

UNPACKING THE COACH-ATHLETE RELATIONSHIP:
THE ROLE OF ATHLETE COPING SKILLS
WITHIN A FRAMEWORK OF
SELF-DETERMINATION

A Thesis
Submitted to
the Temple University Graduate Board

In Partial Fulfillment
of the Requirements for the Degree
MASTER OF SCIENCE

by
Ryan T. Sappington
May 2015

Examining Committee Members:

Dr. Michael Sachs, Advisory Chair, Department of Kinesiology

Dr. Lois Butcher-Poffley, Department of Kinesiology

Dr. Cristina Fink, External Member, YSC Sports

Dr. Joseph DuCette, External Member, Office of the Dean

©
Copyright
2015

by

Ryan Sappington
All Rights Reserved

ABSTRACT

Over the last 40 years, the field of sport psychology has generated a growing body of literature on the coach-athlete relationship, driven by the recognition that the quality of this dyad can play an important role in an athlete's experiences in sport. Despite strong evidence suggesting that Self-Determination Theory (SDT) accurately reflects processes within this relationship, which promote or undermine intrinsic motivation, there is room to deepen contemporary understandings of coach-athlete dyads by assessing the role of athlete individual differences within this theory.

Sixty-seven male athletes (ages 12-18) and 3 male coaches participated in the current study, which set out to cultivate a more nuanced understanding of coach-athlete relationships in a high-level youth athletic academy. Questionnaires measuring preferences for, and perceptions of, coaching behavior, psychological coping skills, psychological needs satisfaction, motivation, and burnout were administered at the beginning and end of the fall season. Results gleaned from correlations, multiple regressions and mediational analyses variably supported the study's main hypotheses. Processes consistent with SDT were evident, as a dimension of perceived coaching behavior predicted needs satisfaction, which in turn, predicted levels of motivation and burnout. Finally, and most importantly, results showed that athletes' psychological coping skills predicted their perceptions of coaching behavior, and outcomes related to needs satisfaction, motivation, and burnout. The current paper also discusses implications of these findings for research and applied practice in sport psychology, and provides recommendations for future avenues of study.

This thesis is dedicated to my grandmother, Gloria Grumbach.

You were unwavering in your love for those around you, and you inspired me to never forget what is important in this life. May you continue to bring fond memories to the friends and family whose lives you touched, and may you forever rest in peace.

“The Clock of Life” by Robert H. Smith

*“The clock of life is wound but once,
And no man has the power
To tell just when the hands will stop
At late or early hour.
To lose one's wealth is sad indeed,
To lose one's health is more,
To lose one's soul is such a loss
That no man can restore.
The present only is our own,
So live, love, toil with a will,
Place no faith in "Tomorrow,"
For the Clock may then be still.”*

ACKNOWLEDGEMENTS

My gratitude for this project must, first and foremost, be extended to my advisor Dr. Sachs, for everything you have done over the past two years to guide, mentor, and encourage me in my pursuits. Your sense of humor and positivity go a long way in making us feel like we are more than just your students. Thank you to Dr. B., for joining my committee, and for a rewarding experience in Sociology of Sport last year. Thank you to Dr. Cristina Fink for providing incredible opportunities for learning and growth at YSC Sports over the last two years, and for helping me in countless ways to build an understanding of myself and what I want out of a professional career. To Dr. Joseph Ducette and Dr. Adam Davey – thank you for your time and patience in helping me navigate (and at times, even enjoy) the challenges of playing with far too many variables in SPSS. A special ‘thank you’ to Dr. Packianathan Chelladurai, Dr. Chris Lonsdale, and Dr. Anthony Amorose for setting the groundwork for this project, your insightful correspondence over email, and the various ways in which you enhanced this thesis during the stages of its design and planning. Thank you to the classmates in my cohort. It was wonderful getting to know each of you over the last two years and share the challenges, frustrations, and joys of graduate school. Thank you to mom, dad, and Kelby for the relentless love, support, encouragement, and laughter you provide that pushes me over, around, and through life’s obstacles. Lastly, there is no person more worthy of my appreciation and admiration than Megan. Your passion for *true* education in life keeps me grounded. And your tolerance for my sleep deprivation, mood swings, and days of stress never cease to amaze me. Life’s curveballs became instantly more manageable with you in my corner.

TABLE OF CONTENTS

Page

ABSTRACT	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER	
1. INTRODUCTION	1
Statement of the Problem.....	5
Research Questions	7
Research Hypotheses	10
Limitations	12
Delimitations.....	13
Defining Key Terms	16
2. REVIEW OF LITERATURE	20
The Coach-Athlete Relationship.....	20
Leadership Styles and Coaching Behavior	26
Autonomy-Supportive Coaching Behavior.....	31
Athlete Motivation	32
Self-Determination Theory	34
Athlete Burnout.....	39
Athlete Individual Differences (Coping Skills)	41
Theoretical Models	46
3. METHODS	50
Study Design.....	50
Epistemological Approach.....	50

Program Description and Participants	51
Instruments/Measures	53
Measuring Coaching/Leadership Behavior.....	54
Measuring Athlete Psychological Coping Skills	58
Measuring Psychological Needs Satisfaction	61
Measuring Motivation.....	62
Measuring Burnout	65
Procedure/Participant Requirements.....	66
Anonymity and Confidentiality	67
Data Analysis	67
4. RESULTS AND DISCUSSION	70
Demographics	70
Reliability Analysis.....	72
Main Findings	74
Consistency of Athlete Coping Skills	81
Results: Hypothesis 1a-1c.....	82
Results: Hypotheses 2a and 2b	84
Discussion: Hypotheses 1a-1c	88
Discussion: Hypotheses 2a and 2b.....	92
Results: Hypotheses 3a and 3b	94
Results: Hypotheses 4a-4c	99
Results: Hypothesis 5.....	103
Discussion: Hypotheses 3a and 3b.....	105
Discussion: Hypotheses 4a-4c	107
Discussion: Hypothesis 5.....	109
General Discussion	109
Implications for Research	112
Modified Version of LSS.....	114
The Benefits of Targeting Specific Populations	115
Using and Expanding on Previous Models.....	116

Implications for Practice	117
Athlete-Centered Coaching.....	119
Implications for the Evaluated Program	121
5. SUMMARY, CONCLUSIONS, RECOMMENDATIONS FOR FUTURE	
RESEARCH.....	124
Summary	124
Conclusions.....	126
Recommendations for Future Research	127
BIBLIOGRAPHY	130
APPENDICES	140
A. LEADERSHIP SCALE FOR SPORTS (LSS)	140
B. ATHLETIC COPING SKILLS INVENTORY-28 (ACSI-28).....	143
C. BASIC NEEDS SATISFACTION IN SPORTS	
SCALE (BNSSS).....	145
D. BEHAVIORAL REGULATION IN SPORT	
QUESTIONNAIRE (BRSQ)	146
E. ATHLETE BURNOUT QUESTIONNAIRE (ABQ).....	148
F. INFORMED CONSENT LETTER FOR PARENTS OF	
PARTICIPANTS	149

LIST OF TABLES

Table	Page
1. Participant Demographic Information	71
2. Reliability Analysis for Full Scales and Subscales.....	73
3. Descriptive Statistics for Athlete Postseason Variables	75
4. Inter-Correlations (Pearson's r) for Athlete Postseason Variables	76
5. Descriptive Statistics for Athlete Coping Skills and Coaching Preferences	78
6. Inter-Correlations for Athlete Coping Skills and Coaching Preferences.....	78
7. Inter-Correlations Among Coach Perceptions and Athlete Variables	79
8. Paired Samples T-Test for Pre- and Post- Scores on ACSI-28.....	81
9. Multiple Regression – Coaching Behaviors and Athlete Autonomy.....	83
10. Multiple Regression – Coaching Behaviors and Athlete Relatedness.....	84
11. Multiple Regression – Needs Satisfaction and Introjected Regulation	86
12. Multiple Regression – Needs Satisfaction and External Regulation	87
13. Multiple Regression – Needs Satisfaction and Amotivation	87
14. Multiple Regression – Needs Satisfaction and Athlete Burnout	88
15. Multiple Regression – Coping Skills and Perceived Training & Instruction	96
16. Multiple Regression – Coping Skills and Perceived Democratic Behavior	97
17. Multiple Regression – Coping Skills and Perceived Autocratic Behavior	97
18. Multiple Regression – Coping Skills and Perceived Positive Feedback	98
19. Multiple Regression – Coping Skills and Perceived Autonomy	100
20. Multiple Regression – Coping Skills and External Regulation	102
21. Multiple Regression – Coping Skills and Burnout	103

LIST OF FIGURES

Figure	Page
1. Multidimensional Model of Leadership (Chelladurai, 1978; 1993).....	29
2. The Self-Determination Continuum of Motivation (Ryan & Deci, 2000).....	35
3. Hypothesized Mediation Model from Hollebeak and Amorose (2005).....	47
4. Expanded Model	47
5. The Projected Influence of Athlete Psychological Coping Skills.....	48
6. Hypothesized Mediation Model of Athlete Psychological Coping Skills.....	49
7. Statistical Path Model for Mediating Role of Coping Skills in Relationship Between Training and Instruction and Athlete Autonomy.....	104
8. Statistical Path Model for Mediating Role of Coping Skills in Relationship Between Training and Instruction and Athlete Relatedness	105

CHAPTER 1

INTRODUCTION

Sports offer a fascinating naturalistic environment for the study of psychological phenomena, in part, due to a “range of psychological processes that find expression in that setting” (Smoll & Smith, 1989, p. 1525). High-level youth sports, in particular, tend to offer a wealth of opportunities for the study of individual behavior and interpersonal dynamics. Considerable attention has recently been directed at the fact that athletes are being exposed to, and specializing in, the competitive and performance-focused environments that characterize high-level sports at increasingly younger ages (Wiersma, 2000). And, while sport participation is beneficial to youth development in many ways, this exposure can include sources of psychological strain associated with, among other factors, the involvement and influence of parents and coaches (Wiersma, 2000).

The field of sport psychology, through its research and applied professional practice, investigates the many psychological processes involved in sport participation. The field functions primarily to assist both athletes and coaches in improving their sporting experience (i.e., enhancing wellbeing in the athletic environment) and getting the most out of their performance (see Weinberg & Gould, 2011; Williams & Krane, 2014). Within the field, professionals often work with athletes individually or in groups to develop skills (e.g. goal setting, routines, emotional management, confidence, etc.) to help them more effectively navigate psychological challenges involved in sport participation and development.

As young athletes develop and advance to higher levels of their sport, they are typically asked to increase their involvement in, and commitment to, participation and training. With this increased commitment, greater focus is often placed on performance outcomes, and this can potentially lead to less concern for athlete development and wellbeing, and greater risk of negative outcomes such as athlete burnout (Vealey, Armstrong, Comar, & Greenleaf, 1998). As focus and attention on youth athletic development continues to grow, new challenges for the field of sport psychology include examining and addressing this subtle tension that can arise between performance and wellbeing in highly competitive environments. One way to approach this tension is to evaluate factors and mechanisms associated with the coach-athlete relationship.

While applied sport psychology operates primarily in the role of providing mental skills training to athletes and coaches, researchers have noted that this relationship is a crucial entry point for greater understanding and effective intervention for enhanced performance and wellbeing (Jowett & Cockerill, 2003; Mageau & Vallerand, 2003; Smoll, Smith, Curtis, & Hunt, 1978; Vealey et al., 1998). Such research has consistently indicated that the relationship between an athlete and a coach can be a strong predictor of many different athlete outcomes related to both wellbeing and performance.

The current study assessed athlete experiences within a high-level team sport environment, and took a particular interest in parts of those experiences associated with the coach-athlete relationship. Seeking a greater understanding of the coach-athlete relationship is particularly important when it comes to team sports, given that athletes in

individual sports report higher feelings of closeness and commitment to their coach than those in team settings (Rhind, Jowett, & Yang, 2012).

In order for sport psychology to maximize either of its primary contributions (i.e., enhanced wellbeing or performance) for either individual involved (i.e., athlete or coach), continued efforts are needed to develop an understanding of this relationship. Vealey et al. (1998) took this a step further, noting that many of the developmental benefits of sport participation (see Becker, 2009; Gould, Collins, Lauer, & Chung, 2007; Vella, Oades, & Crowe, 2013) suggest that more attention needs to be devoted to understanding *all* interpersonal processes within sport.

Studying elements of the coach-athlete relationship is by no means a groundbreaking endeavor. Nevertheless, despite a relatively extensive array of empirical research on this phenomenon, there are considerable gaps in the existing literature that require further examination. Even at first glance, the coach-athlete relationship is both complex and multidimensional (Poczwardowski, Barott, & Jowett, 2006). Across sports, and even within a single team, both athlete and coach experiences within this relationship seem far from homogenous. These experiences are, at times, influenced by many different personal (Jackson, Dimmock, Gucciardi, & Grove, 2011; Kenow & Williams, 1999) and environmental (Rhind et al., 2012) factors. Research has even suggested that the competitive level of the athlete can influence satisfaction levels in the relationship (Jowett & Nezlek, 2012), gender can impact preferences for coaching behavior (Sherman, Fuller, & Speed, 2000), and that these preferences vary with age (Chelladurai & Carron, 1983).

One approach to addressing this heterogeneity has called for methodological changes in order to better reflect the multifaceted and profoundly idiosyncratic nature of each coach-athlete dyad (Poczwardowski et al., 2006). Poczwardowski and his colleagues (2006) made a call to strengthen research on coach-athlete relationships by diversifying methodological approaches and focusing on more than one member in the relationship at a time. In many cases, this has been done (see Jackson et al., 2011). Researchers have examined the relationship or combined effect of attributes or behaviors on both sides of the relationship on outcomes related to athlete wellbeing or performance. However, many studies on the coach-athlete relationship still seem limited, in the extent to which they restrict themselves to various iterations of the same over-simplified question: “*How does coaching behavior X impact athlete outcome Y?*”

Self-Determination Theory (SDT; Ryan & Deci, 2000b) has been a commonly used framework in research on these relationships. Sport-related research on SDT has suggested that the satisfaction of three basic psychological needs (i.e, autonomy, competence, and relatedness) contributes positively to athlete wellbeing and functioning in these environments (e.g., Adie, Duda, & Ntoumanis, 2012; Reinboth, Duda, & Ntoumanis, 2004). Studies have looked extensively at how coaching behavior (or perceptions of coaching behavior) can impact these needs, and the extent to which perceptions of coaching behaviors can enhance or undermine intrinsic motivation in the athlete via the satisfaction of these psychological needs (e.g., Hollebeak & Amorose, 2005). However, there is room to potentially improve our understanding of these processes by considering the role of athlete characteristics (e.g., coping skills) as they

pertain to any of these variables. By focusing more on athlete attributes that can potentially influence a coach's impact on the athlete, research could conceivably expand the lens through which a coach-athlete relationship can be understood, and ultimately provide applied practitioners with greater insight into how their interventions could enhance the interpersonal experiences of both coaches and athletes.

Statement of the Problem

No shortage of research has been conducted to better understand *how* multiple athletes are impacted by coaches or coaching behavior in different ways. However, very few studies have endeavored to understand *why*. In other words, further efforts are needed to explore the underlying mechanisms or factors behind athlete outcomes related to relationships with their coaches.

While research on effective coaching and leadership styles continues to build a growing understanding of desirable coaching attributes, styles, or behaviors, each empirical study is to some extent, inevitably limited in its generalizability. For example, a study may find that *coaching behavior X* positively impacts *athlete outcome Y*. However, such findings are almost inherently limited in that the measurements were taken from a specific population, within a specific competitive environment, in a specific location, and under specific circumstances – all of which may be entirely unique for both the athletes and coaches involved. This suggests an even greater need for more nuanced understandings of how these effects unfold.

Early research indicated that the quality of the coach-athlete relationship is influenced by factors on both sides of the dyad (Carron & Bennett, 1977; Jowett & Cockerill, 2003; Terry, 1984). Therefore, rather than trying to add to a growing list of ideal coaching qualities or effective coaching approaches, research on the coach-athlete relationship may better serve the athletic community if it takes a broader approach to these dyads. In other words, the question would largely shift from “What coaching styles/behaviors positively impact athlete outcomes?” to “*Why* are certain athlete outcomes tied to certain coaching styles/behaviors?”

Rather than attempting to build a standardized concept of effective coaching practices, the proposed study creates greater space for the athlete by conceptualizing “athlete characteristics” as the primary independent variable of interest. The study investigates how athlete characteristics might impact both preferences for, or perceptions of, coaching behaviors, as well as the athlete outcomes potentially associated with coaching behaviors.

The current study was, therefore, designed with the goal of unpacking current conceptualizations of the coach-athlete relationship within a specific context. The need to explore this relationship and better understand nuances in these dyads arises partially out of the notion that multiple athletes may not respond in the same way to the same coach or coaching behavior. For instance, research has indicated that when it comes to emotionally abusive coaches, some athletes perceive this abuse to be facilitative (i.e., for motivation and performance), while others perceive it to be detrimental (Stirling & Kerr, 2013).

Furthermore, despite considerable attention devoted to research on the coach-athlete relationship, very few practical steps have been taken to incorporate these findings explicitly into applied sport psychology interventions (Wylleman, 2000). The current study also takes steps in bridging the gap between science and practice, by paying special attention to an athlete's *psychological coping skills* – a construct with direct implications for the practice of applied sport psychology

It is, again, important to note that the current study targeted a specific population within a high-level youth athletic developmental program. As such, the participants were preselected, the procedure was specifically designed, and methodological decisions were made throughout, in order to ultimately ensure that the primary objective of this study (evaluating athlete experiences in a high-level youth athletic academy) was actualized. Nevertheless, it is equally important to keep in mind that the theoretical models (i.e., motivational, leadership, etc.) underlying the proposed study have been used extensively throughout prior research with a wide range of populations, and that this research has set the groundwork for the study at hand.

Research Questions

The following section outlines three areas of interest and two research questions behind this study's design. Given the extent of, and gaps in, previous research on the coach-athlete relationship, the current study was somewhat exploratory in nature. However, at the core of this exploration was a variable of particular interest: athlete psychological coping skills (Smith, Schutz, Smoll, & Ptacek, 1995). Using this variable

as a “centerpiece”, the study also examined the following three areas of interest in the coach-athlete relationship: *athlete preferences* for coaching behavior, *athlete (and coach) perceptions* of coaching behavior, and *athlete “outcomes”* potentially associated with those perceptions of coaching behavior.

Research has shown that an athlete’s preferences for coaching behavior are of considerable importance within a coach-athlete relationship (see Chelladurai, 1984; Chelladurai & Carron, 1983; Chelladurai, Imamura, Yamaguchi, Oinuma, & Miyauchi, 1988, etc.). Carron and Bennet (1977) have summarized this importance:

In athletics, compatibility between the coach and athlete cannot be determined solely on the basis of the coach’s personality and behavior. Rather, it is necessary to determine whether the behavior expressed by the coach...is compatible with that *desired* by the athlete...(p. 673, emphasis added).

The current study examined athlete perceptions of coaching behavior in an effort to, in some way, access the immediacy of athlete experiences within the coach-athlete relationship and to keep the focus on those experiences. In other words, rather than assessing (through observation) the behaviors themselves, the current study was more interested in how the athletes perceived their coaches’ behaviors. Furthermore, there was an interest in the extent to which athlete coping skills were related to these perceptions.

The athlete outcomes of interest in this study included psychological needs satisfaction, motivation, and burnout. In particular, this study sought to examine the nature of any relationships between perceived coaching behavior and these

outcomes, as well as any potential associations between athlete coping skills and these outcomes.

The three areas of interest outlined above contributed to an a priori theoretical framework (see Figures 3-6 for an elaboration of this framework), used in the present study so that “exploratory” data collection and analysis could be carried out in a relatively systematic way. Based on the central variable (athlete coping skills), and these three areas of interest, the current empirical investigation was driven by the following research questions. The first question re-evaluates, and expands on, previous research (i.e., Hollembeak & Amorose, 2005) by exploring athlete and coach perceptions of coaching behavior, and how these perceptions relate to athlete-related outcomes. The second question takes the existing literature in a relatively new direction by focusing on the role of athlete psychological coping skills in the coach-athlete relationship.

1. How do the psychological needs of an athlete function within the coach-athlete dyad, specifically with regards to their relationships with perceived coaching behaviors, as well as their impact on the athlete’s motivation and burnout?
2. How do athlete psychological coping skills operate within the coach-athlete relationship, specifically with regards to their impact on one’s preferences for, or perceptions of, coaching behaviors, as well as their impact on needs satisfaction, motivation, and burnout?

Research Hypotheses

Based on this review of existing literature, and grounded in the two aforementioned research questions, the following hypotheses were proposed for the current study:

Hypotheses 1a-1c: Perceived Coaching Behaviors and Needs Satisfaction

- a. Higher levels of athlete perceptions of coaches' Training and Instruction, Democratic Behavior, Social Support, and Positive Feedback were expected to positively predict athlete Competence.
- b. Higher levels of perceived Democratic Behavior were expected to positive predict athlete Autonomy, while higher levels of Autocratic Behavior were expected to negatively predict Autonomy.
- c. And higher levels of Social Support were expected to positive predict athlete Relatedness.

Hypotheses 2a and 2b: Needs Satisfaction, Motivation, and Burnout

- a. Higher levels of athlete psychological needs satisfaction (i.e., competence, autonomy, and relatedness) were expected to positively predict higher levels of the more self-regulated forms of motivation (e.g., intrinsic motivation, integrated regulation, and identified regulation).
- b. Lower levels of needs satisfaction were expected to predict higher levels of less self-regulated motivation (e.g., introjected regulation, external regulation), as well as higher levels of amotivation and burnout.

Hypotheses 3a and 3b: Athlete Coping Skills and Perceptions of Coaching Behavior

- a. Higher levels of athlete coping skills were expected to predict higher levels of perceived Training and Instruction, Democratic Behavior, Social Support, and Positive Feedback.
- b. Higher levels of athlete coping skills were expected to predict lower levels of perceived Autocratic Behavior.

Hypotheses 4a-4c: Athlete Coping Skills and Needs Satisfaction, Motivation, and Burnout

- a. High coping skills were expected to predict higher levels of an athlete's psychological needs satisfaction (i.e., perceived competence, autonomy, and relatedness).
- b. High coping skills were expected to predict high levels of self-regulated forms of motivation (i.e., intrinsic motivation, integrated regulation, and identified regulation), lower levels of less self-regulated motivation (i.e., introjected regulation, and external regulation), and lower levels of amotivation.
- c. High coping skills were expected to predict low levels of athlete burnout.

Hypothesis 5: Athlete coping skills were expected to mediate the relationships between perceived coaching behaviors and needs satisfaction.

Limitations

The current section outlines certain limitations that could have potentially distorted the findings or impacted the generalizability of any conclusions drawn from this study.

1. Questionnaires were used to measure most of the constructs, and it should be acknowledged that the use of self-report methodology is almost inevitably limited in any research in the behavioral sciences (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In the current study, various response sets, and biases may have impacted the extent to which athletes were honest on the questionnaires. While the athletes were encouraged to respond to items in each questionnaire honestly, their responses could have been distorted by social desirability (i.e., a participant's desire to be viewed favorably), acquiescence (i.e., a participant's desire to please the researcher), and various demand characteristics (i.e., a participant's awareness of, or expectations for, the study's purpose).

2. A second limitation of the study concerns the level of exposure each player had with his coach. Based on the design of the athletic environment, some players were new to a team while others had already played under the specific coach for a year. Furthermore, some of the players had been a part of the larger youth development organization for several years (in other teams or programs). The varying extents to which athletes had previously played in the organization and their varied levels of exposure to their coach could have conceivably impacted any number of self-reported experiences in this study.

3. Another limitation concerned the possibility of “athlete movement” among the three teams. In this particular environment, team rosters are often fluid, whereby athletes can potentially play for one coach for a month or two, before being moved up or down an age group based on performance and developmental needs, and thereby finish the season with a different coach. To account for this possibility, the Leadership Scale for Sports (Chelladurai & Saleh, 1980) was chosen specifically for this study’s design. This scale was deemed suitable because it can be administered in two formats (“preferred” and “perceived” coaching behavior), allowing the latter to be used solely at the conclusion of the season for the coach with whom the athlete trained and competed most often. In other words, athletes provided coaching behavior *preferences* at the beginning of the season, and four months later, were asked to provide their *perceptions* of coaching behavior for the coach with whom they spent the most time.

Delimitations

Because this study targeted a specific population, the research design entailed several delimitations, which can potentially restrict the generalizability of results.

1. *The Environment and Sample:* The current study’s participant pool was preselected, consisting of players and the head coaches of three teams in an all-male youth development academy.

2. Only players fluent in English were included in the sample. The talent level of the athletes in this sample is also a point of consideration. The study

examined the experiences of high-level athletes who train and compete 5-6 days a week. Concerning the competitive level of this sample, several things should be noted: 1) High-level athletes are often highly motivated and passionate about their sport (Mallett & Hanrahan, 2004); 2) Coaches at this level are often highly qualified (the coaches in this sample have extensive experience working at the club, college, national, and international level); and 3) The athletes in this sample are exposed to high level training and instruction, including sport psychology mental skills education, as part of the holistic developmental focus of the program.

3. *Operationalization and Measurement of Constructs:* Within coaching and leadership research, measurement often either involves ratings of coaching styles or behavior on the part of the coaches and athletes, or the observation of such behavior on the part of the researcher (Smoll et al., 1978; Tenenbaum, Eklund, & Kamata, 2012). Upon consideration, the decision was made to omit observational measurement from this study. Advocates of observational measurement (i.e., Smoll & Smith, 1989) note its utility, based on the potential biases or distortions involved in self-report methodology (i.e., player or coach perceptions). Furthermore, early research on the coach-athlete relationship argued that "...it would appear somewhat risky to rely solely upon player-perceived coaching behaviors," given that perception often depends on the nature of the environment, and characteristics of the perceiver (Smoll et al., 1978, p. 529). In their approach to theory and measurement of leadership, Smoll and Smith (1989) advocated for behavioral assessment, which "provides a means of observing and measuring leadership behaviors in naturalistic

settings” (p. 1524). Specifically, this measurement involves the use of the Coaching Behavior Assessment System (CBAS), an observational measurement of 12 behavioral categories (Smith, Smoll, & Hunt, 1977; Tenenbaum et al., 2012). Despite this alternative, the present study does not incorporate observational measurement of behavior for several reasons. There were several reasons for this omission. First, the present study holds a primary interest in *athlete perceptions* of coaching behavior, and even prioritizes these perceptions over the behavior itself. For instance, while it certainly may be the case that a coach provides positive feedback and social support regularly, athletes may not perceive these behaviors or may be less influenced by them if, for example, they are often overshadowed by other aspects of the coach’s behavior. Proponents of observational measurement have even acknowledged that these perceptions may, at times, be of greater importance (Smoll et al., 1978). Secondly, upon consideration, some of the behaviors measured using observations in the CBAS (Smith et al., 1977), may be susceptible to distortion depending on the interpretation of the observer. For example, measuring the number of times a coach fails to acknowledge positive behavior (a ‘CBAS’ category labeled “nonreinforcement”; Smith et al., 1977) involves a subjective judgment on the part of the observer as to what qualifies a *positive* behavior. While there may certainly be times when these behaviors are easily judged as such, there will also be occasions in which a behavior deemed positive (or negative) by an observer is not by the coach. Finally, given the specific methodological design, the Leadership Scale for Sports (Chelladurai & Saleh, 1980) was deemed the most suitable measurement for coaching

behavior in this study. First, its adaptability allows for the measurement of both athlete *preferences* for (preseason), and perceptions of (postseason), coaching behavior with very little alteration of the measurement. Second, given the research questions, observations of coaching behavior would have added very little to an understanding of coaching behavior derived from the LSS (Chelladurai & Saleh, 1980). Data collection took place over a four-month period. Given the short timespan, observing coaching behavior at one or more points during this timeframe would likely have yielded very little insight, especially because coaching styles or behavior are susceptible to distortion, depending on the mood of the coach or factors within the training environment on any given day.

Defining Key Terms

The current section provides definitions used for some of the terms and constructs used in the present study.

Athlete Individual Differences (i.e., Psychological Coping Skills): The present study's use of 'athlete individual differences' refers to the psychological coping skills of an athlete, as conceptualized in Smith et al. (1995). Smith and colleagues (1995) set out to develop a scale of psychological skills in sports, whereby athletes could be measured on 7 dimensions, as well as a general "Personal Coping Resources" score, "assumed to reflect a multifaceted psychological skills construct" (p. 379). The authors acknowledge that this measurement does not "exhaust the domain of psychological skills that may contribute to performance" (Smith et al., 1995, p. 392). However, they noted that the measurement has many similarities with fundamental notions of psychological

skills in sport. The final scale they developed, the Athletic Coping Skills Inventory – 28 (ACSI-28), has been frequently used to measure the coping skills of athletes in various environments, including the highest of competitive levels (see Gould, Dieffenbach, & Moffet, 2002).

Burnout: In the present study, the notion of athlete burnout was defined as “a psychological syndrome of emotional/physical exhaustion, reduced sense of accomplishment, and sport devaluation” (Raedeke & Smith, 2001, p. 283). The relevance of burnout for this study arises out of the notion that increased specialization in, and commitment to, a sport at young ages can lead to various sources of psychological strain and, ultimately, “the possibility an athlete will burn out of sport prior to the time at which peak performance is realized” (Weirisma, 2000, p. 17).

Coach-Athlete Relationship: In their article detailing the development and validation of a scale used to measure the coach-athlete dyad as a single unit (whereby the present study sought to measure variables on both sides of the relationship independently), Jowett and Ntoumanis (2004) defined this relationship as “the situation in which coaches’ and athletes’ emotions, thoughts, and behaviors are mutually and causally interconnected” (p. 245). The definition is almost identical to the one provided by Jowett and Poczwardowski (2007) in their chapter in *Social Psychology in Sport* (Jowett & Lavallee, 2007). Several aspects of this definition made it suitable for the present research, including the fact that it incorporates emotions, thoughts, and behaviors into its conceptualization, and the fact that it acknowledges the mutual interconnectedness of

these variables. While the present study only looked at athlete outcomes in this relationship, this definition was comprehensive enough for various angles of research.

Leadership/Coaching Behavior: The present study's focus on leadership and coaching behavior operates out of Barrow's (1977) definition, frequently used in research on leadership in sports (Chelladurai & Saleh, 1980; Tenenbaum et al., 2012). Barrow (1977) defined leadership as "the behavioral process of influencing individuals and groups toward set goals" (p. 232). This definition suited the present study's objectives, because while there are certainly other components of coaching and leadership that influence the coach-athlete relationship (see Jowett & Ntoumanis, 2004), earlier iterations of this study's general research question also focused on coaching behavior as an antecedent (see Hollembeak & Amorose, 2005).

Motivation: McClelland (1987) characterized motivation as having "to do with the *why* of behavior, as contrasted with the *how* or the *what* of behavior" (p. 4). This definition differs slightly from one put forth by Ryan and Deci (2000a) in their Self-Determination Theory (SDT), which notes that "to be motivated means *to be moved* to do something. A person who feels no impetus or inspiration to act is thus characterized as unmotivated, whereas someone who is energized or activated toward an end is considered motivated" (p. 54). This broader definition is the one used in the present study, as it reflects the continuum on which motivation is commonly conceptualized in recent research that set the groundwork for this study.

The Satisfaction of Psychological Needs (Self-Determination Theory): Self-Determination Theory (SDT) "is an approach to human motivation" that focuses on the

conditions facilitating an individual's self-regulation of behavior through the satisfaction of three psychological needs: competence, relatedness, and autonomy (Ryan & Deci, 2000b, p. 68). The need for perceived competence "refers to feeling effective in one's ongoing interactions with the social environment and experiencing opportunities to exercise and express one's capacities" (Deci & Ryan, 2002, p. 7). In an athletic context, for example, competence simply refers to whether an athlete feels that he or she has the ability to perform the tasks and skills required in the sport. Perceived competence, or merely the belief that one will have success in a task, has long been associated with enhanced intrinsic motivation for the task (Bandura & Schunk, 1981).

Relatedness, on the other hand, "refers to feeling connected to others, to caring for and being cared for those others, to having a sense of belongingness both with other individuals and with one's community" (Deci & Ryan, 2002, p. 7). In sport or exercise, this relates to the extent to which an individual feels part of a group, or perceives to be connected or close with other members.

Finally, "Autonomy refers to being the perceived origin or source of one's own behavior" (Deci & Ryan, 2002, p. 8). In this sense, athletes who feel autonomous in their behavior feel that their decisions and actions are self-directed.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this paper is to examine the role of athlete differences (i.e., psychological coping skills) in the coach-athlete relationship, using Self-Determination Theory (SDT) as a framework. The following sections provide an empirical and theoretical background of understanding for this study, and set the stage for its specific objectives by reviewing and synthesizing prior research on: the coach-athlete relationship; coaching behavior and leadership (including autonomy-supportive behaviors); SDT, including motivation and psychological needs satisfaction (Ryan & Deci, 2000b); athlete burnout, and athlete psychological coping skills. The literature review is organized with the intention of progressively introducing and discussing topics that, when integrated, yielded the aforementioned hypotheses and contribute to the subsequent models conceptualizing the theoretical framework behind this study's primary aims. In addition to synthesizing previous research from various domains in sport psychology, the following review will periodically identify limitations and gaps in the literature, some of which were addressed in the current study.

The Coach-Athlete Relationship

"...An important determinant of the effects of participation lies in the relationship existing between coach and player" (Smoll et al., 1978, p. 529).

Competitive sports offer a particularly rich context for the study of interpersonal relationships (Carron & Bennett, 1977). At any level, athlete experiences can be profoundly influenced by interpersonal dynamics within their sport. In the interest of

enhancing athlete performance and wellbeing, there is, perhaps, no relationship more worthy of attention than that between the coach and the athlete (Jowett, 2005).

Researchers have consistently maintained that this relationship can impact a range of outcomes in an athlete's sporting experience. Mageau and Vallerand (2003), for instance, noted that "The coach-athlete relationship is one of the most important influences on athletes' motivation and subsequent performance" (p. 884). Similarly, Vealey et al. (1998) wrote that, "The coach-athlete relationship is an integral part of sport, and anecdotal evidence from many athletes indicates that this relationship is central to the ultimate quality and perceived success of their competitive sport careers" (p. 298).

Research has, thus far, approached this relationship from many different conceptual angles. In a recent paper, these approaches were grouped into five categories: psychodynamic and personality-focused, behavioral, cognitive, social psychological, and interactional (Poczwadowski et al., 2006). Yet, even within these five categories of research, the range of phenomena examined in the coach-athlete relationship is continuing to expand. Only within the last few years, for instance, empirical studies on this relationship have looked at: compatibility between coaches and athletes (Jackson et al., 2011), individual perceptions of leadership or coaching behavior (Stirling & Kerr, 2013), athlete attachment styles (Davis & Jowett, 2014; Davis, Jowett, & Lafrenière, 2013; Felton & Jowett, 2013), as well as extensive research on psychological needs satisfaction (recent works include Adie et al., 2012; Felton & Jowett, 2013; Isoard-Gauthier, Guillet-Descas, & Lemyre, 2012).

Previous research has frequently assessed coach-athlete dyads, with regards to the personal differences and attributes the members bring to the relationship. Findings have suggested that similarities between coach and athlete often enhance the quality of this bond (Jackson et al., 2011). Jackson et al. (2011) investigated the Big Five personality traits (i.e., openness, extraversion, agreeableness, conscientiousness, and neuroticism) and found that when athletes and coaches were dissimilar on certain traits (extraversion and openness), measures of commitment to the relationship and feelings of relatedness were lower. In other words, the coach-athlete relationship was stronger when personal attributes of both members were well matched (Jackson et al., 2011).

Other individual characteristics have received focus as well. Davis and Jowett (2014) recently examined the extent to which athlete attachment styles play a role in the coach-athlete dyad. The authors found that athletes with avoidant attachment styles perceived their coaches to provide less support, while those with secure attachment styles were less likely to experience conflict in the coach-athlete relationship. These were similar to findings in an earlier study by Davis et al. (2013), who found that avoidant attachment styles in both athletes and coaches negatively predicted perceptions of the quality of the coach-athlete relationship.

Researchers in these studies chose to focus primarily on the impact of personal attributes on relationship outcomes. And while these were relevant to their specific aims, there is room to further parse out nuances in these and other findings, and ask important questions. For instance, to what extent are interpersonal *perceptions* in a relationship

dependent on individual differences, and would certain characteristics permit athletes or coaches to *perceive* these relationships more favorably?

Kenow and Williams (1999) conducted research with markedly similar aims to some of those in the present study. The researchers tested the extent to which athlete traits and coach-athlete compatibility impacted athletes' perceptions of their coaches' behaviors. Results indicated that athletes who were high in trait anxiety and low in self-confidence were more likely to rate their coaches' behaviors unfavorably. Kenow and Williams (1999) also found that athletes who felt that they were compatible with their coach were more likely to have positive overall perceptions of their coach's behavior. Such findings point to the potential for athlete attributes to serve a mediating role in the coach-athlete relationship (see later discussion of Smoll and Smith's [1989] mediational model of leadership).

In addition to research on individual athlete attributes, coach behavior has frequently been shown to be an important factor in these dyads and, if effective, can be a determinant of positive developmental outcomes for young athletes, such as the promotion of life skills (Becker, 2009; Gould et al., 2007; Vella et al., 2013). A coach's orientation to competition and winning, for example, can positively impact his or her athletes (Vella et al., 2013). In their study of the athletic experiences of 455 adolescent soccer players (age 11-18), Vella and colleagues (2013) found that positive developmental outcomes in young athletes are associated with coaches who frame both winning and losing as opportunities for growth. Similarly, Gould et al. (2007) conducted interviews with 10 highly successful high school football coaches, and found that their

success was coupled with a consistent commitment to viewing the development of sport skills and life skills as having equal importance.

Despite its many different manifestations, it is worth noting that coach-athlete relationship research has, at times, been criticized for its limited scope, especially with regards to the fact that samples are often comprised almost exclusively of undergraduate student-athletes (Jowett & Poczwardowski, 2007; Poczwardowski et al., 2006). This trend, while often a product of convenience sampling, yields issues when one considers the unique environment of college athletics, especially compared to other sporting contexts. In other words, from the standpoint of practical application, drawing conclusions from a sample of undergraduate student-athletes and implementing these findings into coaching education at younger ages can be problematic. In addition to using a non-college aged sample, the current study was specifically concerned with a target population within a preselected environment. As such, findings are limited to the specific context in which they were measured. Acknowledgements of this limitation are made throughout this paper, in accordance with recommendations for future research in (Jowett & Poczwardowski, 2007).

Despite the frequent use of college athletes in the literature, however, other populations have received attention with regards to relationships between coaches and athletes. Research, for instance, has often looked to Olympic-level competitors for insight into what makes these relationships (and their members' performance) effective at the highest levels of sport (Gould, Guinan, Greenleaf, & Chung, 2002; Greenleaf, Gould, & Dieffenbach, 2001; Jowett & Cockerill, 2003). Greenleaf et al. (2001) conducted

interviews with 15 U.S. Olympic athletes (eight from the 1996 Summer Games, and seven from the 1998 Winter Games), and found that factors such as contact with a coach, trust from a coach, and perceptions of friendship with a coach often positively contribute to athlete performance. Athletes also reported that coach-related issues (e.g., conflicts in power, poor coaching instruction, and a lack of coach focus on the team climate) often negatively impacted their performance (Greenleaf et al., 2001). Jowett and Cockerill (2003) also interviewed Olympic athletes, and demonstrated the importance of the coach-athlete relationship at the elite levels of sport, in facilitating or inhibiting an athlete's performance and wellbeing. Their research suggested that elite athletes value coaches who are inspirational and nurturing in their work with athletes. The quality of the coach-athlete relationship was shown to depend in part on the extent to which the three interpersonal constructs of Closeness (i.e., emotional connection, trust, respect), Co-orientation (i.e., shared values and goals), and Complementarity (i.e., matching roles, needs, and contributions) are high.

Given the range of methods and theories used in prior research, questions arise as to whether there are, in fact, ideal approaches to the study of coach-athlete relationships. In their chapter summarizing the current status of research on coach-athlete relationships, Jowett and Poczwardowski (2007) discussed several conceptual models often used in the literature. Rather than advocating for any one of these approaches, the authors ultimately recommend an “integrated research model”, encompassing three levels of variables: individual differences in both coaches and athletes (e.g., personality); feelings, thoughts, and behaviors of both coaches and athletes; and interpersonal, intrapersonal, or group-

related outcomes. In light of these recommendations, the current study employed elements from all three of these levels.

Despite the significance of this dyad, research on the coach-athlete relationship is still relatively immature. Furthermore, it remains in considerable need of further advancements on an empirical level, as well as improvements in study design and methodology (Poczwardowski et al., 2006). In particular, Poczwardowski et al. (2006) point out that “more holistically oriented approaches are needed to diversify the traditional psychological perspective on athlete-coach dyads” (p. 138). At the time of their paper, these authors noted that future research on the coach-athlete relationship needed to include more units of analysis.

The present study took a more holistic orientation to research on the coach-athlete relationship by expanding the units of analysis and exploring variables from both relationship participants (as recommended in Jowett & Poczwardowski, 2007; Poczwardowski et al., 2006; and Philippe & Seiler, 2006). The current approach also integrates several theoretical perspectives on coach-athlete relationships, and examines several different vantage points (i.e., personal characteristics, leadership behavior, motivational processes, etc.). Nevertheless, despite its use of different theoretical models and approaches, the current study adheres to a systematic methodology, by integrating these different theoretical perspectives in accordance with previous studies and findings.

Leadership Styles/Coaching Behavior

Early research on the coach-athlete relationship was carried out almost exclusively from the lens of leadership and coaching behavior (Jowett & Poczwardowski,

2007). Research on leadership or coaching behavior in sport has always garnered considerable interest, given the impact this behavior can have on athlete experiences, as well as the variety of psychological, emotional, behavioral, and social/interpersonal factors that can influence these behaviors as well as related outcomes.

Research on athletes' positive and negative experiences of coaching behavior is extensive, and results have indicated that the notions of "effective coaching" or "preferred coaching behaviors" are dynamic and multifaceted. In other words, there is no one secret to being an effective coach. For example, Chelladurai and Carron (1983) demonstrated that athletes' preferences for coaching change with age. In their study, athlete preferences for task and instruction behaviors on the part of the coach decreased as the athletes matured through high school, and began to increase upon entry into collegiate athletics. The researchers also found that preferences for social support increased steadily from high school into college (Chelladurai & Carron, 1983).

Other studies on coaching behavior have yielded inconsistent findings. Vealey et al., (1998) found that while perceived coaching behaviors (e.g., a lack of empathy, autocratic leadership style, emphasis on winning, etc.) did not predict athlete levels of anxiety, they did predict levels of athlete burnout. However, results from Baker, Côté, and Hawes (2000) indicated that several coaching behaviors (e.g., negative personal rapport, competition strategies, etc.) did predict levels of athlete anxiety, and noted a direct contrast with Vealey et al. (1998). The authors speculated that this discrepancy in findings could have been due to the use of different measurement tools. Nevertheless, the variability of research findings on coaching behavior and its impact on athlete outcomes

suggests that our understanding of such behavior is not always straightforward, and is at times, ambiguous.

Ambiguity aside, however, research on coaching behavior frequently shows that effective coaches recognize that their responsibilities extend beyond merely that involving training and instruction geared toward performance. Becker (2009) interviewed elite athletes, asking participants to discuss their own positive experiences of coaching. Responses indicated that athletes valued coaches who filled more than just the role of a coach – in other words, those who were able to provide mentorship and guidance outside of the typical coaching responsibilities. Furthermore, athletes appreciated coaches who were willing to make mistakes and admit faults (Becker, 2009).

Like the broader realm of research on the coach-athlete relationship, empirical studies that focus specifically on leadership and coaching behavior have employed many different theoretical approaches. One of the models commonly used to conceptualize leadership styles and coaching behavior in sport maintains that effective coaching is a multidimensional concept influenced by an array of personal, environmental, and situational variables (Chelladurai, 1978). The Multidimensional Model of Leadership (Chelladurai, 1978; Chelladurai, 1993; Tenenbaum et al., 2012; see *Figure 1*) suggests that effective leadership is achieved through a balance among three types of behavior: required behaviors, preferred behaviors, and actual behaviors. In sport, required behaviors include those that are expected, and are influenced by the circumstances or situation surrounding a coach. Preferred behaviors are those that represent the preferences of the members of a group (e.g., athletes, etc.), and are tied to personal

characteristics of those members. Actual behaviors are influenced by characteristics of the leader, as well as behaviors that are both required and preferred (Rierner, 2007). In other words, the Multidimensional Model of Sport Leadership suggests that leadership and coaching behavior is dependent, in large part, on the preferences of the individuals being led, as well as the characteristics of the leader and the situation (Chelladurai, 1978, 1993). Finally, as evidenced in *Figure 1*, “congruence among the three states of leader behavior results in member satisfaction and group performance” (Tenenbaum et al., 2012, p. 434).

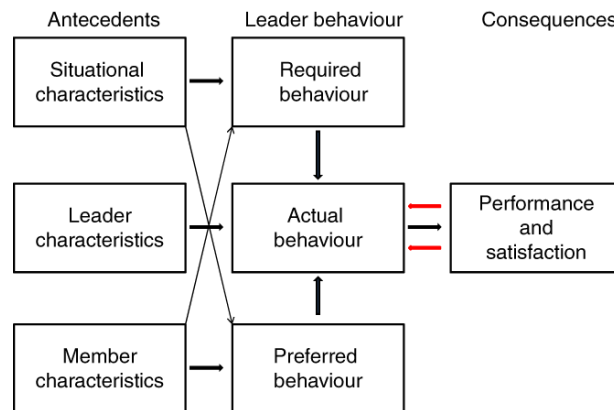


Figure 1. Multidimensional Model of Leadership (Chelladurai, 1978, 1993) (Tenenbaum et al., 2012, p.441)

The current study used the Multidimensional Model of Leadership (and its corresponding measurement tool: the Leadership Scale for Sports; Chelladurai & Saleh, 1980), because it provided a strong theoretical foundation for conceptualizing the dynamics among individual characteristics, as well as behavioral antecedents and outcomes, within the coach-athlete relationship. Furthermore, the theory acknowledges

that effectiveness of leadership and coaching behavior in sport is a product of factors on both sides of the dyad.

There are other models of leadership (e.g., the Mediation Model of Leadership; Smoll & Smith, 1989) that would have conceivably mapped onto the present study's questions and aims. However, these models were deemed incompatible on various grounds for the current study's design and methodological components. One of the main benefits of the Multidimensional Model of Leadership involves its measurement companion, the Leadership Scale for Sports (LSS), which can assess preferences for, and perceptions of (i.e., actual leadership), five dimensions of coaching behavior: Training and Instruction, Democratic Behavior, Autocratic Behavior, Social Support, and Positive Feedback. The two versions of this measurement both played a role in this study's design.

Overall, the Multidimensional Model of Leadership and other theories of coaching behavior seem to collectively suggest that effective coaching is not universally achieved through some recipe of coaching behaviors "proven" to yield desirable athlete outcomes. Rather, while there are certainly some qualities that are commonly desirable, coaching effectiveness is largely situational and impacted by a wide range of factors, including those originating in the individual coach and athlete.

The current study took a particular interest in the role of athlete characteristics within the coach-athlete relationship. Specifically, this study examined the extent to which these characteristics influenced athletes' *perceptions* of their coach. However, research on athlete characteristics within the Multidimensional Model of Leadership has

rarely pursued this line of inquiry (Riemer, 2007). Instead, the LSS is typically used to assess the extent to which athlete characteristics (e.g., gender, maturity level, etc.) impact athlete *preferences* of coaching behavior (Riemer, 2007). Administering the scale in both formats (measuring preferences and perceptions) allowed this study to examine its versatility in adequately reflecting several different components of the coach-athlete relationship.

Autonomy-Supportive Coaching Behavior

Research has consistently indicated that autonomy-supportive behaviors are one of the common qualities of effective coaching (Coatsworth & Conroy, 2009; Gillet, Vallerand, Amoura, & Baldes, 2010; Mageau & Vallerand, 2003). Based on their review, Mageau and Vallerand (2003) proposed a list of autonomy-supportive behaviors on the part of a coach that can benefit an athlete. These behaviors include: allowing athletes to make decisions within boundaries, avoiding coaching behaviors that are controlling or autocratic, recognizing athlete feelings and perspectives, and removing the ego (for a full list, see Table 1 in Mageau & Vallerand, 2003, p. 887). However, their model also proposes that the occurrence and frequency of these behaviors have specific determinants – namely, a coach’s personal orientation, the context surrounding the athletic environment, and the athlete’s behavior and/or motivation (Mageau & Vallerand, 2003).

Research on the benefits of autonomy-supportive coaching has shown that these behaviors can predict positive levels of desirable athlete outcomes, such as self-esteem. Coatsworth and Conroy (2009), for example, surveyed 119 youth swimmers (ages 10-18)

on their perceptions of their coaches' behaviors, as well as various outcomes associated with well-being and positive development. Results showed that perceptions of coaches' autonomy-supportive behaviors (especially the act of praising athletes' autonomous behavior) predicted levels of athlete perceptions of competence, which in turn positively influenced self-esteem. The positive effect of autonomy-supportive coaching on an athlete's self-esteem could possibly be explained by the notion that individuals who tend to behave autonomously also tend to be more intrinsically motivated (Thill, Mailhot, & Mouanda, 1998). In other words, Thill and colleagues (1998) found that "autonomy-oriented subjects were more intrinsically motivated, felt more competent, expressed greater interests..." and had higher performance than individuals who were described as "control-oriented" or tended to behave in accordance with external pressures (p. 152). The role of intrinsic motivation, as an athlete outcome related to perceived coaching behaviors, was also of particular interest in the current study.

Athlete Motivation

In the practice of enhancing athlete wellbeing and performance, motivation has long been, and will continue to be, an outcome of special interest for the field of sport psychology (Frederick-Recascino, 2002). Nevertheless, within the broader field of psychology, motivation is so variably studied and discussed that even the definition itself is often inconsistent (Roberts, 2012). Literature suggests that, for as many motivational theories that exist, there are almost as many idiosyncratic definitions of the construct (Roberts, 2012). Across all of these conceptualizations, however, contemporary theorists and researchers seem to largely agree on the fact that, "motivation is not an entity but a

process...the process that influences the initiation, direction, magnitude, perseverance, continuation, and quality of goal-directed behavior” (Roberts, 2012, p. 7).

This process offers an insightful entry point for the examination of athlete experiences in competitive sport, in part, because of the range of both internal and external variables that influence motivation in this environment. Athletes, particularly those competing at a high level, are regularly exposed to high levels of physical, mental, and emotional strain during training and competition. For populations similar to the sample used in the current study (high school-aged athletes specializing in their sport and training and competing at least six days per week) the study of motivation (as well as its undesirable cousins, amotivation and burnout) is becoming increasingly important. The early specialization of youth in high-level sports (see Weirisma, 2000) has been a point of controversy in sport psychology discourse for some time. If the world of youth sports continues to provide opportunities for adolescents (and in some cases even children) to dedicate so much of their time and energy to one endeavor, than it is important to examine the extent to which these environments help to facilitate processes like motivation and positive youth development in general.

Motivation has been characterized as the fuel or drive that pushes an individual to persist in a sport and continue striving for higher levels of performance. In a sense, motivation provides answers to questions of “*why*” (Deci, 1975; McClelland, 1987). According to Ryan and Deci (2000b), “Motivation concerns energy, direction, persistence and equifinality—all aspects of activation and intention” (p. 69). The current study examines the extent to which these “aspects of activation and intention” are, on one

level, a product of an athlete's relationship with a coach, and on another level, influenced by individual differences in the athlete.

Research has frequently studied the nature of athlete motivation by examining various factors and mechanisms that may impact the direction and intensity of this drive (Amorose & Anderson-Butcher, 2007; Amorose & Horn, 2001; Andrew, 2004; Hollembeak & Amorose, 2005; Mageau & Vallerand, 2003; Pelletier, Fortier, Vallerand, Tuson, Briere, & Blais, 1995). While there are several models commonly used to study motivation in sport and exercise research, such as achievement goal theory, self-efficacy, or hierarchical goal model (see Roberts, 2012 for a summary of these and other approaches), Self-Determination Theory (SDT; Ryan & Deci, 2000b), is perhaps the framework most frequently applied to contemporary motivation research in sport. SDT contributed considerably to the theoretical foundation for the present study's design. This decision was made, in part, because the various components of SDT catered to the primary research interests and questions at hand.

Self-Determination Theory

Richard Ryan and Edward Deci have, through their Self-Determination Theory (SDT), ultimately revolutionized the conceptualization and examination of motivation in social science research (Deci, 1975; Deci & Ryan, 1985; Ryan & Deci, 2000b). SDT's primary contribution to motivational theory concerns the notion that social and environmental factors impact an individual's direction and intensity of motivation, based on the extent to which three innate psychological needs (perceived competence, autonomy, and relatedness) have been satisfied (Ryan & Deci, 2000b).

SDT sets aside commonly accepted notions of a straightforward dichotomy between extrinsic and intrinsic motivation (Rigby, Deci, Patrick, & Ryan, 1992). Instead, the theory is predominantly concerned with the extent to which the source of an individual’s motivation is self-determined, or self-regulated (See *Figure 2*). The framework conceptualizes extrinsic motivation on a continuum of causality, whereby one’s motivation is of a more- or less-autonomous, or self-regulated, nature (Ryan & Deci, 2000; Pelletier et al., 1995).

On one end of the continuum, *amotivation* simply refers to the lack of any intention to engage in a behavior, while on the other end, *intrinsic motivation* is a form of motivation whereby individuals engage in action purely for the enjoyment or satisfaction that the action brings (Mageau & Vallerand, 2003; Ryan & Deci, 2000b). When intrinsically motivated, the endeavor or behavior is an end in itself, rather than a means to an end. An intrinsically motivated individual acts simply because the action is enjoyable, and rewards from a behavior are gained purely from engaging in that behavior (i.e., “for the love of the sport”). Finally, *Extrinsic motivation* is defined as “the performance of an activity in order to attain some separable outcome... [rather than] doing an activity for the inherent satisfaction of the activity itself” (Ryan & Deci, 2000b, p. 71).

	Controlled Extrinsic Motivation		Autonomous Extrinsic Motivation		
Amotivation (Non-Regulation)	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Motivation (Intrinsic Regulation)

Figure 2. The Self-Determination Continuum of Motivation
(Ryan & Deci, 2000b, p. 72)

Most assumptions related to extrinsic motivation seem to suggest that it entails a lack of any autonomy on the part of the individual – that behavior is directed wholly from external sources. However, SDT suggests that extrinsic motivation can vary on its own self-determined continuum depending on the extent to that motivation is regulated or governed internally or externally (Ryan & Deci, 2000b). Mageau and Vallerand (2003), perhaps, explained the distinction best, noting that “As extrinsic reasons become internalized, they become coherent with the person’s self and thus become self-determined” (p. 885).

Research has consistently demonstrated that intrinsically motivated athletes typically experience a range of emotional benefits from their tasks, and often exhibit greater persistence and enhanced performance in their sport (Mageau & Vallerand, 2003; Vallerand & Rousseau, 2001). The extensive benefits associated with intrinsic motivation have led to continued research efforts into a wide range of individual, interpersonal, and environmental factors that can potentially facilitate this type of motivation.

Like other interpersonal relationships, the coach-athlete relationship is characterized by expression and fulfillment of needs on both sides (Jowett, 2005). Similarly, SDT suggests that human motivation and behavior is closely tied to three innate psychological needs – competence, autonomy, and relatedness (Deci & Ryan, 1985; Ryan & Deci, 2000b).

Accounting for these three psychological needs, SDT-guided research often examines the extent to which factors in an environment might influence (positively or

negatively) an individual's motivation to engage in a particular activity, through the satisfaction of, or failure to meet these needs (Ryan & Deci, 2000b). SDT's subtheory Cognitive Evaluation Theory (CET; Deci & Ryan, 1985) specifically suggests that intrinsic motivation is maximized in an individual when social and environmental conditions are facilitative – namely, when they support those needs (competence, autonomy, and relatedness). Research on SDT not only suggests that the satisfaction of these needs enhances one's intrinsic motivation (Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002), but also that an individual is pulled toward experiences in which the satisfaction of needs seems likely (Vallerand & Losier, 1999).

For almost as long as SDT has guided research on human motivation and behavior in various contexts, it has been applied to athletes and their sports. This has typically revolved around the effectiveness of coaching styles or coaching behaviors at meeting the three psychological needs and enhancing self-determined types of motivation. Research findings from the likes of Coatsworth and Conroy (2009), Gagné, Ryan, and Bargmann (2003), Gillet et al. (2010), and Hollembeak and Amorose (2005) offer important implications for coaching styles and leadership behavior that can contribute to an athlete's sense of autonomy and self-determined motivation and behavior.

Given the importance of autonomy, intrinsic motivation, and self-empowerment in youth development, the question, then, becomes how to best draw out these qualities in a young athlete through the coach-athlete relationship. SDT has been applied extensively to research on athlete motivation, and has suggested that coach behavior can largely

impact the nature of this motivation (Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009; Gillet et al., 2010; Hollembeak & Amorose, 2005; Mageau & Vallerand, 2003). Specifically, Mageau and Vallerand (2003) note that "...decades of research now support Deci and Ryan's (1980, 1985) claim that autonomy-supportive behaviors relative to controlling behaviors enhance intrinsic motivation and self-determined extrinsic motivation" (p. 887).

Furthermore, theoretical models conceptualizing the link between the satisfaction of psychological needs and athlete motivation have recently been adjusted to suggest that the psychological needs actually play a mediating role between coaching behaviors and athlete motivation (Hollembeak & Amorose, 2005; Mageau & Vallerand, 2003; Vallerand & Losier, 1999). Blanchard et al. (2009) presented some of the most recent findings that replicated this trend, showing that psychological needs satisfaction mediated the relationship between social factors and self-determined motivation in a sample of 197 basketball players.

Findings on autonomy-supportive coaching behaviors are especially relevant when it comes to SDT. As cited in Mageau and Vallerand (2003), results from Blanchard and Vallerand (1996) showed that, when athletes perceive autonomy-supportive behaviors from their coach and cohesiveness with teammates, they are more likely to perceive that their psychological needs are satisfied and more likely to engage in the sport through self-determined types of motivation. Given this understanding, Mageau and Vallerand (2003) have proposed a motivational model of the coach-athlete relationship,

which reflected the extent to which coaching autonomy-supportive behaviors influence athlete needs satisfaction, which in turn, influence athlete motivational outcomes.

However, Mageau and Vallerand (2003) were also careful to note that "...the ultimate effect of coaching behaviors will depend on how athletes interpret those behaviors" (p. 892). Assuming this is true, factors contributing to how an athlete interprets coaching behavior become especially relevant for understanding coach-athlete relationships. These factors might include an athlete's mood, prior experiences with the coach, or individual characteristics of the athlete. However, before discussing the potential role of these characteristics with regards to the current study, the following section outlines an additional outcome variable of interest in the coach-athlete relationship: the extent to which an athlete experiences burnout.

Athlete Burnout

While it has received considerable attention in the field of work and organizational psychology, burnout had, until recently, received limited attention in the realm of sports (Raedeke & Smith, 2001). In their attempts to develop a measurement of burnout in an occupational setting, Maslach and Jackson (1981) characterized burnout as having three main features: an individual experiencing burnout typically exhibits an increase in psychological and emotional exhaustion, an increase in depersonalization or negative feelings toward the work or client with whom one works, and a perceived lack of personal accomplishment.

While the Maslach Burnout Inventory (Maslach & Jackson, 1981) has held up in its application to organizations, and is occasionally used with athletes, recent research has

modified the measurement of burnout in sport to be more relevant for athletes (Raedeke & Smith, 2001). Raedeke, Lunney, and Venables, (2002) altered the three dimensions slightly and redefined the construct as “a withdrawal from [sport] noted by a reduced sense of accomplishment, devaluation/resentment of sport, and physical/psychological exhaustion” (p. 181).

Burnout was included as an outcome variable of interest in the present study, in part, because it has so often been tied to the process of motivation. Consistent findings have linked increased burnout to the dissatisfaction of psychological needs, as well as controlled forms of regulation. Lonsdale, Hodge, and Rose (2009), for example found, in a sample of 201 elite athletes, that more self-regulated forms of motivation negatively predicted levels of athlete burnout, and mediated the negative relationship between burnout and the satisfaction of some needs (i.e., competence and autonomy). Hodge, Lonsdale, and Ng (2008) found similar results with a sample of rugby players. Specifically, results showed that higher levels of athlete autonomy and competence contributed to lower levels of burnout related to an athlete’s reduced sense of accomplishment and devaluation (Hodge et al., 2008).

Coaches have pointed out that their athletes frequently encounter burnout as a result of outside pressures, stemming from parents, the coach, desire to win, peer comparisons, and perceptions that one is being forced to participate in his or her sport (Raedeke et al., 2002). Furthermore, research has also shown that a balance between the three psychological needs (i.e., competence, autonomy, and relatedness), more so than

the contributions of any one need, predicts lower levels of athlete burnout (Perreault, Gaudreau, Lapointe, & Lacroix, 2007).

A systematic review of burnout in sport recently found that a host of individual, interpersonal, and environmental variables can influence levels of athlete burnout. Goodger, Gorely, Lavallee, & Harwood, (2007) concluded that variables such as individual factors such as intrinsic motivation and an ability to cope with adversity, along with interpersonal factors such as social support, can mitigate levels of burnout. On the other hand, reduced intrinsic motivation or amotivation, along with high stress and anxiety and insufficient recovery from training, can all increase the risk for athlete burnout (Goodger et al., 2007).

Finally, conclusions from a more recent systematic review and meta-analysis on burnout and SDT have largely supported links between psychological needs satisfaction, self-determined motivation, and athlete burnout (Li, Wang, Pyun, & Kee, 2013). The authors of this review confirmed that SDT is, in fact, an appropriate framework for the study of athlete burnout, given that both needs satisfaction and type of motivation were highly predictive of the outcome (Li et al., 2013).

Athlete Individual Differences (Coping Skills)

Research on the coach-athlete relationship has consistently the importance of accounting for both members of the dyad. Caron and Bennett (1977), for example, noted that, “An accurate assessment of the factors contributing to or detracting from coach-athlete compatibility must take into account the needs, involvement and contributions of both” (p. 672). Similarly, a recent article providing recommendations for future research

on coach-athlete relationships noted the need for focusing on more than one member of the relationship at a time.

From an interpersonal perspective, focusing on one participant in the relationship at a time... is a problem in that it may miss or misrepresent some of the more complex issues that are inherently present in the interpersonal dynamics in the athlete-coach dyad (Poczwardowski et al., 2006, p. 129).

These two articles, written nearly 30 years apart, suggest that considerable gaps still exist in the literature on coach-athlete relationships, and that steps must be taken to further our understanding of these relationships on the basis of these recommendations.

The final area of interest in this literature review, and the means by which the current study set itself apart from others before it, concerns the role of athlete attributes in the coach-athlete relationship. Ultimately, the current study sought to better understand how athlete attributes operate within the coach-athlete relationship and potentially impact an array of variables from either side, including: perceptions of coaching behavior, psychological needs satisfaction, motivation, and athlete burnout.

In line with research on how different athletes relate to coaching behavior in different ways, Stirling and Kerr (2013) conducted interviews with 14 retired athletes from a range of sports, examining how they were impacted by emotional abuse on the part of the coach. Responses indicated that athletes perceived emotionally abusive coaches to have a range of negative effects on outcomes related to their well-being and performance, including: low self-efficacy, poor body image, increased anxiety, decreased motivation, and decreased enjoyment. However, many athletes in the sample (n=11) also indicated that the emotional abuse actually increased their motivation, while some (n=3)

reported that it enhanced their performance. One athlete even noted that when a coach yells, it simply shows that he/she cares (Stirling & Kerr, 2013).

In their model of coaching, Smoll and Smith (1989) acknowledged certain assumptions concerning the potential impact of athlete individual differences. In short, they suggested that the impact of coaching behavior could be mediated, in part, by the meaning an athlete attaches to a behavior (e.g., some athletes may value a behavior such as positive feedback more than others). Smoll and Smith (1989) also hypothesized that athlete factors such as age, sex, perceived coaching norms, valence of coach behaviors, trait anxiety, and self-esteem could all potentially impact athletes' perceptions of, and evaluative reactions to, behaviors of their coaches.

Davis and Jowett's (2014) study took a step towards understanding how athletes' perceptions of coaching behaviors can differ depending on individual differences, concluding that athletes with avoidant attachment styles perceived less social support from their coach. Similarly, Kenow and Williams (1999) found links between an athlete's trait anxiety and levels of self-confidence and athlete perceptions of coaching behavior. The role of individual anxiety has also been explored with regards to its impact on one's coaching *preferences*. Horn, Bloom, Berglund, and Packard (2011), for example, showed that psychological characteristics (trait anxiety and motivational orientation) of an athlete do, in fact, predict one's preferences for coaching behavior.

Nevertheless, despite the likelihood that such perceptions and preferences for coaching behavior are consistently influenced by athlete characteristics, there have been very few other studies dedicated to understanding this influence. As a result, in

attempting to generate a 'list' of ideal coaching behaviors, research on coach-athlete relationship often falls short of fully understanding the underlying mechanisms that might explain *why* an athlete prefers or perceives a coach to behave in a certain way, as well as the extent to which these perceptions vary from athlete to athlete.

Furthermore, there is a need to enhance our understanding of the disparities in needs satisfaction for multiple athletes who train and compete under the same coach. Similar to a trend of research on the impact of coaching behavior within the framework of SDT, Hollembeak and Amorose (2005) proposed and partially demonstrated a mediational model reflecting the relationship between leadership behaviors, the satisfaction of athlete psychological needs (competence, autonomy, and relatedness), and athlete intrinsic motivation. Most of the findings were consistent with the hypothesized relationships, suggesting that the satisfaction of psychological needs mediated the relationship between coaching behaviors and intrinsic motivation. However, several results were counter-intuitive and unanticipated. For example, the dimension of coaching behavior called "Training and Instruction" was shown to have an insignificant relationship with athlete "perceived competence." The researchers suggested that the absence of this relationship might have been the result of athlete's reliance on other factors to determine competence. Such findings and speculation seem to beg the examination of additional factors potentially contributing to the quality of the coach-athlete relationship and effectiveness of various coaching styles. Based on these unanticipated results and a need to further understand the interactions between coach and player variables, the current study engaged in a more nuanced examination of this

relationship, focusing on the role of psychological coping skills in the coach-athlete relationship (Smith et al., 1995).

Smith et al., (1995) introduced a new measure (the Athletic Coping Skills Inventory-28; ACSI-28) designed to test athlete differences in the form of psychological coping skills. The ACSI-28 was used in the current study because it provided a measure of athlete characteristics that are specifically relevant to applied sport psychology practices. In the interest of maximizing discussion concerning practical implications of studying the coach-athlete relationship, this study used the ACSI-28 as a focal point.

The use of the ACSI-28 in literature has indicated that these coping skills are significant predictors of lower stress and higher life satisfaction (Surujlal, Zyl, & Nolan, 2013), and better performance and likelihood for a prolonged professional career (Smith & Christensen, 1995). Furthermore Sheldon and Eccles (2005) examined 466 tennis players and found that six out of seven of these coping skills were positively correlated with an athlete's self-perceptions of ability, while four out of seven were positively correlated with one's rating by the United States Tennis Association (USTA).

The argument could be made that the central vein of the current study has already been accounted for by another model of leadership: namely, Smoll and Smith's (1989) meditational model, "...[which] stipulates that the ultimate effects of coaching behaviors are mediated by the meaning that players attribute to them" (p. 1527). However, while Smoll and Smith's (1989) model did, in fact, conceptualize the mediating effects of athlete differences (e.g., personality, cognitive interpretation, etc.) in relationships between coaching behaviors and athlete outcomes, the model (and its authors) advocated

for observational measurement with regards to coaching behavior. Based on several limitations identified (and discussed previously) with observational measurement of coaching behaviors, the current study opted to focus on athlete *perceptions* of coaching behaviors, measured through the Leadership Scale for Sports (Chelladurai & Saleh, 1980).

As such, while the current study has elements similar to the meditational model of leadership, it omitted overt coaching behavior from its measurement, electing instead to examine how athlete attributes impact *perceptions* of coaching behavior, as well as outcomes related to those perceptions. In many ways, the current study is similar to the approach used in Kenow and Williams (1999), whose results indicated that highly anxious athletes and those low in self-confidence were more likely to have negative perceptions of their coaches. The current study employs a systematic approach to looking at similar phenomena, by focusing on a particular set of athlete psychological coping skills (Smith et al., 1995).

Theoretical Models

Based on its expansion of the theoretical model put forth and tested by Hollembeak and Amorose (2005), this study added to prior research by looking at additional forms of athlete motivation as well as athlete burnout. Furthermore, the study's focus on psychological coping skills added a new dimension to the current literature base.

The following figures provide conceptual models of the study. Expansions on prior research and theoretical models (Hollembeak & Amorose, 2005) are displayed in

red. *Figure 3* depicts the hypothesized model of mediation originally proposed and assessed in Hollembeak and Amorose (2005).

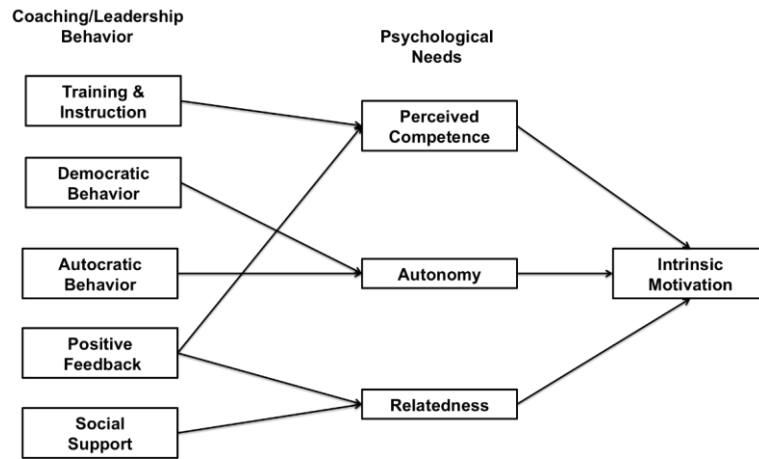


Figure 3. Hypothesized Mediation Model from Hollembeak and Amorose (2005)
(Hollembeak & Amorose, 2005, p. 23)

Figure 4 depicts the same model with the addition of several other outcome variables of interest in the present study for athletes, including amotivation, extrinsic motivation (i.e., external regulation, introjected regulation, identified regulation, and integrated regulation), and burnout.

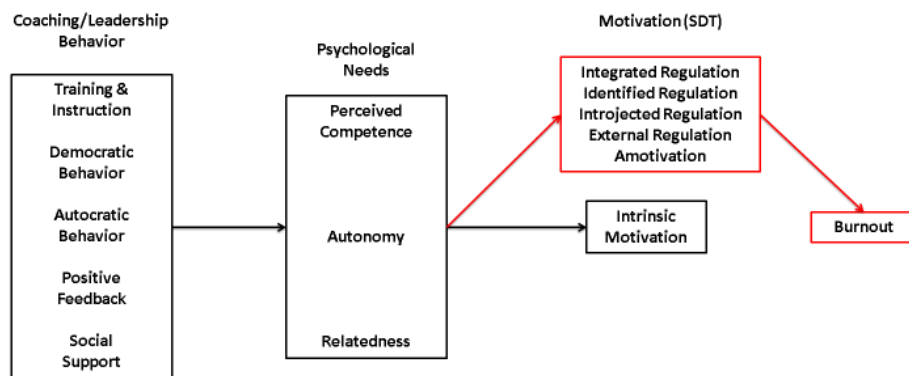


Figure 4. Expanded Model (with additional outcome variables)

Figure 5 displays the potential influence that athlete coping skills might have on preferences and perceptions of coaching behavior, psychological needs satisfaction, motivation, and burnout.

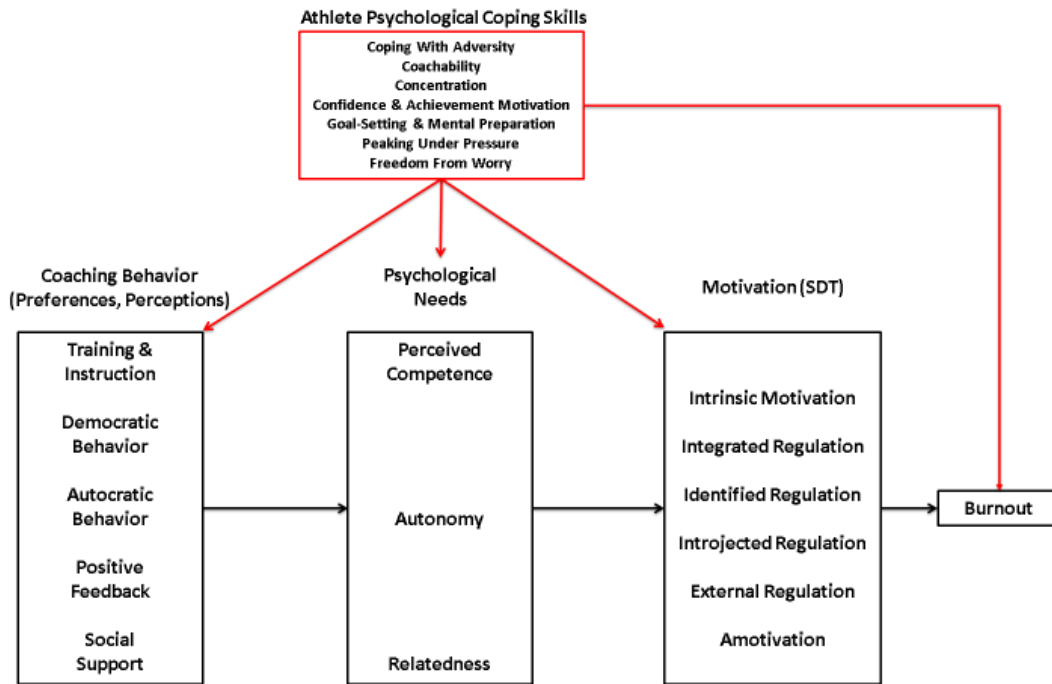


Figure 5. The Projected Influence of Athlete Psychological Coping Skills

Finally, Figure 6 turns this conceptual model into a hypothesized model of mediation (Hypothesis 5), whereby the relationships between perceived coaching behavior and psychological needs satisfaction are mediated by athlete differences (psychological skills).

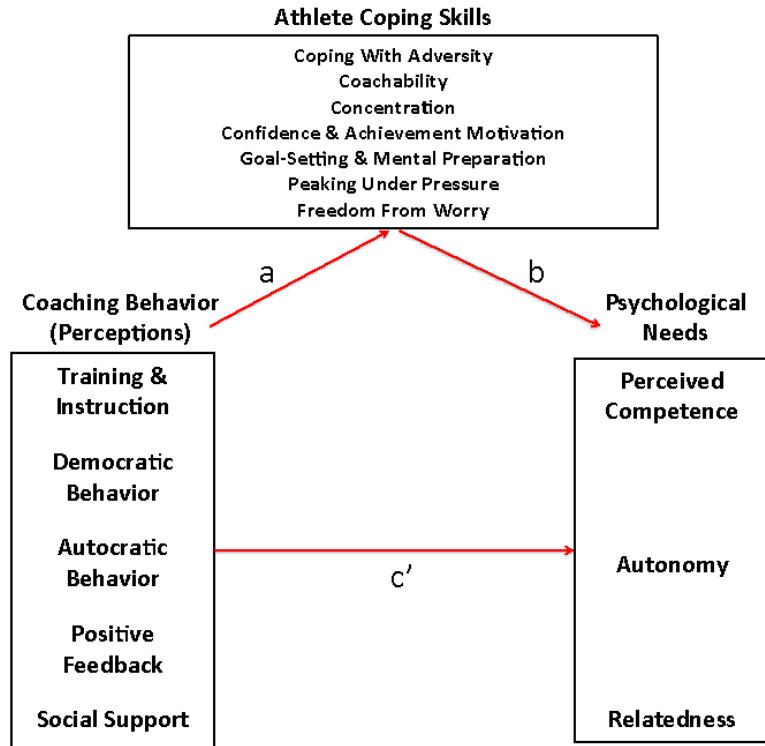


Figure 6. Hypothesized Mediation Model of Athlete Psychological Coping Skills

CHAPTER 3

METHODS

The following sections outline methodological aspects of this study, including the design, decisions regarding the epistemological approach, a description of the program that underwent evaluation, participants, instrumentation and psychometric properties of the measurements, the nature of study procedures/participation, anonymity and confidentiality, and data analysis.

Study Design

The current study was largely exploratory in nature. It sought to provide further insight into athlete experiences in an elite youth development context, as well as the coach-athlete relationship within that context. Furthermore, the study targeted a specified population. As such, it should be noted that any results, interpretation, and discussion are descriptive in the extent to which they specifically reflect the sample and environment of interest. The study design was developed in an effort to collect a snapshot of athlete experiences across four months in this program. Questionnaires were administered once during preseason to provide baseline measurements for many of the constructs, and again four months later, at the conclusion of the fall portion of the season.

Epistemological Approach

There is reason to suggest that a mixed-methods approach (including a qualitative component) would have enhanced the depth of this study's results and conclusions, given that greater insight into athlete experiences in the coach-athlete relationship could have

been gathered through semi-structured interviews. However, a solely quantitative approach was deemed the most appropriate, given time constraints in data collection, as well as the study's specific purpose (see *Figure 6*) and relatively large sample size (Poczwardowski et al., 2006). Given a broad theoretical framework, and consideration for relationships between several different variables operating within that framework, a quantitative method seemed most efficient for this purpose. Nevertheless, while time constraints restricted the inclusion of semi-structured athlete interviews in the current study, mixed methods research would conceivably offer even greater insight into coach-athlete relationships in youth sports.

In many ways, the present study sought to address the call for methodological “diversification” made in Poczwardowski et al. (2006), by incorporating theory (i.e., SDT) from other related disciplines, and expanding on the range of variables (i.e., motivation, burnout, athlete needs, athlete perceptions, athlete attributes) of interest. In line with Poczwardowski's et al. (2006) recommendations, the study examined multiple units of analysis; however, it fell short of focusing on other levels of analysis, beyond the individual (i.e., group, cultural, institutional, cultural, etc.).

Program Description and Participants

As noted previously, the current study targeted a population of interest, and as such, the subjects were pre-selected as a whole group. Seventy-one athletes in an all-male athletic development academy located on the east coast completed the first set of questionnaires during preseason. However, four of them were dropped from the study, as their involvement in the academy program ended for a variety of reasons. The final

sample was comprised of 67 athletes (100% male, ages 12-18) and three coaches (three males, ranging in age from 44 to 55). The academy's philosophical focus is one of holistic development. In addition to training and competition, the players also receive supplementary instruction and support in the areas of sport science and sport psychology (with both educational and performance enhancement components). The top tier of the academy's youth developmental model consists of three high-level youth teams, which train 4-5 days a week, and compete for 9-10 months out of the year, against other academy teams around the country in their respective age groups. Below this tier, several training groups and developmental programs provide high-level training environments for younger players in the geographical area and ultimately serve as feeder pools for the three academy teams.

Athletes on the three youth academy teams made up the sample in this study. Inclusion on these teams is based on a process of scouting and formal/informal tryout procedures. Players, based both locally and non-locally, are often invited to tryout for the academy teams, and are selected based on an ongoing evaluation process to one of the three age groups (Under 14, Under 16, and Under 18) for the coming year. The chief focus of the academy system is one of youth development and performance, while winning is a secondary emphasis. It is important to note that, given its primary emphasis on development, the academy age group structure is fluid, and players can be moved around during the season depending on skill level and the needs of respective teams. Prior to data collection, this was preemptively recognized as a potential obstacle in the measurement and aggregation of athlete perceptions of coaching behavior. As such, at

the second phase of data collection, players were asked to provide perceptions of coaching behavior for the coach with whom they trained/competed most during the four-month period. The coaches had minimal participation requirements in the study, completing only a single questionnaire (perceptions of one's own coaching behavior) at the conclusion of the data collection period. While each team has both a head coach and an assistant, the study focused solely on the coaching behavior of the head coach, because the assistant has substantially less exposure and contact with the players on a consistent basis throughout the season.

Instrumentation/Measures

The following instruments were used to measure variables of interest in the present study:

- *The Leadership Scale for Sports (LSS)*, assessing both athlete preferences for, and perceptions of, coaching behaviors (Chelladurai & Saleh, 1980)
- *The Athletic Coping Skills Inventory (ACSI-28)*, assessing athlete psychological coping skills (Smith et al., 1995)
- *The Basic Needs Satisfaction in Sport Scale (BNSS)*, assessing the extent of athlete perceived satisfaction of three psychological needs: competence, autonomy, and relatedness (Ng, Lonsdale, & Hodge, 2011)
- *The Behavioral Regulation in Sport Questionnaire (BRSQ)*, measuring various types of athlete motivation (Lonsdale, Hodge, & Rose, 2008)
- *The Athlete Burnout Questionnaire (ABQ)*, assessing athlete burnout (Raedeke & Smith, 2001)

The following subsections outline the operationalization of each construct or variable, and discuss previously reported psychometric properties of each scale and subscale.

Measuring Coaching/Leadership Behavior

Coaching/leadership behavior will be measured using the Leadership Scale for Sports (LSS) – a measurement of five leadership dimensions developed under the Multidimensional Model of Sport Leadership (Chelladurai, 1978, 1993; Chelladurai & Saleh, 1980). Wylleman (2000) noted that the LSS has been identified as providing an appropriate measurement of interpersonal interaction in sports. The LSS is made up of 40 items, measuring five factors or dimensions of sport leadership or coaching behavior: Training and Instruction (13 items), Democratic Behavior (9 items), Autocratic Behavior (5 items), Social Support (8 items), and Positive Feedback (5 items).

The current study used a slightly altered version of the LSS (Chelladurai & Saleh, 1980). In the original development of the scale (and subsequent instances in which it has been used in research), respondents complete each of the 40 items by selecting an option from the following five-point Likert Scale to indicate how often their coach exemplifies the stated behavior: (1) Never; (2) Seldom – 25% of the time; (3) Occasionally – 50% of the time; (4) Often – 75% of the time; and (5) Always. Considering some of the challenges younger participants may face in responding to the items using a time-oriented conceptualization of behavior, a decision was made to change the anchors of the 5-point response scale to: (1) Strongly Disagree, (2) Disagree, (3) Neither Agree Nor Disagree, (4) Agree, and (5) Strongly Agree. This alteration was made in an attempt to cater the

questionnaire to a more appropriate comprehension level for the younger athletes.¹

Reliability data was collected to compare the scale anchors used in the current study to those of the original scale (see later section in Chapter 5 entitled “Modified Version of LSS”).

Depending on how the items are worded, research has used the LSS to assess three different phenomena: Athletes’ *preferences* for coach behavior, athletes’ *perceptions* of coach behavior, and coaches’ *perceptions* of their own behavior. When administered, the 40 items are preceded by the following three phrases to reflect these phenomena, respectively: “I prefer my coach to...”; “My coach...”; and “As a coach, I...”. For the current study, athletes completed a “preferred” version of the LSS during preseason, while both athletes and coaches completed “perceived” versions of the scale after four months.

The LSS does not yield a total “coaching” score. Rather, subscale scores are calculated by averaging the item scores for each of the five dimensions of coaching behavior, and higher subscale scores equate to higher levels of the behavior (including autocratic behavior). The 13 items assessing *training and instruction* behavior (e.g., “My coach points out each athlete’s strengths and weaknesses.”) assess the extent to which a coach is able to “improve the performance level of the athlete” through effective

¹ Prior to making this change, this study’s investigator contacted the primary developer of the LSS (P. Chelladurai), to request consultation on the feasibility of this potential alteration. P. Chelladurai felt that changing the response scale anchors would not pose a problem or undermine the measurement’s integrity, but suggested that comparisons of reliability between this study and published studies using the LSS be discussed to assess the effectiveness of this change (P. Chelladurai, personal communication, August 3, 2014).

instruction of necessary skills, techniques, and tactical information (Chelladurai & Saleh, 1980, p. 41). Training and instruction has been shown to be of considerable significance, as a perceived lack of quality in a coach's expertise and instructional ability has been shown to negatively impact the coach-athlete relationship, as well as the performance and wellbeing of the athlete (Jowett & Cockerill, 2003). Furthermore, elite athletes have noted that great coaching experiences typically emerge under knowledgeable, experienced coaches who facilitate "well planned, highly structured, and game-like" training environments (Becker, 2009, p. 103).

The nine items assessing *democratic behavior* (e.g., "My coach lets the group set its own goals") are used to convey the extent to which a coach allows for and encourages involvement from athletes in decision-making processes. Alternatively, the five items used to assess *autocratic behavior* (e.g., "My coach speaks in a manner not to be questioned") reflect the extent to which a coach takes an authoritative approach, and distances him or herself from the athletes.

The eight items assessing *social support* (e.g., "My coach helps athletes with their personal problems") reflect the extent to which a coach displays "personal concern for individual athletes and their welfare and is aimed at developing a positive group atmosphere and fostering warm interpersonal relations among team members" (Chelladurai & Carron, 1983, p. 375). Research on the coach-athlete relationship has suggested that social support is an important contribution coaches can make to an athlete's performance, wellbeing, and development (Philippe & Seiler, 2006).

Finally, the five items assessing *positive feedback* (e.g., “My coach gives credit when credit is due”) reflect the extent to which a coach expresses “appreciation and [compliments] the athletes for their performance and contribution” (Chelladurai & Saleh, 1980, p. 43). Positive feedback has been shown to play a powerful role in the quality of the coach-athlete relationship, as well as various athlete-related outcomes. Specifically, positive verbal feedback has been shown to contribute directly to an individual’s intrinsic motivation in a task (Vallerand & Reid, 1984), and is also associated with an individual’s increased feelings of competence, which, in turn, enhances intrinsic motivation (Vallerand, 1983).

The development of the LSS entailed assessing validity and reliability through a follow-up factor analysis after the scale was originally produced, because the initial paper failed to discuss these properties (Chelladurai & Saleh, 1978). In the process of developing and validating the LSS (Chelladurai & Saleh, 1980), internal consistency values (Cronbach’s alpha) were deemed to be sufficient, ranging from .45-.93 for all five dimensions, with all but one of the coefficients falling above .65. The one coefficient of concern (autocratic behavior; $\alpha = .45$) emerged out of only one of the samples when measuring preferred coaching behavior. However, any such concern was at least partially mitigated through the sufficient reliability of autocratic behavior when administered to the other samples ($\alpha = .66$, $\alpha = .79$), in its other format (perceived behavior). Test-retest reliability of the LSS also yielded sufficient values, ranging from .71-.82 (Chelladurai & Saleh, 1980). Finally, Chelladurai and Saleh (1980) noted strong face, factorial, and content validity in their article, based on replication and interpretation of the five

dimensions. Furthermore, as cited in Tenenbaum et al. (2012), evidence of construct and concurrent validity have been demonstrated by subsequent research using the LSS (Chelladurai, 1993; Chelladurai and Reimer, 1998; Cumming, Smith, & Smoll, 2006). See Appendix A for a full version of the LSS used in this study.

Measuring Athlete Psychological Coping Skills

Participants in this study completed the Athletic Coping Skills Inventory (ACSI-28) on two occasions: once during preseason and again at the conclusion of the fall season (four months later). The ACSI-28 (Smith et al., 1995) was developed with the intention of measuring a “multifaceted psychological skills construct” (p. 379). The scale consists of 28 items, developed and validated from a previous unpublished 42-item version ACSI (Smith, Smoll, & Schutz, 1988). Respondents use a 4-point Likert scale, ranging from 0=*Almost Never* to 4=*Almost Always*.

The original 42 items, divided into eight subscales representing specific psychological skills, were narrowed in the validation process using various confirmatory factor analyses (CFAs) into 28 items and seven finalized subscales. These sub-factors were named based on the content of the four items in each category: Coping With Adversity, Peaking Under Pressure, Goal Setting/Mental Preparation, Concentration, Freedom From Worry, Confidence and Achievement Motivation, and Coachability. It is worth noting that Smith et al., (1995) tested the multidimensional nature of the seven subscales against one overarching psychological skills construct made up of all 28 items, and found that a single construct was not sufficient. Instead, the scale better reflects the seven aforementioned unique sub-factors. However, the authors noted that, “In many

instances, a global measure of psychological coping skills...is sufficient, but in others, investigators need a measure of specific and relatively distinct psychological characteristics. The ACSI-28 is our initial attempt to provide a psychometrically sound measure that can meet both needs” (Smith et al., 1995, p. 391). Furthermore, recent studies using the ACSI-28 have frequently included a total “Personal Resources” coping score in their analyses (Johnson & Ivarsson, 2011; Poczwardowski, Diehl, O’Neil, & Cote, 2014). As such, the current study included calculation of an overall coping skills score (Total Coping Skills) with this sample.

Scores on the ACSI-28 are calculated simply by adding up the item responses for each subscale. There are 6 negatively worded items (two measuring Coachability, and all four measuring Freedom From Worry) on the ACSI that are reverse-scored (e.g., “I worry quite a bit about what others think of my performance”; “When a coach or manager criticizes me, I become upset rather than feel helped”; etc.).

During scale development, similar psychometric properties of the ACSI-28 were demonstrated for both males and females (Smith et al., 1995). The seven factors accounted for 53% and 58% of variance in males and females, respectively. Internal consistency values for the seven subscales were not markedly high across all groups (Cronbach’s alphas ranged from $\alpha = .62$ to $\alpha = .78$), which the authors attributed to the small number of items (four) for each of the factors. Based on these limitations, Smith et al. (1995) further suggested that factor validity better represents the quality of the scale. Likewise, while the alpha coefficient was much higher for a comprehensive (28-item) psychological skills construct (termed “Personal Coping Resources”), this was deemed to

be a result of the large number of items when grouped together as a total. Test-retest reliability coefficients for the subscales were relatively high, (ranging from $\alpha = .63$ to $\alpha = .87$), with the sole exception of coachability ($\alpha = .47$).

Scale development also assessed the relationships between the ACSI-28 and various other measurements, and results provided evidence of the scale's convergent and discriminant validity. While further testing of the ACSI-28 showed that it did not reliably predict athletic performance, Smith et al. (1995) noted that the measurement provided merely a snapshot of a range of psychological skills often associated with athletic experiences. Furthermore, the results and psychometric properties outlined in their write-up suggest that the scale "maps onto a set of seven latent variables that conform to the current conceptions of important psychological skills" (Smith et al., 1995, p. 392).

Due to the fact that scores on the ACS-28 in the present study were collected at two different points in time (preseason and postseason), it was impossible to reliably determine which score most accurately reflected an athlete's coping skills. As such, for the purposes of data analysis in this study, scale and subscale measurements from the ACSI were averaged across the two data points. Unless otherwise specified, results involving any of the seven coping skills or the Total Coping Skills score reflect a player average across pre- and post-season measurements. See Appendix B for a full version of the ACSI-28 used in this study.

Measuring Psychological Needs Satisfaction

The satisfaction of athlete psychological needs in accordance with SDT (Ryan & Deci, 2000b) was assessed using the Basic Needs Satisfaction in Sport Scale (BNSSS), developed by Ng et al. (2011). Grounded in SDT, the BNSSS was designed to allow for a sport-specific assessment of the satisfaction of the three psychological needs (competence, autonomy, and relatedness). The scale itself is composed of 20 items, divided across five subscales (including three forms of autonomy): Competence (5 items), Relatedness (5 items), Autonomy – Perceived choice (4 items), Autonomy – Internal perceived locus of causality (IPLOC; 3 items), and Autonomy – Volition (3 items). Respondents used a 7-point Likert scale, ranging from (1) *Not at all true* to (7) *Very true*. Factor scores on the BNSSS are calculated by averaging the item values for each subscale. There is one negatively-worded item on the BNSSS for the subscale Autonomy-Volition, which required reverse-scoring: “In my sport, I feel that I am being forced to do things that I don’t want to do.” Scores can be generated to reflect general autonomy (10 items) or the three subscales of autonomy (Choice, IPLOC, or Volition).

Development and initial validation of the BNSSS was conducted across three separate studies ($n = 273$, $n = 401$, and $n = 63$), which revealed that both reliability and construct validity were sufficient (Ng et al., 2011). After the initial pool of items was developed and refined from Study 1, Study 2 indicated that alpha coefficients for the subscales ranged from .61 to .82, and showed support for content, factorial, and nomological validity. In Study 3, test-retest reliability was demonstrated using 63 athletes at a university in Hong Kong. Preliminary support for test-retest reliability was

demonstrated, as intra-class coefficients (ICC) were sufficient, ranging from .74 to .87. In addition to its strong psychometric properties, the BNSSS can be used to measure the perceived satisfaction of psychological needs in nearly any sport-specific domain. See Appendix C for a full version of the BNSSS used in the current study.

Measuring Motivation

The current study used the Behavioral Regulation in Sport Questionnaire (BRSQ) developed and validated by Lonsdale et al. (2008) to measure various types of athlete motivation, as reflected by Self-Determination Theory (Ryan & Deci, 2000b). It is worth noting that the original (Pelletier et al., 1995) and revised (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013) versions of the Sport Motivation Scale (SMS and SMS-II, respectively) have both been used more frequently in research on athlete motivation. However, upon review, many of the items on these scales seemed to be too lengthy and potentially beyond the appropriate reading/comprehension level for the intended sample in the current study (ages 12-18). On the other hand, the phrasing of the individual items and the verbal anchors for the response scale on the BRSQ were deemed to be of an appropriate comprehension level (Lonsdale et al., 2008). Furthermore, a recent review comparing motivation scales noted that, while it is an improvement on the original SMS, there is a lack of evidence to suggest that the SMS-II is superior to the BRSQ (Lonsdale, Hodge, Hargreaves, & Ng, 2014).

The full version of the BRSQ is comprised of 36 items divided equally among the following nine factors (4 items per factor): Amotivation, External Regulation, Introjected Regulation, Identified Regulation, Integrated Regulation, Intrinsic Motivation – General,

Intrinsic Motivation – Knowledge (IMK), Intrinsic Motivation – Stimulation (IMS), and Intrinsic Motivation – Accomplish (IMA).

The types of motivation conceptualized in the BRSQ are a reflection of the continuum of motivation outlined in Self-Determination Theory (see Figure 2) and a multidimensional conceptualization of Intrinsic Motivation (IM), proposed by Vallerand (1997). Amotivation (AM) refers to a lack of motivation, while four types of extrinsic motivation are organized along a continuum depending on the extent to which they are controlled or autonomously regulated (Lonsdale et al., 2008). External Regulation (EX) corresponds to motivation that originates externally out of an individual's desire to avoid punishment or acquire a reward. Introjected Regulation (IJ) refers to individuals who engage in behavior in order to avoid guilt or shame or, alternatively, to contribute to their ego. Identified Regulation (ID) originates somewhat more autonomously on the part of the individual, and refers to the internal valuation of a goal or outcome that comes from engaging in a behavior. Integrated Regulation (IG), the most autonomous of the extrinsic forms of motivation, refers to an activity that an individual feels is “in congruence with deeply held values and his or her sense of self” (Lonsdale et al., 2008, p. 325). While IG is the most self-determined form of Extrinsic Motivation (EM), it is still distinguished from Intrinsic Motivation (IM), in that it is not based on engaging in an activity purely for enjoyment or satisfaction in the activity itself.

The original BRSQ permits administration in a 32- or 24-item format, depending on a study's conceptualization of IM. In addition to a general IM construct, prior research (e.g., Vallerand, 1997) has often conceptualized and operationalized IM as

multidimensional. Intrinsic Motivation – Knowledge (IMK) refers to one’s enjoyment in learning or acquiring expertise. Intrinsic Motivation – Stimulation (IMS) refers to individuals who engage in an activity because of the enjoyable sensations the activity provides. Finally, Intrinsic Motivation – Accomplish (IMA) corresponds to the enjoyment in a behavior based (not on accomplishment, but) on positive feelings one encounters when striving for accomplishment (Lonsdale et al., 2008). Given this study’s specific objectives, and the fact that even revisions to other sport motivation scales moved toward a one-dimensional conceptualization of IM (Pelletier et al., 2013), the decision was made to use the 24-item BRSQ (incorporating a generalized measurement of IM). Scores are calculated by averaging the items on each subscale.

Development and validation of the BRSQ provided initial support for the scale’s internal consistency, test-retest reliability, and nomological validity (Lonsdale et al., 2008). Scale items were developed from interviews, reviewed by experts, and tested through a pilot study. Internal consistency values (Cronbach’s alphas) were deemed sufficient, ranging from .76 to .91. Furthermore, Lonsdale et al. (2008) demonstrated the BRSQ’s strong factorial validity, and a subsequent comparison even suggested that it was stronger than the SMS-II, based on certain psychometric criteria (Hu & Bentler, 1999: as cited in Lonsdale et al., 2014). Finally, test-retest reliability coefficients for 34 male rugby players were also acceptable across a 1-week period, as subscale values ranged from .73 to .90 across all nine factors (including the three types of intrinsic motivation and general intrinsic motivation). See Appendix D for the version of the BRSQ used in the present study.

Measuring Burnout

Burnout was assessed using the Athlete Burnout Questionnaire (ABQ), developed and validated by Raedeke and Smith (2001). In the interest of fueling more focused research on the nature and antecedents of athlete burnout, Raedeke and Smith (2001) set out to propose a burnout measure specifically designed for sport. Development of the scale yielded three burnout dimensions: Reduced sense of accomplishment (RA), emotional/physical exhaustion (E), and devaluation (D). The measurement includes 15 items, divided evenly across the three dimensions, and participants respond to each item using a 5-point Likert scale, ranging from (1) Almost Never to (5) Almost Always. Subscale scores are calculated by averaging the responses across the items in a dimension (i.e., Reduced Accomplishment, Exhaustion, and Devaluation). There are two negatively-worded items in the ABQ that required reverse-scoring: “I’m accomplishing many worthwhile things in [sport]”, and “I feel successful at [sport]”.

In the first phase of scale development, when the ABQ included 21 items, internal consistency was sufficient, as alpha coefficients ranged from .78-.89. The second phase of the research, involving the finalized ABQ yielded Cronbach’s alphas ranging from .84-.88 for the three subscales. Construct validity was supported through expected relationships between dimensions of the ABQ and other constructs (positive relationships emerged with trait anxiety and amotivation; negative relationships emerged with variables such as sport enjoyment, intrinsic motivation, and commitment). Test-retest reliability was also established in the third study of Raedeke and Smith’s (2001) development of the ABQ. Coefficients for exhaustion (.92), reduced sense of

accomplishment (.86), and devaluation (.92) were also all deemed sufficient. See Appendix E for a full version of the ABQ used in the present study.

Procedure/Participation Requirements

The preselected sample was used as the participant pool for the current study, given that it targeted a population within a specific environment. For the purposes of reporting aggregated results, parents of the athletes were provided an informational document explaining details of the study, and were given the opportunity to sign an informed consent release, allowing results to be used for future reports, presentations, and/or publications. See Appendix F for a version of this consent document, with identifying information associated with the sample redacted.

Data collection commenced in the middle of August, during the first week of preseason for the three academy teams. Athlete participation in this study involved the completion of questionnaires once during preseason, and again four months later, at the end of the fall portion of the season. Over the course of the four months, the three teams each trained 4-5 days per week. The two older teams ($n = 42$) each played 14 games across four months, while the youngest team ($n = 25$) played 12 games. At both stages of data collection, questionnaires were administered in pencil/paper format in a controlled environment (a quiet room). Coaches were not present in the room while athletes completed their questionnaires. During the first week of preseason (in August), the following scales were administered: the “preferred” format of the Leadership Scale for Sports (LSS), the Athletic Coping Skills Inventory-28 (ACSI-28), the Basic Needs Satisfaction in Sport Scale (BNSSS), the Behavioral Regulation in Sport Questionnaire

(BRSQ), and the Athlete Burnout Questionnaire (ABQ). In November (four months later), athletes completed the same set of questionnaires, with the exception of the LSS, which was administered in a “perceived” format (Chelladurai & Saleh, 1980). Coaches also completed a *perceived* version of the LSS in November, assessing their own perceptions of their coaching behaviors across the four months.

Even though the follow-up measurement occurred after the first half of the season (four months after preseason), throughout subsequent sections, the two stages of data collection will be referred to, for the sake of simplicity, as “preseason” and “postseason”.

Anonymity and Confidentiality

Throughout data collection and analysis, every effort was taken to ensure participant confidentiality and anonymity. Participants were asked to not write their names on questionnaires. However, after completing the first phase of data collection, their responses were placed in envelopes with their names on the outside, to allow the investigator to match their preseason responses with those collected four months later. All questionnaires were kept in a locked room during this process.

Data Analysis

Following the conclusion of data collection, all responses were entered into SPSS. By checking minimum and maximum values on each scale, variables were inspected for significant errors in data entry, as well as issues concerning variance or skew.

It is worth noting that this study’s relatively small sample size (N = 67) limited the number of statistical tests that could be used. Research questions were largely

addressed through correlational analyses, and findings were then expanded with tests of multiple regression and mediation. Preliminary data analysis started with tests of internal consistency to determine the reliability of each scale and subscale (see Table 2 for Cronbach's alphas for all variables). Subsequently, descriptive statistics (means, standard deviations, minimum and maximum values) were generated for all variables (see Table 3). A paired samples t-test was conducted to determine the extent to which athlete coping skills were consistent across points of measurement. Inter-correlations between variables are also displayed in Table 3.

Inferential statistical analyses were conducted in accordance with the research questions. Primary relationships between variables (Hypotheses 1a-c, 2a-b, 3a-b, and 4a-c) were assessed using a combination of correlation and multiple regression analyses. Due to the large number of variables used in this study, unless otherwise stated, multiple regression analyses were run with the total scale score of a variable rather than the subscale scores (i.e., Autonomy Total was used in place of autonomy-choice, autonomy-IPLOC, or autonomy-volition), in an effort keep models as parsimonious as possible.

Tests of mediation were used to assess Hypothesis 5. Mediation analyses were conducted using Preacher and Hayes' (2008) SPSS indirect mediation macro, which generated path coefficients through bootstrapping. Mediation path models (with statistical coefficients) were constructed using an online graphical program (Jose, 2013). Components of the hypothesized model (see Figures 5 and 6) were examined through multiple regression and mediation analyses. While structural equation modeling (SEM)

is often used to fully test models like this, this study's sample ($N = 67$) was well below the necessary size to conduct such an analysis.

CHAPTER 4

RESULTS AND DISCUSSION

The following sections will outline results of this study, organized in accordance with the main hypotheses, as well as any exploratory analyses that were conducted for further understanding. In addition to an overview of sample demographics (see Table 1), the sections will review scale reliability (see Table 2), independent samples t-tests, descriptive stats and correlations between scales and subscales (see Tables 3-7), regression analyses, and tests of mediation. For all multiple regression analyses, multicollinearity statistics were examined (no variables were removed from a model, as VIF statistics all fell below 3.00). The inferential statistical analyses will be organized in accordance with the hypotheses, to reflect the extent to which this study (1) re-tested and expanded on previous research (e.g., Hollebeak & Amorose, 2005), and (2) examined the central variable of interest (athlete psychological coping skills).

Demographics

In total, 67 male athletes and three coaches participated in this study. Athletes ranged in age from 12 to 18 years old ($M = 14.91$, $SD = 1.47$), while coaches ranged in age from 44 to 55 years old. Playing experience for the athletes varied considerably, from 4 to 15 years of experience ($M = 10.12$, $SD = 2.20$), while prior years of participation in the academy program ranged from 0 to 7 ($M = 2.68$, $SD = 2.17$). Table 1 provides an overview and breakdown of demographics for the sample of athletes and subgroups. While analyses in this paper will examine the full sample ($N = 67$), Table 1

also displays the demographics for each of the three teams (U-14s, U-16s, and U-18s) as well.

Table 1. Participant Demographic Information

	Team 1 (n = 25)	Team 2 (n = 27)	Team 3 (n = 15)	Full Sample (N = 67)
Age (years)				
Min	12.00	14.00	16.00	12.00
Max	14.00	16.00	18.00	18.00
M	13.40	15.15	17.00	14.91
SD	.58	.60	.38	1.47
Ethnicity (%)				
African American	9 (36%)	5 (18.5%)	6 (40%)	20 (29.9%)
Caucasian/White	12 (48%)	15 (55.6%)	7 (46.7%)	34 (50.7%)
Hispanic/Latino	2 (8%)	5 (18.5%)	2 (13.3%)	9 (13.4%)
Other*	2 (8%)	2 (7.4%)	0 (0%)	4 (6%)
Years on Team				
Min	0.00	0.00	0.00	0.00
Max	1.00	1.00	1.00	1.00
M	.16	.67	.53	.45
SD	.37	.48	.52	.50
Primary Position (%)				
Goalkeeper	2 (8%)	2 (7.4%)	1 (6.7%)	5 (7.5%)
Defender	7 (28%)	11 (40.7%)	5 (33.3%)	23 (34.3%)
Midfielder/Winger	11 (44%)	9 (33.3%)	7 (46.7%)	27 (40.3%)
Forward	5 (20%)	5 (18.5%)	2 (13.3%)	12 (17.9%)
Years in Academy				
Min	0.00	0.00	0.00	0.00
Max	6.00	7.00	6.00	7.00
M	2.00	2.89	3.40	2.68
SD	2.00	2.22	2.16	2.17
Years Playing Soccer				
Min	4.00	7.00	7.00	4.00
Max	11.00	13.00	15.00	15.00
M	8.80	10.22	12.13	10.12
SD	1.68	1.72	2.23	2.20

* Other reported ethnicities in the sample included: African (2), Portuguese, and African-American/Caucasian

Reliability Analysis

A summary of reliability (internal consistency) tests for the scales and subscales used in both preseason and post-season measurements can be found in Table 2. Across both stages of data collection, reliability coefficients (Cronbach's alphas) were, for the most part, sufficient, with most of the values falling above the commonly used threshold of .70 (Nunnally, 1978). However, reliability for the scales in preseason was notably lower than that of the same scales administered four months later. Of the 29 scales and subscales, 14 of them yielded Cronbach's alphas below the .70 threshold in preseason, while only five of them were insufficient at postseason measurement. Overall, reliability coefficients increased from preseason to postseason measurement for 25 out of 29 scales.

Throughout the following sections, most of the analyses focus on variables measured in the postseason. Three individual subscales measured during at postseason (ACSI – Concentration, ACSI – Confidence and Achievement Motivation, and BNSSS – Autonomy Volition) yielded Cronbach's alphas below the commonly accepted .70 threshold (.58, .53, and .42, respectively). However, each of these scales is composed of only 3-4 items, suggesting that reliability coefficients are difficult to interpret. As such, these and other postseason variables that exhibited reliability values marginally below .70 were included. However, it should be noted that results involving these subscales (Concentration, Confidence and Achievement Motivation, Autonomy-Volition, Integrated Regulation, and Burnout – Reduced Sense of Accomplishment) should be interpreted with caution, given the possibility that they may not have been measuring a single construct.

Table 2. Reliability Analyses for Full Scales and Subscales (Cronbach's Alpha)

Scale	Cronbach's Alpha	
	Pre	Post
LSS – Training and Instruction	.84	.90
LSS – Democratic Behavior	.78	.87
LSS – Autocratic Behavior	.78	.73
LSS – Social Support	.76	.81
LSS – Positive Feedback	.78	.85
ACSI – Coping With Adversity	.79	.79
ACSI – Coachability	.66*	.77
ACSI – Concentration	.55*	.58*
ACSI – Confidence & Achievement Motivation	.43*	.53*
ACSI – Goal-Setting and Mental Preparation	.69*	.80
ACSI – Peaking Under Pressure	.79	.87
ACSI – Freedom From Worry	.73	.80
ACSI – Coping Subscales Totaled^	.67*	.76
ACSI – Coping Items Totaled^	.82	.88
BNSSS – Competence	.66*	.88
BNSSS – Autonomy Choice	.68*	.71
BNSSS – Autonomy IPLOC	.68*	.71
BNSSS – Autonomy Volition	.60*	.42*
BNSSS – Autonomy Subscales Totaled^	.61*	.77
BNSSS – Autonomy Items Totaled^	.74	.81
BNSSS – Relatedness	.68*	.79
BRSQ – Intrinsic Motivation	.60*	.75
BRSQ – Integrated Regulation	.82	.84
BRSQ – Identified Regulation	.74	.62*
BRSQ – Introjected Regulation	.82	.87
BRSQ – External Regulation	.78	.84
BRSQ – Amotivation	.81	.88
ABQ – Reduced Sense of Accomplishment	.67*	.66*
ABQ – Exhaustion	.79	.86
ABQ – Devaluation	.47*	.85
ABQ – Subscales Totaled^	.75	.77
ABQ – Items Totaled^	.83	.88

Notes.

* Indicates that an alpha coefficient falls below the commonly accepted threshold of .70 (Nunnally, 1978)

^ Two values were calculated for the same scale; coefficients were computed using two methods: with the subscales, and with the total number of items. Because internal consistency tends to increase as the number of items increases, alpha values are higher when using the total number of items.

LSS: Leadership Scale for Sports (Chelladurai & Saleh, 1980) – athlete **preferences** for (Pre) and **perceptions** of (Post) coaching behavior

ACSI: Athletic Coping Skills Inventory (Smith et al., 1995) – athlete psychological coping skills

BNSSS: Basic Needs Satisfaction for Sports (Ng et al., 2011) – psychological needs satisfaction

BRSQ: Behavioral Regulation in Sport Questionnaire (Lonsdale et al., 2008) – motivation

ABQ: Athlete Burnout Questionnaire (Raedeke & Smith, 2001) – burnout

Main Findings

It was recognized that fully testing the theoretical models (see Figures 3-6) as well as all possible relationships between variables, through Structural Equation Modeling was beyond the scope of this project, given the small sample size. However, in accordance with the main hypotheses, analyses were carried out in a systematic fashion in order to begin to develop a clearer picture of the coach-athlete relationship in this environment.

Following tests of reliability, preliminary analyses were conducted for variables across both stages of measurement (pre- and post-season). The hypotheses in the present paper focus largely on variables measured at the postseason stage (with the exception of ACSI scores, which reflect the averages of pre- and post- measurements). Individual preseason variables were largely excluded from the correlational analysis, with the exception of athlete coping skills and preferences for coaching behavior.

Descriptive statistics and inter-correlations among the relevant scales and subscales were calculated, and are displayed in Tables 3 and 4. Tables 5 and 6 provide descriptive statistics and inter-correlations for selected athlete responses only at preseason measurement (examining athlete preferences for coaching behavior). Table 7 provides descriptive statistics for coaches' responses on the LSS, as well as inter-correlations between these and athlete variables.

Table 3. Descriptive Statistics for Athlete Postseason Variables (ACSI values reflect averages of Pre/Post)

	Variable	Min	Max	M	SD
1.	LSS – Training & Instruction	1.31	5.00	3.85	.67
2.	LSS – Demographic Behavior	1.33	4.89	3.03	.74
3.	LSS – Autocratic Behavior	1.00	4.40	2.25	.69
4.	LSS – Social Support	1.38	4.75	3.11	.76
5.	LSS – Positive Feedback	1.00	5.00	4.03	.71
6.	ACSI – Coping	3.50	12.00	7.68	2.21
7.	ACSI – Coachability	4.50	12.00	10.40	1.69
8.	ACSI – Concentration	5.50	12.00	8.91	1.67
9.	ACSI – Confidence	6.50	12.00	9.97	1.34
10.	ACSI – Goal-Setting	2.00	12.00	7.40	2.25
11.	ACSI – Peaking Under Pressure	4.00	12.00	8.66	2.14
12.	ACSI – Freedom From Worry	1.50	11.50	6.50	3.50
13.	ACSI – TOTAL	35.00	79.00	59.58	9.04
14.	BNSSS – Competence	1.00	7.00	6.33	.94
15.	BNSSS – Autonomy-Choice	2.50	7.00	5.48	1.01
16.	BNSSS – Autonomy-IPLOC	3.00	7.00	6.48	.80
17.	BNSSS – Autonomy-Volition	4.00	7.00	6.33	.83
18.	BNSSS – Autonomy TOTAL	3.50	7.00	6.10	.73
19.	BNSSS – Relatedness	2.20	7.00	6.14	.87
20.	BRSQ – Intrinsic Motivation	4.25	7.00	6.75	.54
21.	BRSQ – Integrated Regulation	4.25	7.00	6.54	.74
22.	BRSQ – Identified Regulation	3.75	7.00	6.26	.83
23.	BRSQ – Introjected Regulation	1.00	7.00	3.37	2.03
24.	BRSQ – External Regulation	1.00	6.25	2.21	1.39
25.	BRSQ – Amotivation	1.00	7.00	1.74	1.10
26.	ABQ – Exhaustion	1.00	4.00	1.96	.72
27.	ABQ – Reduced Accomplishment	1.00	3.20	1.84	.62
28.	ABQ – Devaluation	1.00	3.40	1.43	.66
29.	ABQ – Burnout TOTAL	1.00	3.40	1.75	.55

Note. LSS (Leadership Scale for Sports; Chelladurai & Saleh, 1980) measured athlete perceptions of coaching behavior; ACSI (Athletic Coping Skills Inventory; Smith et al., 1995) measured athlete psychological coping skills averaged from Pre- and Post- Measurements; BNSSS (Basic Needs Satisfaction for Sports; Ng et al., 2011) measured psychological needs satisfaction; BRSQ (Behavioral Regulation in Sport Questionnaire; Lonsdale et al., 2008) measured motivation ; ABQ (Athlete Burnout Questionnaire; Raedeke & Smith, 2001) measured burnout

Table 4. Inter-Correlations (Pearson's *r*) for Athlete Postseason Variables (ACSI values reflect averages of Pre/Post)

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. LSS – Training & Instruction	1.00														
2. LSS – Demographic Behavior	.60*	1.00													
3. LSS – Autocratic Behavior	-.44*	-.34*	1.00												
4. LSS – Social Support	.14	.36*	-.15	1.00											
5. LSS – Positive Feedback	.55*	.41*	-.19	.39*	1.00										
6. ACSI – Coping	.43*	.25^	-.30^	-.06	.26^	1.00									
7. ACSI – Coachability	.58*	.39*	-.43*	.18	.37*	.34*	1.00								
8. ACSI – Concentration	.24	.14	-.13	-.01	.15	.55*	.26^	1.00							
9. ACSI – Confidence	.34*	.11	-.11	.07	.34*	.51*	.09	.46*	1.00						
10. ACSI – Goal-Setting	.50*	.36*	-.19	.06	.29^	.47*	.30^	.41*	.52*	1.00					
11. ACSI – Peaking Under Pressure	.11	.07	-.05	.11	.18	.42*	-.09	.37*	.50*	.31*	1.00				
12. ACSI – Freedom From Worry	.15	.05	-.30^	-.08	.16	.37*	.36*	.37*	.28^	.13	.12	1.00			
13. ACSI – TOTAL	.51*	.31^	-.35*	.06	.38*	.80*	.49*	.73*	.70*	.69*	.57*	.60*	1.00		
14. BNSSS – Competence	.11	-.14	-.06	-.09	.10	.14	-.04	.32*	.28^	.22	.25^	.29^	.29^	.33*	1.00
15. BNSSS – Autonomy-Choice	.18	.10	-.10	.11	.22	.26^	.01	.31^	.24	.29^	.29^	.26^	.38*	.47*	1.00
16. BNSSS – Autonomy-IPLOC	.24^	-.10	-.04	-.16	.20	.35*	.13	.42*	.42*	.24	.22	.35*	.46*	.76*	.56*
17. BNSSS – Autonomy-Volition	.44*	.10	-.31^	-.11	.14	.31^	.30^	.27^	.26^	.25^	.11	.44*	.43*	.41*	.44*
18. BNSSS – Autonomy TOTAL	.34*	.05	-.18	-.05	.23	.37*	.17	.40*	.36*	.32*	.26^	.42*	.50*	.65*	.83*
19. BNSSS – Relatedness	.26^	-.07	-.18	.08	.13	.28^	.01	.33*	.36*	.18	.18	.18	.32*	.65*	.54*
20. BRSQ – Intrinsic Motivation	.12	-.03	.03	-.17	.04	.07	.14	.15	.25^	.12	-.01	.14	.18	.22	.09
21. BRSQ – Integrated Regulation	.31^	.20	-.07	.06	.26^	.14	.16	.17	.25^	.31*	.10	-.00	.24	.15	.06
22. BRSQ – Identified Regulation	.32*	.27^	-.05	.12	.37*	.18	.18	.14	.11	.37*	.09	-.04	.23	.11	-.01
23. BRSQ – Introjected Regulation	.03	.08	.05	.12	.07	-.04	-.25^	-.26^	-.03	.01	.06	-.29^	-.17	-.11	-.04
24. BRSQ – External Regulation	-.26^	-.16	.25^	.03	-.10	-.22	-.38*	-.22	-.12	-.12	-.05	-.37*	-.34*	-.06	-.17
25. BRSQ – Amotivation	-.25^	-.01	.18	.08	.06	-.23	-.18	-.22	-.09	-.16	-.21	-.22	-.29^	-.11	-.34*
26. ABQ – Exhaustion	-.27^	-.17	.17	.12	-.10	-.33*	-.37*	-.24	-.14	-.35*	-.08	-.21	-.38*	-.14	-.25^
27. ABQ – Reduced Accomplishment	-.39*	-.21	.26^	-.11	.17	-.41*	-.33*	-.42*	-.49*	-.46*	-.19	-.27^	-.56*	-.14	-.20
28. ABQ – Devaluation	-.21	.03	-.05	.18	-.06	-.27^	-.21	-.25^	-.25^	-.34*	-.18	-.15	-.36*	-.11	-.24^
29. ABQ – Burnout TOTAL	-.34*	-.14	.15	.08	-.13	-.40*	-.37*	-.36*	-.35*	-.46*	-.18	-.25^	-.52*	-.16	-.28^

Note. LSS (Leadership Scale for Sports; Chelladurai & Saleh, 1980) measured athlete perceptions of coaching behavior; ACSI (Athletic Coping Skills Inventory; Smith et al., 1995) measured athlete psychological coping skills averaged from Pre- and Post- Measurements; BNSSS (Basic Needs Satisfaction for Sports; Ng et al., 2011) measured psychological needs satisfaction; BRSQ (Behavioral Regulation in Sport Questionnaire; Lonsdale et al., 2008) measured motivation ; ABQ (Athlete Burnout Questionnaire; Raedeke & Smith, 2001) measured burnout

* Correlation is statistically significant ($p < .01$)

^ Correlation is statistically significant ($p < .05$)

Table 4. (continued)

77

Variable	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.
1. LSS – Training & Instruction														
2. LSS – Demographic Behavior														
3. LSS – Autocratic Behavior														
4. LSS – Social Support														
5. LSS – Positive Feedback														
6. ACSI – Coping														
7. ACSI – Coachability														
8. ACSI – Concentration														
9. ACSI – Confidence														
10. ACSI – Goal-Setting														
11. ACSI – Peaking Under Pressure														
12. ACSI – Freedom From Worry														
13. ACSI – TOTAL														
14. BNSSS – Competence														
15. BNSSS – Autonomy-Choice														
16. BNSSS – Autonomy-IPLOC	1.00													
17. BNSSS – Autonomy-Volition	.60*	1.00												
18. BNSSS – Autonomy TOTAL	.85*	.80*	1.00											
19. BNSSS – Relatedness	.73*	.46*	.69*	1.00										
20. BRSQ – Intrinsic Motivation	.44*	.27^	.31^	.19	1.00									
21. BRSQ – Integrated Regulation	.26^	.25^	.21	.14	.59*	1.00								
22. BRSQ – Identified Regulation	.09	.11	.07	.14	.24^	.57*	1.00							
23. BRSQ – Introjected Regulation	-.22	-.40*	-.25^	-.00	-.15	.01	.10	1.00						
24. BRSQ – External Regulation	-.21	-.51*	-.35*	.05	-.25^	-.13	-.07	.67*	1.00					
25. BRSQ – Amotivation	-.33*	-.54*	-.48*	-.21	-.26^	-.16	-.07	.26^	.41*	1.00				
26. ABQ – Exhaustion	-.32	-.46*	-.41*	-.16	-.19	-.15	-.18	.36*	.47*	.44*	1.00			
27. ABQ – Reduced Accomplishment	-.31^	-.43*	-.37*	-.31^	-.24^	-.25^	-.23	.22	.40*	.42*	.43*	1.00		
28. ABQ – Devaluation	-.39*	-.46*	-.43*	-.20	-.38*	-.26^	-.13	.32	.30^	.58*	.63*	.50*	1.00	
29. ABQ – Burnout TOTAL	-.41*	-.54*	-.49*	-.27^	-.33*	-.26^	-.22	.37*	.47*	.58*	.85*	.76*	.86*	1.00

Note. LSS (Leadership Scale for Sports; Chelladurai & Saleh, 1980) measured athlete perceptions of coaching behavior; ACSI (Athletic Coping Skills Inventory; Smith et al., 1995) measured athlete psychological coping skills averaged from Pre- and Post- Measurements; BNSSS (Basic Needs Satisfaction for Sports; Ng et al., 2011) measured psychological needs satisfaction; BRSQ (Behavioral Regulation in Sport Questionnaire; Lonsdale et al., 2008) measured motivation ; ABQ (Athlete Burnout Questionnaire; Raedeke & Smith, 2001) measured burnout

* Correlation is statistically significant ($p < .01$)

^ Correlation is statistically significant ($p < .05$)

Table 5. Descriptive Statistics for Athlete Coping Skills and Coaching Preferences

	Variable	Min	Max	M	SD
1.	LSS – Training & Instruction	2.31	5.00	4.21	.50
2.	LSS – Demographic Behavior	1.00	5.00	3.48	.60
3.	LSS – Autocratic Behavior	1.00	4.00	2.06	.66
4.	LSS – Social Support	1.88	4.50	3.20	.58
5.	LSS – Positive Feedback	3.00	5.00	4.10	.58
6.	ACSI – Coping	3.00	12.00	7.63	2.32
7.	ACSI – Coachability	5.00	12.00	10.46	1.77
8.	ACSI – Concentration	5.00	12.00	8.79	1.90
9.	ACSI – Confidence	6.00	12.00	9.90	1.49
10.	ACSI – Goal-Setting	2.00	12.00	7.06	2.36
11.	ACSI – Peaking Under Pressure	4.00	12.00	8.90	2.20
12.	ACSI – Freedom From Worry	1.00	12.00	6.34	2.52
13.	ACSI – TOTAL	41.00	78.00	59.18	8.56

Table 6. Inter-Correlations for Athlete Coping Skills and Coaching Preferences

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
14. LSS – Training & Instruction	1.00												
15. LSS – Demographic Behavior	.45*	1.00											
16. LSS – Autocratic Behavior	.03	-.01	1.00										
17. LSS – Social Support	.23	.45*	.01	1.00									
18. LSS – Positive Feedback	.13	.15	-.12	.38	1.00								
19. ACSI – Coping	.34*	-.05	-.15	-.08	-.09	1.00							
20. ACSI – Coachability	.13	.11	-.17	.24	-.01	.21	1.00						
21. ACSI – Concentration	.22	.10	-.33*	.05	.03	.54*	.41*	1.00					
22. ACSI – Confidence	.23	.16	.03	.17	.10	.32*	-.02	.25^	1.00				
23. ACSI – Goal-Setting	.35*	-.14	.01	.10	.10	.31^	.15	.33*	.40*	1.00			
24. ACSI – Peaking Under Pressure	.09	.01	-.17	-.04	.14	.23	-.08	.33*	.33*	.20	1.00		
25. ACSI – Freedom From Worry	.07	-.04	-.21	.04	.05	.14	.34*	.25^	.12	.07	.13	1.00	
26. ACSI – TOTAL	.36*	.03	-.23	.10	.08	.68*	.47*	.74*	.54*	.61*	.52*	.53*	1.00

Note. LSS (Leadership Scale for Sports; Chelladurai & Saleh, 1980) measured athlete preferences for coaching behavior; ACSI (Athletic Coping Skills Inventory; Smith et al., 1995) measured athlete psychological coping skills at pre-season measurement

Correlations displayed as Pearson's "r" coefficient

* Correlation is statistically significant ($p < .01$)

^ Correlation is statistically significant ($p < .05$)

Table 7. Inter-Correlations Among Coach Perceptions and Athlete Variables (Athletes and Coaches)

Variable						1.	2.	3.	4.	5.
		Min	Max	M	SD					
1.	Coach LSS – Training & Instruction	3.46	3.85	3.55	.16	1.00				
2.	Coach LSS – Demographic Behavior	2.22	2.89	2.62	.33	.44*	1.00			
3.	Coach LSS – Autocratic Behavior	2.00	2.60	2.21	.23	.92*	.75*	1.00		
4.	Coach LSS – Social Support	2.63	3.63	3.10	.40	.72*	-.31^	.39*	1.00	
5.	Coach LSS – Positive Feedback	3.80	4.00	3.96	.08	-1.00*	-.44*	-.92*	-.72*	1.00
6.	Athlete LSS – Training & Instruction	1.31	5.00	3.85	.67	.01	.40*	.18	-.30^	-.01
7.	Athlete LSS – Demographic Behavior	1.33	4.89	3.03	.74	.24	.43*	.36*	-.08	-.24
8.	Athlete LSS – Autocratic Behavior	1.00	4.40	2.25	.69	-.19	-.36*	-.30^	.08	.19
9.	Athlete LSS – Social Support	1.38	4.75	3.11	.76	.44	.09	.36*	.40*	-.44*
10.	Athlete LSS – Positive Feedback	1.00	5.00	4.03	.71	.14	.12	.15	.05	-.14
11.	ACSI – Coping	3.50	12.00	7.68	2.21	-.05	.08	-.00	-.11	.05
12.	ACSI – Coachability	4.50	12.00	10.40	1.69	.16	.64*	.39*	-.33*	-.16
13.	ACSI – Concentration	5.50	12.00	8.91	1.67	.07	-.07	.02	.12	-.07
14.	ACSI – Confidence	6.50	12.00	9.97	1.34	-.06	-.03	-.06	-.04	.06
15.	ACSI – Goal-Setting	2.00	12.00	7.40	2.25	-.06	.20	.04	-.21	.06
16.	ACSI – Peaking Under Pressure	4.00	12.00	8.66	2.14	.07	-.02	.04	.09	-.07
17.	ACSI – Freedom From Worry	1.50	11.50	6.50	3.50	-.13	.10	-.05	-.21	.13
18.	ACSI – TOTAL	35.00	79.00	59.58	9.04	-.01	.19	.07	-.16	.01
19.	BNSSS – Competence	1.00	7.00	6.33	.94	.03	-.09	-.02	.11	-.03
20.	BNSSS – Autonomy-Choice	2.50	7.00	5.48	1.01	.08	-.05	.04	.13	-.08
21.	BNSSS – Autonomy-IPLOC	3.00	7.00	6.48	.80	-.10	-.06	-.10	-.06	.10
22.	BNSSS – Autonomy-Volition	4.00	7.00	6.33	.83	-.16	.11	-.07	-.25^	.16
23.	BNSSS – Autonomy TOTAL	3.50	7.00	6.10	.73	-.06	-.01	-.04	-.06	.06

Note. LSS (Leadership Scale for Sports; Chelladurai & Saleh, 1980) measured athletes' or coaches' perceptions of coaching behavior; ACSI (Athletic Coping Skills Inventory; Smith et al., 1995) measured athlete psychological coping skills averaged from Pre- and Post- Measurements; BNSSS (Basic Needs Satisfaction for Sports; Ng et al., 2011) measured psychological needs satisfaction; BRSQ (Behavioral Regulation in Sport Questionnaire; Lonsdale et al., 2008) measured motivation ; ABQ (Athlete Burnout Questionnaire; Raedeke & Smith, 2001) measured burnout
Correlations displayed as Pearson's "r" coefficient

* Correlation is statistically significant ($p < .01$); ^ Correlation is statistically significant ($p < .05$)

Table 7. (continued)

Variable					1.	2.	3.	4.	5.
	Min	Max	M	SD					
24. BNSSS – Relatedness	2.20	7.00	6.14	.87	.01	-.03	-.01	.03	-.01
25. BRSQ – Intrinsic Motivation	4.25	7.00	6.75	.54	-.25 [^]	-.03	-.20	-.24	.25 [^]
26. BRSQ – Integrated Regulation	4.25	7.00	6.54	.74	-.15	.08	-.07	-.22	.15
27. BRSQ – Identified Regulation	3.75	7.00	6.26	.83	-.17	.04	-.07	-.15	.12
28. BRSQ – Introjected Regulation	1.00	7.00	3.37	2.03	.13	-.01	.09	.15	-.13
29. BRSQ – External Regulation	1.00	6.25	2.21	1.39	.08	-.09	.02	.16	-.08
30. BRSQ – Amotivation	1.00	7.00	1.74	1.10	.13	-.10	.06	.21	-.13
31. ABQ – Exhaustion	1.00	4.00	1.96	.72	.37*	-.09	.23	.46*	-.37*
32. ABQ – Reduced Accomplishment	1.00	3.20	1.84	.62	.12	-.01	.09	.14	-.12
33. ABQ – Devaluation	1.00	3.40	1.43	.66	.52*	.14	.44*	.44*	-.52*
34. ABQ – Burnout TOTAL	1.00	3.40	1.75	.55	.41*	.02	.31 [^]	.43*	-.41*

Note.

1. Coach LSS - Training & Instruction
2. Coach LSS – Democratic Behavior
3. Coach LSS – Autocratic Behavior
4. Coach LSS – Social Support
5. Coach LSS – Positive Feedback

LSS (Leadership Scale for Sports; Chelladurai & Saleh, 1980) measured athletes’ or coaches’ perceptions of coaching behavior; ACSI (Athletic Coping Skills Inventory; Smith et al., 1995) measured athlete psychological coping skills averaged from Pre- and Post- Measurements; BNSSS (Basic Needs Satisfaction for Sports; Ng et al., 2011) measured psychological needs satisfaction; BRSQ (Behavioral Regulation in Sport Questionnaire; Lonsdale et al., 2008) measured motivation ; ABQ (Athlete Burnout Questionnaire; Raedeke & Smith, 2001) measured burnout
Correlations displayed as Pearson’s “r” coefficient

* Correlation is statistically significant (p < .01); [^] Correlation is statistically significant (p < .05)

Consistency of Athlete Coping Skills

A paired samples t-test was conducted on measurements of athlete psychological coping skills to determine whether or not these scores changed significantly from preseason to postseason. Table 8 provides a summary of this test for each of the seven dimensions of the ACSI-28, as well as the overall coping score (Total Coping Skills). Results of the paired samples t-test indicate that only one (Goal-Setting) of the eight measures of athlete psychological coping skills exhibited a significant change in scores from preseason to postseason. Athletes' responses on the Goal-Setting dimension of Coping Skills changed significantly from preseason (M = 7.06, SD = 2.36) to postseason (M = 7.73, SD = 2.62), $t(66) = -2.55$, $p < .05$. Total Coping Skills and the other seven dimensions of coping skills did not exhibit significant changes across measurement points.

Table 8. Paired Samples T-Test for Pre- and Post- Scores on ACSI-28

Variable	Pre Mean (SD)	Post Mean (SD)	r	Difference in Means (SD)	t- value	2-Tailed Sig (p)
Coping With Adversity	7.63 (2.32)	7.72 (2.47)	.70	-0.09	-0.40	.693
Coachability	10.46 (1.77)	10.34 (1.98)	.62	0.12	0.59	.555
Concentration	8.79 (1.90)	9.03 (1.96)	.51	-0.24	-1.02	.311
Confidence	9.90 (1.49)	10.04 (1.62)	.48	-0.15	-0.77	.445
Goal-Setting	7.06 (2.36)	7.73 (2.62)	.63	-0.67	-2.55	.013*
Peaking Under Pressure	8.90 (2.20)	8.42 (2.61)	.58	0.48	1.75	.085
Freedom From Worry	6.34 (2.52)	6.66 (3.14)	.52	-0.31	-0.91	.367
Total Coping Skills	59.18 (8.56)	59.97 (10.77)	.75	-0.79	-0.89	.376

Notes:

SD: Standard deviation

r: Pearson's Correlation between pre- and post- measurement (all coefficients significant at $p < .01$)

* Significant at $p < .05$

Despite this evidence suggesting that these scores did not fluctuate significantly, the decision was still made to use an average value of each coping skills score (including

Total Coping Skills) in most analyses to best reflect athlete coping skills over the four-month window.

Results: Hypothesis 1a-1c

Hypotheses 1a-1c suggested that athletes' perceptions of various coaching behaviors would predict levels of needs satisfaction. Specifically, it was expected that: higher levels of favorable behaviors such as Training and Instruction, Democratic Behavior, Social Support, and Positive Feedback would positively impact Competence (Hypothesis 1a); higher levels of Democratic Behavior and Autocratic Behavior would positively and negatively predict athlete Autonomy, respectively (Hypothesis 1b); and higher levels of Social Support would positively predict Relatedness (Hypothesis 1c). See Table 3 for a full overview of intercorrelations among these variables.

Athletes who rated their coaches higher in training and instruction were more likely to perceive that their needs for Autonomy-IPLOC ($r = .24, p = .046$), Autonomy-Volition ($r = .44, p = .000$), and Autonomy-Total ($r = .34, p = .006$) were being met. Athletes whose perceptions of coach training and instruction were high also reported a high sense of relatedness ($r = .26, p = .031$) in their sport participation. Finally, athletes who reported high levels of coach autocratic behavior were less likely experience volitional autonomy ($r = -.31, p = .011$). However, no relationship emerged between Democratic Behavior and any dimensions of athlete Autonomy. This resulted in a partial rejection of the null hypothesis for Hypothesis 1b. A lack of any significant relationships between the specified coaching behaviors and athlete needs for competence and relatedness yielded a failure to reject the null hypotheses for 1a and 1c.

For exploratory purposes, multiple regression analyses were then conducted, using athlete perceptions of all five coaching behaviors as predictor variables, and each of the three main psychological needs as outcome variables. Perceptions of coaching behaviors predicted the satisfaction of two psychological needs: autonomy (Table 9) and relatedness (Table 10).

A linear combination of athlete perceptions of the five coaching behaviors *marginally* predicted, and explained 9.7% of the variance in, athlete autonomy (Adj. $R^2 = .097$, $F(5, 59) = 2.372$, $p = .050$).

Table 9. Multiple Regression – Coaching Behaviors and Athlete Autonomy

Model ^a	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	4.915	.848		5.800	.000
Training and Instruction	.406	.196	.377	2.075	.042
Democratic Behavior	-.242	.160	-.242	-1.510	.136
Autocratic Behavior	-.056	.144	-.053	-.392	.697
Social Support	-.065	.133	-.068	-.488	.628
Positive Feedback	.165	.163	.158	1.013	.315
$R^2 = .167$					
Adj. $R^2 = .097$					
F = 2.372					
p = .050					

a. Dependent Variable: Athlete Autonomy

A second multiple regression analysis was conducted to determine the extent to which the five coaching behaviors predicted athlete relatedness. Results (Table 10) showed that the model explained 12.1% of the variance in athlete relatedness (Adj. $R^2 = .121$, $F(5, 59) = 2.765$, $p < .05$).

Table 10. Multiple Regression – Coaching Behaviors and Athlete Relatedness

Model ^a		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	4.992	.998		5.003	.000
	Training & Instruction	.627	.230	.488	2.725	.008
	Democratic Behavior	-.547	.189	-.458	-2.900	.005
	Autocratic Behavior	-.095	.169	-.074	-.559	.578
	Social Support	.216	.156	.189	1.381	.173
	Positive Feedback	-.022	.191	-.017	-.114	.910
R ² = .190						
Adj. R ² = .121						
F= 2.765						
p= .026						

a. Dependent Variable: Athlete Relatedness

After examining athlete perceptions of coaching behaviors, exploratory analyses were conducted on coaches' perceptions of their own behavior. Results (as shown in Table 7) indicated that these perceptions were largely unrelated to the satisfaction of an athlete's psychological needs. With the exception of a coach's perceptions of his levels of social support (which yielded a negative correlation with the volitional dimension of autonomy; $r = -.25$, $p = .043$), there were no relationships between coaches' perceived behavior and athlete needs. Multiple regression analyses using all five dimensions (coaches' perceptions of their own behavior) confirmed that these perceptions have no predictive impact on athletes' needs satisfaction.

Results: Hypotheses 2a and 2b

Hypothesis 2a suggested that higher levels of athlete psychological needs satisfaction (i.e., competence, autonomy, and relatedness) would positively predict higher levels of the more self-regulated forms of motivation (e.g., intrinsic motivation,

integrated regulation, and identified regulation). Hypothesis 2b expected that lower levels of needs satisfaction would be associated with higher levels of less self-regulated motivation (e.g., introjected regulation, external regulation), as well as higher levels of amotivation and burnout.

Results allowed for a partial rejection of the null hypothesis for Hypothesis 2a. As shown in Table 4, there were no significant relationships between an athlete's perceptions of competence and his motivation and/or burnout, despite positive trends for each. Relatedness was unrelated to athlete motivation. However, the extent to which an athlete felt a sense of relatedness (i.e., connectedness, belongingness) did have a significant negative correlation with reduced sense of accomplishment ($r = -.31, p = .012$) as well as overall burnout ($r = -.27, p = .030$).

There were several significant relationships between athlete autonomy and motivation, such that athletes who perceived greater autonomy in their sport were more likely to be intrinsically motivated ($r = .31, p = .012$), and significantly less likely to be externally regulated ($r = -.35, p = .004$) or amotivated ($r = -.48, p = .000$). Dimensions of autonomy (i.e., choice, IPLOC, and volition) all showed significant relationships with various types of motivation on the self-determination continuum, with a trend indicating that greater perceived autonomy was associated with more self-determined types of motivation (see Table 4).

Measures of burnout were also negatively correlated with the extent to which an athlete's need for autonomy was satisfied. Respondents who reported higher levels of autonomy were less likely to experience the three dimensions of burnout (exhaustion: $r =$

-.41, $p = .001$; reduced accomplishment: $r = -.37$, $p = .002$; devaluation: $r = -.43$, $p = .000$) and less likely to be burnt out overall ($r = -.49$, $p = .000$).

Multiple regression analyses were conducted to test the predictive impact of athlete needs satisfaction, overall, on athlete motivation and burnout. When examined simultaneously as predictor variables, all three psychological needs failed to predict levels of athlete intrinsic motivation, integrated regulation, and identified regulation. However, satisfaction of the three needs (or lack thereof) did predict levels of the three least self-determined types of motivation: introjected regulation, external regulation, and amotivation.

Results allowed for a full rejection of the null hypothesis for Hypothesis 2b. First, psychological needs satisfaction was shown to predict levels of introjected regulation in the athlete. As shown in Table 11, needs satisfaction accounted for 8.0% of the variance in athlete introjected regulation ($\text{Adj. } R^2 = .080$, $F(3, 63) = 2.922$, $p < .05$).

Table 11. Multiple Regression – Needs Satisfaction and Introjected Regulation

Model ^a		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.834	2.078		3.289	.002
	Competence	-.060	.360	-.028	-.167	.868
	Autonomy	-1.313	.487	-.473	-2.699	.009
	Relatedness	.801	.409	.344	1.957	.055
$R^2 = .122$ $\text{Adj. } R^2 = .080$ $F = 2.922$ $p = .041$						

a. Dependent Variable: Athlete Introjected Regulation

Second, satisfaction of the three psychological needs also predicted levels of athlete external regulation, accounting for 25.4% of the variance ($\text{Adj. } R^2 = .254$, $F(3, 63) =$

8.492, $p < .01$). Table 12 provides individual Beta and p-values for each of the predictor variables.

Table 12. Multiple Regression – Needs Satisfaction and External Regulation

Model ^a		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.111	1.280		3.993	.000
	Competence	.173	.222	.117	.781	.437
	Autonomy	-1.474	.300	-.776	-4.916	.000
	Relatedness	.812	.252	.509	3.219	.002
R ² = .288						
Adj. R ² = .254						
F= 8.492						
p= .000						

a. Dependent Variable: Athlete External Regulation

Finally, multiple regression analysis indicated that psychological needs satisfaction predicted, and explained 27.4% of the variance in, levels of amotivation (Adj. R²= .274, F(3, 63)=9.314, $p < .01$), as shown in Table 13.

Table 13. Multiple Regression – Needs Satisfaction and Amotivation

Model ^a		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.507	1.000		5.506	.000
	Competence	.367	.173	.313	2.120	.038
	Autonomy	-1.140	.234	-.758	-4.866	.000
	Relatedness	.139	.197	.110	.703	.484
R ² = .307						
Adj. R ² = .274						
F= 9.314						
p= .000						

a. Dependent Variable: Athlete Amotivation

Examining the extent to which psychological needs satisfaction predicted levels of athlete burnout yielded a similar picture. Multiple regression analyses were conducted, and a linear combination of all three predictor variables (competence,

autonomy, and relatedness) was shown to predict levels of burnout (see Table 14). Needs satisfaction accounted for 24.4% of the variance in the outcome (Adj. $R^2=.244$, $F(3, 63) = 8.091$, $p<.01$).

Table 14. Multiple Regression – Needs Satisfaction and Athlete Burnout

Model ^a		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.770	.514		7.332	.000
	Competence	.148	.089	.251	1.666	.101
	Autonomy	-.513	.120	-.677	-4.259	.000
	Relatedness	.027	.101	.042	.262	.794
$R^2 = .278$ Adj. $R^2 = .244$ $F = 8.091$ $p = .000$						

a. Dependent Variable: Athlete Burnout

As previously noted, signs of multicollinearity between predictors emerged in these and other models. For example, in the previous three tables, regression coefficients for several IV's yielded directions (positive or negative) that were either counterintuitive or contradicted correlations (see Table 4). However, VIF statistics for these predictors were all below 2.50, so multicollinearity, while present, was not a significant concern.

Discussion: Hypotheses 1a-1c

This study's first set of hypotheses paralleled work by Hollembeak and Amorose (2005), speculating that athletes' perceptions of coaching behaviors would predict the extent to which they also perceived their needs as being satisfied. Similar links have been examined and identified throughout the recent literature, suggesting that athletes who perceive coaches with a controlling interpersonal style have lower autonomy (Blanchard et al., 2009), and that coaches' autonomy-supportive behaviors predict higher

levels of athlete competence and relatedness (Coatsworth & Conroy, 2009). Specifically, the current study examined: whether or not perceptions of a coach's Training and Instruction, Democratic Behavior, Social Support, and Positive Feedback positively predicted athlete competence (Hypothesis 1a); whether or not coach Democratic or Autocratic Behavior predicted athlete autonomy (Hypothesis 1b); and whether or not a coach's Social Support behaviors positively predicted an athlete's sense of Relatedness (Hypothesis 1c).

While exploratory analyses indicated that perceptions of coaching behaviors did provide linear predictability for two of the three athlete needs (i.e., autonomy and relatedness), results largely failed to show that any of the specific hypothesized relationships were present. However, the unexpected results involving coaching behavior and athlete needs were not necessarily out of the norm (c.f. Hollembeak & Amorose, 2005).

In the current study, an athlete's perceived competence was not significantly related to any of the five coaching behaviors. Despite showing positive trends with Positive Feedback and Training and Instruction, neither of these relationships reached statistical significance. Any number of delimiting factors (i.e., small sample size, measurements used, etc.) could have explained a lack of relationship here. However, it is also reasonable to suggest that an athlete's perceptions of competence have very little to do with coaching behavior, and more to do with individual differences, or even direct, observable outcomes in sport. In other words, if an athlete experiences consistent individual success in a sport by way of significant playing time, points or goals scored, or

being selected to a more competitive team (i.e., regional or national teams), these factors might positively influence one's self-efficacy and perceived competence irrespective of the quality of instruction one receives from his or her coach.

Nevertheless, a lack of any relationship between perceived competence and positive feedback from a coach was surprising, given previous support for this interaction (e.g., Allen & Howe, 1998). In line with aforementioned speculation, and subsequent discussions on the role of coping skills, it is again reasonable to suggest that the athletes in this sample are basing perceptions of competence on internal sources, or other external factors (such as those related to performance) rather than feedback from the coach.

Autonomy was the only outcome that reflected several significant relationships with perceived coaching behaviors. Surprisingly, the most prominent and consistent of these relationships involved Training and Instruction. Athletes who felt that their coaches were providing effective training and instruction were more likely to feel that they had choice (the flexibility to make decisions), volition (or unforced desire to participate), and an internal perceived locus of causality or IPLOC (the belief that one's actions are a product of internal forces rather than external pressures). Finally, these athletes were also more likely to report greater autonomy overall. These findings contradicted those of Hollebeak and Amorose (2005), who found that Training and Instruction had a negative impact on Autonomy, and speculated that this could have been because a coach spent more time and energy perfecting the instructional aspects of training and failed to provide athletes with decision-making power in the environment. On the other hand, results in the current study may suggest that Training and Instruction

provided by coaches in this sample is autonomy-supportive by nature. While this may not align with the fact that these athletes' perceptions of Democratic Behavior were unrelated with their autonomy, it may suggest that the notion of effective "Training and Instruction" as originally put forth in the LSS (Chelladurai & Saleh, 1980) has evolved to incorporate notions of autonomy-support in present-day coaching practices. As will be discussed further, however, subsequent analyses suggested that, in the present sample, individual differences (in the form of psychological coping skills) were a possible mechanism underlying the unexpected relationship between Training and Instruction and athlete Autonomy.

Results from this study also partially supported the hypothesis suggesting that a coach's autocratic behavior ("...the extent to which a coach keeps apart from the athletes and stresses his or her authority in dealing with them"; Chelladurai & Saleh, 1980, p. 41) was related to athlete perceptions of autonomy. Namely, this behavior was shown to negatively impact the volitional dimension of this need.

Training and Instruction was also the only coaching dimension shown to predict levels of athlete relatedness, suggesting that the extent to which an athlete feels a sense of connectedness or belongingness is associated with the quality of instruction on the part of the coach. This, again, could have to do largely with new conceptualizations of "effective" instruction in the present-day.

Despite the absence of relationships between certain coaching behaviors and athlete needs satisfaction in accordance with the specified hypotheses, results of exploratory analysis (multiple regression) showed that, taken together, the five coaching

dimensions did predict levels of athlete autonomy and relatedness. Juxtaposed with the failure to reject several null hypotheses, these findings suggest that further investigation is needed to determine the role of these five coaching dimensions in the coach-athlete relationship, specifically with regards to how they directly or indirectly impact athlete needs satisfaction.

Finally, it is important to note that the absence of relationships between coaches' perceptions of their own behavior and athlete needs satisfaction suggests that these perceptions are, in fact, less relevant when it comes to outcomes related to the athlete. With regards to future research, this reiterates the need to place greater focus on athlete perceptions in the relationship, when examining how behaviors or interpersonal processes might impact said athlete.

Discussion: Hypothesis 2a and 2b

The second set of hypotheses (2a and 2b) looked at the extent to which athlete needs satisfaction contributed to motivation and burnout. Results partially supported the two hypotheses. Athletes who perceived greater Autonomy were more likely to be intrinsically motivated and less likely to report less self-determined forms of regulation (i.e., external regulation), while athlete Relatedness and Competence failed to show any relationships with motivation. Athletes who reported high levels of Autonomy and Relatedness were also less likely to encounter burnout.

These findings align with much of the previous literature on needs satisfaction and motivation, suggesting that autonomy plays a key role in these relationships. Sarrazin et al. (2002), for example, found that autonomy was the psychological need that

most strongly predicted levels of self-determined motivation in female handballers. The special impact of autonomy on motivation is intuitively reasonable, given all of the literature on SDT, suggesting that intrinsic motivation is a product of an individual feeling self-directed and self-regulated in his or her endeavor (Ryan & Deci, 2000b).

Exploratory analyses associated with the second group of hypotheses showed that, when combined in a linear model, a lack of satisfaction in the three psychological needs predicted a number of undesirable outcomes in the athlete, including higher levels of non-self-determined forms of motivation (e.g., introjected regulation and external regulation), higher levels of amotivation, and higher levels of burnout. While the need for autonomy largely drove the predictability of these models, it is worth noting the expected trends between competence and relatedness and outcomes related to motivation and burnout, and the fact that these relationships did not negatively affect the predictability of the model as a whole.

The relationships between needs satisfaction and athlete burnout were, on the whole, largely unsurprising, given recent evidence that suggests that these needs play a prominent role in predicting burnout in sports (Hodge et al., 2008; Lonsdale et al., 2009). However, while conclusions drawn from these previous studies suggested that coaches take certain steps to ensure that athletes' needs are being met in order to avoid the possibility of burnout, the current study attempted to unpack these relationships further. As outlined and discussed in the sections that follow, our present understanding of the various relationships between needs satisfaction, motivation, and burnout is incomplete without sufficiently accounting for individual differences in psychological coping skills.

Results: Hypotheses 3a and 3b

Hypotheses 3a and 3b suggested that coping skills would predict athlete perceptions of coaching behavior. It was expected that athletes higher in these coping skills would have more favorable perceptions of their coaches' behavior. In other words, athletes with high coping skills would report higher scores on perceived Training and Instruction, Democratic Behavior, Social Support, and Positive Feedback (3a) and lower scores on perceived Autocratic Behavior (3b). No predictions were made concerning the links between coping skills and preferences for coaching behavior. However, exploratory analyses were conducted to examine possible relationships among these variables.

For these and subsequent analyses, unless otherwise noted, the seven coping skills and Total Coping Skills scores were calculated by averaging the Pre- and Post-measurements for each athlete, in an effort to increase reliability and construct validity. As shown in Table 4, athlete coping skills exhibited strong relationships with a majority of athlete perceptions of coaching behavior. Of the 40 possible relationships between variables representing athlete coping skills (8, including the total scale score) and those representing perceptions of coaching behavior (5), 18 of these relationships were significantly correlated.

Overall, results allowed for a partial rejection of one null hypothesis (3a), and a full rejection of the other (3b). Adding the seven subscale scores in the ACSI together yielded a Total Coping Skills score, which ranged from 35.00 to 79.00 ($M = 59.58$, $SD = 9.04$). Several correlations between this overall indicator of an athlete's coping skills and his perceptions of coaching behaviors were significant. Athletes high in Total Coping

Skills were more likely to perceive their coaches' Training and Instruction as effective ($r = .51, p = .000$), more likely to perceive higher levels of Democratic Behavior ($r = .31, p = .011$), less likely to perceive higher levels of Autocratic Behavior ($r = -.35, p = .005$), and more likely to perceive higher levels of Positive Feedback from their coaches ($r = .38, p = .002$).

Additionally, conceptualizing coping skills as seven independent dimensions (Smith et al., 1995) yielded several ways in which these athlete strengths were associated with favorable perceptions of coaching behavior. Athlete skills such as Coping with Adversity ($r = .43, p = .000$), Coachability ($r = .58, p = .000$), Confidence ($r = .34, p = .006$), and Goal-Setting ($r = .50, p = .000$) were shown to be positively correlated with favorable perceptions of a coach's Training and Instruction capabilities. Higher scores on Coping with Adversity ($r = .25, p = .049$), Coachability ($r = .39, p = .001$), and Goal-Setting ($r = .36, p = .003$) were positively related with an athlete's perceptions of a coach's Democratic Behavior. Athletes who rated their coaches as low in Autocratic Behavior were more likely to be high in Coping with Adversity ($r = -.30, p = .016$), Coachability ($r = -.43, p = .000$) and Freedom from Worry ($r = -.30, p = .016$). Athlete strengths were not related to perceptions of Social Support from the coach. However, high scores on several coping skills, including Coping with Adversity ($r = .26, p = .037$), Coachability ($r = .37, p = .002$), Confidence ($r = .34, p = .005$), and Goal-Setting ($r = .29, p = .019$), were associated with higher perceptions of Positive Feedback from a coach.

Multiple regression analyses were conducted to evaluate the extent to which athletes' psychological coping skills predicted their perceptions of coaching behavior.

Due to the fact that correlational analyses showed the significant relationship between one's Total Coping Skills and these coaching behaviors, each multiple regression analysis uses the seven skills as predictor variables, and each of the five dimensions of perceived coaching behavior as a criterion variable.

Table 15 shows the extent to which a linear combination of athlete coping skills predicted an athlete's perception of coach Training and Instruction. The seven coping skills accounted for 43.6% of the variance in these perceptions (Adj. $R^2 = .436$, $F(7, 58) = 8.164$, $p < .01$).

Table 15. Multiple Regression – Coping Skills and Perceived Training & Instruction

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.597	.648		.920	.361
	Coping with Adversity	.051	.040	.166	1.281	.205
	Coachability	.198	.044	.499	4.469	.000
	Concentration	-.040	.048	-.099	-.824	.413
	Confidence	.089	.064	.178	1.387	.171
	Goal-Setting	.073	.036	.244	2.040	.046
	Peaking Under Pressure	-.007	.036	-.022	-.195	.846
	Freedom From Worry	-.033	.030	-.123	-1.130	.263
$R^2 = .496$ Adj. $R^2 = .436$ $F = 8.164$ $p = .000$						

a. Dependent Variable: Athlete Perceptions of Coach Training and Instruction

A multiple regression model using coping skills as predictors of athlete perceptions of Democratic Behavior also reached significance (see Table 16). The predictors accounted for 13.7% of the variance in these perceptions (Adj. $R^2 = .137$, $F(7, 57) = 2.457$, $p < .05$).

Table 16. Multiple Regression – Coping Skills and Perceived Democratic Behavior

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.227	.870		1.410	.164
	Coping with Adversity	.022	.054	.064	.405	.687
	Coachability	.143	.059	.332	2.406	.019
	Concentration	-.012	.065	-.028	-.190	.850
	Confidence	-.042	.087	-.077	-.484	.630
	Goal-Setting	.090	.048	.280	1.884	.065
	Peaking Under Pressure	.019	.049	.056	.388	.699
	Freedom From Worry	-.024	.040	-.080	-.603	.549
R ² = .232						
Adj. R ² = .137						
F= 2.457						
p= .028						

a. Dependent Variable: Athlete Perceptions of Coach Democratic Behavior

Results of multiple regression analyses (see Table 17) also showed that coping skills predicted an athlete's perceptions of autocratic behavior, accounting for 13.9% of the variance in these perceptions (Adj. R²= .139, F(7, 57)=2.470, p<.05).

Table 17. Multiple Regression – Coping Skills and Perceived Autocratic Behavior

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.042	.829		4.875	.000
	Coping with Adversity	-.049	.050	-.156	-.976	.333
	Coachability	-.137	.056	-.336	-2.430	.018
	Concentration	.044	.063	.104	.700	.487
	Confidence	.016	.082	.031	.192	.849
	Goal-Setting	-.013	.045	-.041	-.278	.782
	Peaking Under Pressure	-.015	.046	-.047	-.330	.743
	Freedom From Worry	-.046	.038	-.165	-1.219	.228
R ² = .233						
Adj. R ² = .139						
F= 2.470						
p= .028						

a. Dependent Variable: Athlete Perceptions of Coach Autocratic Behavior

Coping skills showed a similar influence on athlete perceptions of Positive Feedback (see Table 18). The seven variables accounted for 15.7% of the variance in these perceptions (Adj. $R^2 = .157$, $F(7, 58) = 2.731$, $p < .05$).

Table 18. Multiple Regression – Coping Skills and Perceived Positive Feedback

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.863	.834		1.035	.305
	Coping with Adversity	-.009	.051	-.027	-.171	.865
	Coachability	.156	.057	.373	2.738	.008
	Concentration	-.045	.062	-.107	-.732	.467
	Confidence	.165	.083	.311	1.988	.051
	Goal-Setting	.012	.046	.039	.264	.793
	Peaking Under Pressure	.034	.047	.104	.736	.465
	Freedom From Worry	-.004	.038	-.014	-.105	.917
$R^2 = .248$ Adj. $R^2 = .157$ $F = 2.731$ $p = .016$						

a. Dependent Variable: Athlete Perceptions of Coach Positive Feedback

Exploratory analyses were conducted to determine relationships between athlete coping skills and preferences for coaching behavior (both measured during preseason). Significant relationships emerged, though to a far lesser extent than they did for athlete perceptions of coaches. Athletes who preferred coaches high in the Training and Instruction dimension of coaching behavior (98.5% of the sample indicated preferences greater than or equal to a 3 on the five-point Likert Scale for this behavior) were more likely to be high in Coping with Adversity ($r = .34$, $p = .006$), Goal-Setting ($r = .35$, $p = .004$), and Total Coping Skills ($r = .36$, $p = .003$). Preferences for Autocratic Behavior yielded the only other significant relationship, such that athlete's high in Concentration were less likely to prefer Autocratic coaches ($r = -.33$, $p = .008$). Multiple regression

analyses were conducted to determine whether linear combinations of the seven coping skills (subscales only) brought out any prediction for any of the five athlete preferences for coaching behaviors. While coping skills as predictors of athlete preferences for Training and Instruction showed a positive trend ($p = .087$), all five models failed to reach statistical significance.

Results: Hypothesis 4a-4c

Hypothesis 4a predicted that athletes with higher coping skills would be more likely to perceive that their needs (competence, autonomy, and relatedness) were satisfied. Hypothesis 4b expected high coping skills to predict high levels of more self-regulated forms of motivation, lower levels of less self-regulated motivation, and lower levels of amotivation. Hypothesis 4c expected that high coping skills would predict low levels of burnout. Numerous significant relationships emerged that corresponded with these expectations (see Table 4).

Results showed that athletes with higher Total Coping Skills scores were more likely to perceive that their three main psychological needs (competence: $r = .33$, $p = .007$, autonomy: $r = .50$, $p = .050$, and relatedness: $r = .32$, $p = .009$) were being met. Accordingly, the null hypothesis (4a) was rejected. With the exception of Coachability, most of the subscale coping scores showed similar positive relationships with these needs (see Table 4). Multiple regression analyses were, therefore, conducted to determine the extent to which linear combinations of these seven coping skills predicted levels of needs satisfaction. The model (using coping skills as predictor variables) failed to reach significance when the needs for Competence or Relatedness were included as criterion

variables. However, the seven coping skills did predict levels of athlete perceived autonomy (see Table 19), accounting for 12.9% of its variance (Adj. $R^2 = .129$, $F(7, 58) = 2.374$, $p < .05$).

Table 19. Multiple Regression – Coping Skills and Perceived Autonomy

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.639	.800		5.798	.000
	Coping with Adversity	.068	.045	.214	1.515	.135
	Coachability	-.024	.057	-.058	-.421	.675
	Concentration	.040	.061	.105	.668	.507
	Confidence	-.016	.066	-.033	-.242	.810
	Goal-Setting	.018	.041	.057	.434	.666
	Peaking Under Pressure	.038	.044	.113	.862	.392
	Freedom From Worry	.083	.037	.283	2.255	.028
$R^2 = .223$ Adj. $R^2 = .129$ $F = 2.374$ $p = .033$						

a. Dependent Variable: Athlete Perceptions of Autonomy

Intercorrelations between variables also indicated that athlete coping skills were related to several measures of motivation (see Table 4). Correlational analysis indicated that, on the whole, more self-regulated types of motivation (i.e., intrinsic motivation, integrated regulation, and identified regulation) were largely unrelated to most athlete coping skills, with the exception of Confidence and Goal-Setting. Athletes who reported higher confidence were more likely to also report high levels of intrinsic motivation ($r = .25$, $p = .040$) and integrated regulation ($r = .25$, $p = .043$), while athletes who indicated that they frequently set personal goals were more likely to report high levels of integrated regulation ($r = .31$, $p = .010$) and identified regulation ($r = .37$, $p = .002$). Apart from these two subscales, no other significant relationships emerged between coping skills and self-regulated forms of motivation.

On the other hand, measures of less self-determined types of motivation (i.e., introjected regulation and external regulation) indicated several significant negative correlations with several coping skills (see Table 4). Athletes who were high in Coachability ($r = -.25, p = .039$), and Freedom From Worry ($r = -.29, p = .016$) were less likely to report high levels of introjected regulation, and were also less likely to be externally regulated ($r = -.38, p = .002$; $r = -.37, p = .002$, respectively). Athletes' scores on Total Coping Skills were also negatively correlated with external regulation ($r = -.34, p = .005$). Finally, athletes with high levels of Total Coping Skills ($r = -.29, p = .020$) were less likely to report a lack of motivation (i.e., amotivation). Given the lack of findings involving coping skills and intrinsic motivation, the null hypothesis (4b) was partially rejected.

Multiple regression analyses, using all seven coping skills as predictor variables, failed to show that these skills predicted levels of athlete motivation, with the exception of external regulation (see Table 20). Results indicated that, together, the seven coping skills predicted levels of athlete extrinsic motivation, accounting for 12.8% of the variance in the criterion variable (Adj. $R^2 = .128, F(7, 58) = 2.357, p < .05$).

Burnout was another athlete outcome frequently associated with coping skills (see Table 4). Correlational analyses indicated that athletes who scored high on Coping with Adversity ($r = -.40, p = .001$), Coachability ($r = -.37, p = .002$), Concentration ($r = -.36, p = .003$), Confidence ($r = -.35, p = .004$), Goal-Setting ($r = -.46, p = .000$), and Freedom From Worry ($r = -.25, p = .039$) were significantly less likely to experience burnout.

Overall, athletes high in Total Coping Skills showed lower levels of burnout ($r = -.52, p = .000$).

Table 20. Multiple Regression – Coping Skills and External Regulation

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.642	1.663		3.394	.001
	Coping with Adversity	-.097	.101	-.153	-.953	.344
	Coachability	-.223	.114	-.272	-1.963	.054
	Concentration	-.012	.123	-.014	-.094	.926
	Confidence	.028	.165	.027	.170	.866
	Goal-Setting	.037	.091	.060	.406	.686
	Peaking Under Pressure	-.006	.093	-.009	-.060	.952
	Freedom From Worry	-.121	.076	-.216	-1.600	.115
R ² = .221						
Adj. R ² = .128						
F = 2.357						
p = .034						

a. Dependent Variable: External Regulation

Including burnout into a multiple regression model, testing the predictive capacity of the seven coping skills yielded a significant effect (see Table 21). Coping skills explained 23% of the variance in athlete burnout (Adj. $R^2 = .230, F(7, 58) = 3.769, p < .01$). This resulted in a rejection of the null hypothesis (4c).

Table 21. Multiple Regression – Coping Skills and Burnout

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.797	.626		6.066	.000
	Coping with Adversity	-.025	.038	-.098	-.646	.521
	Coachability	-.067	.043	-.203	-1.556	.125
	Concentration	-.031	.046	-.092	-.657	.513
	Confidence	-.034	.062	-.083	-.554	.582
	Goal-Setting	-.066	.034	-.269	-1.925	.059
	Peaking Under Pressure	.002	.035	.006	.046	.964
	Freedom From Worry	-.012	.028	-.053	-.415	.680
R ² = .313						
Adj. R ² = .230						
F= 3.769						
p= .002						

a. Dependent Variable: Athlete Burnout

Results: Hypothesis 5

In an effort to further test the role of athlete coping skills in the coach-athlete relationship, mediational analyses were conducted in accordance with the model displayed in *Figure 6*, to determine the extent to which these coping skills mediated relationships between any of the dimensions of perceived coaching behaviors and athlete psychological needs satisfaction (Hypothesis 5). Given the range of possible variable combinations, mediational analysis focused only on a few selected relationships based on preliminary analyses and the theoretical focus, rather than all possible models.

Results showed that Total Coping Skills fully mediated the relationship between Training and Instruction and athlete perceived Autonomy. Pathways, with standardized coefficients, are displayed in *Figure 7*. This means that a significant indirect effect of Training and Instruction was found on athlete Autonomy, mediated through athlete Coping Skills, *Indirect Effect* = .25, *CI95%* = [.117, .441]. Athletes' perceptions of

Training and Instruction and their own Coping Skills explained 26.2% of the variance in athlete Autonomy.

Similarly, athlete Coping Skills were found to mediate the relationship between Training and Instruction and athlete perceptions of Relatedness (as shown in *Figure 8*). There was a significant indirect effect of Training and Instruction on athlete Relatedness, mediated through athlete Coping Skills, *Indirect Effect* = .17, CI95% = [.022, .383]. Athlete perceptions of their coaches' Training and Instruction quality, along with their own Coping Skills, accounted for 11.6% of the variance in athlete Relatedness. Based on these two significant models, the null hypothesis for Hypothesis 5 was partially rejected.

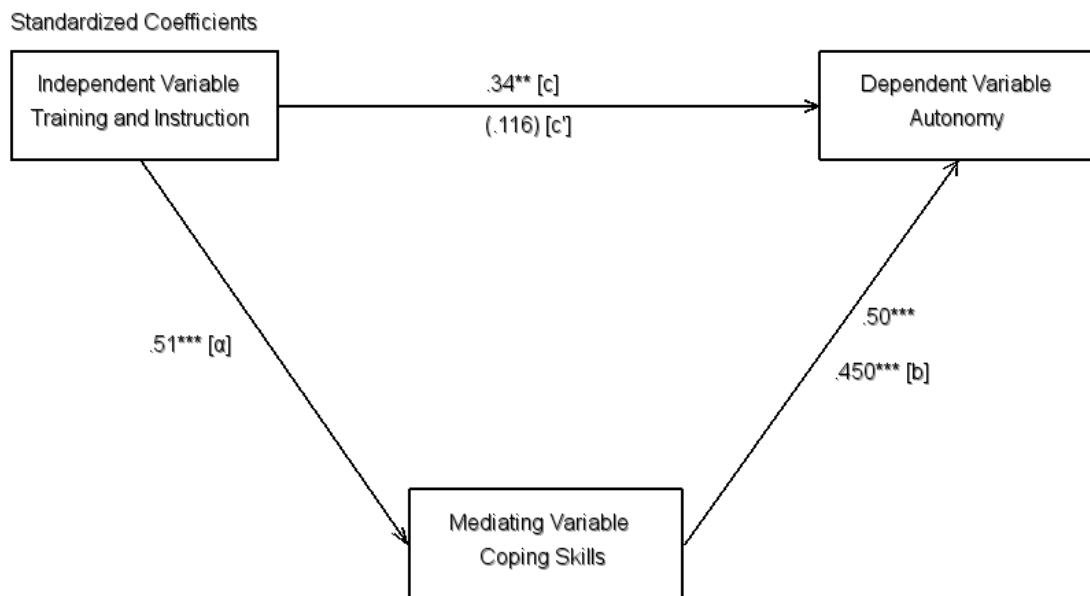


Figure 7. Statistical Path Model for Mediating Role of Coping Skills in Relationship Between Training and Instruction and Athlete Autonomy

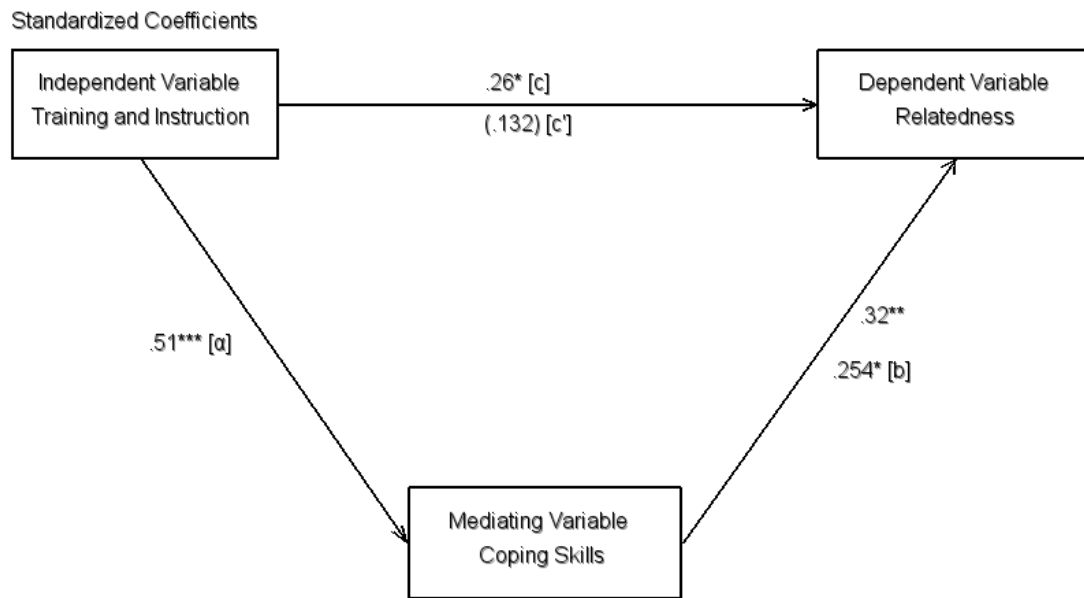


Figure 8. Statistical Path Model for Mediating Role of Coping Skills in Relationship Between Training and Instruction and Athlete Relatedness

Discussion: Hypotheses 3a and 3b

The current study took a modified approach to studying SDT (Ryan & Deci, 2000b) in sports, by incorporating measurements of athlete coping skills to determine the role of these individual differences within commonly studied processes pertaining to the coach-athlete relationship. The third set of hypotheses sought to, first and foremost, examine the extent to which an athlete's coping skills played a role in one's perceptions of coaching behavior. Steps were taken to ensure that the measurement of athlete coping skills reflected a consistent (though, not necessarily trait-like) conceptualization of individual attributes. A paired-samples t-test showed that, with the exception of Goal-Setting, these coping skills did not vary considerably across the measurement period (four months). To further ensure that scores on the ACSI-28 (Smith et al., 1995)

provided a general reflection of athlete coping skills (rather than a momentary snapshot), responses from preseason and postseason were averaged into eight aggregate coping skills scores (seven dimensions and one total score).

Results consistently supported the notion that athletes higher in these coping skills were more likely to have favorable perceptions of their coach. Specifically, athletes high in Total Coping Skills tended to provide higher ratings of a coach's Training and Instruction, higher ratings of Democratic Behavior and Positive Feedback, and lower ratings of Autocratic Behavior. Furthermore, a number of individual coping skills (e.g., Coping with Adversity, Coachability, Goal-Setting, Freedom from Worry, Confidence, etc.) displayed similar relationships with perceptions of coaching behavior. Multiple regression analyses indicated that the seven coping skills, together, predicted athletes' ratings of their coaches on Training and Instruction, Democratic Behavior, Autocratic Behavior, and Positive Feedback. Similar trends were not found with regards to athlete preferences.

The impact of athlete coping skills on one's perceptions of coaching behavior adds considerable nuance to our understanding the coach-athlete relationship, because it sheds light on some of the individual differences on the part of the athlete that can partially determine whether or not a coach-athlete relationship is effective. Previous research has recognized that athletes can perceive the same coaching behavior in different ways (Stirling & Kerr, 2003). The present study's findings contribute to an understanding of these perceptual differences. The current findings also build on those put forth by Davis and Jowett (2014), who found that athletes with an avoidant

attachment styles were less likely to perceive that their psychological needs were being met in the coach-athlete relationship, while those with secure attachment styles were more likely to perceive higher levels of social support and depth in the coach-athlete relationship and lower levels of conflict with a coach.

Results from the multiple regression analyses suggest that one could possibly view these seven coping skills as a “psychological profile” for each athlete. Given that the linear combination of these skills predicted an athlete’s perceptions of Training and Instruction, Democratic Behavior, Autocratic Behavior, and Positive Feedback, there is reason to believe that this sort of psychological makeup in an athlete is an important determinant for the quality of one’s relationship with a coach.

Discussion: Hypotheses 4a-4c

Results largely supported the fourth set of hypotheses in the present study, which expected that athlete coping skills would enhance perceived needs satisfaction, predict self-determined forms of motivation, and lead to less burnout. Specifically, athletes with greater coping skills were more likely to report that they felt autonomous, competent, and connected with others in their sport. Combined into a linear model, these coping skills predicted higher levels of athlete autonomy. However, results of other multiple regression analyses failed to show similar effects for competence or relatedness. The fact that these individual differences were highly correlated with psychological needs satisfaction suggests that it is insufficient to consider athlete psychological needs solely based on the influence of coaching behaviors, as studied in Amorose and Anderson-Butcher (2007) and Coatsworth and Conroy (2009). Instead, a full understanding of

these needs in the coach-athlete relationship should take into account personal attributes of the members of the dyad.

The current study also demonstrated that these coping skills predict levels of athlete motivation. SDT suggests that motivation is organized on a continuum, reflecting the extent to which an individual is self-regulated or self-determined (see *Figure 2*; Ryan & Deci, 2000). Intrinsic motivation and amotivation reside at opposite ends of this continuum, and extrinsic motivation is broken down into four subtypes: integrated regulation, identified regulation, introjected regulation, and external regulation (in order of decreasing self-determined drive). The present study found that athletes with higher coping skills were less likely to be characterized by non-self-determined forms of motivation. These athletes were also less likely to report a lack of motivation (i.e., amotivation). Finally, these psychological attributes also increased the likelihood that an athlete avoided symptoms of burnout.

These findings support the notion that the quality of an athlete's experiences in sport depends largely on the internal mechanisms that process those experiences. This holds important implications for high-level youth sports, where psychological strain is prevalent due to increased specialization, as well as pressure from parents and coaches (Wiersma, 2000). Given that the coach-athlete relationship has been shown to impact all three of these outcomes (i.e., needs satisfaction, motivation, and burnout) in an athlete (Adie et al., 2012; Mageau & Vallerand, 2003; Vealey et al., 1998), these coping skills could be important in facilitating positive athlete experiences in these relationships.

Discussion: Hypothesis 5

This study's fifth hypothesis sought to strengthen support for the part of coping skills in the coach-athlete dyad by examining its role in helping to account for predictive relationships between other variables. Mediation analyses are used to explain mechanisms that underlie a relationship that has been observed between an independent variable and dependent variable. The current study could have conceivably tested many different models of mediation whereby coping skills explained the link between two other variables. However, the fifth hypothesis focused solely on the relationship between coaching behavior and an athlete's needs. Results supported the notion that individual differences could explain links between an athlete's perceptions of a coach's Training and Instruction and athlete perceptions of their own autonomy and relatedness.

General Discussion

Despite considerable research evidence indicating that the relationship between a coach and athlete is vital to outcomes related to performance and wellbeing, there is a noticeable gap between science and practice when it comes to applying these findings within sport psychology interventions. As such, the current study endeavored to examine the role of psychological coping skills in the coach-athlete relationship in the interest of contributing conclusions that were directly relevant to the work of an applied sport psychology practitioner.

Overall, the current study supports a SDT-based understanding of the coach-athlete relationship, by providing further support for the importance of psychological needs satisfaction, and linking these constructs to more self-regulated forms of individual

motivation (c.f. Coatsworth & Conroy, 2009; Gagné et al., 2003; Gillet et al., 2010; and Hollembeak & Amorose, 2005). The results discussed above expand specifically on those put forth by Hollembeak and Amorose (2005), who showed that these needs lead to increased intrinsic motivation in the athlete and that psychological needs satisfaction mediates some relationships between perceived coaching behavior and this intrinsic motivation. While athlete needs in the current study, with the exception of autonomy, did not lead to increased intrinsic motivation, results did indicate that athletes whose needs were not met were more likely to be extrinsically motivated or lack motivation altogether.

Above all, the most significant contribution made to research and practice in sport psychology through this project concerned an array of findings surrounding athlete psychological coping skills and their role in enhancing one's experiences in the coach-athlete relationship, as well as lessening the likelihood that an individual motivated by extrinsic rewards or experiencing burnout.

The extent to which these coping skills contribute to more favorable perceptions of a coach, as well as higher levels of needs satisfaction and lower burnout, is not necessarily surprising when one considers literature on the ACSI-28 (Smith et al., 1995) and its use with athletes. Surujlal et al., (2013), for example, found that athletes high in these seven coping skills experienced less stress and had greater life satisfaction than those who were lower on these dimensions. Furthermore, Smith and Christensen (1995) incorporated these skills into an understanding of success in professional baseball, showing that athletes' coping skills were as predictive of performance (i.e., batting average) as physical ability, and that they predicted the duration of an athlete's

professional career. Nevertheless, research has rarely, if ever applied the notion of psychological coping skills to an examination of coach-athlete relationships. If, as these results suggest, an athlete's mental skills contribute to better perceptions of coaching behavior, higher needs satisfaction, less non-self-determined motivation, and less burnout, then research should move in the direction of examining: 1) how these skills impact other interpersonal aspects in this dyad, and 2) whether applied sport psychology interventions directed at building these coping skills are effective at also improving the relationship between an athlete and coach.

It is worth noting that the lack of relationships between athlete coping skills and preferences for coaching behavior was a relatively unexpected finding in the current study. This contradicted the results put forth by Horn et al. (2011), who showed that psychological characteristics did, in fact, impact athletes' coaching preferences. For the sake of evaluating athlete experiences in this program, relationships between coping skills and perceptions of coaching behavior were more relevant. Nevertheless, further research is needed to better understand how athlete individual differences impact one's preferences for a coach.

One question that arises out of this work concerns the appropriateness of the theoretical framework employed in the study's design, as well as the accuracy of this theory, compared to others, with regards the phenomenon in question. In other words, do these findings lend support to the multidimensional model of leadership put forth by Chelladurai (1978), or Smoll and Smith's (1989) mediational model of leadership? Additionally, are these models mutually exclusive? In response, it must be noted that

fundamental discrepancies between Smoll and Smith's (1989) and Chelladurai's (1978) models are subtle. One theory maintains that coaching behavior is a product of situational, personal, and interpersonal factors, and that positive athlete outcomes (performance and satisfaction) emerge when preferred, required, and actual coaching behaviors all align (Chelladurai, 1978). The other model suggests that the impact of a coach on an athlete depends on the individual characteristics of both dyad members (Smoll & Smith, 1989; Smoll et al., 1978). Essentially, both theories suggest a similar convergence of individual and interpersonal variables (psychological and behavioral in nature) that yield positive or negative outcomes in the coach-athlete relationship, depending on context and situation as well as attributes both dyad members bring to the table. What is important to note, however, is that the current study examined ways in which both of these models can be used more effectively in future research, namely, through the examination of these individual attributes (e.g., psychological coping skills) and their role in contributing to positive or negative outcomes associated with the relationship.

Implications for Research

As discussed in earlier sections on the limitations and delimitations of this study, there were some factors that suggest that some findings from this project should be interpreted conservatively. First, the athlete sample size ($N = 67$) was extremely small for research using a theoretical model of this nature. As such, the more powerful and commonly used methods of analysis (i.e., structural equation modeling) were unsuitable. While many of the preliminary analyses (i.e., correlations) suggest that important

relationships do exist among these variables, further research is needed to test the strength of these relationships using larger sample sizes.

Conclusions drawn from these results should also take into account the nature of this sample. The academy of interest houses high-level youth athletes and coaches. As such, it may be reasonable to assume that the quality of training and instruction an athlete receives from these coaches may be relatively high compared to that received by athletes in other environments. Additionally, it could be the case that measures of needs satisfaction, motivation, burnout, and even coping skills were relatively high for this sample for a variety of reasons. First, the sample is comprised of athletes who have all experienced a high level of achievement in their sport (many of them have been selected for youth national teams). As such, levels of motivation could be higher than other samples at these ages, and levels of burnout could be lower relative to other athletes. Second, all of the athletes in this sample receive some form of psychological skills training from the academy's sport psychology department. In addition to an online sport psychology workbook, mental skills presentations, and group discussions, many of the athletes receive 1-on-1 performance counseling from the sport psychology staff. Lastly, it is important to note any number of factors that could have impacted athlete responses on the questionnaires, including individual playing time, current mood state, positive or negative experiences in recent practices or games, or even recent conversations with a coach.

Nevertheless, despite some weaknesses and limitations in the design, the present study had many positive characteristics that set it apart from previous research and helped

to contribute important findings to the body of literature. Similar to findings published by Hollembeak and Amorose (2005), the current study's results expanded on the number of variables simultaneously under investigation in the coach-athlete relationship. The study examined five dimensions of coaching behavior, seven athlete coping skills, three psychological needs (with three additional dimensions), six forms of motivation, and burnout (with three additional dimensions). This resulted in a more holistic and intricate understanding of processes that govern SDT (Ryan & Deci, 2000b), as well as a host of relationships that merit further investigation. In addition to the contributions this study made to literature on the coach-athlete relationship, SDT, and psychological skills, there were other less-noticeable benefits that should be identified, including: the use of a modified LSS (Chelladurai & Saleh, 1980), the value of targeting a specific population, and the value of incorporating, and expanding on, a previously tested framework.

Modified Version of LSS

It was previously noted that the current study altered one of its measurements (LSS) from the original version to tailor it more appropriately to the sample. Even though item response anchors were changed from a time-based format (e.g., 25% of the time, 75% of the time, etc.) to one that assessed agreement (e.g., Disagree, Agree, Strongly Agree, etc.), reliability of the dimensions in the LSS were similar, and in some cases stronger, than those from the original scale development. Chelladurai and Saleh (1980) found that internal consistency of the five coaching dimension subscales ranged from .45-.93, with only one coefficient (preferences for Autocratic Behavior) falling below the .70 threshold (Nunnally, 1978). The current study administered the LSS twice

(assessing preferences during preseason and perceptions after four months) and found that reliability coefficients for all scales across both measurements ranged from .73-.90. It is reasonable to suggest that, especially for participants at younger ages, the modified response scale is appropriate. While further testing is necessary to confirm that these modifications do not, in fact, undermine the scale's integrity or construct validity, the use of altered response anchors could contribute to greater flexibility in using this measurement with various populations.

The Benefits of Targeting Specified Populations

Research seems to frequently operate out of the assumption that results are more valuable if they can be generalized beyond a particular sample. However, there is value in purposefully restricting a sample to a target population. The study at hand looked at a specific, preselected group of athletes. As a result, many of the potential confounds that differentiate one athlete's experiences from those of another were largely circumvented. Instead, experimental conditions in this study were held, for the most part, constant. And, with the exception of the specific coach, it is reasonable to assume that athletes faced relatively similar experiences across the four months.

Furthermore, studies that target specific populations are conducive to integrating research into practice. In their systematic review on athlete burnout, Goodger et al. (2007) note that "Empirical investigations of targeted groups could play an important role in the identification of those at risk and the development of prevention and management strategies" (p. 142). In this case, the current study looked at athlete experiences within a

high-level youth development academy. Therefore, not only did it presumably yield a clear picture of athlete experiences within this environment, but it provided important insight into how those experiences could be improved (see “Implications for Practice” below).

Using and Expanding on Previous Models

This study added to a growing body of research that has used SDT as a model for studying athlete experiences in sports, and its design grounded itself, loosely, in a previously tested theoretical framework (Hollembek & Amorose, 2005). Hollembek and Amorose (2005) contributed to research on the coach-athlete relationship by testing a link between coaching behavior and athlete motivational processes under SDT, using psychological needs satisfaction as a mediator. Furthermore, they added to previous findings by investigating a wider range of coaching behaviors and testing all three psychological needs outlined in SDT (competence, autonomy, and relatedness). However, Hollembek and Amorose’s (2005) research focused primarily on the role of coaching behavior in determining athlete outcomes, while the proposed study focuses primarily on the underlying contribution of athlete characteristics. The merits of using a previously tested model to generate research questions as well as elements of a study’s design should be considered in future research on this and other phenomena. Hollembek and Amorose (2005) painted a coherent picture of relationships among coaching behaviors, athlete needs and athlete motivation, and in doing so, added to an understanding of the coach-athlete relationship and raised important questions. Future research on this relationship would benefit from, not only re-testing previous models to

strengthen the results, but also expanding on these models to incorporate a more nuanced approach. In doing so, our growing understanding of the coach-athlete relationship will begin to: a) employ consistent terminology across the research and b) systematically contribute to theoretical structure and practical application.

Implications for Practice

From the standpoint of practical implications, the study sought to lend insight into some of the coping skills that can potentially help athletes to function more effectively in their sport, by positively affecting their experiences within the coach-athlete relationship. There are numerous findings that could potentially offer valuable insight for applied sport psychology practitioners working to improve an athlete's relationship with a coach.

First, results indicate that psychological skills play a prominent role in an athlete's experiences, and that continued emphasis should be placed on the development of these skills through applied sport psychology work. Second, these results hold important implications for future ways in which sport psychology practices can evolve to better address interpersonal processes in sport.

There is a growing body of research on interpersonal dynamics experienced by athletes in their relationships with coaches. Jowett's research (i.e., Davis & Jowett, 2014; Davis, Jowett, & Lafreniere, 2013) has attempted to investigate the role of athlete individual differences in determining the quality in the coach-athlete relationship. However, with regards to practical contributions to applied sport psychology interventions, their conclusions are limited for the work of applied consultants, because they focus on attachment styles in the athlete. Instead, research that moves in the

direction of understanding athlete individual differences as they pertain to mental skills would conceivably offer more practical contributions, because the development of these skills is an essential component of performance enhancement interventions.

The current study sought to address this need, by examining the impact of these skills on preferences and perceptions in the coach-athlete relationship, as well as athlete outcomes related to needs satisfaction, motivation, and burnout. In their development of the ACSI-28, Smith et al. (1995) assert that the seven coping skills measured in this scale “conform to the current conceptions of important psychological skills” (p. 392).

Demonstrating, as this study has done, that coping skills are significant determinants in the coach-athlete relationship opens the door for the possibility that applied sport psychology practitioners can place more emphasis on tailoring interventions to enhance athlete’s relational experiences with coaches, rather than focusing primarily on performance. In other words, while most applied sport psychology work is concerned with developing mental skills conducive for greater individual performance, there is room to direct some of this work towards enhanced interpersonal relationships:

From an applied point of view, it can be argued that as sport psychologists have generally profiled themselves in terms of ‘mental skills trainers’...their attention for relationship issues will remain restricted. Not only do very few performance enhancement models focus on interpersonal skills...but almost no sport psychological intervention technique has been developed for optimizing athletes’ *interpersonal* functioning (Wylleman, 2000, p. 599).

Results from this study offer insight into the ways in which applied sport psychology can cater its interventions to enhance athlete interpersonal functioning with regards to the coach-athlete relationship. If coping skills such as “Coping

with Adversity”, “Coachability”, “Confidence”, and “Goal-Setting” are, in fact, related to the perceptions athletes may have of their coaches as well as various outcomes tied to the coach-athlete relationship, then it seems reasonable to suggest that athletes would benefit from applied sport psychology interventions that develop these skills, with the explicit aim of enhancing their interpersonal experiences with coaches.

Athlete-Centered Coaching

Athlete-centered coaching provides other relevant implications for the results of this study. Athlete-centered approaches to coaching have received increased attention in recent years (Becker, 2009; Kidman & Lombardo, 2010; Mallett, 2005). In line with Self-Determination Theory (SDT), athlete-centered coaching emphasizes the pursuit of self-determined behavior through the empowerment of the athlete (Kidman & Lombardo, 2010; Ryan & Deci, 2000b). According to Kidman and Lombardo (2010), “...the key to the athlete-centered approach is a leadership style that caters to athletes’ needs and understandings where athletes are enabled to learn and have control of their participation in sport” (p. 23). Similarly, as a theory of motivation, SDT is concerned with the processes and factors involved in determining how and why an individual takes action or engages in behavior. Ryan and Deci’s (2000b) theory of self-determination purports that intrinsic motivation is a natural propensity of human beings, but that this propensity is influenced by environmental conditions and variables. The emergence and influence of intrinsic motivation over behavior, therefore, is partially dependent on the environmental conditions that surround an individual. In other words, SDT “examines conditions that

elicit and sustain, versus subdue and diminish, this innate propensity” (Ryan & Deci, 2000b, p. 70).

While the current study did not show consistent relationships between coaching behavior and athlete outcomes, it did expand on our understanding of the coach-athlete relationship by shifting the focus to the athlete, in an attempt to determine, with greater clarity, the individual differences that can influence the extent to which an athlete is positively or negatively impacted by a coach. Overall, the study offered strong support for the influential role of psychological coping skills within an athlete’s experience. Athletes with higher coping skills were more likely to have favorable perceptions of their coach, were more likely to perceive that their needs were being met, were less likely to report non-self-determined forms of motivation, and were less likely to experience burnout. From the standpoint of athlete-centered coaching, these results could be interpreted to suggest that coaches would benefit from greater understanding of an individual athlete as well as personal attributes or “mental skills” that athlete may bring to the table.

While considerable evidence has supported the athlete-centered notion of giving an athlete greater autonomy and decision-making power in the sporting environment (e.g., Coatsworth & Conroy, 2009; Gagne et al., 2010; Gillet et al., 2010; etc.), this study provides evidence that suggests that athlete coping skills could be equally significant. As such, coaches could conceivably benefit from administering measurements of psychological coping skills, such as the ACSI-28 (Smith et al., 1995) prior to the start of a season. There are certainly ethical issues that must be considered concerning

anonymity and even the extent to which athletes will be honest in completing such measurements for their coach's use. Nevertheless, under controlled circumstances and in the interest of using "mental profiles" of an athlete to enhance the coach-athlete relationship, such measurements could provide valuable insight for the coach or athlete who desires such information.

Implications for the Evaluated Program

Given that the athletes in this program also receive psychological skills training on a regular basis as a part of their holistic development experience, it was hoped that results and conclusions in this study would enhance the delivery of these practices, as well as the general practices of the larger athletic organization. In line with previous research, this study also intended to provide the athletes, coaches, and sport psychology professionals in this program with greater understanding of nuances involved in the coach-athlete relationship.

The results of the current study benefit the program of interest in three primary ways:

1. First, this study demonstrated that the extent to which athletes perceive that their needs are satisfied positively impacts outcomes related to motivation, and decreases the likelihood that an athlete experiences burnout. While coaching behaviors (with the exception of Training and Instruction) were not consistently linked to these needs, it is this paper's recommendation that future practices within this organization consider possible means by which the satisfaction of these needs

(i.e., competence, autonomy, and relatedness) can become more frequent and commonplace.

2. Second, findings indicate that psychological skills training should be an essential component of youth athletic development. Athletes with higher psychological coping skills in this sample were more likely to have favorable perceptions of their coach, more likely to perceive that their needs (i.e., competence, autonomy, and relatedness) were being satisfied, less likely to be extrinsically motivated, and less likely to experience burnout. While it is natural for some athletes to benefit from mental skills training more than others, these findings offer considerable support for the significant role psychological skills training, and a full-time sport psychology department, can potentially play in enhancing athlete experiences in the sport. As such, this paper also recommends further developing and incorporating the sport psychology department's practices into athlete experiences in this program.

3. Third, these findings provide an explicit list of psychological coping skills that ostensibly enhance these athletes' experiences within the coach-athlete relationship, including: Coping with Adversity, Coachability, Concentration, Confidence and Achievement Motivation, Goal-Setting and Mental Preparation, Peaking Under Pressure, and Freedom From Worry (Smith et al., 1995). While mental training often focuses on developing skills similar to some of these (confidence, goal-setting, concentration), others are discussed much less frequently (i.e., coachability, freedom from worry). It is, therefore, a third recommendation of

this paper that the sport psychology department incorporate some of these constructs (including their definitions, and psychological, emotional, and behavioral aspects) into their practices.

CHAPTER 5
SUMMARY, CONCLUSIONS, AND
RECOMMENDATIONS FOR FUTURE RESEARCH

Summary

The following chapter will conclude this paper by outlining a summary, providing an overview of main conclusions, and discussing recommendations for future research. The purpose of this research was to further unpack our current understanding of the coach-athlete relationship by expanding on previous applications of Self-Determination Theory (SDT) in sport. Specifically, the study sought to: 1) examine the relationships among coaching behavior, athlete needs satisfaction, motivation, and burnout, 2) assess the impact of athlete coping skills on an individual's perceptions of coaching behavior, and 3) evaluate the extent to which athlete coping skills are related to various athlete outcomes, including needs satisfaction, motivation, and burnout.

Sixty-seven male athletes (ages 12-18) and three coaches (ages 44-55) in a high-level youth athletic academy participated in the current study as part of an effort to better understand athlete experiences in this targeted environment. The study focused on factors associated with SDT (Ryan & Deci, 2000b), such as needs satisfaction and motivation, as well as other potentially related variables including: coaching behaviors, athlete coping skills, and athlete burnout. Variables were measured quantitatively, using five different self-report questionnaires: the LSS (preferences for, and perceptions of, coaching behavior), the ACSI-28 (athlete psychological coping skills), the BNSSS (athlete needs satisfaction), the BRSQ (which assesses various forms of athlete

motivation falling on a self-determined continuum), and the ABQ (measuring athlete burnout). Athletes completed a handout of these questionnaires once during their preseason, and then again, four months later after the conclusion of the first half of their season. Coaches completed a single questionnaire (LSS) assessing their perceptions of their own behavior at the four-month mark.

Results indicated that there were minimal significant relationships between perceived coaching behavior and an athlete's needs satisfaction (i.e., competence, autonomy, and relatedness). However, results showed consistent significant links between needs satisfaction and outcomes pertaining to athlete motivation and burnout. Additionally, findings provided insight into significant relationships between an individual athlete's psychological coping skills and the perceptions he had of his coach. Further analysis of these coping skills indicated that they were strong predictors of needs satisfaction, motivation, and burnout, such that athletes with higher coping skills perceived satisfaction of their needs, were less likely to be driven by external forces (non-self-determined forms of motivation), and were less likely to experience burnout. Finally, mediational tests confirmed that these coping skills can operate as an explanatory mechanism underlying the relationship between one particular coaching behavior and an athlete's psychological needs satisfaction. Overall, this study provided further support for using SDT (Ryan & Deci, 2000b) as a framework for understanding coach-athlete relationships, and offered initial evidence for the extent to which athletes' individual differences play an important role in these dyads.

Conclusions

The following section outlines conclusions drawn from this study, in accordance with the two research questions and findings from the 6 tested hypotheses.

1. Findings of this study support the use of SDT as an appropriate framework for assessing the coach-athlete relationship. Specifically, these findings support the notion that the psychological needs of an athlete (i.e., competence, autonomy, and relatedness) are an important factor in one's interpersonal experiences with a coach. While most coaching behaviors did not predict these needs, a coach's Training and Instruction was found to enhance various forms of athlete autonomy, as well as an athlete's feelings of relatedness.

2. This study also concluded that higher autonomy corresponded to athletes who are less likely to be regulated by external, non-self-determined forms of motivation, and are less likely to experience burnout. Furthermore, athletes who perceive that their need for relatedness (i.e., connectedness or belongingness) is satisfied are less likely to be burnt out.

3. On the whole, athletes high in overall psychological coping skills are more likely to have favorable perceptions of their coaches.

4. Athletes high in these coping skills are also more likely to perceive that their needs are satisfied, less likely to be characterized by non-self-regulated forms of motivation, and less likely to encounter burnout in their sport.

5. Finally, the current study concluded that athlete psychological coping skills are potentially an important mechanism underlying the relationship between

perceived coaching behavior and needs satisfaction. While a mediational effect was only found to explain two links between coaches and athlete needs, there is reason to believe that psychological coping skills might play a similar role among other variables, given the number of significant correlations between these attributes and an athlete's perceptions of a coach as well as needs satisfaction.

Recommendations for Future Research

Based on various limitations in this study, recommendations for future research include the use of much larger sample sizes, longer longitudinal designs, and the use of diverse sport populations (the current study only looked at athletes playing one sport). Furthermore, given evidence that suggests that males and females can have different preferences for coaching behavior (Sherman et al., 2000), future research should examine these variables and processes in all-female populations, as well as those that have mixed dyads (e.g., male coach, female athlete; female coach, male athlete).

Research often takes a largely unidimensional and unidirectional approach to the coach-athlete relationship, focusing on the extent to which coaching behavior or coaching styles can positively or negatively affect the athletes. Questions inevitably arise concerning whether some coaching styles or coaching behaviors are, in fact, effective for all athletes, and if not, why certain athletes benefit while others suffer. As such, among other purposes, the present research looks at how outcomes of the coach-athlete relationship are, at least partially, filtered through individual differences that each athlete might bring to the table.

It is recommended that other scales be used to assess some of the variables of interest in this study, namely coaching behaviors. Only one of the perceived coaching behaviors (Training and Instruction) measured by the LSS (Chelladurai & Saleh, 1980) yielded a significant impact on athlete psychological needs in the current study. Future research on the coach-athlete dyad should test these relationships further, possibly by using a different measure of coaching behavior. While the LSS has been used consistently throughout research on the coach-athlete relationship, it could be the case that this measurement did not accurately reflect the experiences that some of these athletes had with their coaches. Testing a broader (and different) range of perceived coaching behaviors and their impact on athlete needs satisfaction could provide further insight into what has become a consistent trend in the literature.

Similar recommendations hold true for the measurement of psychological coping skills, needs satisfaction, motivation, and burnout (although there is only one commonly used sport-specific measurement of this last construct). The more that future research examines these relationships using a range of measurement tools, the more credible these conclusions will become.

Future research could also benefit from changing the application of SDT to sport-related research. Consistent with coach-centered trends in the literature, with regards to SDT and psychological needs satisfaction (specifically competence), research in sport has adhered very closely to a coach-based model of SDT. In other words, most studies, including this one, examining psychological needs satisfaction in sport have looked at the extent to which coaching behaviors impact those needs (e.g., Coatsworth & Conroy,

2009; Hollembeak & Amorose, 2005; Felton & Jowett, 2014; Adie et al., 2012; etc.). However, Ryan and Deci (2000b) note that SDT and its accompanying sub-theories (Cognitive Evaluation Theory, etc.) assert that “social-contextual events (e.g., feedback, communication, rewards) that conduce towards feelings of competence during action can enhance intrinsic motivation for that action” (p. 70). In other words, competence-conductive information can originate from sources other than the coach. Granted, coaches – especially those in team sports – hold arguably the greatest influence over the extent to which an athlete’s needs are satisfied. Nevertheless, future research should examine other potential antecedents (e.g., playing time, individual success, team success, team cohesion, etc.) and the extent to which they potentially influence athlete needs satisfaction. Given that the current study largely failed to find any consistent link between coaching behavior and athlete psychological needs, there is room to further our understanding of these needs by testing other possible antecedents. The focus may need to broaden to include other interpersonal, sociocultural, or environmental factors that may enhance or lessen an athlete’s perceptions of competence, autonomy, and relatedness.

In accordance with recommendations put forth by Poczwardowski et al. (2006), the current study found that a multifaceted approach to studying the coach-athlete relationship yielded a wealth of findings and nuanced insight. Future research on these dyads should continue to incorporate diversified approaches and methodologies, including qualitative measurement and mixed methods designs to get to the heart of an athlete’s experience in this relationship.

BIBLIOGRAPHY

- Adie, J. W., Duda, J. L., & Ntoumanis, N. (2012). Perceived coach-autonomy support, basic need satisfaction and the well-and ill-being of elite youth soccer players: A longitudinal investigation. *Psychology of Sport and Exercise, 13*(1), 51-59.
- Allen, J. B. & Howe, B. L. (1998). Player ability, coach feedback, and female adolescent athletes' perceived competence and satisfaction. *Journal of Sport & Exercise Psychology, 20*, 280-299.
- Amorose, A. J., & Anderson-Butcher, D. (2007). Autonomy-supportive coaching and self-determined motivation in high school and college athletes: A test of self-determination theory. *Psychology of Sport and Exercise, 8*(5), 654-670.
- Amorose, A. J., & Horn, T. S. (2001). Pre-to post-season changes in the intrinsic motivation of first year college athletes: Relationships with coaching behavior and scholarship status. *Journal of Applied Sport Psychology, 13*(4), 355-373.
- Andrew, D. P. S. (2004). *The effect of congruence of leadership behaviors on motivation, commitment, and satisfaction of college tennis players* (Unpublished doctoral dissertation). Florida State University: Tallahassee, Fl.
- Baker, J., Côté, J., & Hawes, R. (2000). The relationship between coaching behaviours and sport anxiety in athletes. *Journal of Science and Medicine in Sport, 3*(2), 110-119.
- Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology, 41*(3), 586-598.
- Barrow, J. C. (1977). The variables of leadership: A review and conceptual framework. *Academy of Management Review, 2*(2), 231-251.
- Becker, A. J. (2009). It's not what they do, it's how they do it: Athlete experiences of great coaching. *International Journal of Sports Science and Coaching, 4*(1), 93-119.
- Blanchard, C. M., Amiot, C. E., Perreault, S., Vallerand, R. J., & Provencher, P. (2009). Cohesiveness, coach's interpersonal style and psychological needs: Their effects on self-determination and athletes' subjective well-being. *Psychology of Sport and Exercise, 10*(5), 545-551.

- Blanchard, C., & Vallerand, R. J. (1996). Perceptions of competence, autonomy, and relatedness as psychological mediators of the social factors-contextual motivation relationship. *Unpublished manuscript. Université du Québec à Montréal.*
- Carron, A. V., & Bennett, B. B. (1977). Compatibility in the coach-athlete dyad. *Research Quarterly. American Alliance for Health, Physical Education and Recreation, 48*(4), 671-679.
- Chelladurai, P. (1978). A contingency model of leadership in athletics. Unpublished doctoral dissertation. University of Waterloo, Canada.
- Chelladurai, P. (1984). Discrepancy between preferences and perceptions of leadership behavior and satisfaction of athletes in varying sports. *Journal of Sport Psychology, 6*, 27-41
- Chelladurai, P. (1993). Leadership In R. N., Singer, M. Murphy, & L. K., Tennant (Eds.). *Handbook of research on sport psychology* (pp. 647–671). New York: Macmillan.
- Chelladurai, P., & Carron, A. V. (1983). Athletic maturity and preferred leadership. *Journal of Sport Psychology, 5*(4), 371-380.
- Chelladurai, P., Imamura, H., Yamaguchi, Y., Oinuma, Y., & Miyauchi, T. (1988). Sport leadership in a cross-national setting: The case of Japanese and Canadian university athletes. *Journal of Sport & Exercise Psychology, 10*(4), 374-389.
- Chelladurai, P., & Reimer, H. A. (1998). Measurement of leadership in sport. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 227-253). Morgantown, WV: Fitness Information Technology.
- Chelladurai, P., & Saleh, S. D. (1978). Preferred leadership in sports. *Canadian Journal of Applied Sport Sciences, 3*(2), 85-92.
- Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behavior in sports: Development of a leadership scale. *Journal of Sport Psychology, 2*(1), 34-45.
- Coatsworth, J. D., & Conroy, D. E. (2009). The effects of autonomy-supportive coaching, need satisfaction, and self-perceptions on initiative and identity in youth swimmers. *Developmental Psychology, 45*(2), 320-328.
- Cumming, S. P., Smith, R. E., & Smoll, F. L. (2006). Athlete-perceived coaching behaviors: Relating two measurement traditions. *Journal of Sport and Exercise Psychology, 28*, 205-213.

- Davis, L., & Jowett, S. (2014). Coach-athlete attachment and the quality of the coach-athlete relationship: Implications for athlete's well-being. *Journal of Sport Sciences*, 32(15), 1454-1464.
- Davis, L., Jowett, S., & Lafreniere, M. K. (2013). An attachment theory perspective in the examination of relational processes associated with coach-athlete dyads. *Journal of Sport & Exercise Psychology*, 35, 156-167.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- Deci, E. L. & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (Eds.). (2002). *Handbook of self-determination research*. Rochester, NY: University of Rochester Press.
- Felton, L., & Jowett, S. (2013). "What do coaches do" and "how do they relate": Their effects on athletes' psychological needs and functioning. *Scandinavian Journal of Medicine & Science in Sports*, 23(2), 130-139.
- Frederick-Recascino, C.M. (2002). Self-determination theory and participation motivation research in the sport and exercise domain. In E. Deci, & R. Ryan (Eds.). *Handbook of self-determination research* (pp. 277-294). Rochester, NY: The University of Rochester Press.
- Gagné, M., Ryan, R., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, 15(4), 372-390.
- Gillet, N., Vallerand, R. J., Amoura, S., & Baldes, B. (2010). Influence of coaches' autonomy support on athletes' motivation and sport performance: A test of the hierarchical model of intrinsic and extrinsic motivation. *Psychology of Sport and Exercise*, 11(2), 155-161.
- Goodger, K., Gorely, T., Lavalley, D., & Harwood, C. (2007). Burnout in sport: A systematic review. *The Sport Psychologist*, 21, 127-151
- Gould, D., Collins, K., Lauer, L., & Chung, Y. (2007). Coaching life skills through football: A study of award winning high school coaches. *Journal of Applied Sport Psychology*, 19(1), 16-37.
- Gould, D., Dieffenbach, K., & Moffet, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology*, 14, 172-204.

- Gould, D., Guinan, D., Greenleaf, C., & Chung, Y. (2002). A survey of U.S. Olympic coaches: Variables perceived to have influenced athlete performance and coach effectiveness. *The Sport Psychologist, 16*, 229-250.
- Greenleaf, C., Gould, D., & Dieffenbach, K. (2001). Factors influencing Olympic performance: Interviews with Atlanta and Nagano US Olympians. *Journal of Applied Sport Psychology, 13*(2), 154-184.
- Hodge, K., Lonsdale, C., & Ng, J. Y. (2008). Burnout in elite rugby: Relationships with basic psychological needs fulfillment. *Journal of Sports Sciences, 26*(8), 835-844
- Hollebeak, J., & Amorose, A. J. (2005). Perceived coaching behaviors and college athletes' intrinsic motivation: A test of self-determination theory. *Journal of Applied Sport Psychology, 17*(1), 20-36.
- Horn, T. S., Bloom, P., Berglund, K. M., & Packard, S. (2011). Relationships between collegiate athletes' psychological characteristics and their preferences for different types of coaching behavior. *The Sport Psychologist, 25*, 190-211.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.
- Isoard-Gartheur, S., Guillet-Descas, E., & Lemyre, P. (2012). A prospective study of the influence of perceived coaching style on burnout propensity in high level young athletes: Using a self-determination theory perspective. *The Sport Psychologist, 26*, 282-298.
- Jackson, B., Dimmock, J. A., Gucciardi, D. F., & Grove, J. R. (2011). Personality traits and relationship perceptions in coach-athlete dyads: Do opposites really attract?. *Psychology of Sport and Exercise, 12*(3), 222-230.
- Johnson, U., & Ivarsson, A. (2011). Psychological predictors of sport injuries among junior soccer players. *Scandinavian Journal of Medicine & Science in Sports, 21*(1), 129-136.
- Jose, P. E. (2013). *MedGraph-I: A programme to graphically depict mediation among three variables: The internet version, version 3.0*. Victoria University of Wellington, Wellington, New Zealand. Retrieved [February, 2015] from <http://pavlov.psyc.vuw.ac.nz/paul-jose/medgraph/>

- Jowett, S. (2005). The coach-athlete partnership. *The Psychologist*, 18(7), 412-415.
- Jowett, S., & Cockerill, I. M. (2003). Olympic medalists' perspective of the athlete-coach relationship. *Psychology of Sport and Exercise*, 4(4), 313-331.
- Jowett, S., & Lavalley, D. (Eds.). (2007). *Social psychology in sport*. Champaign, IL: Human Kinetics.
- Jowett, S., & Nezlek, J. (2012). Relationship interdependence and satisfaction with important outcomes in coach-athlete dyads. *Journal of Social and Personal Relationship*, 29(3), 287-301.
- Jowett, S. & Ntoumanis, N. (2004). The coach-athlete relationship questionnaire (CART-Q): Development and initial validation. *Scandinavian Journal of Medicine & Science in Sports*, 14, 245-257.
- Jowett, S., & Poczwadowski, A. (2007). Understanding the coach-athlete relationship. In S. Jowett & D. Lavalley (Eds.), *Social psychology in sport*. (pp. 3-14). Champaign, IL: Human Kinetics.
- Kenow, L., & Williams, J. M. (1999). Coach-athlete compatibility and athlete's perception of coaching behaviors. *Journal of Sport Behaviour*, 22(2), 251-259.
- Kidman, L., & Lombardo, B. J., (Eds.). (2010). *Athlete-centred coaching: Developing Decision Makers* (2nd ed.). Worchester, UK: IPC Print Resources.
- Li, C., Wang, C. K., Pyun, D. Y., & Kee, Y. H. (2013). Burnout and its relations with basic psychological needs and motivation among athletes: A systematic review and meta-analysis. *Psychology of Sport and Exercise*, 14(5), 692-700.
- Lonsdale, C., Hodge, K., Hargreaves, E. A., & Ng, J. Y. (2014). Comparing sport motivation scales: A response to Pelletier et al. *Psychology of Sport and Exercise*, 15, 446-452.
- Lonsdale, C., Hodge, K., & Rose, E. A. (2008). The behavioral regulation in sport questionnaire (BRSQ): Instrument development and initial validity evidence. *Journal of Sport & Exercise Psychology*, 30(3), 323-355.
- Lonsdale, C., Hodge, K., & Rose, E. (2009). Athlete burnout in elite sport: A self-determination perspective. *Journal of Sports Sciences*, 27(8), 785-795.
- Mageau, G. A., & Vallerand, R. J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sports Science*, 21(11), 883-904.

- Mallett, C. J., & Hanrahan, S. J. (2004). Elite athletes: Why does the 'fire' burn so brightly? *Psychology of Sport and Exercise*, 5(2), 183-200.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, 2(2), 99-113.
- McClelland, D.C. (1987). *Human motivation*. Cambridge, UK: Cambridge University Press.
- Ng, J. Y., Lonsdale, C., & Hodge, K. (2011). The basic needs satisfaction in sport scale (BNSSS): instrument development and initial validity evidence. *Psychology of Sport and Exercise*, 12(3), 257-264.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd Ed.). New York: McGraw-Hill.
- Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Briere, N. M., & Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport and Exercise Psychology*, 17, 35-53.
- Pelletier, L. G., Rocchi, M. A., Vallerand, R. J., Deci, E. L., & Ryan, R. M. (2013). Validation of the revised sport motivation scale (SMS-II). *Psychology of Sport and Exercise*, 14(3), 329-341.
- Perreault, S., Gaudreau, P., Lapointe, M., & Lacroix, C. (2007). Does it take three to tango? Psychological need satisfaction and athlete burnout. *International Journal of Sport Psychology*, 38, 437-450.
- Philippe, A.R., & Seiler, R. (2006). Closeness, co-orientation and complementarity in coach-athlete relationships: what male swimmers say about their male coaches. *Psychology of Sport and Exercise*, 7(2), 159-171.
- Poczwardowski, A., Barott, J. E., & Jowett, S. (2006). Diversifying approaches to research on athlete-coach relationships. *Psychology of Sport and Exercise*, 7(2), 125-142.
- Poczwardowski, A., Diehl, B., O'Neil, A., Cote, T., & Haberl, P. (2014). Successful transitions to the Olympic Training Center, Colorado Springs: A mixed-method exploration with six resident-athletes. *Journal of Applied Sport Psychology*, 26(1), 33-51.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.

- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879-891.
- Raedeke, T. D., Lunney, K., & Venables, K. (2002). Understanding athlete burnout: Coach perspectives. *Journal of Sport Behavior*, *25*(2), 181-206.
- Raedeke, T. D., & Smith, A. L. (2001). Development and preliminary validation of an athlete burnout measure. *Journal of Sport & Exercise Psychology*, *23*, 281-306.
- Reinboth, M., Duda, J. L., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion*, *28*(3), 297-313.
- Rhind, D. J. A., Jowett, S., & Yang, S. X. (2012). A comparison of athletes' perceptions of the coach-athlete relationship in team and individual sports. *Journal of Sport Behavior*, *35*(4), 433-452.
- Riemer, H. A. (2007). Multidimensional model of coach leadership. In Jowett, S., & Lavallee, D. (Eds.), *Social psychology in sport*. (pp. 57-73). Champaign, IL: Human Kinetics.
- Rigby, C. S., Deci, E. L., Patrick, B. C., & Ryan, R. M. (1992). Beyond the intrinsic-extrinsic dichotomy: Self-determination in motivation and learning. *Motivation and Emotion*, *16*(3), 165-185.
- Roberts, G. C. (2012). Motivation in sport and exercise from an achievement goal theory perspective: After 30 years, where are we? In G. C. Roberts & D. C. Treasure (Eds.), *Advances in motivation in sport and exercise* (pp. 5-58). (3rd ed.). Champaign, IL: Human Kinetics.
- Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*(1), 54-67.
- Ryan, R. M., & Deci, E. L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68-78.
- Sarrazin, P., Vallerand, R., Guillet, E., Pelletier, L., & Cury, F. (2002). Motivation and dropout in female handballers: A 21-month prospective study. *European Journal of Social Psychology*, *32*, 395-418.

- Sheldon, J. P., Eccles, J. S. (2005). Physical and psychological predictors of perceived ability in adult male and female tennis players. *Journal of Applied Sport Psychology, 17*, 48-63.
- Sherman, C. A., Fuller, R., & Speed, H. D. (2000). Gender comparisons of preferred coaching behaviors in Australian sports. *Journal of Sport Behavior, 23*(4), 389-406.
- Smith, R. E., & Christensen, D. S. (1995). Psychological skills as predictors of performance and survival in professional baseball. *Journal of Sport & Exercise Psychology, 17*, 399-415.
- Smith, R.E., Schutz, R.W., Smoll, F.L., & Ptacek, J.T. (1995). Development and validation of a multidimensional measure of sport-specific psychological skills: The athletic coping skills inventory-28. *Journal of Sport and Exercise Psychology, 17*, 379-398.
- Smith, R. E., Smoll, F. L., & Hunt, E. (1977). A system for the behavioral assessment of athletic coaches. *Research Quarterly. American Alliance for Health, Physical Education and Recreation, 48*(2), 401-407.
- Smith, R. E., Smoll, F. L., & Schutz, R. (1988). *The Athletic Coping Skills Inventory: Psychometric properties, correlates, and confirmatory factor analysis*. Unpublished manuscript, University of Washington, Seattle, WA.
- Smoll, F. L., Smith, R. E., Curtis, B., & Hunt, E. (1978). Toward a mediational model of coach-player relationships. *Research Quarterly. American Alliance for Health, Physical Education and Recreation, 49*(4), 528-541.
- Smoll, F. L., & Smith, R. E. (1989). Leadership behaviors in sport: A theoretical model and research paradigm. *Journal of Applied Social Psychology, 19*(18), 1522-1551.
- Stirling, A. E., & Kerr, G. A. (2013). The perceived effects of elite athletes' experiences of emotional abuse in the coach-athlete relationship. *International Journal of Sport and Exercise Psychology, 11*(1), 87-100.
- Surujlal, J., Zyl, Y. V., & Nolan, V. T. (2013). Perceived stress and coping skills of university student-athletes and the relationship with life satisfaction. *African Journal for Physical, Health Education, Recreation and Dance, 19*(4:2), 1047-1059.
- Tenenbaum, G., Eklund, R.C., & Kamata, A. (Eds.). (2012). *Measurement in sport and exercise psychology*. Champaign, IL: Human Kinetics.

- Terry, P. C. (1984). The coaching preferences of elite athletes competing at Universiade'83. *Canadian Journal of Applied Sport Sciences*, 9(4), 201-208.
- Thill, E. E., Mailhot, L., & Mouanda, J. (1998). On how task- contingent rewards, individual differences in causality orientations, and imagery abilities are related to intrinsic motivation and performance. *European Journal of Social Psychology*, 28(2), 141-158.
- Vallerand, R. J. (1983). The effect of differential amounts of positive verbal feedback on the intrinsic motivation of male hockey players. *Journal of Sport Psychology*, 5(1), 100-107.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 271-360). San Diego, CA: Academic Press.
- Vallerand, R. J., & Losier, G. F. (1999). An integrative analysis of intrinsic and extrinsic motivation in sport. *Journal of Applied Sport Psychology*, 11(1), 142-169.
- Vallerand, R. J., & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology*, 6(1), 94-102.
- Vallerand, R. J. & Rousseau, F. L. (2001). Intrinsic and extrinsic motivation in sport and exercise: A review using the hierarchical model of intrinsic and extrinsic motivation. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.). *Handbook of Sport Psychology* (2nd ed.) (pp. 389–416). New York: Wiley.
- Vealey, R. S., Armstrong, L., Comar, W., & Greenleaf, C. A. (1998). Influence of perceived coaching behaviors on burnout and competitive anxiety in female college athletes. *Journal of Applied Sport Psychology*, 10(2), 297-318.
- Vella, S. A., Oades, L. G., & Crowe, T. P. (2013). The relationship between coach leadership, the coach–athlete relationship, team success, and the positive developmental experiences of adolescent soccer players. *Physical Education and Sport Pedagogy*, 18(5), 549-561.
- Weinberg, R. S., & Gould, D. (2011). *Foundations of sport and exercise psychology* (5th ed.). Human Kinetics.
- Wiersma, L. D. (2000). Risks and benefits of youth sport specialization: Perspectives and recommendations. *Pediatric Exercise Science*, 12(1), 13-22.

Williams, J. M., & Krane, V. (2014). *Applied sport psychology: Personal growth to peak performance*. (7th ed.). New York: McGraw-Hill.

Wylleman, P. (2000). Interpersonal relationships in sport: Uncharted territory in sport psychology research. *International Journal of Sport Psychology*, 31, 555-572.

APPENDIX A
LEADERSHIP SCALE FOR SPORTS (LSS)
(Chelladurai & Saleh, 1980)

*NOTE: The LSS can be administered in multiple formats, testing athletes' preferences for coaching behavior, athletes' perceptions of coaching behavior, and coaches' perceptions of their own behavior. The format below reflects the version measuring *athlete perceptions*. Administration in alternative formats only involves changing the opening phrase to "I prefer my coach to..." or "As a coach, I...".

My coach...	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1. Sees to it that every athlete is working to his capacity.	1	2	3	4	5
2. Explains to each athlete the techniques and tactics of the sport.	1	2	3	4	5
3. Pays special attention to correcting athletes' mistakes.	1	2	3	4	5
4. Makes sure that the coach's part in the team is understood by all the athletes.	1	2	3	4	5
5. Instructs every athlete individually in the skills of the sport.	1	2	3	4	5
6. Figures ahead on what should be done.	1	2	3	4	5
7. Explains to every athlete what he should and what he should not do.	1	2	3	4	5
8. Expects every athlete to carry out his assignment to the last detail.	1	2	3	4	5
9. Points out each athlete's strengths and weaknesses.	1	2	3	4	5
10. Gives specific instructions to each athlete as to what he should do in every situation.	1	2	3	4	5
11. Sees to it that athletes' efforts are coordinated.	1	2	3	4	5
12. Explains how each athlete's contribution fits into the total picture.	1	2	3	4	5
13. Specifies in detail what is expected of each athlete.	1	2	3	4	5
14. Asks for the opinion of the athletes on strategies for specific competitions.	1	2	3	4	5
15. Gets group approval on important matters before going ahead.	1	2	3	4	5

My coach...	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
16. Lets his athletes share in decision making.	1	2	3	4	5
17. Encourages athletes to make suggestions for ways of conducting practices.	1	2	3	4	5
18. Lets the group set its own goals.	1	2	3	4	5
19. Lets the athletes try their own way even if they make mistakes.	1	2	3	4	5
20. Asks for the opinion of the athletes on important coaching matters.	1	2	3	4	5
21. Lets athletes work at their own speed.	1	2	3	4	5
22. Lets the athletes decide on the tactics/plays to be used in a game.	1	2	3	4	5
23. Works relatively independent of the athletes.	1	2	3	4	5
24. Does not explain his action.	1	2	3	4	5
25. Refuses to compromise a point.	1	2	3	4	5
26. Keeps to himself.	1	2	3	4	5
27. Speaks in a manner not to be questioned.	1	2	3	4	5
28. Helps the athletes with their personal problems.	1	2	3	4	5
29. Helps members of the group settle their conflicts.	1	2	3	4	5
30. Looks out for the personal welfare of the athletes.	1	2	3	4	5
31. Does personal favors for the athletes.	1	2	3	4	5
32. Expresses affection he feels for his athletes.	1	2	3	4	5
33. Encourages the athlete to confide in him.	1	2	3	4	5
34. Encourages close and informal relations with athletes.	1	2	3	4	5
35. Invites athletes to his home.	1	2	3	4	5

My coach...	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
36. Compliments an athlete for his performance in front of others.	1	2	3	4	5
37. Tells an athlete when he does a particularly good job.	1	2	3	4	5
38. Sees that an athlete is rewarded for a good performance.	1	2	3	4	5
39. Expresses appreciation when an athlete performs well.	1	2	3	4	5
40. Gives credit when credit is due.	1	2	3	4	5

APPENDIX B
ATHLETIC COPING SKILLS INVENTORY-28
(Smith, Smoll, Schutz, & Ptacek, 1995)

	Almost Never	Sometimes	Often	Almost Always
1. On a daily or weekly basis, I set very specific goals for myself that guide what I do.	0	1	2	3
2. I get the most out of my talent and skill.	0	1	2	3
3. When a coach or manager tells me how to correct a mistake I've made, I tend to take it personally and feel upset.	0	1	2	3
4. When I'm playing soccer, I can focus my attention and block out distractions.	0	1	2	3
5. I remain positive and enthusiastic during competition, no matter how badly things are going.	0	1	2	3
6. I tend to play better under pressure because I think more clearly.	0	1	2	3
7. I worry quite a bit about what others think of my performance.	0	1	2	3
8. I tend to do lots of planning about how to reach my goals.	0	1	2	3
9. I feel confident that I will play well.	0	1	2	3
10. When a coach or manager criticizes me, I become upset rather than feel helped.	0	1	2	3
11. It is easy for me to keep distracting thoughts from interfering with something I am watching or listening to.	0	1	2	3
12. I put a lot of pressure on myself by worrying about how I will perform.	0	1	2	3
13. I set my own performance goals for each practice.	0	1	2	3
14. I don't have to be pushed to practice or play hard; I give 100%.	0	1	2	3
15. If a coach criticizes or yells at me, I correct the mistake without getting upset about it.	0	1	2	3

	Almost Never	Sometimes	Often	Almost Always
16. I handle unexpected situations in soccer very well.	0	1	2	3
17. When things are going badly, I tell myself to keep calm, and this works for me.	0	1	2	3
18. The more pressure there is during a game, the more I enjoy it.	0	1	2	3
19. While competing, I worry about making mistakes or failing to come through.	0	1	2	3
20. I have my own game plan worked out in my head long before the game begins.	0	1	2	3
21. When I feel myself getting too tense, I can quickly relax my body and calm myself.	0	1	2	3
22. To me, pressure situations are challenges that I welcome.	0	1	2	3
23. I think about and imagine what will happen if I fail or screw up.	0	1	2	3
24. I maintain emotional control regardless of how things are going for me.	0	1	2	3
25. It is easy for me to direct my attention and focus on a single object or person.	0	1	2	3
26. When I fail to reach my goals, it makes me try even harder.	0	1	2	3
27. I improve my skills by listening carefully to advice and instruction from coaches and managers.	0	1	2	3
28. I make fewer mistakes when the pressure is on because I concentrate better.	0	1	2	3

APPENDIX C
BASIC NEEDS SATISFACTION IN SPORT SCALE
(Ng, Lonsdale, & Hodge, 2011)

		Not True At All		Somewhat True			Very True	
1.	In my sport, I feel close to other people.	1	2	3	4	5	6	7
2.	In my sport, I feel I am pursuing goals that are my own.	1	2	3	4	5	6	7
3.	I feel I participate in my sport willingly.	1	2	3	4	5	6	7
4.	In my sport, I get opportunities to make choices.	1	2	3	4	5	6	7
5.	In my sport, I feel that I am being forced to do things that I don't want to do.	1	2	3	4	5	6	7
6.	I can overcome challenges in my sport.	1	2	3	4	5	6	7
7.	I show concern for others in my sport.	1	2	3	4	5	6	7
8.	I choose to participate in my sport according to my own free will.	1	2	3	4	5	6	7
9.	In my sport, I have a say in how things are done.	1	2	3	4	5	6	7
10.	There are people in my sport who care about me.	1	2	3	4	5	6	7
11.	I am skilled at my sport.	1	2	3	4	5	6	7
12.	I feel I am good at my sport.	1	2	3	4	5	6	7
13.	In my sport, I can take part in the decision making process.	1	2	3	4	5	6	7
14.	I get opportunities to feel that I am good at my sport.	1	2	3	4	5	6	7
15.	In my sport, I really have a sense of wanting to be there.	1	2	3	4	5	6	7
16.	In my sport, I feel I am doing what I want to be doing.	1	2	3	4	5	6	7
17.	I have the ability to perform well in my sport.	1	2	3	4	5	6	7
18.	In my sport, there are people who I can trust.	1	2	3	4	5	6	7
19.	I have close relationships with people in my sport.	1	2	3	4	5	6	7
20.	In my sport, I get opportunities to make decisions.	1	2	3	4	5	6	7

Note: For researchers desiring to use the BNSSS in future research, the original author (Dr. Chris Lonsdale) requests that you contact him prior to doing so at chris.lonsdale@acu.edu.au.

APPENDIX D
BEHAVIORAL REGULATION IN SPORT QUESTIONNAIRE
(Lonsdale, Hodge, & Rose, 2008)

<i>I participate in my sport...</i>	Not At All True		Somewhat True			Very True	
1. Because I enjoy it.	1	2	3	4	5	6	7
2. Because it's a part of who I am.	1	2	3	4	5	6	7
3. Because it's an opportunity to just be who I am.	1	2	3	4	5	6	7
4. Because I would feel ashamed if I quit.	1	2	3	4	5	6	7
5. But the reasons why are not clear to me anymore.	1	2	3	4	5	6	7
6. Because I would feel like a failure if I quit.	1	2	3	4	5	6	7
7. But I wonder what's the point.	1	2	3	4	5	6	7
8. Because what I do in sport is an expression of who I am.	1	2	3	4	5	6	7
9. Because the benefits of sport are important to me.	1	2	3	4	5	6	7
10. Because if I don't, other people will not be pleased with me.	1	2	3	4	5	6	7
11. Because I like it.	1	2	3	4	5	6	7
12. Because I feel obligated to continue.	1	2	3	4	5	6	7
13. But I question why I continue.	1	2	3	4	5	6	7
14. Because I feel pressure from other people to play	1	2	3	4	5	6	7
15. Because people push me to play.	1	2	3	4	5	6	7

16. Because it's fun.	1	2	3	4	5	6	7
17. Because it teaches me self-discipline.	1	2	3	4	5	6	7
18. Because I would feel guilty if I quit.	1	2	3	4	5	6	7
19. Because I find it pleasurable.	1	2	3	4	5	6	7
20. Because I value the benefits of my sport.	1	2	3	4	5	6	7
21. But I question why I am putting myself through this.	1	2	3	4	5	6	7
22. Because it is a good way to learn things which could be useful to me in my life.	1	2	3	4	5	6	7
23. In order to satisfy people who want me to play.	1	2	3	4	5	6	7
24. Because it allows me to live in a way that is true to my values.	1	2	3	4	5	6	7

Note: The following items were not included in the current study's administration of the BRSQ. The items represent three subscales for Intrinsic Motivation (IM-Knowledge, IM-Stimulation, and IM-Accomplish).

I participate in my sport...

1. Because of the pleasure I experience when I feel completely absorbed in my sport.
2. Because I enjoy the feeling of achievement when trying to reach long-term goals.
3. Because I enjoy the feeling of success when I am working towards achieving something important.
4. I enjoy learning something new about my sport.
5. Because of the excitement I feel when I am really involved in the activity.
6. Because I enjoy doing something to the best of my ability.
7. Because I like learning how to apply new techniques.
8. Because I enjoy learning new techniques.
9. Because I love the extreme highs that I feel during sport.
10. Because of the positive feelings that I experience while playing my sport.
11. Because I get a sense of accomplishment when I strive to achieve my goals.
12. For the pleasure it gives me to know more about my sport.

Note: For researchers desiring to use the BRSQ in future research, the original author (Dr. Chris Lonsdale) requests that you contact him prior to doing so at chris.lonsdale@acu.edu.au.

APPENDIX E
ATHLETE BURNOUT QUESTIONNAIRE (ABQ)
(Raedeke & Smith, 2001)

	Almost Never	Rarely	Sometimes	Frequently	Almost Always
1. I'm accomplishing many worthwhile things in soccer.	1	2	3	4	5
2. I feel so tired from my training that I have trouble finding energy to do other things.	1	2	3	4	5
3. The effort I spend in soccer would be better spent doing other things.	1	2	3	4	5
4. I feel overly tired from my participation in soccer.	1	2	3	4	5
5. I am not achieving much in soccer.	1	2	3	4	5
6. I don't care as much about my performance in soccer as I used to.	1	2	3	4	5
7. I am not performing up to my ability in soccer.	1	2	3	4	5
8. I feel "wiped out" from soccer.	1	2	3	4	5
9. I'm not into soccer like I used to be.	1	2	3	4	5
10. I feel physically worn out from soccer.	1	2	3	4	5
11. I feel less concerned about being successful in soccer than I used to.	1	2	3	4	5
12. I am exhausted by the mental and physical demands of soccer.	1	2	3	4	5
13. It seems that no matter what I do, I don't perform as well as I should.	1	2	3	4	5
14. I feel successful at soccer.	1	2	3	4	5
15. I have negative feelings toward soccer.	1	2	3	4	5

APPENDIX F
INFORMED CONSENT LETTER FOR PARENTS OF PARTICIPANTS
(Identifying Information Redacted)

Dear [REDACTED] Academy Parent,

In the interest of enhancing your son's experience with the [REDACTED] Academy, the Sport Psychology Department conducted a program evaluation this fall with members of its three academy teams (U14, U16, and U18). The evaluation was designed by [REDACTED] and Ryan Sappington, M.Sc., a member of the Sport Psychology staff and a Temple University graduate student.

As part of this evaluation, the athletes completed questionnaires during the 2014 preseason and again at the end of the fall. The questionnaires assessed various aspects of the players' experiences in the [REDACTED] Academy, including: their preferences for coaching styles, their perceptions of coaching styles, psychological coping skills, motivation, psychological needs satisfaction, and athlete burnout. The data will be used to provide insight on player experiences in the program, and aid us in continuing to enhance the [REDACTED] Academy moving forward.

It is important to note that, throughout this process, any and all information collected will be entirely anonymous. Ryan will be incorporating some aspects of the data into his master's thesis at Temple. No individual athlete identifying information will be used in the data analysis nor any write-up of the results. Athlete responses will not be associated with their names, and the Sport Psychology Department will only be using aggregate data from all three teams to improve coaching practices and athlete experiences in this program.

If you have any questions concerning this study or your son's participation, please contact either [REDACTED] Director of Sport Psychology at [REDACTED] or Ryan Sappington at [REDACTED].

By typing your name and selecting "Yes" from the options below, you are providing authorization for [REDACTED] and Ryan to use aggregate, anonymous data from these questionnaires in future write-ups, presentations, and/or publications.

Sincerely,

[REDACTED]
Director of Sport Psychology, [REDACTED]