	5.2	1.70	-0.76	-0.29
My coach deals with problems I may experience at competitions.	4.4	1.73	-0.16	-0.88
My coach shows confidence in my ability during competitions.	4.2	1.89	0.02	-1.20
My coach ensures that facilities and equipment are organized for competition.	5.1	1.73	-0.72	-0.39
My coach shows understanding for me as a person.	4.4	2.06	-0.15	-1.29
My coach is a good listener.	4.1	2.04	-0.01	-1.26
My coach is easily approachable about personal problems that I might have.	3.9	2.18	0.19	-1.36
My coach demonstrates concern for my whole self (i.e., other parts of my life than sport)	4.5	2.05	-0.29	-1.25
My coach is trustworthy with my personal problems.	4.5	2.12	-0.26	-1.35
My coach maintains confidentiality regarding my personal life.	5.1	1.95	-0.73	-0.78
My coach uses fear in his/her coaching methods.	3.7	1.84	0.26	-1.04
My coach yells at me when angry.	4.7	1.85	-0.27	-1.25
My coach disregards my opinion.	3.1	1.65	0.64	-0.38
My coach shows favouritism towards others.	4.0	2.01	0.13	-1.31
My coach intimidates me physically.	1.7	1.12	1.83	3.13
My coach uses power to manipulate me.	2.4	1.71	1.32	0.93
My coach makes personal comments to me that i find upsetting.	2.4	1.62	1.22	0.69
My coach spends more time coaching the best athletes.	2.9	1.91	0.90	-0.29
SUBSCALES				
Physical training and planning	4.7	1.39	-0.19	-0.92
Technical skills	4.6	1.57	-0.24	-1.07
Mental preparation	3.7	1.63	0.24	-0.74
Competition strategies	5.3	1.62	-0.21	-0.76
Personal rapport	4.4	1.82	-0.18	-1.18
Negative personal rapport	3.1	1.14	0.69	0.03
Goal setting	3.7	1.63	0.24	-1.05

Note: Items can range from 0 = 'Never' to 7 = 'Always' with higher scores indicating greater levels of athlete perceived coaching behaviours

Table 3: Correlations between demographic, anxiety, and coaching behaviour variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Demographic Variables														
1. Gender														
2. Eligibility year	-.06													
3. Playing time	-.10	-.45*												
4. Age	.13	.75**	-.36**											
Anxiety Variables														
5. Somatic Anxiety	-.90	-.32**	.21*	-.26**										
6. Worry	-.20*	-.28**	.34**	-.22**	.61**									
7. Concentration Disruption	-.03	-.11	.15	-.06	.40**	.58**								
8. Total Anxiety	-.15	-.30**	.34**	-.25	.86**	.89**	.70**							
Coaching Behaviour Variables														
9. Physical Training	-.14	-.02	-.90	.04	-.18*	-.19*	-.26**	-.25**						
10. Technical Skills	-.04	-.04	-.01	-.07	.02	-.10	-.09	-.08	.55**					
11. Mental Preparation	-.05	-.05	-.18*	-.07	.02	-.11	-.09	-.06	.40**	.65**				
12. Goal Setting	-.02	.02	-.12	-.07	-.01	-.11	-.11	-.09	.51**	.70**	.71**			
13. Competition Strategies	-.07	-.07	-.15	-.04	-.02	-.16	-.23**	-.14	.57**	.78**	.75**	.74**		
14. Personal Rapport	-.21*	-.05	-.05	-.06	.88	-.04	-.06	.01	.39**	.71**	.64**	.62**	.72**	
15. Negative Personal Rapport	.16	-.01	-.03	-.04	-.08	.03	.06	-.01	-.32**	-.33**	-.25**	-.21**	-.30**	-.50**

*** $p \leq .001$, ** $p \leq .01$, * $p \leq .05$

Table 4: Hierarchical regression analysis of athlete anxiety (total anxiety) and athletes' perceived coaching behaviours after controlling for socio-demographic variables

Variable	β	F	df	R^2	$R^2\Delta$
Step 1		5.14**	3, 127	.108	.108
Gender[a]	-.122				
Eligibility Year[b]	-.255**				
Playing Time[c]	.088				
Step 2		2.81**	10, 120	.190	.081
Physical Training[d]	-.216				
Technical skills[d]	-.054				
Mental Preparation[d]	-.031				
Goal Setting[d]	.004				
Competition Strategies[d]	-.140				
Personal Rapport[d]	.218				
Negative Personal Rapport[d]	.025				

Note: Beta weights (and their significance) are taken from the final step of each model. F values (and their significance) are for the entire model, inclusive of previous steps.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

[a] 1 = male, 0 = female

[b] Years of eligibility can range from 1 to 5

[c] 1 = come off the bench, 0 = start

[d] Mean values can range from 0 to 7 with higher scores indicating greater levels of perceived coaching behaviours

Table 5: Hierarchical regression analysis of athlete anxiety (somatic anxiety) and athletes' perceived coaching behaviours after controlling for socio-demographic variables

Variable	β	F	df	R^2	$R^2\Delta$
Step 1		5.40**	3, 129	.111	.111
Gender[a]	-.083				
Eligibility Year[b]	-.305**				
Playing Time[c]	.040				
Step 2		2.56**	10, 122	.174	.062
Physical Training[d]	-.216*				
Technical skills[d]	-.029				
Mental Preparation[d]	-.102				
Goal Setting[d]	-.036				
Competition Strategies[d]	.040				
Personal Rapport[d]	.229				
Negative Personal Rapport[d]	-.021				

Note: Beta Weights (and their significance) are taken from the final step of each model. F values (and their significance) are for the entire model, inclusive of previous steps.

*p ≤ .05. **p ≤ .01 ***p ≤.001.

[a] 1 = male, 0 = female

[b] Years of eligibility can range from 1 to 5

[c] 1 = come off the bench, 0 = start

[d] Mean values can range from 0 to 7 with higher scores indicating greater levels of perceived coaching behaviours

Table 6: Hierarchical regression analysis of athlete anxiety (concentration disruption) and athletes' perceived coaching behaviour after controlling for socio-demographic variables

Variable	β	F	df	R^2	$R^2\Delta$
Step 1		.825	3, 129	.019	.019
Gender[a]	-.028				
Eligibility Year[b]	-.015				
Playing Time[c]	.124				
Step 2		1.789	10, 122	.128	.109
Physical Training[d]	-.202				
Technical skills[d]	.084				
Mental Preparation[d]	.041				
Goal Setting[d]	.054				
Competition Strategies[d]	-.394*				
Personal Rapport[d]	.196				
Negative Personal Rapport[d]	.055				

Note: Beta weights (and their significance) are taken from the final step of each model. F values (and their significance) are for the entire model, inclusive of previous steps.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

[a] 1 = male, 0 = female

[b] Years of eligibility can range from 1 to 5

[c] 1 = come off the bench, 0 = start

[d] Mean values can range from 0 to 7 with higher scores indicating greater levels of perceived coaching behaviours

Table 7: Hierarchical regression analysis of athlete anxiety (worry) and athletes' perceived coaching behaviour after controlling for socio-demographic variables

Variable	β	F	df	R^2	$R^2\Delta$
Step 1		5.31**	3, 129	.110	.110
Gender[a]	-.161				
Eligibility Year[b]	-.228*				
Playing Time[c]	.098				
Step 2		2.39**	10, 122	.164	.054
Physical Training[d]	-.105				
Technical skills[d]	-.087				
Mental Preparation[d]	-.005				
Goal Setting[d]	-.025				
Competition Strategies[d]	-.122				
Personal Rapport[d]	.131				
Negative Personal Rapport[d]	.052				

Note: Beta weights (and their significance) are taken from the final step of each model. F values (and their significance) are for the entire model, inclusive of previous steps.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

[a] 1 = male, 0 = female

[b] Years of eligibility can range from 1 to 5

[c] 1 = come off the bench, 0 = start

[d] Mean values can range from 0 to 7 with higher scores indicating greater levels of perceived coaching behaviours

CHAPTER V: DISCUSSION

Introduction

This study investigated the relationship between athlete perceived coaching behaviours and athlete anxiety among varsity basketball players. It has been established that coaches play a significant role in influencing anxiety levels within their athletes (Baker, 2000; Glenn, Horn, Campbell, & Burton, 2003; Gould, Horn, & Spreeman, 1983). Research has found a correlation between athlete anxiety and negatively perceived coaching behaviours within a variety of sports (Baker, Cote, & Hawes, 2000; Kenow & Williams, 1992, 1997, 1999; Lewthwaite & Scanlan, 1989; Passer, 1983).

The preceding chapters presented an overview of sport performance anxiety, coaching behaviours and its relationship to athlete anxiety as reviewed in the literature; described the purpose and methodology of the current study; and presented the statistical results of this investigation. The following chapter will discuss the findings with regards to the relationship between perceived coaching behaviours and athlete anxiety among female and male varsity basketball athletes. Specifically, the purpose of this current study was to cross-validate Baker, Cote, and Hawes' (2000) findings in a sport-specific setting. Particular emphasis will be placed on answering the research question: *Does a relationship exist between university basketball players' perceived frequency of seven coaching behaviours (physical training, mental preparation, goal-setting, technical skills, competition strategies, personal rapport and negative personal rapport) and four forms of sport anxiety (total anxiety, somatic anxiety, concentration disruption, and worry)*?

The chapter begins by summarizing and comparing the study's findings to that of Baker, Cote, and Hawes investigation. This will be followed by a general discussion of the knowledge gained from this study, provide future recommendation, and a conclusion.

Cross-Validation Findings

One of the purposes of this study was to cross-validate Baker, Cote, and Hawes' (2000) findings within a sport specific setting. Baker et al. examined the relationships between coaching behaviours and athlete anxiety among both individual (i.e., badminton, athletics, figure skating, and swimming) and team sports (i.e., baseball, basketball, football, ice hockey, rowing, rugby, softball, soccer, triathlon, volleyball, and water polo). Since team and individual sports may characteristically differ, the relationship between coaching behaviours and athlete anxiety may not generalize across different sport contexts. Thus, this current study examined if a relationship existed between perceived coaching behaviours and athlete anxiety in varsity *basketball* athletes while using the same instruments and methodology as Baker, Cote and Hawes.

The results of the stepwise multiple regression analysis in the current study did not reveal many significant findings between perceived coaching behaviours and athlete anxiety. Similar to Baker, Cote, and Hawes' (2000) findings, two forms of coaching behaviours were significantly associated with player anxiety in the current investigation. The present study found a negative significant relationship between perceived physical training and somatic anxiety. In addition, significance was approached between perceived physical training and total anxiety. The study also revealed a significant negative relationship between perceived competition strategy preparation and

concentration disruption. Although Baker et al. did not reveal a significant relationship between physical training and anxiety; similarly, they found a negative significant relationship between competition strategies and anxiety. The results from this study and Baker et al's investigation suggest that as athletes' anxiety increases, their perceptions of their coaches' physical and strategic preparations may decrease, suggesting they view their coaches as not fully preparing them for competition.

Like the present study's findings, Baker, Cote, and Hawes' (2000) investigation found two coaching behaviours to be better predictors of sport anxiety than others. Their strongest relationship, however, was found between negative personal rapport behaviours and all four forms of anxiety (total anxiety, somatic anxiety, concentration disruption, and worry). The current study, however, did not reveal a significant relationship between negative personal rapport and anxiety. Also significant in their study were the relationships between competition strategy behaviours and total anxiety, concentration disruption, and worry. These anxiety variables were all found to increase as competition strategies displayed by the coach decreased (Baker, Cote, & Haws, 2000). The current investigation solely found a similar significant association between competition strategies and concentration disruption. The practical applications of the current study's findings and Baker et al's results suggest that coaches should be wary of the behaviours they exhibit toward their athletes, as well as ensuring their players are physically and strategically prepared for competition.

As mentioned, two forms of coaching behaviours (physical training & competition strategies) in the current study were significantly associated with anxiety. This finding furthers Smith, Smoll, and Weichman's (1998) model of sport anxiety to include external

factors (coaches influence) on athletes' *cognitive appraisal* of the competitive situation. Athlete who reported a perceived lack of physical training and competition strategies by their coach in the current study also reported higher amounts of anxiety. With regards to the model, the perceived lack of physical training and competition strategies may have induced a *negative consequence* of poor performance, leading to the athlete feeling *anxious*.

This finding is consistent with previous literature indicating that anxiety is associated with perceived physical readiness (Hanton & Jones, 1995, 1997; Jones, Swain, & Cole, 1990; Lane, Terry, & Karageorghis, 1995a). Early research in this area revealed that antecedents of anxiety in elite varsity distant runners were factors associated with perceived readiness (Jones, Swain, & Cole, 1990). Hanton and Jones, and Lane et al. further established more support for the importance of perceived physical readiness on athlete anxiety. In Hanton and Jones' (1997) study, stepwise multiple regression analysis revealed once again that cognitive anxiety was significantly related to perceived readiness in competitive swimmers. The current study provided similar results to these previous studies regarding the association between perceived readiness and anxiety.

Comparisons cannot be made between the current results and those of Baker, Cote, and Hawes (2000) in terms of the relationships between socio-demographic variables and player anxiety as they did not discuss these results. In the current study, eligibility year was significantly related to the various forms of anxiety. Specifically, eligibility year was significantly negatively associated with somatic anxiety, worry, and total anxiety. This finding has been supported in previous research on experience level and anxiety which has found negative relationships between experience level (primarily

operationalized as age), skill level, and sport performance anxiety (Campbell & Jones, 1997; Hanton & Swain, 1994; Hanton, Thomas, & Maynard, 2004; Krane & Williams, 1987, 1994).

Generally, the higher the skill level required for competition, the older the athlete. Researchers have documented that athletes who are higher in skill level can experience lower levels of anxiety (Martens, Burton, Verley, Bump, & Smith, 1990), and interpret their symptoms as more facilitative (Campbell & Jones, 1997; Hanton & Swain, 1994) perhaps due to more successful experiences (Mahoney, Gabriel, & Perkins, 1987). For example, Martens and his colleagues (1990) investigated anxiety in collegiate athletes, high school athletes, and national sport festival competitors. Overall, the high school athletes displayed higher cognitive and somatic anxiety than the national sport festival athletes. Krane and Williams (1987) suggested that differences in anxiety between the high school and college athletes may have resulted from the fewer experiences high school athletes have encountered. This may consequently lead to being less capable of controlling negative thoughts than the more experienced, college athletes. Consistent with Martens et al.'s (1990) findings, Krane and Williams (1994) also found that the more experienced college athletes displayed lower cognitive and somatic anxiety than the high school athletes. In a more recent study, it was hypothesized that national level athletes would experience lower intensities of cognitive and somatic anxiety than club level athletes (Hanton, Thomas, Maynard, 2004). Furthermore, it was hypothesized that national level athletes would interpret anxiety symptoms more facilitative then the club level athletes. The findings supported the notion that higher skill performers interpret the symptoms associated with competitive anxiety as more facilitative towards performance.

Collectively, these studies demonstrated the relationship between athlete anxiety, skill level and age. These studies supported the finding that there was a significant relationship between eligibility year and athlete anxiety, and also supported why the current studies total anxiety scores were smaller than Baker, Cote, and Hawes' (2000).

Discussion

In terms of total anxiety scores, this study derived a lower mean value of 21.0 for total anxiety as opposed to the higher mean value of 39.6 displayed in Baker, Cote, and Hawes (2000) study. Many potential factors could be influencing the differences in total anxiety scores and explain why the current study found minimal relationships between perceived coaching behaviours and athlete anxiety. As previously discussed, research has found that the greater the experience of athletes the lesser their feelings of anxiety--college and national level athletes as opposed to high school and club level players (Hanton, Thomas, & Maynard, 2004; Krane & Williams, 1997). These studies would support why the current investigation found a lower mean value for total anxiety compared to Baker, Cote and Hawes' study. Their study utilized both varsity athletes and regional lower level competitors, compared to the current study which focused solely on varsity athletes with greater competition experience. Additionally, the mean age for Baker's study was 18.3 years compared to the mean age of 21 years in the current investigation. Experience, in terms of actual competition experience and experience with age, may explain the differences in total anxiety between this study and that of Baker et al's findings.

Characteristically, team and individual sports may differ quite substantially. The difference in athletes' perception of certain situations may be a direct reflection of team size. According to Widmeyer, Brawley, and Carron (1990), the larger the team, the less those athletes assume responsibility and personal accountability. Athletes on larger teams also have been found to expend less effort, and increase their tendency to blame others for failure. This may provide an additional reason why the current study did not find significant relationships between perceived coaching behaviours and performance anxiety. Since basketball is a team based sport, with approximately 12-15 players per team, the majority of the athletes may have not felt the pressure, stress, or responsibility compared to the individual sport athletes in Baker et al.'s (2000) study. Researchers have investigated the effects of team and individual based sports on performance anxiety (Griffin, 1972; Simons & Martens, 1979; Wong, Lox, & Clark, 1993). Early research by Griffin (1972) indirectly compared the anxiety levels of individual-sport and team-sport participants. The four sports eliciting the highest levels of anxiety were gymnastics, swimming, tennis, and track and field; all individual sports. The other four sports were team based and comprised of basketball, field hockey, softball, and volleyball. Simons and Marten's (1979) study supported Griffin's results by finding that individual sport participants had significantly higher states of anxiety in contrast to the team-sport participants. Results from both studies determined that athletes who competed in individual based sports had significantly higher levels of anxiety as opposed to the team sport athletes.

Wong, Lox, and Clark, (1993) found parallel results in a similar study examining differences between team-sport and individual-sport athletes on competitive anxiety. The

participants competed in basketball, baseball, track, karate, tennis or volleyball. As hypothesized, team-sport athletes reported lower mean anxiety scores than did the individual-sport athletes. This trend for individuals to possess higher levels of anxiety is most likely the result of greater evaluation potential when competing alone, as well as not being able to attribute mistakes to others (Marten, 1977). Collectively, these findings reinforce Endler's (1981) theory that specific environments, such as individual based versus team based environment, may produce distinctive affects upon the individuals in that environment. Regardless of individual or team based sports, many elite athletes knowingly or not, possess coping skills which enables them to deal with the adversity and anxiety of competition. This may be a further reason explaining why the current study participants had minimal levels of anxiety.

Substantial research has indicated that anxiety can be at a minimum when coping interventions are utilized (Elko & Ostrow, 1991; Haney, 2004; Kerr & Leith, 1993; Meyers, Schleser, & Okwumabua, 1982; Savoy, 1993; Savoy & Beitel, 1997). As Orlick (1986) stated, the mental ability of elite athletes to control anxiety is a decisive factor separating good from bad performances. Participants in this current study were elite athletes and may have been exposed to mental training programs, contributing to the findings of lesser feelings of anxiety. For example, Savoy (1993) examined a prescribed collaborative mental training program to an athlete on a NCAA Division 1 basketball team. Results determined that both athlete and coach recognized the improvement in performance, increase in self-confidence, and specifically, a decrease in pre-game anxiety. In a follow-up study, Savoy and Beitel (1997) investigated the effects of a group and group/individualized mental training program on pre-game anxiety among NCAA

Division one female athletes. The results indicated a steady decline in cognitive and somatic anxiety for athletes, both in the group and group/individualized programs. More recently, Haney (2004) evaluated the effectiveness of a cognitive and relaxation intervention for stressed athletes. Once again, the intervention proved to be successful in significantly reducing anxiety, as well as increasing self-efficacy. Based on these studies, one could surmise that some of these AUS athletes may have been exposed to mental training.

An additional factor why the varsity basketball athletes showed minimal significant findings may have to do with situation criticality, referring to how important a particular situation is. Early research suggested that anxiety studies should consider situational factors within the sport environment pertaining to measures of anxiety (Fisher & Zwart, 1982). The entire sample in the current study completed the Sport Anxiety Scale (SAS) and Coaching Behaviour Scale for Sport (CBS-S) during the regular season, a time in which athletic pressure may be relatively low, compared to playoffs. Perhaps if the sample completed the questionnaire during a situation in which high performance was critical, such as the playoffs, anxiety measures may have been higher. An early study by Lowe (1973) examined the relationship between situation criticality and physiological arousal with little league baseball players. Lowe found that athletes' heart rate (somatic anxiety) was correlated with situation criticality. A later study investigated anxiety and performance as related to athletes' trait anxiety and situation criticality among 11 NCAA Division one softball players (Krane, Joyce, & Rafeld, 1994). As hypothesized, cognitive and somatic anxiety was triggered by greater perceived threat or importance of situation. In congruence with multidimensional theory, an increase in perceived demand increases

cognitive anxiety. With regards to the current investigation, the athletes may not have perceived high demands at the time of data collection, which occurred at various time during the regular season. Consequently, this could have impacted their level of performance anxiety at the specific time.

Recommendations for Future Research Studies

The study conducted by Baker, Cote, and Hawes (2000) noted future recommendation in their discussion. This investigation pursued their recommendations of examining the relationship between athlete perceived coaching behaviour and athlete anxiety within a *single sport*, as opposed to their multi-sport sample base. Following are further recommendation for future studies in the area of anxiety and coaching behaviours.

This study, similar to the majority of the studies examining the relationship between athlete perceived coaching behaviours and athlete anxiety, employed a quantitative methodology. Although this method was appropriate for assessing this relationship, a qualitative methodology may offer valuable information. Exploring the relationship between athlete anxiety and perceived coaching behaviours through a qualitative methodology could potentially provide in-depth knowledge and rich insight. A qualitative methodology may have also provided insight into other coaching behaviours that were not incorporated in the Coaching Behaviour Scale for Sport (CBS-S) such as swearing during practice or displaying negative body language. Questionnaire based responses often tend to not reveal emotions from the participants, thus a qualitative

approach may have given the researcher further insight into the true feelings of the athletes.

A qualitative methodology may also investigate coaches' attitudes and beliefs on this issue, and not focus solely on the athletes' cognitions. Relationship research in sport psychology has stressed the importance of thinking dyadically as opposed to uni-directionally (Wylleman, DeKnop, Sloore, Vanden Auweele, & Ewing, 2003). Future studies should examine how influential each person is on the other. Jowett (2005) stated that a relationship does not reside in the individual, but is a process and product shared amongst two individuals. Thus, research that implements data from both sides of the coach-athlete spectrum may be more convincing in generating knowledge and understanding the sources of anxiety.

This study attempted to examine the relationship between athlete anxiety and perceived coaching behaviours in Atlantic University Sport (AUS) male and female athletes. For results to be generalized to the broader population, future studies should also investigate this topic among the other three conferences within the nation (Canada West, Ontario University Athletics, Quebec Student Sport Federation). Data could consequently be compared to determine if differences exist in athlete anxiety between conferences.

It is recommended that future studies examining this topic further explore other sports to see if results vary between sports. Baker, Cote, and Hawes' (2000) study examined the relationship between athlete anxiety and coaching behaviours within 15 different sports. The present study examined the same relationship among varsity basketball players. Using the same instruments as this study, researchers should also

individually investigate other sports (e.g., volleyball, tennis, football, swimming). Furthermore, researchers should compare individual versus team-based sports at both the high school and college level to determine the difference in the relationship between athlete anxiety and perceived coaching behaviours. Future studies should also examine this relationship pertaining to the coach's gender to determine if this has an effect on athlete anxiety and perceived coaching behaviours. Coaching experience and training should also be another variable to be examined since younger, more inexperienced coaches, may evoke anxiety within their players in contrast to older, more experienced coaches. Individual differences between athletes (e.g., gender) may influence perceived anxiety and should be explored in future studies.

Athletes' feelings of anxiety, as well as their perceptions of coaching behaviours, may very well fluctuate during the course of a competitive season. Since data collection depended on the coaching staff's convenience, the current investigation collected data at various times throughout the season, potentially affecting results based on, for example, league standings, importance of games, or changes in attitudes and beliefs. The Sport Anxiety Scale (SAS), for example, measures trait anxiety prior to competition. Since numerous teams completed the questionnaire following competition, athletes' responses may not have reflected their actual state anxiety prior to competition. For this reason, it is recommended that future research collect data during the same time (pre-game), same location (home or away) as well as during the same time in season (early season/mid season/late season). By following this methodology, data may be more consistent and valid, giving the research more insight into the relationship between athlete anxiety and perceived coaching behaviours.

Conclusion

Through extensive research, anxiety has been shown to be facilitative, but more so debilitative with regards to athletic performance. One of the antecedents of athlete anxiety, however, is the coach that is involved in the sport. The majority of the research pertaining to the relationship between athlete anxiety and perceived coaching behaviours has revealed that coaches play a crucial role in evoking player anxiety within their players. The present study; however, found minimal significance with regards to the relationship between athlete anxiety and perceived coaching behaviours. Various factors, postulated above, provide reasons why this study's sample of athletes did not possess high anxiety levels. These factors include their skill level (varsity), type of sport (individual vs. team), and potentially learned coping mechanisms.

The findings of the present study have practical significance and social relevance. The only significant relationships, though quite minimal, were found between perceived physical training and somatic anxiety, as well as perceived competition strategies and concentration disruption. The results suggest that anxious athlete's perceive their coach as not preparing them in a physical and tactical manner. In order to limit higher anxiety levels, coaches can utilize this information by ensuring that their players are physically fit and ready for competition. One of the postulated reasons as to why this study lacked significant findings was due to the type of sports utilized in this investigation and Baker, Cote, and Hawes' (2000) study. Since research has shown that significant relationships exist between athlete anxiety and perceived coaching in individual sport athletes more so than team sport athletes, coaches of individual-based sports should be more cautious of

their practice and game behaviours. Team sport coaches, as well as individual sport coaches, may further utilize coping mechanisms, such as mental training programs, to moderate athlete anxiety.

Future studies should further examine this relationship within other single sports (volleyball, tennis, football, swimming) and levels (high school versus college) to determine if athlete anxiety and perceived coaching behaviours differ from sport to sport and skill level. Additionally, future studies should consider using a qualitative approach, examining the gender and training experience of the coach, examining individual differences between athletes, and employ strict methodological procedures to collect data. By following up on these recommendations, further research would hopefully reveal in what exact ways coaching behaviours evoke athlete anxiety. After all, athletics is deemed to be full of excitement and enjoyment. Limiting high levels of athlete anxiety would be a step in the right direction for this gratification to occur.

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APPENDIX 1: LETTER TO DIRECTORS AND COACHES

School of Human Kinetics & Recreation

Dear directors and coaches,

I, George Mammen, am a graduate student from the School of Human Kinetics and Recreation at Memorial University of Newfoundland. I am attempting to conduct a study to determine what specific coaching behaviours induce performance anxiety in university basketball players. Currently, I am the new assistant coach for the Memorial University women's basketball program. Due to the coaching position, AUS basketball coaches may feel obliged to encourage their teams to participate in this study as a professional favor. However, I would like to emphasize that participation is completely voluntary and that the sole purpose of this study is to further research in the coach-athlete spectrum. Furthermore, I also want to clearly state that data is confidential and anonymous and that the information will not be used as a strategic way to prepare for competitions, and only for the purpose in which it is intended.

I am hoping to draw data from fifteen Atlantic University Sport basketball teams (seven female, eight male) and am seeking your assistance. Data collection will commence in the beginning of November when the AUS basketball season officially begins. Out of the 15 varsity basketball programs, 12 will visit Newfoundland to play the Memorial Sea-Hawks. During a convenient time for both players and coaches, I am asking to gather data either at the hotel where the teams are staying, or at a pre-determined room in the Physical Education building at Memorial. The site and time of the study will be totally dependent on the coaching staff. If the coach and players feel uneasy about an opposing coach collecting the data, a research assistant can be available if they wish. Once the study is thoroughly explained to the athletes and coaches,

with the consent forms provided, the athletes will be asked to complete a questionnaire, consisting of a) background information b) Profile of Mood States (POMS) c) Sport Anxiety Scale (SAS) d) Coaching Behaviour Scale for Sport. Filling out these scales will take approximately 30 minutes or less. Since four teams will not come to Newfoundland to compete (UPEI and DAL), the researcher or research assistant (as requested by coaches) will travel to these AUS teams to collect data. The same experimental procedure will follow for these four remaining teams (2 female and 2 male teams). In the event in which data cannot be obtained at Memorial due to various reasons, such as weather or timing issues, I will attempt to arrange a convenient time for those teams when Memorial travels to compete against them. It is hoped that participants can benefit by gaining knowledge pertaining to coaching behaviours and player anxiety.

I am aware of the hectic schedule that accompanies traveling for competition, however I would like to emphasize again that the time and location of data collection is totally dependent on the coaching staff. A follow up phone call to the coaches will occur by myself in approximately one week to clarify any questions regarding the study. If the coaches agree to partake in the study, another phone call will be made for data collection arrangements. The coaching association of Canada has a renewed interest and greater financial support for coaching research within Canada. We would greatly appreciate your help in achieving further coaching research within our country. If you have any questions regarding this study, please feel free to contact the researcher, George Mammen, at gm999@hotmail.com or at 709-738-1984. Once again, we would greatly appreciate your participation in this study; however, participation is completely voluntary. Thank you for your time.

Sincerely,

George Mammen

APPENDIX 2: INFORMATION SHEET

MEMORIAL UNIVERSITY
School of Human Kinetics & Recreation

Information Sheet

Thank you for taking time to read this form which explains the study "A study to examine relationship between coaching behaviours and sport anxiety in varsity basketball athletes." The researcher is asking university basketball players to complete a survey which will help coaches and athletes learn more about certain coaching behaviors, and how they specifically alter player anxiety. If you volunteer to partake in this study, you will be asked to complete a paper survey which will take no longer than 30 minutes of your time. For each question there are no correct or incorrect responses. The researcher is simply interested in the relationship between coaching behaviors and athlete anxiety, specifically within basketball players.

There are no risks associated with this study. If you require help completing the survey, such as having someone read the questions to you or help you respond to the questions, please feel free to ask either the researcher or research assistant. Your confidentiality is ensured even if you require help.

The results of your participation will be completely confidential. The only individuals that will have access to the data are the three supervisors of the study, and the possible research assistant. No information about you, or provided by you during the study will be shared with anyone else. All data will be kept in confidence at the School of Human Kinetics and Recreation at Memorial University. In case of challenges to the results of the study, data will be retained by the experimenters for up to five years after the conclusion of the study. No individual data will be reported, and only aggregate data with summaries will be available if the study is deemed publishable.

Your participation in this study is voluntary. You can leave the study at any time and stop taking part without giving any reason and without any penalty. You can ask to have all the information about yourself returned to you, removed from the research records, or destroyed. You may also refuse any questions in which you do not want to answer. The proposal for this research has been approved by the Interdisciplinary Committee on Ethics in Human Research at Memorial University. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at (709) 737-8368.

If you have any further questions please contact the researcher, George Mammen, at (709) 690-7390 or gm999@hotmail.com. You may also contact the head supervisor, Dr. Basil Kavanagh, at 709-737-8676 or basilk@mun.ca if you have any other questions.

By completing this questionnaire package you are giving consent to take part in this study, however you may stop at any point in time. It also tells the researcher that you have understood the nature of the study and received satisfactory answers to your questions.

APPENDIX 3: QUESTIONNAIRE

MEMORIAL UNIVERSITY
School of Human Kinetics & Recreation

A study to examine the relationship between coaching behaviours and player anxiety in varsity basketball players.

QUESTIONNAIRE

Thank you for taking the time to complete this survey. We want to analyze the relationships between certain coaching behaviours and player anxiety. There are no right or wrong answers to any of the following items. Please respond to the best of your ability, indicating how you feel about the particular topic. Please be open and honest in your responding.

YOUR MOOD

We are interested in measuring your affect or mood so far during this basketball season. Using the scale below, please indicate to what extent each of the following items are true for you *(1= 'Not at all', 5= 'Extremely')*. The information you provide will remain confidential and anonymous.

FEELING	*Not at all*	*A little*	*Moderately*	*Quite a bit*	*Extremely*
Friendly	1	2	3	4	5
Tense	1	2	3	4	5
Angry	1	2	3	4	5
Worn out	1	2	3	4	5
Unhappy	1	2	3	4	5
Clear-headed	1	2	3	4	5
Lively	1	2	3	4	5
Confused	1	2	3	4	5
Sorry for things done	1	2	3	4	5
Shaky	1	2	3	4	5

FEELING	*Not at all*	*A Little*	*Moderately*	*Quite a bit*	*Extremely*
Listless	1	2	3	4	5
Peeved	1	2	3	4	5
Considerate	1	2	3	4	5
Sad	1	2	3	4	5
Active	1	2	3	4	5
On Edge	1	2	3	4	5
Grouchy	1	2	3	4	5
Blue	1	2	3	4	5
Energetic	1	2	3	4	5
Panicky	1	2	3	4	5
Hopeless	1	2	3	4	5
Relaxed	1	2	3	4	5
Unworthy	1	2	3	4	5
Spiteful	1	2	3	4	5
Sympathetic	1	2	3	4	5
Uneasy	1	2	3	4	5
Restless	1	2	3	4	5

FEELING	*Not at all*	*A Little*	*Moderately*	*Quite a bit*	*Extremely*
Unable to concentrate	1	2	3	4	5
Fatigued	1	2	3	4	5
Helpful	1	2	3	4	5
Annoyed	1	2	3	4	5
Discouraged	1	2	3	4	5
Resentful	1	2	3	4	5
Nervous	1	2	3	4	5
Lonely	1	2	3	4	5
Miserable	1	2	3	4	5
Muddled	1	2	3	4	5
Cheerful	1	2	3	4	5
Bitter	1	2	3	4	5
Exhausted	1	2	3	4	5
Anxious	1	2	3	4	5
Ready to fight	1	2	3	4	5
Good-natured	1	2	3	4	5
Gloomy	1	2	3	4	5

FEELING	*Not at All*	*A Little*	*Moderately*	*Quite a bit*	*Extremely*
Desperate	1	2	3	4	5
Sluggish	1	2	3	4	5
Rebellious	1	2	3	4	5
Helpless	1	2	3	4	5
Weary	1	2	3	4	5
Bewildered	1	2	3	4	5
Alert	1	2	3	4	5
Deceived	1	2	3	4	5
Furious	1	2	3	4	5
Effacious	1	2	3	4	5
Trusting	1	2	3	4	5
Full of pep	1	2	3	4	5
Bad-tempered	1	2	3	4	5
Worthless	1	2	3	4	5
Forgetful	1	2	3	4	5
Carefree	1	2	3	4	5
Terrified	1	2	3	4	5

FEELING	*Not at all*	*A Little*	*Moderately*	*Quite a bit*	*Extremely*
Guilty	1	2	3	4	5
Vigorous	1	2	3	4	5
Uncertain about things	1	2	3	4	5
Bushed	1	2	3	4	5

SPORT ANXIETY

The following items reflect anxiety prior to competitions this season. Using the scale below, please indicate to what extent each of the following items are true for you (0=Not at all, 3= 'Very much so'). Please circle a number after each statement provided. For example if you feel 'somewhat' nervous, you would circle the number '1,' or if you feel 'very much so' nervous, you would circle the number '3'.

Some athletes believe they should not admit to feelings of nervousness or worry, but such reactions are actually quite common, even among professional athletes. To help researchers better understand competition anxiety and it's relation to coaching behaviours, we ask you to share your true reactions with us. Please indicate how your feelings are *prior* to competition. The information you provide will be completely confidential and anonymous.

Statements	*Not at all*	*Somewhat*	*Moderately so*	*Very much so*
I feel nervous.	0	1	2	3
I find myself thinking unrelated thoughts.	0	1	2	3
I have self-doubts.	0	1	2	3
My body feels tense.	0	1	2	3
I am concerned that I may not do as well in competition as I could.	0	1	2	3

Statements	*Not at all*	*Somewhat*	*Moderately so*	*Very much so*
My mind wanders during sport competition.	0	1	2	3
While performing, I often do not pay attention to what's going on.	0	1	2	3
I feel tense in my stomach.	0	1	2	3
Thoughts of doing poorly interfere with my concentration during competition.	0	1	2	3
I am concerned about choking under pressure.	0	1	2	3
My heart races.	0	1	2	3
I feel my stomach sinking.	0	1	2	3
I'm concerned about performing poorly.	0	1	2	3
I have lapses in concentration because of nervousness.	0	1	2	3
I sometimes find myself trembling before or during a competitive event.	0	1	2	3
I'm worried about reaching my goal(s).	0	1	2	3
My body feels tight.	0	1	2	3
I'm concerned that others will be disappointed with my performances.	0	1	2	3
My stomach gets upset before or during competition.	0	1	2	3
I'm concerned I won't be able to concentrate.	0	1	2	3

Statements	*Not at all*	*Somewhat*	*Moderately so*	*Very much so*
My heart pounds before competition.	0	1	2	3

COACHING BEHAVIOUR

This scale measures how frequently you have experienced the following coaching behaviours during this basketball season. Using the scale below, please indicate to what extent each of the following items are true for you (1= 'Never', 7= 'Always'). Please circle the number that best represents each statement.

For example the first statement states *'My coach provides me with a physical conditioning program in which I am confident.'* If your coach '*sometimes*' provides you with a physical conditioning program, you would circle the number '3'. Please circle your selection based on the ***head coach*** of your team. The information you provide will be completely confidential and anonymous.

Statements	*Never*	*Rarely*	*Sometimes*	*Fairly Often*	*Often*	*Very often*	*Always*
My coach provides me with a physical conditioning program in which I am confident.	1	2	3	4	5	6	7
My coach provides me with a physically challenging conditioning program.	1	2	3	4	5	6	7
My coach provides me with a detailed physical conditioning program.	1	2	3	4	5	6	7
My coach provides me with a plan for my physical preparation.	1	2	3	4	5	6	7
My coach ensures that training facilities and equipment are organized.	1	2	3	4	5	6	7
My coach provides me with structured training sessions.	1	2	3	4	5	6	7
My coach provides me with an annual training program.	1	2	3	4	5	6	7

Statements	*Never*	*Rarely*	*Sometimes*	*Fairly Often*	*Often*	*Very often*	*Always*
My coach provides me with advice while I'm performing a skill.	1	2	3	4	5	6	7
My coach gives me specific feedback for correcting technical errors.	1	2	3	4	5	6	7
My coach gives me reinforcement about correct technique.	1	2	3	4	5	6	7
My coach provides me with feedback that helps me improve my technique.	1	2	3	4	5	6	7
My coach provides visual examples to show how a skill should be done.	1	2	3	4	5	6	7
My coach uses verbal examples that describe how a skill should be done.	1	2	3	4	5	6	7
My coach makes sure I understand the techniques and strategies I'm being taught.	1	2	3	4	5	6	7
My coach provides me with immediate feedback.	1	2	3	4	5	6	7
My coach provides advice on how to perform under pressure.	1	2	3	4	5	6	7
My coach provides advice on how to be mentally tough.	1	2	3	4	5	6	7
My coach provides advice on how to stay confident about my abilities.	1	2	3	4	5	6	7
My coach provides advice on how to stay positive about myself.	1	2	3	4	5	6	7
My coach provides advice on how to stay focused.	1	2	3	4	5	6	7
My coach helps me identify strategies to achieve my goals.	1	2	3	4	5	6	7

Statements	*Never*	*Rarely*	*Sometimes*	*Fairly often*	*Often*	*Very often*	*Always*
My coach monitors my progress toward my goals.	1	2	3	4	5	6	7
My coach helps me set short-term goals.	1	2	3	4	5	6	7
My coach helps me identify target dates for attaining my goals.	1	2	3	4	5	6	7
My coach helps me set long-term goals.	1	2	3	4	5	6	7
My coach provides support to attain my goals.	1	2	3	4	5	6	7
My coach helps me focus on the process of performing well.	1	2	3	4	5	6	7
My coach prepares me to face a variety of situations in competition.	1	2	3	4	5	6	7
My coach keeps me focused in competitions.	1	2	3	4	5	6	7
My coach has a consistent routine at competition.	1	2	3	4	5	6	7
My coach deals with problems I may experience at competitions.	1	2	3	4	5	6	7
My coach shows confidence in my ability during competitions.	1	2	3	4	5	6	7
My coach ensures that facilities and equipment are organized for competition.	1	2	3	4	5	6	7
My coach shows understanding for me as a person.	1	2	3	4	5	6	7
My coach is a good listener.	1	2	3	4	5	6	7

Statements	*Never*	*Rarely*	*Sometimes*	*Fairly often*	*Often*	*Very often*	*Always*
My coach is easily approachable about personal problems that I might have.	1	2	3	4	5	6	7
My coach demonstrates concern for my whole self (i.e., other parts of my life than sport).	1	2	3	4	5	6	7
My coach is trustworthy with my personal problems.	1	2	3	4	5	6	7
My coach maintains confidentiality regarding my personal life.	1	2	3	4	5	6	7
My coach uses fear in his/her coaching methods	1	2	3	4	5	6	7
My coach yells at me when angry.	1	2	3	4	5	6	7
My coach disregards my opinion.	1	2	3	4	5	6	7
My coach shows favoritism towards others.	1	2	3	4	5	6	7
My coach intimidates me physically.	1	2	3	4	5	6	7
My coach uses power to manipulate me.	1	2	3	4	5	6	7
My coach makes personal comments to me that I find upsetting.	1	2	3	4	5	6	7
My coach spends more time coaching the best athletes.	1	2	3	4	5	6	7

DEMOGRAPHIC INFORMATION

Are you: □ Female □ Male

What is your date of birth?: Month _____ Year _____

What year of eligibility are you in? □1 □2 □3 □4 □5

Do you normally: □Start OR □Come off the bench

ID Code: Letter_____ Number_____

Date: Month_____ **Day**_____ **Year**_____