

THE PEER-CREATED MOTIVATIONAL CLIMATE AND PSYCHOSOCIAL OUTCOMES
IN YOUTH SPORT

By

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PUBLIC ABSTRACT

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Many different people play important roles in shaping young athletes' positive and negative sport experiences. As children become more independent from their parents and other adults, they begin to value their peers more across diverse contexts. Sport peers are important because children spend a significant amount of time with them during training and competitions. In the sport setting, peers are often helpful to young athletes in determining their own ability via direct comparison to like others and also fulfill various relational needs. Ultimately, the quality of one's interactions and relationships with sport peers ties to athletes' motivation and long-term sport participation. Therefore, sport peers should be considered a key feature of a young athletes' career that can enhance or diminish the quality of their participation. The goal of this two-study dissertation was to examine the role of peers in the broader adolescent sport context to better understand how higher quality experiences may be achieved.

Study 1 focused on peer motivational climate, peer relationships, and adolescent athlete well-being. We believed athletes could be grouped based on the quality of their relationships with their teammates and this would explain differences in how the team climate links with markers of well-being. Our hypotheses were supported, and five peer relationship profiles, ranging in quality, were found that were characterized by varying levels of peer acceptance, friendship quality, and friendship conflict. For example, the *Reject* group had the lowest peer relationship quality scores, *Thrive* had the highest, and *Survive* had low peer acceptance and moderate friendship quality and conflict. Study findings showed that athletes in profiles like the

Survive profile with some moderate relationship scores are most sensitive to the peer motivational climate within a team. When these athletes report higher perceptions of a team atmosphere characterized by encouraging improvement, effort, and support among one another, they are generally more likely to experience greater well-being (i.e., lower anxiety, lower burnout, higher enjoyment). The opposite is true when they perceive teammates promote competition and conflict between each other.

Study 2 revealed that the motivational climate players promote may differ from what the coach reinforces, but the two can be combined to create unique and meaningful climate profiles. Our hypotheses were partially supported in that climate profiles with similar and different coach and peer climate perceptions emerged. For example, one group of athletes perceived that their coach and teammates did not value and encourage mastery but were more concerned with the outcome of performance. Another group generally viewed their coach to care more about performance outcomes, while their teammates encouraged effort, improvement, and support. The four climate profiles found tied to athlete engagement, effort, and intentions to continue sport participation in different ways. Athletes who believed their coach and teammates value mastery and not performance were the most engaged, put forth the most effort, and were most likely to continue playing their sport. Athletes who believed their coach and teammates valued performance over mastery, showed the lowest scores on outcome variables. It also appeared that perceiving contradictory values from coaches and teammates was not necessarily detrimental to athlete engagement in this study.

Altogether, these studies enrich our understanding of the contributions that peers make to sport and physical activity experiences of youth and highlight the importance of continued research on this topic.

ABSTRACT

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Numerous social agents collectively shape an omnipresent social context in youth sport that is partially responsible for the quality of young people's athletic experiences. One's peers become increasingly important during adolescence with heightened frequency in interactions, the development of meaningful relationships, and the increased rate of comparison tendencies among like individuals (Horn & Weiss, 1991; Rubin, Bukowski, & Parker, 2006; Sullivan, 1953). Research in the peer area is scant relative to other critical social agents within the broader youth sport social climate (Smith, 2003, 2019). The purpose of this dissertation was to expand the current understanding of the role of peers in adolescents' sport experiences by closely examining the salience of peer motivational climate in the broader social-motivational context.

Study 1 was a cross-sectional survey study that explored potential variations in the associations between peer motivational climate and markers of sport-related well-being as a function of individual differences in peer relationships in adolescent soccer players. Cluster analysis of peer acceptance, friendship quality, and friendship conflict variables yielded five profiles. The profile characterized by average quality sport friendship combined with relatively low peer acceptance exhibited a more consistent pattern of meaningful correlations between task-involving climate dimensions and enjoyment, anxiety, and burnout than did other profiles. The findings suggest that athletes within this peer relationship profile may be relatively more sensitive to the achievement climate reinforced by peers. Thus, peer relationships in sport may determine the salience of peer motivational climate to well-being of adolescent athletes.

Study 2 was a cross-sectional survey study that aimed to challenge the established narrative about how coach and peer motivational climate perceptions link to adaptive and maladaptive achievement patterns by examining unique combinations of athletes' perceptions of coach and peer climates within their team. Cluster analysis of the higher order coach and peer climate types (i.e., task- and ego-involving) yielded four distinct climate profiles ranging least to most adaptive in regard to how they related to study outcome variables (athlete engagement, effort, and continuation). The climate profile with a low score on peer task-involving climate and moderate scores on all other climate variables associated with significantly lower engagement, effort, and continuation. This profile was not significantly different from the least adaptive profile. One climate profile was characterized by differences in the dominant climate type coaches and teammates promote (e.g., high coach ego-involving/high peer task-involving), but it did not appear to be significantly beneficial or detrimental to athletes' levels of engagement and effort. However, mean scores on outcome variables would suggest this climate is more adaptive than not. This work suggests that coaches and peers can convey differing messages about what is valued within their team. The peer task-involving climate may be the more meaningful climate type in shaping the adaptive or maladaptive experiences of adolescent athletes.

In sum, this dissertation highlights the contributions that peer relationships make to the sport experiences of youth and highlights the importance of continued investigation of peers as a part of the broader social climate in the physical domain. This area represents a meaningful direction for researchers to pursue and further our understanding of social processes in youth physical activity contexts.

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To my Ph.D. parents

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TABLE OF CONTENTS

LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: STUDY ONE Peer Relationship Profiles and the Association of Perceived Peer Motivational Climate with Well-Being in Adolescent Athletes	11
Abstract	12
Introduction	13
Method	20
Participants	20
Procedure	21
Measures	22
Data Analysis	26
Results	27
Descriptive Statistics	27
Multilevel Data Analysis	30
Cluster Analysis	31
Profile Group Difference Analyses	36
Discussion	43
CHAPTER 3: STUDY TWO The Association of Coach and Peer Motivational Climate Perceptions of Young Athletes with Athlete Engagement	50
Abstract	50
Introduction	51
Method	60
Participants	60
Procedure	63
Measures	63
Data Analysis	69
Results	69
Descriptive Statistics	69
Multilevel Data Analysis	72
Cluster Analysis	73
Profile Group Difference Analysis	80
Discussion	81
CHAPTER 4: GENERAL DISCUSSION	94
APPENDICES	109
APPENDIX A Study One Initial IRB Application Approval Letter	110

APPENDIX B Study One Questionnaire Packet	112
APPENDIX C Study Two Initial IRB Application Approval Letter.....	124
APPENDIX D Study Two Questionnaire Packet	130
REFERENCES	141

LIST OF TABLES

Table 1. Demographic Information (N = 245).....	21
Table 2. Descriptive Statistics, Correlation, and Alpha Coefficients (N = 245)	29
Table 3. Participant Numbers, Means, Standard Deviations, and Standardized Scores for Peer Relationship Profiles Resulting from <i>k</i> -Means Cluster Analysis	33
Table 4. Demographic Representation in Peer Relationship Profiles.....	36
Table 5. Univariate F, Effect Size, and Cluster Means, Standard Deviations, and Standardized Scores for Peer Motivational Climate Variables	38
Table 6. Univariate F, Effect Size, and Cluster Means, Standard Deviations, and Standardized Scores for Well-Being Variables	39
Table 7. Correlations between Peer Climate Perceptions and Athlete Well-being by Relationship Profile.....	42
Table 8. Demographic Information (N = 255).....	62
Table 9. Descriptive Statistics, Correlation, and Alpha Coefficients (N = 255)	71
Table 10. Participant Numbers, Means, Standard Deviations, and Standardized Scores for Motivational Climate Profiles Resulting from <i>k</i> -Means Cluster Analysis	76
Table 11. Demographic Representation in Motivational Climate Profiles.....	79
Table 12. Univariate F, Effect Size, and Cluster Means, Standard Deviations, and Standardized Scores for Athlete Engagement, Effort, and Intention to Continue Variables.....	81

LIST OF FIGURES

Figure 1. Histogram of Number of Players on a Team Included in Sample (N = 34).....	31
Figure 2. Five Cluster Solution of Peer Relationship Quality Variables.....	35
Figure 3. Histogram of Number of Players on a Team Included in Sample (N = 55).....	73
Figure 4. Four Cluster Solution of Coach and Peer Motivational Climate Variables	77

CHAPTER 1: INTRODUCTION

The numerous benefits of youth sport involvement often serve as the basis for encouraging participation. Importantly, it is argued that the *quality* of one's participation shapes the impact sport has on psychosocial adjustment throughout childhood (Holt, 2016). The quality of the sport experience can vary from one athlete to the next for a number of reasons. Among the factors that contribute to the quality of youth athletic experiences is the social climate present within the broader sport context. The social climate within achievement-focused contexts has the capacity to be adaptive (e.g., supportive) and enhance experience quality, but may also be maladaptive (e.g., confrontational) and negatively impact sport experience. Investigations into key features of the social climate in the physical domain are necessary in order to effectively promote high quality sport experiences for young people.

The sport social climate includes a number of significant others who influence the quality of one another's experiences. Existing sport and exercise psychology research has unintentionally undervalued peers, who have received relatively limited attention in comparison to their adult counterparts (Smith, 2003). Peer relationships in achievement-focused contexts are unique in that they are both imposed and voluntary. Associations to larger peer groups is often unavoidable in the context of sport (e.g., teams), while pursuing and maintaining quality friendships with another peer is based on choice. These complex relationships are fluid, evolve, and provide unique contributions to youth experiences.

Consideration of this social agent is necessary in youth athlete populations due to the general instability of relationship salience across childhood. For example, there is a shift away from adult agents (i.e., parents, coaches, teachers) as primary sources of information to a greater dependence on peers during late childhood and adolescence (Horn, Glenn, & Wentzell, 1993; Horn & Hasbrook, 1987; Horn & Weiss, 1991; Weiss, Ebbeck, & Horn, 1997). This

developmental period is marked by a more holistic sense of self in relation to affiliation with their larger peer group (i.e., peer acceptance) and specific peer relationships (i.e., friendship) (Bukowski & Hoza, 1989; Hartup, 1996; Sullivan, 1953). Research efforts outside of the sport context suggest interactions and relationships built with one's peers may demonstrate greater influence than other social agents on young peoples' experiences (Rubin, Bukowski, & Parker, 2006). Yet, less is known about the contribution peers make specifically to the sport social climate because they remain understudied (Smith, 2003). Thus, a promising avenue for research in the physical domain is one that places young people and their peers at the center of the complex of social climate.

The existing sport peer narrative suggests that ties between participation motives, self-perceptions, and peer relationships influence the overall quality of youth athletic experiences. Young people often cite affiliation with peers as a primary reason for sport participation (e.g., being with/make new friends) and attrition (e.g., competitive team atmosphere) (Allender, Cowburn, & Foster, 2006; Gould & Petlichkoff, 1988). As children develop a preference for social comparison-oriented information (Horn, 2004), sport peers serve as a reference point to determine their own athletic competence (Horn & Weiss, 1991). Not only do children use their peers to determine ability, but their physical competence is also a form of social currency that youth use to ascertain social status (Weiss & Duncan, 1992; Smith, 2007; Chase & Machida, 2011). Therefore, one reason children are motivated to be successful at sport is due to the positive impression it will make on her or his peers. Altogether, this suggests that peers are critical agents within the social climate and have the capacity to enhance or diminish potential benefits of sport participation.

One way to examine how peers contribute to adaptive and maladaptive experiences in youth sport is to examine the consequences of existing value structures within a team. Of particular importance is the value structure that defines the team's criteria for success and failure. This dimension of the social climate is understood as the motivational climate. Multiple agents shape unique motivational climates that simultaneously contribute to sport-related outcomes, but the peer motivational climate is particularly salient as children age and frequently interact with their teammates. The present dissertation places peers at the center of this climate dimension with the intent to understand how young people and their teammates contribute to the quality of their own sport experiences. The design of the present dissertation was informed by numerous theoretical perspectives including the interpersonal theory of psychiatry, achievement goal theory, social cognitive theory, and self-determination theory. Though many perspectives shape the present dissertation, the series of studies cohere around the motivational climate dimension of achievement goal theory (AGT; Ames, 1992; Maehr & Nicholls, 1980; Nicholls, 1984; 1989).

Achievement goal theory (Maehr & Nicholls, 1980; Nicholls, 1984; 1989) states that the goals individuals pursue and the existing achievement climate interact with individual orientations and self-perceptions to shape how a person engages in the setting. Motivational climate refers to perceptions of situational goal or reward structures reinforced by significant others that encourage a particular goal orientation, and that at a given point in time induce a goal involvement state (Ames, 1992; Roberts, Treasure, & Conroy, 2007). Two distinct motivational climate types exist across achievement contexts. The task-involving climate encourages self-referenced forms of ability, effort, and improvement, and the ego-involving climate fosters social comparison and emphasizes normative ability (Ames, 1992). Different social agents can create and reinforce a particular motivational climate, but existing research has primarily addressed the

influence of adults in the physical domain (Harwood, Keegan, Smith, & Raine, 2015; Ntoumanis & Biddle, 1999).

Because of the salience of peers in the youth sport, it is reasonable to expect peers to also contribute to the creation and maintenance of a prevailing motivational climate within a team. Vazou, Ntoumanis, and Duda (2005) sought to address the lack of knowledge on the peer motivational climate in their seminal sport-based qualitative work with adolescent athletes. They identified a number of dimensions unique to the peer motivational climate that informed the creation of a peer motivational climate measure (Ntoumanis & Vazou, 2005). The development of this measure clarified the conceptual landscape of peer motivational climate and paved the way for future quantitative work in this area. Seminal peer motivational climate research and measurement development suggested that peer motivational climate may be a distinct feature of the youth sport setting, an observation reinforced in later youth sport and elite sport research (Keegan, Harwood, Spray, & Lavallee, 2009, 2014; Vazou, 2010; Vazou, Ntoumanis, & Duda, 2006).

Similar to the coach motivational climate, the multidimensional peer motivational climate is characterized by task- and ego-involving higher order climate types (Ntoumanis & Vazou, 2005). The task-involving climate is characterized by three dimensions: 1) improvement, 2) relatedness support, and 3) effort. The improvement dimension refers to encouraging and providing feedback for teammates to improve. The relatedness support dimension is defined as the fostering and facilitation of the feeling of belonging and being part of a group as well as the creation of a friendly team atmosphere. And finally, the effort dimension is understood as teammates encouraging the importance of exerting effort and trying one's hardest (Vazou et al., 2005). The ego-involving climate is represented by two dimensions: 1) including intra-team

competition and ability as well as 2) intra-team conflict. Intra-team competition and ability is characterized by teammates promoting competition and norm-referenced comparison, whereas intra-team conflict is understood as teammates exhibiting negative and unsupportive behaviors (e.g., blaming each other for poor performance, laughing at teammates) (Ntoumanis, Vazou, & Duda, 2007). Building on this foundation, research has been conducted to further understand how the peer motivational climate ties to various sport-related outcomes.

Subsequent research indicates that the peer motivational climate uniquely contributes to youth athlete experiences beyond adult-created motivational climate. Peer motivational climate has been identified as a key predictor of youth athletes' self-perceptions, sport-related affect, and perceptions of the larger group over and above the coach motivational climate (García-Calvo et al., 2014; Ntoumanis, Taylor, & Thørgersen-Ntoumani, 2012; Vazou et al., 2006). Further, the presence of a particular coach motivational climate does not imply the presence of a similar peer motivational climate (Vazou et al., 2006; Ntoumanis et al., 2007). While the two are related, the peer motivational climate is not a direct result of the existing coach climate. These findings suggest that the peer motivational climate contributes to the quality of a sport experience beyond other-created climate contributions and is therefore a unique and salient feature of the youth sport context. Multiple social agents serve to shape independent goal and reward structures in youth sport and their unique individual and combined influences should be examined to develop a deeper understanding of the sport social climate.

Though distinct from the climate created by coaches, the peer motivational climate appears to tie to sport-related outcomes in a similar manner. The peer task-involving climate is referred to as the more adaptive climate, while the ego-involving climate is the more maladaptive climate. For example, higher task-involving climate perceptions have been linked to higher

levels of sport enjoyment, self-worth, and sport commitment, as well as lower anxiety levels (Vazou et al., 2006). Further, this climate type has been related to greater team cohesion (García-Calvo et al., 2014; McLaren, Newland, Eys, & Newton, 2017), empathic concern (Ettekal, Ferris, Batanova, & Syer, 2016), and prosocial attitudes (Ntoumanis et al., 2012). Higher task-involving climate perceptions are also positively linked with basic psychological needs satisfaction, intrinsic motivation, and sport persistence (Jõesaar, Hein, & Hagger, 2011, 2012), as well as lower athlete burnout perceptions (Ntoumanis et al., 2012; Smith, Gustafsson, & Hassmén, 2010). These findings suggest peers generally experience higher quality sport involvement when they perceive their teammates reinforce a task-involving climate.

Higher ego-involving climate perceptions, on the other hand, typically show the opposite relationship with sport-related outcomes. This climate type is related to higher levels of maladaptive motivational and well-being variables (Vazou et al., 2006). For example, the peer ego-involving climate has been associated with greater perceptions of negative sport behaviors (Davies, Babkes Stellino, Nichols, & Coleman, 2015), athlete burnout perceptions (Smith et al., 2010), and antisocial attitudes in sport (Ntoumanis et al., 2012), as well as less self-determined motivation (Hein & Jõesaar, 2015). In general, the existing research suggests an ego-involving peer motivational climate may negatively impact the quality of youth sport experiences.

However, the associations between the peer ego-involving climate and maladaptive sport-related outcomes are not as consistent as those between the task-involving climate and adaptive outcomes. Further research is needed in order to determine the potential consequences of sport participation within a peer ego-involving climate (Vazou et al., 2006).

These initial findings suggest that further examination of the peer motivational climate offers promise for advancing knowledge on social dynamics in sport and the well-being of youth

athletes. The present dissertation will build on this work by examining the unique and combined influence of the peer motivational climate on adaptive and maladaptive psychosocial outcomes experienced by young athletes. The theory-driven peer research spanning diverse disciplines (e.g., social psychology, developmental psychology, and child development) provides a foundation from which the following studies could be designed. The two studies presented within this dissertation significantly advance the sport-related peer relationship and peer motivational climate research area.

Study 1 was designed to evaluate how perceptions of peer motivational climates associate with adolescent athlete well-being. Initial research efforts have shown the peer motivational climate to associate with adaptive and maladaptive motivation-related outcomes in sport, with greatest support for links with task-involving climate and variable findings for ego-involving climate (Atkins, Johnson, Force, & Petrie, 2013; Davies, et al., 2016; Ettekal et al., 2016; Ntoumanis et al., 2007). Moreover, previous research has noted within-team differences in perceptions of peer climate, meaning that not all individuals perceive the climate to be the same (García-Calvo et al., 2014; Vazou, et al., 2006). Intra-team diversity of climate perceptions raises questions about what contributes to this individual variability and how it may impact sport experiences. One possibility resides in the peer relationships that athletes possess. Relationships with peers is of increased importance during adolescence (Rubin et al., 2006), but certainly differs among athletes in ways that are salient to sport motivation and well-being (Smith, Ullrich-French, Walker, & Hurley, 2006). Therefore, the purpose of Study 1 was two-fold: (a) to identify existing peer relationship profiles within adolescent sport teams and (b) to determine if associations between perceived peer motivational climate and well-being indices vary by profile membership.

Study 2 will differ from the previously described study in that two key social agents will be considered simultaneously. Specifically, this study provides a deeper understanding of the adaptive and maladaptive nature of peer task- and ego-involving climate when examined with coach motivational climate as co-existing features of the broader social context. Both coach and peer motivational climates are similar in their respective relationships to various markers of sport-related outcomes, yet they are unique contributors to these positive and negative sport experiences (Atkins et al., 2015; Beck, Petrie, Harmison, Moore, 2017; Chan, Lonsdale, & Fung, 2012; García-Calvo et al., 2014; Ntoumanis et al., 2012; Vazou, 2010; Vazou et al., 2006). Therefore, it is important to consider how unique *combinations* of the two tie to various sport-related outcomes. The adaptive psychosocial experience of athlete engagement is linked to positive sport outcomes and previous research suggests it may be shaped by the motivational climate others create (Curran, Hill, Hall, & Jowett, 2015). The purpose of Study 2 is to expand upon previous motivational climate research by 1) identifying existing coach and peer motivational climate profiles in a sample of adolescent athletes, and 2) examining potential differences on perceptions of athlete engagement, effort, and intention to continue.

The goal of this dissertation is to develop a deeper understanding of the complexity of the adolescent sport social climate by closely examining the roles of peers and existing motivational climates in shaping quality experiences. The two studies within this dissertation offer an alternative perspective on how we understand the adaptive and maladaptive nature of youth sport motivational climates. This is achieved by considering individual variability in climate perceptions and how associations with sport-related psychosocial outcomes differ. There are potential differences in how these climates contribute to the quality of young peoples' sport experiences that are not yet fully understood. The consequences of this lack of knowledge have

practical significance in that motivational climate intervention and educational efforts ignore individual differences and may not be achieving their potential effectiveness. The idea that promoting a particular climate-type within a team will result in more adaptive or maladaptive achievement patterns in young athletes has been oversimplified in the literature. The interaction of additional salient features of the sport environment are ignored and therefore limit our current understanding of the genuine influence of motivational climates.

Both studies in the present dissertation employ a person-centered approach to identify unique profiles existing in youth sport. These suggest the adaptive and maladaptive outcomes generally associated with a task- and ego-involving climate respectively may not be as straightforward as has been portrayed in the literature to this point. The first study specifically targets how peer relationship quality may explain variation in the link between peer motivational climate perceptions and athlete well-being. The second study examines how the combined effects of the perceptions of motivational climates created by different social agents (e.g., coach and peer) are linked to variability in athlete engagement. Both studies account for additional environmental factors (e.g., peer relationships and coach motivational climate perceptions) to help explain how the peer motivational climate associates with young athletes' adaptive and maladaptive achievement patterns. Collectively, these projects will help us understand and appreciate the nuances of the complex role of peers in adolescent sport experiences by understanding more about how the peer motivational climate associates with relevant sport-related outcomes.

CHAPTER 2: STUDY ONE

Peer Relationship Profiles and the Association of Perceived Peer Motivational Climate with Well-Being in Adolescent Athletes

Preface

Results of this study were presented in October of 2018 at the Canadian Society for Psychomotor Learning and Sport Psychology (SCAPPS) annual conference in Toronto, Ontario, Canada.

Abstract

Athlete perceptions of a peer-created task-involving motivational climate associate with adaptive psychological outcomes in sport, whereas perceptions of an ego-involving climate associate with maladaptive outcomes (Ntoumanis, Vazou, & Duda, 2007). Unexplored is potential variation in these associations as a function of individual differences in peer relationships. Indeed, friendship and peer acceptance perceptions differ among athletes in ways that are salient to sport motivation and well-being (Smith, Ullrich-French, Walker, & Hurley, 2006). The purpose of this study was to explore this potential variation by assessing peer relationship profiles and determining if associations between perceived peer motivational climate and well-being indices vary by profile membership. Adolescent soccer players ($N = 245$; M age = 15.5 years, $SD = 1.2$) completed established measures of peer relationships (positive friendship quality, friendship conflict, and peer acceptance), peer motivational climate, and well-being (enjoyment, anxiety, and burnout). Cluster analysis of the peer relationships variables yielded five profiles similar to those in previous research (Smith et al., 2006). The profile characterized by average quality sport friendship combined with relatively low peer acceptance exhibited a more consistent pattern of meaningful correlations between task-involving climate dimensions and enjoyment ($r = 0.43$ to 0.50), anxiety ($r = -0.20$ to -0.26), and burnout ($r = -0.21$ to -0.36) than did other profiles. The findings suggest that athletes with this peer relationship profile may be relatively more sensitive to the achievement climate reinforced by peers. Thus, peer relationships in sport may determine the salience of peer motivational climate to well-being of adolescent athletes.

Introduction

The developmental and psychosocial benefits of youth sport involvement frequently serve as the basis for encouraging sport participation (Hallal, Victora, Azevedo, & Wells, 2006; Stensel, Gorely, & Biddle, 2008). However, the adolescent developmental period is characterized by two conflicting sport participation themes. Specifically, the number of adolescent sport participants is large on the one hand, but attrition rates increase at this time on the other. One way to better understand why adolescents participate or dropout from sport requires is to examine the impact of motivational contexts of youth sport.

A number of adaptive and maladaptive psychological well-being outcomes can result from sport participation and of particular interest to sport and exercise psychology researchers is the role of significant others in fostering such outcomes. The social features of the physical activity and sport context have been previously linked to athlete participation motives, but research has been primarily concerned with adult social agents' contributions to youth sport experiences (Smith, 2019; Smith, Mellano, & Ullrich-French, 2019). While these individuals certainly play a central role in the sport experiences of youth athletes, younger social agents, like one's peers, have the potential to make an impact above that of coaches and parents during particular developmental periods (Smith, 2003). The current study is intended to increase understanding of how one's teammates contribute to the quality of one's sport experience and well-being through the goal and reward structures they reinforce.

As part of a team, youth athletes are regularly surrounded by and interact with a number of their teammates with whom they develop relationships and rely on for competence-based information in the sport context (Horn, 2008; Smith, 2007). The capacity to distinguish between effort and ability is achieved in early adolescence and is an impetus for this shift toward peer

norm-referencing (Fry, 2000; Fry & Duda, 1997; Harter, 1978; McCarthy & Jones, 2007; Roberts, 1993). Peers serve as a resource for comparison as individuals develop a sense of their competence and as sources of enjoyment, anxiety, and commitment (Horn & Weiss, 1991; Weiss, Smith & Theeboom, 1996). In addition to serving as a social reference point, developing quality relationships with peers is of increased importance as children age. Young athletes' motivation and general markers of psychosocial well-being have frequently been the focus of peer research in sport, and findings indicate that adaptive relationships with one's teammates is indicative of higher quality experiences (Cox, Duncheon, & McDavid, 2009; Weiss & Ferrer-Caja, 2002; Weiss & Smith, 2002). The importance of peer relationships in adolescence and the nascent understanding of peers in youth physical activity contexts provide a basis for further research in this area (Smith, 2003; Smith, 2019). Specifically, targeting how peers shape quality experiences for one another through their unique contributions to the broader social climate is needed.

Sport and physical activity settings, especially during adolescence, are considered achievement-focused contexts where performance ability is highly valued. Therefore, achievement goal theory (AGT; Maehr & Nicholls, 1980; Nicholls, 1984; 1989) is a suitable framework through which researchers can examine how the interaction of social features and individual self-perceptions contribute to athlete performance, behavior, and affective responses. The motivational climate dimension of this AGT is the social contextual component that is understood as a set of goal and reward structures reinforced by significant others that elicit particular interpretations of success and failure within an achievement setting (Ames, 1992). Ames (1992) proposed two types of motivational climate. The task-involving climate (mastery-oriented climate) encourages and rewards effort, mastery, and improvement. The ego-involving

(performance-oriented climate) climate emphasizes normative ability and promotes inter-individual comparison. Various individuals can contribute to motivational climates in achievement settings, including peers.

Examinations of the peer motivational climate are in their infancy in comparison to other meaningful social agents in the broader social context. Peer motivational climate is characterized by two higher order climate types and five subdimensions (Ntoumanis & Vazou, 2005). First, the peer task-involving climate encourages effort and rewards task mastery and individual improvement (Ntoumanis & Vazou, 2005). The task-involving climate is comprised of three subdimensions: 1) improvement, 2) relatedness support, and 3) effort dimensions. The improvement dimension refers to encouraging and providing feedback for improvement to teammates. The relatedness support dimension is defined by fostering the feeling of being part of a group and creating a friendly atmosphere on the team. And finally, the effort dimension is operationalized as the importance of exerting effort and trying one's hardest (Ntoumanis, Vazou, & Duda, 2007). Peer ego-involving climate fosters social comparison and emphasizes normative ability. It is characterized by two subdimensions: 1) intra-team competition and ability and 2) intra-team conflict (Ntoumanis & Vazou, 2005). Intra-team competition and ability involves the promotion of competition and comparison among team members, while intra-team conflict is characterized by exhibiting negative and unsupportive behaviors that are not directly related to competing with others (Ntoumanis et al., 2007).

The peer motivational climate research to date suggests that the task-involving climate is more likely to afford adaptive sport outcomes than the ego-involving climate. Higher peer task-involving climate perceptions have exhibited predictive links to long-term markers of sport participation, including higher levels of sport enjoyment, self-worth, and sport commitment, as

well as lower anxiety levels (Vazou et al., 2006). This climate type has also been related to greater team cohesion (García-Calvo et al., 2014; McLaren, Newland, & Newton, 2016), mental toughness (Beck, 2017), and empathic concern (Ettekal, Ferris, & Batanova, 2016). A higher perception of peer ego-involving climate, on the other hand, has been related to higher levels of maladaptive motivational outcomes (Vazou et al., 2006). However, this supposed maladaptive climate does not consistently emerge as a predictor of some maladaptive outcomes. This does not directly align with previous adult-created climate literature (Harwood, Keegan, Smith, & Raine, 2015; Ntoumanis & Biddle, 1999). Both positive and negative sport experiences can result from peer interactions in sport, but less is known regarding how peer motivational climate may contribute to maladaptive sport outcomes.

Initial peer motivational climate investigations showed no predictive links between the ego-involving climate and anxiety (Vazou et al., 2006), which led to continued research examining climate contributions to negative sport experiences. The ego-involving climate has been related to greater perceptions of negative sport behaviors (Davies et al., 2015) and antisocial attitudes in sport (Ntoumanis, Taylor, & Thøgersen-Ntoumanis, 2012). Smith and colleagues (2010) examined the associations between peer motivational climate and athlete burnout dimensions. They found that greater perceptions of intra-team conflict and lower perceptions of task-involving climate dimensions associate with higher perceptions across burnout dimensions. These studies begin to clarify how the different climate types function, but further examination is required to understand fully how climate perceptions influence the optimal youth sport experience.

Though understudied relative to its adult counterpart, the peer motivational climate research demonstrates somewhat consistent associations with sport-related markers of well-

being. This research has generally assumed homogeneity in the athlete population, which has allowed for a better understanding of associations between variables. However, there is a lack of understanding of potential differences in perceptions among individuals. Previous peer motivational climate research has noted within-team differences in perceptions of peer climate, suggesting that not all individuals perceive the climate to be the same (Vazou, 2010).

Specifically, Vazou (2010) found significant variation in coach and peer motivational climate perceptions within youth sport teams (83%-88%). These perceptions varied by a number of individual- (e.g., goal orientation) and group-level (e.g., team success) variables. While this preliminary investigation into what contributes to variation in perceptions within a team, it leaves a number of questions about climate variability in a team left unanswered. Specifically, it raises questions about what else may contribute to this individual variability and how it may impact sport-related well-being. One possibility resides in the peer relationships one possesses.

As previously mentioned, peer relationship quality has been linked to various markers of well-being in the youth sport context (Smith, Mellano, & Ullrich-French, 2019). Studies of the quality of these relationships in sport are frequently informed by Sullivan's (1953) interpersonal theory of psychiatry that identifies peer acceptance and friendship quality as central features of peer relationships. Perceptions of greater friendship quality and peer acceptance in adolescence have been identified as crucial for sport continuation, perceived self-competence, and enjoyment, as well as other adaptive sport-related outcomes (see Fitzgerald, Fitzgerald, & Aherne, 2012). For example, Weiss and Smith (2002) found a significant positive association between positive friendship quality and both sport enjoyment and commitment. Positive peer relationships have also been negatively associated with feelings of anxiety in sport and physical activity (Cox, Duncheon, & McDavid, 2009). Feelings of social acceptance and affiliation have frequently been

identified as reasons for child and adolescent motivation for sport participation (Weiss & Ferrer-Caja, 2002). A two-phase study measuring interaction of social relationships and sport motivation in youth soccer players found that when both friendship quality and peer acceptance perceptions were higher, athletes were more likely to continue soccer participation even when other social relationships (e.g., mother) were reported as lower (Ullrich-French & Smith, 2009). These studies and others explain that adaptive perceptions of peer relationships are related to higher enjoyment and commitment/continuation, and lower anxiety in the sport context (Cox & Ullrich-French, 2010; Smith et al., 2006; Ullrich-French & Smith, 2006; Ullrich-French & Smith, 2009). The quality of one's peer relationships and proximal active peers appears to have positive and negative effects on individual adolescent sport and physical activity motivation. Exploring the associations of individuals' perceptions of positive friendship quality, friendship conflict, and peer acceptance advances this knowledge by addressing inter-individual difference in peer relationship perceptions.

An individual's perceptions of her or his relationships can be complex and identifying the span of an athlete's peer experiences can provide unique insight on sport-related experiences. The combination of peer relationship perceptions within a single individual is unique yet may cohere to one of a finite set of patterns expressed by adolescents. For example, Smith and colleagues (2006) identified distinctive peer relationship profiles in the adolescent youth sport context and examined how these profiles were associated with various indices of motivation. Specifically, five profiles were identified and appeared to exist on a spectrum from least adaptive to most. An adaptive profile is characterized by relatively higher perceptions of peer acceptance and friendship quality and lower perceptions of friendship conflict. More adaptive peer relationship profiles were related to more adaptive motivational outcomes (e.g., higher perceived

competence, enjoyment, and self-determined motivation; lower anxiety and self-presentational concerns relative to sport). Research employing a person-centered approach to identify peer relationship profiles is scant. More research like this is needed to understand how youth sport experiences differ from one athlete to another based on their relationship profiles. This approach may offer insight into how the peer motivational climate ties to markers of well-being as a function of one's peer relationships.

To more fully understand the salience of the peer motivational climate present in youth sport teams, it is necessary to examine theoretically and practically relevant constructs that may contribute to differences in climate perceptions among teammates and ultimately the quality of their sport experiences. Therefore, the purpose of this study is two-fold: (a) to identify existing peer relationship profiles within adolescent sport teams and (b) to determine if associations between perceived peer motivational climate and well-being indices vary by profile membership. First, it is hypothesized that five distinct peer relationship profiles similar to what Smith and colleagues (2006) identified in their earlier work will be found within the study sample. Next, it is possible that an individual with more positive peer relationships on a team is more sensitive to the team's underlying values and reward structure tied to achievement and is more resilient to maladaptive features of the climate. Further, those within a more negative peer relationship profiles may be sensitive to both adaptive and maladaptive climates. Specifically, they may experience well-being benefits when perceptions of a task-involving climate are high and decreased well-being in ego-involving climates. Accordingly, peer relationships may serve to moderate the association of perceptions of the peer motivational climate with adaptive and maladaptive markers of youth athlete well-being.

Method

Participants

Study participants included male and female adolescent soccer players ($N = 245$; 50.2% female, 49.8% male) ranging in age from 14 to 18 years ($M_{\text{age}} = 15.52 \pm 1.20$ years). Current participation in team training and competition was required, and injured athletes were excluded from the study in an effort to avoid the emergence of perceptions that do not accurately reflect the experiences of youth athletes actively engaged in their sport. Participants were recruited from competitive youth soccer programs from the Western and Midwestern regions of the United States. Participants represented a total of 34 competitive youth soccer teams. All player positions were represented within the sample with the majority of participants reporting midfield (44.1%) and defense (31.9%) as their primary positions; 16.6% were forwards and 7.4% were goalkeepers. Participants reported an average of 9.22 years ($SD = 2.9$) of soccer experience with 2.61 of those years spent with their current team ($SD = 2.03$ years). On average, participants reported 8.05 hours ($SD = 4.59$) of soccer training in a week. Over half of the sample identified their ethnicity as Hispanic/Latino (53.6%) and the majority of the sample identified their race as White (45.3%; see Table 1 for summary of demographic information).

Table 1. Demographic Information (N = 245)

	N	Minimum	Maximum	Mean (<i>SD</i>)
Sex				
Female	123 (50.2%)			
Male	122 (49.8%)			
Age		14.0	18.0	15.5 (1.20)
Years playing soccer		1.0	16.0	9.22 (2.97)
Years with team		1.0	10.0	2.61 (2.03)
Training hours (week)		1.5	30.0	8.05 (4.59)
Position				
Goalkeeper	17 (7.4%)			
Defender	73 (31.9%)			
Midfielder	102 (44.3%)			
Forward	38 (16.5%)			
Ethnicity				53.6% Hispanic/Latino
Race				
White	50.0%			
Black	2.7%			
More than one race	18.9%			
Other	25.4%			
Prefer not to say	3.2%			

Procedure

Procedures for the protection of human research participants were reviewed and approved by an institutional ethics review board and were followed throughout the study (see Appendix A). Data were collected at one time point using self-report survey-based methodology. Participants completed a series of established questionnaires to assess perceptions of peer motivational climate, relationship quality (e.g., peer acceptance, friendship quality, friendship conflict), and adaptive and maladaptive motivational indices (e.g., sport enjoyment, sport anxiety, athlete burnout). Collection occurred at the mid-point of the season in order to avoid potential bias in the early season due to insufficient time with teammates and in the late season due to individual and team performance success.

Approval from coaches and tournament directors was obtained prior to direct contact with their athletes. Consent and assent were obtained from parents and participants within the

age range of 14 to 17 years, while 18 years old athletes were simply asked to consent to their participation. The self-report questionnaire packet took participants about 20 minutes to complete (see Appendix B).

Data collection occurred just prior to or after participants' training sessions or games without coaches being directly present. Most participants included in the study completed the study in a training setting rather than prior to or following a competition. In the tournament setting, coaches, parents, and players were approached by the primary investigator and asked about participation interest. Collecting in this setting was challenging as most athletes did not spend significant time at the playing fields prior to or following competition. In fact, most athletes left immediately after competition and only arrived back in time to start warming up. In comparison to planned collections with club organizations, this data collection at tournaments was not as successful. It took significant time with little return. Data collection in this setting is a slow process due to rejection and small groups of athletes with sufficient time to complete the questionnaire packet. Additionally, the tournament settings the primary investigator visited did not cater to having athletes stay at the playing fields for long periods of time (i.e., limited dining options on the premises). Other tournament settings may be more fruitful. One benefit of attempting data collection at tournaments was that it led to promising connections with specific club organizations for future data collection at their training facilities.

Measures

Demographic Information. Demographic information was collected about participants' age, sex, ethnicity, race, years playing soccer, years with current team, position, and weekly training hours to better characterize the obtained sample.

Peer Motivational Climate. The 21-item Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ; Ntoumanis & Vazou, 2005) was used to measure perceived peer motivational climate. Task-involving and ego-involving climates make up the higher order factors of the scale. The task-involving climate is made up of three sub-dimensions, including: improvement, relatedness support, and effort. Two sub-dimensions characterize the ego-involving climate: intra-team competition and ability, and intra-team conflict. All items begin with the stem, “On this team, most athletes...”. Example items from the task-involving climate include: “...teach their teammates new things” (improvement), “...care about everyone’s opinions” (relatedness support), and “...praise their teammates who try hard” (effort). Example items from the ego-involving climate include: “...encourage each other to outplay their teammates” (intra-team competition and ability) and “...criticize their teammates when they make mistakes” (intra-team conflict). Participants are asked to respond to the items using a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. Reliability and validity of PeerMCYSQ scores have been supported in a series of previous studies (see Ntoumanis & Vazou, 2005; Vazou et al., 2006). Internal consistency reliability scores of the five peer motivational climate scales was questionable to good in the present study ($\alpha = .66$ to $.86$). The intrateam competition and ability dimension of the higher order ego-involving climate demonstrated questionable reliability, which is consistent with previous peer motivational climate research (Hein & Jöessar, 2015; Jöessar et al., 2011; Smith et al., 2010; Vazou et al., 2006). The reader is encouraged to interpret results specific to this dimension of the ego-involving climate with caution. A composite of the three task-involving subscales ($\alpha = .90$) and two ego-involving subscales ($\alpha = .72$) were used in the primary analyses.

Peer Acceptance. The five-item Social Competence subscale of Harter's Self-Perception Profile for Adolescents (Harter, 1988, 2012) was used to measure peer acceptance. The items measure perceptions of self-determined social success. Example items from the subscale include: "Some teammates find it hard to make friends BUT Other teammates find it pretty easy to make friends" and "Some teammates don't have the social skills to make friends BUT Other teammates do have the social skills to make friends". To avoid socially desirable responding, these scales use a structured alternative response format (Harter, 1982). Participants are asked to identify which statement is more true of them and then to further note whether it is *sort of true of me* or *really true of me*. Items are scored using a 4-point scale with higher values tied to greater perceive acceptance. Reliability and validity of social competence subscale for adolescence scores have been supported in previous research (see Harter, 2012). The internal consistency reliability of the peer acceptance scores was good in the present study ($\alpha = .73$).

Friendship Quality and Conflict. The Sport Friendship Quality Scale (SFQS; Weiss & Smith, 1999) was used to assess participants' perceptions of positive and negative features of their closest dyadic teammate relationship. This 22-item scale measures six dimensions of dyadic friendship, including: companionship and pleasant play, self-esteem enhancement and supportiveness, loyalty and intimacy, things in common, conflict resolution, and conflict. For this particular study, participants were instructed to think of the person they would consider to be their best soccer friend and to refer to this friend when responding to survey items. Both positive (e.g., "My friend and I play well together") and negative friendship quality (e.g., "My friend and I get mad at each other") were assessed. Survey items were changed to be soccer specific. Participant responses are recorded on a 5-point Likert scale ranging from (1) *not at all true* to (5) *really true*. Reliability and validity of SFQS scores has been supported in a series of previous

studies (see Weiss & Smith, 2002). In the present study internal consistency reliability of the six friendship scales were questionable to good ($\alpha = .67$ to $.90$). A composite of the five positive friendship quality subscales ($\alpha = .90$) and the friendship conflict subscale ($\alpha = .90$) were used in the primary analyses.

Sport Enjoyment. The 4-item sport enjoyment subscale was used to measure enjoyment of sport (Scanlan et al., 1993, p. 18). The language of the survey items were slightly adjusted in order to be soccer specific. Example items include, “Do you enjoy playing soccer this season?” and “Are you happy playing soccer this season?” Responses were recorded using a 5-point Likert scale ranging from (1) *not at all/none* or *nothing* to (5) *very much* or *a lot*. Reliability and validity of Scanlan and colleagues’ enjoyment scores have been supported in previous research (see Scanlan et al., 1993). The internal consistency reliability of the scale was excellent in the present study ($\alpha = .95$).

Sport Anxiety. Participant competitive anxiety was assessed using the 15-item Sport Anxiety Scale-2 (SAS-2; Smith, Smoll, Cumming, & Grossbard, 2006). The scale is comprised of three subscales: somatic anxiety (e.g. “My body feels tense”), worry (e.g. “I worry that I will not play my best”), and concentration disruption (e.g. “I have a hard time focusing on what my coach tells me to do”). Responses are recorded using a four-point scale ranging from (1) *not at all* to (4) *very much so*. Reliability and validity of SAS-2 scores have been supported in previous research (see Smith et al., 2006). Internal consistency reliability of the three anxiety subscale scores were acceptable to excellent in the present study ($\alpha = .78$ to $.93$). A composite of the three anxiety subscales ($\alpha = .90$) was used in the primary analyses.

Athlete Burnout. Participants’ perceptions of athlete burnout were measured using the 15-item Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001). The measure includes

three subscales that reflect the three athlete burnout dimensions: emotional/physical exhaustion subscale (e.g., “I feel so tired from my training that I have trouble finding energy to do other things”), reduced sense of accomplishment subscale (e.g., “I am not achieving much in my sport”), and sport devaluation (e.g., “The effort I spend in my sport would be better spent doing other things”). Participants were asked to rate the extent to which they experience each item in the current season using a 5-point Likert scale ranging from (1) *almost never* to (5) *most of the time* (5). Reliability and validity of ABQ scores has been supported in previous research (see reviews by Eklund & Cresswell, 2007; Raedeke & Smith, 2009). In the present study internal consistency reliability of the three burnout dimensions scores were acceptable to good ($\alpha = .73$ to $.85$). A composite of the three burnout subscales ($\alpha = .89$) was used in the primary analyses.

Data Analysis

The data were screened for missing responses and outliers and examined to test assumptions of normality, linearity, and homoscedasticity before running statistical analyses (Tabachnick & Fidell, 2013). Internal consistency and reliabilities of the measures were examined using Cronbach’s alpha. Cronbach’s alpha coefficients, correlations, means, and standard deviations were obtained on all study variables (see Table 2). To address the first purpose of the study, cluster analysis was conducted using the perceived peer acceptance, friendship quality, and friendship conflict variables. As detailed in the Results section, multiple approaches to cluster analysis were employed in order to assess the stability of the outcome. Peer relationship profile groups that emerged from the cluster analysis were compared on markers of athlete well-being (i.e., sport enjoyment, sport anxiety, athlete burnout) using one-way MANOVA. A significant multivariate effect was followed with univariate follow-up tests. Lastly, a series of correlations by group were run determine if associations between perceived

peer motivational climate and well-being indices (i.e., sport enjoyment, sport anxiety, athlete burnout) vary by profile membership. All analyses were completed using SPSS 24.0 (SPSS Inc., Chicago, IL).

Results

Descriptive Statistics

Table 2 contains descriptive statistics, correlations, and alpha-values for all study variables. Participants generally reported high perceptions of task-involving peer motivational climate dimensions ($M_{improvement} = 5.29$, $SD = 1.10$; $M_{relatedness} = 5.33$, $SD = 1.00$; $M_{effort} = 5.80$, $SD = 0.88$; $M_{task\ global} = 5.51$, $SD = 0.90$) and moderate-to-high perceptions of ego-involving peer motivational climate dimensions ($M_{competition} = 4.71$, $SD = 1.00$; $M_{conflict} = 3.31$, $SD = 1.30$; $M_{ego\ global} = 4.09$, $SD = 0.89$). Additionally, participants perceived moderate-to-high peer acceptance ($M_{acceptance} = 3.12$, $SD = 0.52$), high friendship quality ($M_{friend\ quality} = 4.12$, $SD = 0.58$), and low-to-moderate friendship conflict ($M_{friend\ conflict} = 2.02$, $SD = 1.10$). Lastly, participants reported generally adaptive well-being with high enjoyment ($M_{enjoyment} = 4.58$, $SD = 0.67$), and low-to-moderate anxiety ($M_{anxiety} = 1.81$, $SD = 0.50$), and burnout ($M_{burnout} = 2.02$, $SD = 0.62$). Significant correlations among study variables were in theoretically consistent directions with few exceptions. Task climate dimensions were positively correlated with one another and negatively correlated with the conflict dimension of the ego climate and the global ego variable. Contrary to expectations, task dimensions and the competition dimension of the ego climate were positively associated. Task climate dimensions also positively correlated with friendship quality and enjoyment as well as negatively correlated with anxiety and burnout. Ego climate dimensions were positively correlated with each other. The conflict dimension of the ego climate negatively correlated with friendship quality and enjoyment and positively correlated with

friendship conflict, anxiety, and burnout. Like the conflict dimension, the global ego variable correlated positively with maladaptive relationship and well-being variables. Contrary to expectations, the competition dimension of the ego climate was positively correlated with enjoyment. Among peer relationship variables, only peer acceptance was positively correlated with friendship quality. Friendship quality was positively correlated with enjoyment and negatively correlated with maladaptive well-being variables. Friendship conflict was positively correlated with anxiety. Well-being variables significantly correlated with one another in expected directions. Enjoyment was negatively correlated with anxiety and burnout, which were positively correlated to each other.

Table 2. Descriptive Statistics, Correlation, and Alpha Coefficients (N = 245)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Improvement	.86												
2 Relatedness	.76**	.70											
3 Effort	.72**	.71**	.82										
4 Task Global	.92**	.89**	.91**	.92									
5 Competition	.18**	.20*	.18**	.19**	.66								
6 Conflict	-.46**	-.48**	-.42**	-.50**	.25**	.77							
7 Ego Global	-.18**	-.21**	-.16*	-.20**	.78**	.79**	.72						
8 Peer Acc.	.04	-.01	.06	.04	.02	.03	.03	.73					
9 Friend Qlty.	.32**	.28**	.36**	.36**	.08	-.13*	-.04	.16*	.90				
10 Friend Cfct.	-.06	-.02	-.10	-.07	.12	.25**	.24**	-.01	-.04	.90			
11 Enjoyment	.35**	.32**	.27**	.35**	.19**	-.18**	.01	.06	.20**	.08	.95		
12 Anxiety	-.20**	-.21**	-.16*	-.21**	-.01	.21**	.13*	-.09	-.25**	.14*	-.26**	.90	
13 Burnout	-.26**	-.21**	-.17**	-.24**	-.01	.24**	.15*	-.10	-.23**	.07	-.50**	.55**	.89
Possible Range	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-4	1-5	1-5	1-5	1-4	1-5
<i>M</i>	5.29	5.33	5.80	5.51	4.71	3.31	4.09	3.12	4.12	2.02	4.58	1.81	2.02
<i>SD</i>	1.10	1.00	0.88	0.90	1.00	1.30	0.89	0.52	0.58	1.10	0.67	0.50	0.62

Note. Alpha values on diagonal, correlation values below diagonal, * $p < .05$ and ** $p < .01$ (two-tailed); Peer Acc. = peer acceptance, Friend Qlty. = friendship quality, Friend Cfct. = friendship conflict.

Multilevel Data Analysis

A multilevel regression analysis was conducted to determine if there were variations in coach and peer motivational climates as well as all outcome variables within (Level 1; e.g., athlete) and between (Level 2; e.g., team) teams. The multilevel analytic methods employed align with those proposed by Kashy and Kenny (2000) and Peugh and Enders (2005) when using unequal group sizes like that found in the present sample. The number of athletes representing a team ranged from one to 17 (see Figure 1). Teams represented by at least two athletes were included in this preliminary analysis. Using a threshold of two or more athletes aligns with the perspective of many group process researchers regarding what constitutes a “group” and acknowledges that two individuals can be considered a group (Williams, 2010). It is possible that the athletes representing their team hold very different perspectives from their other teammates and therefore do not provide a comprehensive representation of their respective team perceptions. However, this threshold allowed for most teams in the sample to be represented in this preliminary analysis which provided greater range in perspective of study variables.

First, a null variance component model was tested, which contained only a response variable and no explanatory variables other than the intercept. For the preliminary purposes of these analyses no additional explanatory variables were added to the models. Next, intraclass correlations were calculated from the null model by dividing the intercept Level 2 variance by the sum of Levels 1 and 2 variances (Snijders & Bosker, 1999). These intraclass correlations may be interpreted as either: 1) the amount of variance in a response variable explained by team or 2) the average correlation between responses of two members of the same team. Both interpretations are reported below. A total of 34 teams were represented in the study sample, but only those with representation by two or more athletes were included in these analyses ($n = 28$).

The number of teams in the sample is considered small, therefore, intraclass correlations were calculated for all response variables regardless of the intercept's p-value. The results reported include a summary for all variables.

The results showed that climate perceptions as well as engagement, effort, and intention to continue varied between (2-26%) and within (74-98%) teams. The average intraclass correlation across study variables was 0.14, which suggest that the responses of athletes on the same team were weakly correlated to one another. The within-team variation specific to peer motivational climate variables (e.g., subscales and higher order climate types) ranged from 74% to 89%. This suggests there is considerable variability in climate perceptions within a team, and examinations of climate associations using a person-centered approach may help explain these intra-team differences. Therefore, the proposed cluster analytic techniques and group difference analyses were conducted and are presented in the following sections.

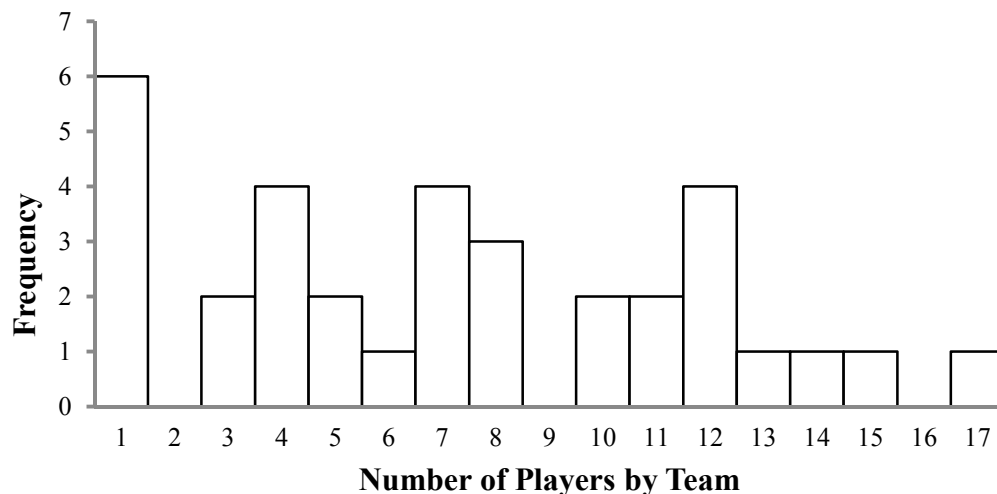


Figure 1. Histogram of Number of Players on a Team Included in Sample (N = 34)

Cluster Analysis

Outliers must be carefully considered when conducting cluster analysis because they can perturb cluster solutions (Hair, Anderson, Tatham, & Black, 1998). Univariate outliers ($z > \pm 3.0$)

were observed in seven cases and no multivariate outliers were observed based on Mahalanobis' D^2 with a $p < .001$ threshold. Results of analyses including and excluding the outlier cases were minimally discrepant and therefore these cases were retained in the sample. Retention of such cases is advised in circumstances like these because outlier cases can represent genuine portions of the population (Hair et al., 1998).

The three peer relationship variables were standardized, and peer acceptance, friendship quality, and friendship conflict z-scores were cluster analyzed. Both hierarchical and nonhierarchical cluster analysis was used to identify the most stable peer relationship cluster solution. Hierarchical cluster analysis using Ward's linkage method and squared Euclidean distance as the similarity measure was conducted to provide guidance as to the number of clusters represented in the data. Examination of the agglomeration coefficients resulting from this analysis showed that the percentage change in coefficient notably increased when moving from five clusters to four and from four clusters to three, suggesting that a five- or four-cluster solution would be most appropriate.

Next, a nonhierarchical k -means cluster analysis using simple Euclidean distance as the similarity measure was conducted, specifying a four-cluster and five-cluster solution. A five-cluster solution was also settled on because it was consistent with previous peer relationship profile research (Seidman et al., 1999; Smith et al., 2006) and because it produced the maximum number of nonredundant profiles with good sample representation. This analysis was performed on a random selection of half the subjects and then on the remainder of the sample. The results of the two analyses were highly consistent in both magnitude and pattern of final cluster centers. Overall, the solution was stable in both analyses and therefore the full sample results are presented.

Table 3 contains the means, standard deviations, and standardized scores for the clustered variables (i.e., peer acceptance, friendship quality, friendship conflict). Figure 1 pictorially represents the peer relationship profiles that emerged from the analysis. A z-score criterion of ± 0.5 was set to represent relatively high or low scores on the peer relationship variables and assigned labels to profiles based on the set of these scores (Hodge & Petchlikoff, 2000). The cluster labels match those from Smith and colleagues' (2006) work and are intended to simplify interpretation of the remaining analyses of this paper and are not intended to characterize the groups in absolute terms. Relatively low or high scores on constructs may not correspond to low or high response set values. For example, the profile possessing the lowest mean value for friendship quality ($z = -1.53$) exhibits a value well above the scale midpoint of 2.5.

Table 3. Participant Numbers, Means, Standard Deviations, and Standardized Scores for Peer Relationship Profiles Resulting from *k*-Means Cluster Analysis

Cluster	n	Peer Acceptance		Friendship Quality		Friendship Conflict	
		M (SD)	Z	M (SD)	Z	M (SD)	Z
~ Isolate	36	3.37 (0.33)	0.47	3.50 (0.39)	-1.08	1.44 (0.62)	-0.53
Reject	24	2.75 (0.34)	-0.72	3.23 (0.46)	-1.53	2.82 (0.88)	0.73
Survive	71	2.64 (0.38)	-0.94	4.23 (0.34)	0.19	1.51 (0.60)	-0.47
Thrive	64	3.55 (0.31)	0.82	4.58 (0.31)	0.80	1.37 (0.47)	-0.59
~Alpha	50	3.28 (0.42)	0.30	4.25 (0.43)	0.22	3.61 (0.68)	1.45

The first cluster is labeled the *~Isolate* profile ($n = 36$; 14.7%) because it is characterized by similar peer relationship quality to the *Isolate* profile identified by Smith and colleagues' (2006) but differs slightly in perceptions of peer acceptance. Athletes characterized by the *~Isolate* profile report a relatively moderate peer acceptance, low friendship quality, and low

friendship conflict. Athletes in this profile perceive acceptance by the broader peer group, but also perceive a generally negative close friendship on their team. The second cluster is labeled the *Reject* profile (n = 24; 9.8%) because athletes in this profile perceive relatively low peer acceptance, low friendship quality, and high friendship conflict. The *Reject* profile is a fully maladaptive profile with generally negative relationship quality. The third cluster is labeled the *Survive* profile (n = 71; 29.0%) because athletes in this profile perceive relatively low peer acceptance, moderate friendship quality, and moderate friendship conflict. The fourth, and most adaptive, cluster is labeled the *Thrive* profile (n = 64; 26.1%) because athletes in this profile perceive relatively high peer acceptance, high friendship quality, and low friendship conflict. The fifth, and final, cluster is labeled the *~Alpha* profile (n = 50; 20.4%) because it is characterized by moderate peer acceptance and friendship quality as well as high friendship conflict. As Smith and colleagues (2006) discussed, athletes in this profile may engage in their sport in an intense manner that elicits both positive and negative attention from their teammates.

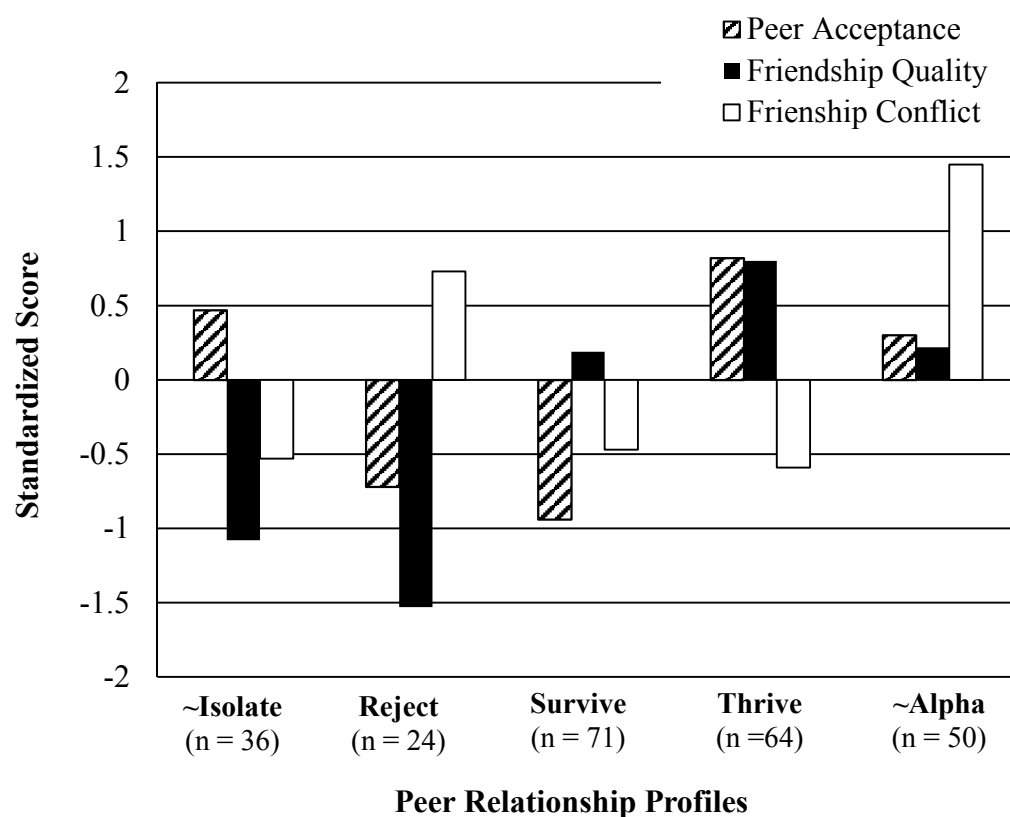


Figure 2. Five Cluster Solution of Peer Relationship Quality Variables

Profiles were assessed for differences in representation of various demographic variables (e.g., gender, position, years playing soccer, years on team, and weekly training hours). Chi-square analysis showed a significant difference in gender representation across profiles, $\chi^2 = 34.56$, $p < .01$. Follow-up examination showed that there was no statistical difference in the number of females and males in the *~Isolate* profile, however males were disproportionately represented within the *Reject* ($\chi^2 = 15.13$, $p < .01$) and *~Alpha* ($\chi^2 = 12.39$, $p < .01$) profiles. Additionally, females were disproportionately represented in the *Thrive* ($\chi^2 = 6.66$, $p < .01$) and *Survive* ($\chi^2 = 8.53$, $p < .01$) profiles. In general, it appears that female athletes in this sample tend to fall in more adaptive relationship profiles/groups. Chi-square analysis showed no significant

differences in position representation across profiles, $\chi^2 (12) = 4.59$, $p = 0.97$. Table 4 provides demographic information for each of the five peer relationship clusters.

Table 4. Demographic Representation in Peer Relationship Profiles

Sex Representation in Profiles					
Sex	~Isolate	Reject	Survive	Thrive	~Alpha
Female	52.8%	12.5%	64.8%	64.1%	28.0%
Male	47.2%	87.5%	35.2%	35.9%	72%
Age Representation in Profiles					
Age	~Isolate	Reject	Survive	Thrive	~Alpha
14 years old	27.8%	25.0%	28.2%	23.4%	12.2%
15 years old	22.2%	29.2%	32.4%	25.0%	32.7%
16 years old	25.0%	20.8%	16.9%	25.0%	34.7%
17 years old	22.2%	16.7%	16.9%	23.4%	18.4%
18 years old	2.8%	8.3%	5.6%	3.2%	2.0%
Position Representation in Profiles					
Position	~Isolate	Reject	Survive	Thrive	~Alpha
Goalkeeper	8.6%	8.3%	6.2%	6.6%	8.9%
Defender	37.1%	33.3%	36.9%	29.5%	22.2%
Midfielder	37.1%	37.5%	43.1%	47.5%	51.1%
Forward	17.1%	20.8%	13.8%	16.4%	17.8%
Years Participating by Profile					
Years	~Isolate	Reject	Survive	Thrive	~Alpha
Mean (SD)	9.11 (2.95)	8.88 (2.94)	8.92 (3.29)	10.07 (2.34)	8.80 (3.14)
Years with Team by Profile					
Years	~Isolate	Reject	Survive	Thrive	~Alpha
Mean (SD)	2.33 (1.87)	3.38 (2.76)	2.55 (1.90)	2.61 (2.19)	2.54 (1.67)
Weekly Training Hours by Profile					
Training Hours	~Isolate	Reject	Survive	Thrive	~Alpha
Mean (SD)	7.00 (3.69)	7.97 (5.79)	7.37 (3.85)	8.56 (4.97)	9.26 (4.88)

Profile Group Difference Analyses

Profile differences on perceptions of climate perceptions and sport-related markers of well-being as well as the associations between climate perceptions and well-being were examined using one-way MANOVA and correlation analyses by profile, respectively. First, one-

way MANOVA conducted to assess profile differences in perceived peer motivational climate yielded a significant multivariate effect, Pillai's trace = 0.197, $F(28, 845) = 1.77, p < .001$, $\eta_p^2 = 0.05$. Follow-up ANOVAs yielded significant univariate effects for all motivation-related variables with effect sizes ranging from 1% to 8% variance explained (see Table 4). Post hoc pairwise comparisons of the estimated marginal means showed significant ($p < .05$) profile group differences. Those in the *Thrive* profile reported higher perceptions of the task-involving climate dimensions than the those in the *~Isolate* and *Reject* profiles. The *~Isolate* and *Reject* profiles reported significantly less relatedness support than the remaining profiles. Athletes in the *Survive* and *Thrive* profiles reported significantly higher perceptions of their team encouraging and praising effort than those in the *Reject* profile. Those in the *Reject* and *~Alpha* perceived significantly higher conflict than athletes in the *Survive* profile. There were no significant differences in perceptions of the competition dimension of the ego-involving climate nor were there significant differences among the profiles when comparing perceptions of the ego-involving climate as a composite score (e.g., ego global). Overall, these comparisons indicate that the quality of one's relationships with teammates may influence how he or she perceives the existing climate. Those who perceive more adaptive peer relationships within their team perceive the climate as more adaptive.

Next, one-way MANOVA conducted to assess profile differences in athlete well-being perceptions yielded a significant multivariate effect, Pillai's trace = 0.195, $F(20, 767) = 2.45, p < .001$, $\eta_p^2 = 0.05$. Follow-up ANOVAs yielded significant univariate effects for all well-being-related variables with effect sizes ranging from 5% to 6% variance explained (see Table 5). Post hoc pairwise comparisons of the estimated marginal means showed significant ($p < .05$) profile group differences. Athletes in the *Thrive* profile reported significantly higher sport

enjoyment than athletes in the *~Isolate* profile. Those within the *Reject* profile reported significantly higher anxiety and athlete burnout than those in the *Thrive* profile. Overall, these comparisons indicate that athletes who perceive more adaptive peer relationships within their team perceive greater sport-related well-being than those who perceive more maladaptive teammate relationships.

Table 5. Univariate F, Effect Size, and Cluster Means, Standard Deviations, and Standardized Scores for Peer Motivational Climate Variables

Variable	$F_{28, 845}$	n_p^2	Cluster									
			<i>~Isolate</i> (n = 36)		Reject (n = 24)		Survive (n = 71)		Thrive (n = 64)		<i>~Alpha</i> (n = 50)	
			Mea n (SD)	z	Mean (SD)	z	Mea n (SD)	z	Mea n (SD)	z	Mean (SD)	z
Impvt.	4.02**	.06	4.94 ^a (0.97)	.93	4.70 ^a (0.92)	-.54	5.38 (1.17)	.08	5.56 ^b (0.97)	.25	5.37 (1.16)	.07
Relate	2.63*	.04	4.96 ^a (0.94)	-.37	4.94 ^a (0.84)	-.39	5.43 ^b (1.11)	.10	5.48 ^b (1.05)	.15	5.45 ^b (1.03)	.12
Effort	4.88**	.08	5.54 (0.77)	-.30	5.30 ^a (0.78)	-.57	5.89 ^b (1.01)	.10	6.08 ^b (0.64)	.32	5.73 (0.94)	.08
Task	4.62**	.07	5.20 ^a (0.75)	-.34	5.00 ^a (0.73)	-.57	5.60 ^b (1.01)	.10	5.76 ^{ab} (0.75)	.03	5.54 (0.95)	.03
Comp.	0.84	.01	4.44 (1.05)	-.27	4.79 (0.77)	.08	4.74 (1.01)	.03	4.73 (1.06)	.02	4.81 (0.99)	.10
Cflct.	4.17**	.07	3.34 (1.33)	.02	3.93 ^b (1.25)	.48	2.99 ^a (1.30)	-.25	3.12 (1.19)	-.15	3.70 ^b (1.23)	.30
Ego	2.37	.04	3.96 (0.96)	-.15	4.40 (0.66)	-.56	3.95 (0.84)	-.16	4.02 (0.95)	.08	4.32 (0.88)	.26

Note. * $p < .05$, ** $p < .01$. Post hoc comparisons conducted for variables with significant univariate F. Cluster differences ($p < 0.05$) on variable scores indicated by distinct superscripts (*a* represents a lower value, *b* represents a higher value).; Impvt. = improvement, Relate = relatedness, Task = task global, Comp. = competition and ability, Cflct. = conflict

Table 6. Univariate F, Effect Size, and Cluster Means, Standard Deviations, and Standardized Scores for Well-Being Variables

Variable	$F_{20, 767}$	n_p^2	Cluster									
			~Isolate (n = 36)		Reject (n = 24)		Survive (n = 71)		Thrive (n = 64)		~Alpha (n = 50)	
			Mea n (SD)	z	Mea n (SD)	z	Mea n (SD)	z	Mea n (SD)	z	Mea n (SD)	z
Enjoy	3.48**	.06	4.36 ^a (0.94)	-.33	4.55 (0.57)	-.05	4.53 (0.76)	-.07	4.72 (0.49)	.21	4.71 (0.47)	.19
Anxiety	3.65**	.06	1.81 (0.50)	.00	2.04 ^b (0.49)	.41	1.81 (0.48)	.00	1.64 ^a (0.48)	-.30	1.87 (0.52)	.11
Burnout	2.93*	.05	2.18 (0.65)	.26	2.28 ^b (0.57)	.42	1.99 (0.56)	-.05	1.85 ^a (0.61)	-.27	2.04 (0.66)	.03

Note. * $p < .05$, ** $p < .01$. Post hoc comparisons conducted for variables with significant univariate F. Cluster differences ($p < 0.05$) on variable scores indicated by distinct superscripts (*a* represents a lower value, *b* represents a higher value). Enjoy = enjoyment.

A series of correlations by profile were conducted to determine if associations between perceived peer motivational climate and well-being indices vary by profile membership (see Table 6). Generally, analysis by profile resulted in few significant associations between climate dimensions and the three well-being variables with the exception of the *Survive* profile which had many significant associations. The *Reject*, *Thrive*, and *~Alpha* profiles exhibited the lowest numbers of significant associations. Analysis specific to the *Reject* profile yielded only one significant association across all climate dimensions and markers of well-being. Specifically, a negative moderate association was found between the relatedness support dimension and sport anxiety ($r = -.47, p < .05$). Young athletes in the *Reject* profile will likely experience increased anxiety when they perceive their teammates value connection with and offer support to one another. Similar to the *Reject* profile, analysis specific to the *Thrive* profile resulted in only two significant associations. Significant positive correlations were found between the improvement dimension and sport enjoyment ($r = .25, p < .05$) as well as the conflict dimension and anxiety (r

= .29, $p < .05$). Collectively, this indicates that athletes in the *Thrive* profile experience more adaptive well-being when they perceive improvement is encouraged and there is minimal conflict among teammates. Findings related to the *~Alpha* profile differed from those found in the *Reject* and *Thrive* profiles in that significant correlations were identified between climate dimensions and athlete burnout. Specific to this profile, athlete burnout correlated negatively with relatedness support ($r = -.29, p < .05$) and effort ($r = -.28, p < .05$) dimensions and positively with the conflict dimension ($r = .34, p < .05$). These findings indicate that those in the *~Alpha* profile may be most sensitive to changes in perceptions of athlete burnout based on the climate they perceive their teammates create.

The greatest number of significant associations were found within the *~Isolate* and *Survive* profiles in comparison to the remaining profiles. First, significant associations within the *~Isolate* profile were specific to climate dimensions and sport enjoyment, and no significant associations were found between climate perceptions and sport anxiety and athlete burnout. Perceived task-involving climate dimensions were positively correlated with sport enjoyment (improvement: $r = .35, p < .05$; relatedness support: $r = .44, p < .01$; task global: $r = .35, p < .05$). The competition dimension of the ego-involving climate was also positively correlated with sport enjoyment ($r = .35, p < .05$). While this positive association between an ego-involving dimension and enjoyment may be contrary to previous findings (Vazou, Ntoumanis, & Duda, 2006), it is possible that the young athletes in this sample perceive competition as an adaptive feature of team climates since they participate in fairly competitive youth sport programs. In general, young athletes in the *~Isolate* profile enjoy their sport experience more when they perceive a task-involving climate.

The largest number of significant associations was found within the *Survive* profile. All task-involving dimensions were positively correlated with sport enjoyment ($r = .43-.50, p < .01$), while the conflict dimension negatively correlated with enjoyment ($r = -.30, p < .01$). Similar to the *~Isolate* profile, the competition dimension correlated positively with sport enjoyment ($r = .25, p < .05$). Sport anxiety was negatively correlated with task-involving dimensions (improvement: $r = -.26, p < .05$; relatedness support: $r = -.24, p < .05$; task global: $r = -.25, p < .05$) and positively correlated with the conflict dimension ($r = .24, p < .05$). Perceptions of athlete burnout were negatively related to task-involving climate dimensions (improvement: $r = -.36, p < .01$; relatedness support: $r = -.24, p < .05$; task global: $r = -.29, p < .05$) but were not significantly associated with any of the ego-involving dimensions. These relationships indicate that athletes in the *Survive* profile experience more adaptive well-being when they perceive task-involving characteristics of the team climate.

Table 7. Correlations between Peer Climate Perceptions and Athlete Well-being by Relationship Profile

	Enjoyment	Anxiety	Burnout
~Isolate			
Improvement	0.35*	-0.29	-0.22
Relatedness Support	0.44**	-0.24	-0.34
Effort	0.13	0.06	-0.01
Task Global	0.35*	-0.18	-0.21
Conflict	-0.03	-0.15	0.13
Competition	0.35*	0.28	-0.04
Ego Global	0.20	-0.26	0.05
Reject			
Improvement	0.20	-0.13	-0.29
Relatedness Support	0.17	-0.47*	-0.22
Effort	-0.15	-0.29	0.21
Task Global	0.07	-0.32	-0.09
Conflict	-0.16	0.24	0.40
Competition	0.04	0.01	0.13
Ego Global	-0.11	0.21	0.41
Survive			
Improvement	0.47**	-0.26*	-0.36**
Relatedness Support	0.43**	-0.24*	-0.24*
Effort	0.49**	-0.20	-0.21
Task Global	0.50**	-0.25*	-0.29*
Conflict	-0.30**	0.24*	0.18
Competition	0.25*	-0.01	-0.16
Ego Global	-0.05	0.16	0.02
Thrive			
Improvement	0.25*	-0.10	-0.15
Relatedness Support	0.13	-0.08	0.07
Effort	0.10	-0.03	-0.01
Task Global	0.19	-0.09	-0.04
Conflict	-0.21	0.29*	0.15
Competition	0.05	0.06	0.07
Ego Global	-0.09	0.19	0.12
~Alpha			
Improvement	0.22	0.01	-0.09
Relatedness Support	-0.16	-0.09	-0.29*
Effort	0.21	-0.07	-0.28*
Task Global	0.22	0.05	-0.23
Conflict	-0.21	0.19	0.34*
Competition	0.03	0.08	0.70
Ego Global	-0.11	0.17	0.26

Note. * $p < .05$, ** $p < .01$

Discussion

The first purpose of this study was to identify existing peer relationship profiles within adolescent sport teams. The five distinct peer relationship profiles observed in the current study were similar to previously identified adolescent peer relationship profiles (Seidman et al., 1999; Smith et al., 2006). Similar to Smith and colleagues (2006), fully adaptive and maladaptive profiles as well as three mixed profiles were observed. The fully adaptive relationship profile (i.e., *Thrive*) that emerged was characterized by relatively high peer acceptance and friendship quality in addition to low friendship conflict, while the fully maladaptive relationship profile (i.e., *Reject*) was characterized by relatively low peer acceptance and friendship quality as well as high friendship conflict. Additionally, the mixed profiles that emerged (i.e., *~Isolate*, *Survive*, and *~Alpha*) were all characterized by at least one relatively moderate peer relationship variable score.

Two of the mixed profiles do not map exactly to Smith and colleagues' (2006) profiles, but trend in similar directions regarding the magnitude of most of the relationship quality variables in consideration. Specifically, the *~Isolate* profile could also be considered a “no friend” profile as it is characterized strongest by relatively low friendship quality and conflict while the *~Alpha* profile is characterized only by relatively high friendship conflict. These profiles both reported relatively moderate peer acceptance perceptions in the current sample, but the Smith and colleagues (2006) *Isolate* and *Alpha* profiles were characterized by relatively low and high peer acceptance respectively. The athletes in the present sample have spent an average of nearly three years with their current team ($M = 2.61$), which may contribute to increased perceptions of peer acceptance by their teammates in general. The profiles that emerged between

these two studies are fairly consistent with one another, but future peer research is needed to confirm the existence of said profile structures in the peer social context of sport.

Profile differences across study variables were assessed using a series of comparative analyses (i.e., chi square, MANOVA). Though significant differences in position representation across profiles was not significant, there were significant differences in female and male representation. Significantly more females were represented in the *Thrive* and *Survive* profiles suggesting that females reported generally more adaptive peer relationship profiles. Males were disproportionately represented in the *Reject* and *~Alpha* profiles, which suggest that young male athletes in this sample generally perceive greater friendship conflict as this is the relationship variable the two profiles have in common. Youth athletes often report social reasons for participating in sport including motives like affiliation, status, recognition, and making friends (Weiss & Ferrer-Caja, 2002), and young female athletes have specifically reported needing a friend present for their participation (Coakley & White, 1992). It is possible that female athletes who do not perceive high quality peer relationships have already stopped their sport participation by the time they reach middle-to-late adolescence and are therefore not evenly represented in the maladaptive profiles within the present sample. Smith and colleagues (2006) called for the replication of their findings to confirm that young male athletes are over represented in the *Isolate* profile, but this was not observed within the current sample. Again, replication of peer relationship profile analysis in sport is needed to understand the degree of consistency in representation across clusters by sex. This will allow for more specific questions to be asked that may offer an explanation as to why certain male and female maladaptive or adaptive profile patterns are present within the adolescent athlete population.

Profile group differences were also examined on peer motivational climate dimensions and well-being indices, and significant differences emerged between the adaptive and maladaptive profiles. Participants in the *Thrive* group reported significantly higher perceptions of a task-involving climate than their maladaptive cohorts in the *Reject* group. Both the *Reject* and *~Alpha* groups reported significantly higher perceptions of the conflict dimension of the ego-involving climate than the *Survive* profile. It is possible that the level of conflict these individuals perceive within the team is a direct product of their perceptions of personal conflict at the dyadic level as both groups are characterized by high friendship conflict. In regard to the well-being indices, the *Reject* group reported significantly higher anxiety and burnout than the *Thrive* group. Significantly higher enjoyment was perceived by the *Thrive* profile than the *~Isolate* profile. These findings are in line with previous work examining motivational and affective salience of peer relationships in sport (Brustad, Babkes, & Smith, 2011; Ullrich-French & Smith, 2006; Weiss & Stuntz, 2004). It should be noted that the effect sizes of these group difference analyses were small (1-8%), which would suggest there are likely other factors to consider in future research that may explain a greater portion of the variance in perceptions of climate and markers of well-being. Collectively, these findings support the first hypothesis that the quality of adolescent peer relationships in sport contexts can be organized into five distinct profiles ranging from fully maladaptive to fully adaptive. Group comparisons like these further support the idea that the profiles are unique from one another in that they demonstrate differences in perceptions of sport climates and individual well-being.

The second purpose of this study was to determine if associations between perceived peer motivational climate and well-being indices vary by profile membership. The study's findings partially support the corresponding hypotheses. In general, the mixed profiles (i.e., *~Isolate*,

Survive, and $\sim Alpha$) appear to be more sensitive to the peer motivational climate on their team. A majority of the full sample significant associations between peer motivational climate dimensions and well-being indices were no longer significant when analyzed within the fully adaptive and maladaptive profiles (i.e., *Thrive* and *Reject*). It is possible that athletes within these profiles are complacent about or accept the status of their relationships with their teammates or that their status within the team is unequivocally clear in comparison to those in other profiles. Therefore, the existing motivational climate reinforced by their teammates neither benefits nor harms their sport-related well-being.

Athletes with peer relationship profiles characterized by average quality sport friendship combined with relatively low peer acceptance exhibited a more consistent pattern of meaningful correlations between task-involving climate dimensions and well-being indices than did other profiles. Specifically, those within the *Survive* profile appear to be more sensitive to the climate they find themselves in during their sport experiences. For example, the significant correlations between the task- and ego-involving climate dimensions and enjoyment appeared to be stronger in this profile compared to the correlations across the whole sample. Significant negative correlations between task-involving climate dimensions and maladaptive well-being indices (i.e., anxiety and burnout) were also strengthened within this profile. Lastly, the significant positive correlation between the conflict dimension of the ego-involving climate and anxiety was also strengthened. These findings suggest young athletes in the *Survive* peer relationship profile significantly benefit from climates where teammates encourage and value improvement, relatedness, and effort and may experience more negative psychological responses to climates emphasizing conflict among teammates.

It is unclear why individuals in the mixed profiles appear to be more sensitive to existing peer climates, but one possibility is that their sport participation choices may be primarily driven by the desire for social experiences. This desire may create a heightened sensitivity to existing climates to satisfy their social needs. For example, athletes with peer relationship profiles characterized by average peer acceptance as well as low friendship quality and friendship conflict report consistent patterns in the associations between most climate dimensions and enjoyment. The positive association between the competition dimension of the ego-involving climate and enjoyment was strengthened when observed within this profile. These findings may indicate that *~Isolate* athletes choose to participate to satisfy their desire for competitive social interactions. Those in the *Survive* profile, on the other hand, experience greater enjoyment in a task climate where support among players is high. Allen's (2003, 2005) social motivational orientations research is a promising avenue for future work in this area because it can potentially clarify individual's social sport goals and clarify differences in the climate—well-being link in mixed profiles.

Negative aspects of the sport social context have been previously linked to athlete burnout (see Pacewicz, Mellano, & Smith, 2019) and may provide support for findings in the present study. Significant climate-burnout correlations in the present study were observed within the profile characterized by highest friendship conflict. It is unsurprising that athletes characterized by higher conflict perceptions at the dyadic-level experience increases in athlete burnout when their team climate is characterized by the presence of conflict among team members. Conflict with key social agents has been linked to burnout in previous sport research (LaVoi, 2002; Lee, Kang, & Kim, 2017; Smith et al., 2010), and those who perceive high conflict from multiple sources are likely more susceptible to heightened burnout perceptions.

Examinations of the conflict between friends and among peers is needed to clarify how negative features of salient social relationships in youth sport contribute to perceptions of athlete burnout.

Peer acceptance did not significantly associate with study variables when examined in the full sample, but the profile that demonstrated the greatest associations between climate and well-being variables is characterized by the lowest peer acceptance scores. The low peer acceptance profiles showed stronger negative associations between the relatedness support dimension of the task-involving climate and anxiety. It is possible that peer acceptance perceptions in the present study are tied to athletes' perceptions of their athletic ability (Weiss & Duncan, 1992; Smith, 2007; Chase & Machida, 2011). Those in the low acceptance profiles may simply be less physically skilled than their teammates and therefore benefit when they are a part of a supportive team climate. These athletes may also perceive their basic psychological need for relatedness (Deci & Ryan, 2000) is being satisfied in a task-involving motivational climate. Any future attempts to replicate the present study should consider the inclusion of an athletic competence variable in order to clarify these findings. Athletes, regardless of skill level, who perceive that they are not directly accepted into a team may benefit from being on an inclusive team where the players value connection and encouragement of one another.

This study offers significant contributions to the existing knowledge about the importance of peers in sport, but it is not without limitations. First, the intra-team competition and ability subscale of PeerMCYSQ (Vazou et al., 2005) yielded an unreliable alpha. This dimension is certainly a salient feature of the motivational climate created by teammates as found in qualitative work (Vazou et al., 2005). However, it has yet to be quantitatively captured well. In fact, it was a challenge in the initial validation of the peer motivational climate instrument (Ntoumanis et al., 2005) as well as other peer motivational climate studies (Hein &

Joessar, 2015; Smith et al., 2010; Vazou, 2010; Vazou et al., 2006). In order for future meaningful contributions to be made to the current understanding of peer motivational climate influence in sport, it is necessary to determine a more effective method to authentically capture this dimension. Next, the sample was limited to adolescent soccer players in order to control for possible differences in perceptions across sport-types. However, future research should consider including more diverse sports and wider age ranges in order to increase the potential generalizability of the findings. Specifically, the salience of the peer motivational climate in comparison to other climate types may be determined by developmental differences among youth athletes. Additionally, the outcome variables in the present study only provide a snapshot of young athlete well-being. Future peer sport research should continue to aim to capture holistic psychosocial well-being by assessing a broader span of adaptive and maladaptive sport outcome variables. These studies may also consider examining behavioral outcomes such as continued sport participation. Previous research has inquired about athletes' intention to continue (Atkins et al., 2013; Atkins, Johnson, Force & Petrie, 2015), but as of yet peer motivational climate has not been examined in relation to actual sport continuation.

Overall, these findings suggest that perceptions of the peer motivational climate and peer relationship quality are particularly important to youth sport well-being. For young athletes with a certain peer relationship profile in sport, peer motivational climate may be especially important to their sport-related well-being. Peer motivational climate is an emerging research area under the AGT umbrella and has the potential to provide significant and unique knowledge to the current understanding of peers in sport with continued research efforts. The contributions of this study as well as future peer motivational climate research will help build a strong empirical database from which firmer conclusions may be drawn.

CHAPTER 3: STUDY TWO

The Association of Coach and Peer Motivational Climate Perceptions of Young Athletes with Athlete Engagement

Abstract

Coaches and peers create distinct climates that operate within a team simultaneously (Vazou et al., 2005; Ntoumanis & Biddle, 1999). Task climate perceptions associate with adaptive psychosocial outcomes while ego climate perceptions are considered more maladaptive (Ntoumanis & Biddle, 1999; Vazou et al. 2006). Unexplored is the salience of consistent and contradictory coach and peer climate perceptions (Ntoumanis, Vazou, & Duda, 2007). The purpose of this study was to 1) identify existing coach and peer motivational climate profiles in a sample of adolescent athletes, and 2) examine potential profile differences on perceptions of engagement, effort, and intention to continue. Adolescent female volleyball players ($N = 255$; M age = 15.5 years, $SD = 1.3$) completed a series of established questionnaires. Cluster analysis of the motivational climate variables yielded four profiles: 1) *Coach and Peer Low Task/High Ego*, 2) *Peer Low Task*, 3) *Coach Ego/Peer Task*, and 4) *Coach and Peer High Task/Low Ego*. Profiles differed significantly on perceptions of outcome variables (Pillai's trace = 0.19, $F(21,726) = 2.45$, $p < 0.001$, $\eta_p^2 = 0.07$). Profiles marked by low task perceptions associated with lower scores on outcome variables, and the profile characterized by both coach and peer perceptions being high in task and low in ego showed the opposite effect. The high coach ego and high peer task climate profile associated with the second highest outcome scores. These findings suggest that high peer task-involving climate perceptions may protect athletes from experiencing maladaptive consequences associated with high ego climate perceptions.

Introduction

Youth sport participation is championed because of the wealth of benefits associated with it. However, these benefits are not inherent, and sport experiences are not always positive. The attitudes, behaviors, and values of diverse significant others are among the many factors that contribute to quality experiences (or lack thereof). Collectively a number of social agents (e.g., coaches and teammates) create a dense social climate present across one's youth sport career. The social climate is a complex system that shapes the quality of young athletes' sport involvement and ultimately their healthy long-term participation. A greater understanding of how to foster high quality sport experiences for young people can be achieved by examining how the social environment contributes to athletes' sport engagement. One of the ways this can be achieved is by examining the motivational climates coaches and teammates create within adolescent sport teams.

Social features of the sport context have been previously linked to the quality of young athletes' psychosocial sport experiences, but the salience of these features varies as children age. Specifically, the importance of adults is consistent across late childhood and early adolescence; however, increases in cognitive and social awareness makes peers particularly salient during the adolescent developmental period (Sullivan, 1953). Therefore, teammates with whom athletes interact regularly and serve as social reference points are also a salient feature of the social context that can facilitate or debilitate one's experiences (Weiss & Stuntz, 2004). The respective roles of adults and peers are frequently examined independent of the other. However, interactions and relationships with these significant others in sport occur simultaneously. Ultimately youth athletes maintain relationships with multiple social agents in their sport environment, and therefore, must integrate multiple potential influences. The contributions of

multiple agents must be considered in order to better understand the complexities of the social sport environment and resultant consequences for athletes.

Achievement goal theory (AGT; Maehr & Nicholls, 1980; Nicholls, 1984) provides a framework through which simultaneous influence of multiple social agents in the sport context can be examined. The motivational climate dimension of AGT suggests that significant others (e.g., parents, coaches, peers) shape a particular goal or reward structure through their values, attitudes, and behaviors (Ames, 1992). Motivational climate research suggests that the social situations created by significant others vary in terms of the achievement goals that are emphasized. Two climate types are presented. The task-involving climate, or the mastery climate, encourages self-referenced forms of ability and rewards improvement and effort. The ego-involving climate, or performance climate, encourages norm-referenced forms of ability and rewards the demonstration of superiority in skill and winning. The subdimensions that comprise each of these climate types differ depending on the social agent driving the development and maintenance of said climate.

For example, the understanding of the peer motivational climate construct is similar to coach motivational climate in that it is also characterized by higher order task-involving and ego-involving climate types, but the two differ in their respective subdimensions. A total of six unique coach-driven dimensions of the coach motivational climate collectively characterize the task- and ego-involving climate types (Newton, Duda, & Yin, 2000; Seifriz, Duda, & Chi, 1992). A coach task-involving climate is perceived to be present when athletes believe their coach values effort and improvement, encourages cooperative learning among team members, and believes every athlete on the team holds an important role. A coach ego-involving climate is characterized by athletes perceiving their coaches primarily reinforce and recognize better

players, punish them for mistakes, and encourage intra-team rivalry. Peer motivational climate is characterized by five distinct peer-related features of the sport environment (Ntoumanis & Vazou, 2005; Vazou, Ntoumanis, & Duda, 2005). A peer task-involving climate is an environment where athletes perceive improvement, effort, and relatedness and support among players to be encouraged and rewarded among teammates. Alternatively, a peer ego-involving climate is characterized by athletes perceiving their teammates as focused on intra-team conflict as well as intra-team competition and ability.

Consistent findings in the physical domain regarding the influence of these higher order climate types have been observed. The task-involving climate has regularly been linked to more adaptive cognitive, emotional, and behavioral sport and physical activity-related outcomes in comparison to the ego-involving climate (see Harwood, Keegan, Smith, & Raine, 2015 and Ntoumanis & Biddle, 1999). The depth of motivational climate research is significant, however, only a portion of the key social agents in sport who contribute to the creation and maintenance of climates are reliably represented. Specifically, the dominant focus of the research in this area has targeted adult agents' (i.e., coaches) influence on the creation and reinforcement of motivational climates (see Duda & Balaguer, 2007), while the influence of teammates remains relatively understudied (Vazou, Ntoumanis, & Duda, 2005). Findings from existing peer motivational climate research support the idea that peer motivational climate is a unique feature of the social context that predicts sport outcomes over and above the coach motivational climate (Davies et al., 2015; García-Calvo et al., 2014; Vazou et al., 2006). Similar to coach motivational climate, the peer task-involving climate tends to associate with adaptive sport-related outcomes, while the peer ego-involving climate has been shown to associate with maladaptive sport-related

outcomes. A richer understanding of the adaptive and maladaptive nature of coach and peer motivational climate perceptions can be achieved by examining them together.

The coexistence of coach and peer motivational climates has been examined in previous youth sport research though the depth of knowledge in this area warrants growth. For example, congruent with previous motivational climate research, greater task-involving climate perceptions, regardless of whether it is adult- or peer-created, associate with more positive sport-related cognitive, affective, and behavioral outcomes (Beck, Petrie, Harmison, & Moore, 2017; Ntoumanis, Taylor, & Thørgersen-Ntoumani, 2012). Specifically, higher perceptions of task-involving climates have been positively linked to moral attitudes and good sport behaviors (Ntoumanis et al., 2012; Davies et al., 2015), self-perceptions (e.g., self-worth), emotional well-being (Ntoumanis et al., 2012; Vazou, Ntoumanis, & Duda, 2006), and young athletes' intentions to continue their sport participation (Atkins, Johnson, Force, & Petrie, 2015; Ntoumanis et al., 2012). The function of the ego-involving climate is less clear as it does not tie as strongly to maladaptive sport-related outcomes as one would expect (Vazou et al., 2006). The influence of coach and peer motivational climate also appears to be age dependent in that the motivational salience of peer climates are stronger as children age (Chan et al., 2012; Davies et al., 2015). Assessing the motivational influence of multiple key social agents concurrently offers insight into the complexities of the youth sport social context.

The research briefly outlined above suggests coaches and teammates certainly promote influential climates in the youth sport context, but little is known about the combined influence of coach and peer motivational climates. While coaches and peers are certainly distinct social agents, they must operate within the same group and likely have combined influence that has been ignored. The coach motivational climate may be among the factors that contribute to the

development of the peer motivational climate, but it cannot be assumed that the climate a coach promotes is directly reflected in the climate reinforced by the players themselves. In fact, coach and peer motivational climate do not demonstrate as strong a relationship to one another as one would expect. They are significantly related, but research suggests that the strength of their association varies from weak to moderate (e.g., $|.20| - |.49|$; Vazou et al., 2006). This indicates that coach and peer motivational climate perceptions are neither orthogonal nor so strongly related that they cannot show a mixed profile. Therefore, it is important to consider how unique *combinations* of the two climates tie to the quality of young athletes' sport experiences.

Assessing the motivational influence of multiple key social agents concurrently offers insight into the complexities of the youth sport social context.

Neglected in the coach and peer motivational climate research to date is an assessment of the similarities and differences in the type of climates coaches and peers reinforce (Ntoumanis et al., 2007). For example, it is possible that coaches intentionally promote a task-involving climate, while the players' attitudes and behaviors primarily reinforce an ego-involving climate. It is unknown how athletes might accommodate different perspectives and any influence on the quality of athletes' engagement and overall sport involvement. Limited research has indicated that examining unique combinations of coach and peer motivational climate perceptions may be warranted. García-Calvó and colleagues (2014) examined how coach and peer motivational climates contribute to group cohesion and individual satisfaction, finding a moderation effect whereby a significant positive relationship between coach task-involving climate and a dimension of task cohesion was observed when peer task-involving climate perceptions were high. However, this relationship was statistically nonsignificant when peer task-involving climate perceptions were low. However, this work targeted a narrow range of psychosocial sport

outcomes and does not sufficiently capture markers of experiential quality. Another study by Vazou and colleagues (2006) examined how coach and peer motivational climates predicted a series of adaptive and maladaptive motivational indices. Their results were somewhat contradictory to García-Calvó and colleagues (2014) in that no significant moderation effects were observed. Thus, further work is needed to understand the simultaneous role of coach and peer climate perceptions in shaping the quality young athletes' experiences.

The two studies previously described should be credited for examining coach and peer motivational climate perceptions simultaneously, which is not often done in the achievement goal theory literature. Both studies utilized a variable-centered approach, however, which can present challenges in addressing this issue. Variable-centered approaches provide little to no understanding of the occurrence of certain constellations of coach and peer motivational climate perceptions experienced by individual adolescent athletes. In theory, there are a number of ways in which athletes may perceive and experience coach and peer motivational climate simultaneously. Employing a person-centered approach, such as cluster analysis, affords researchers the opportunity to observe these unique combinations in the form of naturally occurring profiles that may exist in the youth sport context (Hodge & Petlichkoff, 2000). When groupings of athletes have been generated using a median split approach within variable-centered research, moderately scoring participants tend to inappropriately separated from one another. Cluster analysis produces profiles with the greatest within-group similarity, which may include relatively moderate perceptions on a set of characteristics or perceptions. Individuals with moderate perceptions are a meaningful subpopulation who should not be inappropriately classified in other high or low groups, which is often the case in variable-centered approaches. Person-centered approaches afford achievement goal theory researchers the opportunity to assess

the salience of naturally occurring patterns of motivational climate perceptions and the possible salience of these patterns to markers of high-quality sport experience.

One such important marker of adaptive sport involvement is athlete engagement (Lonsdale, Hodge, & Jackson, 2007). Across achievement domains, including sport, engagement is characterized by three subtypes: behavioral, cognitive, and emotional/affective engagement (Jimerson, Campos, & Greif, 2003). Lonsdale and colleagues (2007) proposed a sport-specific approach to engagement that borrows ideas from work-based models (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). They define athlete engagement as an enduring and relatively stable experiential state, which refers to generalized positive cognitive-affective evaluations of one's sport (Lonsdale et al., 2007; Lonsdale, Hodge, & Raedeke, 2007). Four unique dimensions of athlete engagement have also been identified and include: vigor, dedication, confidence, and enthusiasm. They define vigor as a "sense of physical and mental liveliness", dedication as a "desire to invest effort and time towards achieving goals one views as important", confidence as a "belief in one's ability to attain a high level of performance and achieve desired goals" (p. 472), and enthusiasm as "feelings of excitement and high levels of enjoyment" (p. 479).

Investigations of athlete engagement occurred prior to Lonsdale and colleagues' conceptualization of the construct, but the focus was primarily on observable indicators of engagement (i.e., effort and persistence) that would represent the behavioral subtype of engagement. Lonsdale and colleagues' (2007) work in this area does not specifically target observable athlete behaviors, but rather attends to more cognitive-affect evaluations of engagement in sport. The four dimensions of athlete engagement as well as perceptions of effort and persistence provide a comprehensive assessment of athlete engagement that captures all

three engagement subtypes (i.e., cognitive, affective, and behavioral) and aligns with motivational outcomes relevant to achievement goal theory work.

Athlete engagement dimensions are thought to be collectively shaped by psychological features of the sport context and associate with positive sport experiences. For example, athletes reporting higher engagement also report higher basic psychological needs satisfaction (Hodge, Lonsdale, & Jackson, 2009) and lower athlete burnout (DeFreese & Smith, 2013; Lonsdale et al., 2007). Research in sport has attempted to identify antecedents of athlete engagement in an effort to determine how to promote positive sport experiences (i.e., flow; Hodge et al., 2009) and suppress negative sport outcomes (i.e., burnout; Eklund & DeFreese, 2015). Thus, it is necessary to direct attention to aspects of sport that may enhance athlete engagement. Research in this area is still emerging as it is a relatively new construct in the sport domain. Directing attention to social contextual influences may inform new strategies for increasing the likelihood of athletes experiencing heightened engagement. Specifically, the influence of existing motivational climates within a team warrants further research attention (Curran, Hill, Hall, & Jowett, 2015).

The present study will address how the combination of coach and peer motivational climate perceptions contribute to athletes' cognitive, affective, and behavioral engagement. One study to date, conducted by Curran and colleagues (2015), examined relationships between the coach-created motivational climate and adolescent athletes' engagement. They found that coach motivational climate explained 23 to 34 percent of the variance in athlete engagement. The task-involving climate positively predicts all four dimensions of athlete engagement at the univariate and multivariate level. Contrary to expected results, univariate analyses indicated that the ego-involving climate positively corresponded with the confidence and dedication dimensions of athlete engagement. The variances explained by the ego-involving climate were small, and no

significant multivariate relationship was found. These findings suggest that coach motivational climate may significantly contribute to adolescent athlete engagement, but the contributions of the ego-involving climate are unclear. There is a need for more peer work to better understand the complexity of the sport social context, and one way we may be able to better understand the motivational salience of peers is to examine them in the context of other relationships.

Multiple agents can create motivational climates that young athletes have to accommodate simultaneously. There is an established narrative about how coach and peer task- and ego-involving climates link to adaptive and maladaptive achievement patterns independent of one another. However, there is not a sound understanding of outcomes with respect to accommodating the set of distinct motivational climates present within a team. Examining these different climate perceptions in tandem may allow for researchers and practitioners to more accurately tease out the effects of coaches and peers on the quality of athletes' sport experiences. Therefore, the purpose of the present study is to expand upon previous motivational climate research by 1) identifying existing coach and peer motivational climate profiles in a sample of adolescent athletes, and 2) examining potential profile differences on perceptions of athlete engagement, effort, and intention to continue. Effort and intention to continue variables are included as additional outcome measures in the present study because of the absence of items assessing objective behavioral markers of engagement within Lonsdale and colleagues' (2007) measure. The inclusion of effort and intention to continue will provide a more comprehensive assessment of athlete engagement that captures all three engagement subtypes (i.e., cognitive, affective, and behavioral). Also, effort and persistence are behavioral outcomes often examined within the AGT framework (Maehr & Nicholls, 1980; Nicholls, 1984; 1989).

It is hypothesized that that coach and peer task-involving climate will positively correspond with athlete engagement as well as effort and intention to continue. The reverse relationship is hypothesized for ego-involving climate perceptions, though this is made tentatively in light of previous research being inconclusive and occasionally surprising with respect to peer ego-involving climate perceptions (Curran et al., 2015; Vazou et al., 2006). Next, it is expected that unique motivational climate profiles will emerge in this sample. It is likely that at least one profile will emerge that shows athletes to perceive coach and peer climates similarly, and also likely that at least one will be characterized by perceptions of coach and peer climates that differ from one another. Next, it is hypothesized that these profiles would reflect differing perceptions of athlete engagement, effort, and intentions to continue. Specifically, it is expected that more adaptive responses would be observed in profiles characterized by relatively high task-involving climate perceptions, regardless of ego-involving perceptions. The present study will extend the current understanding of how different social agents simultaneously contribute to the quality of youth sport experiences.

Method

Participants

Study participants include female volleyball players ($N = 255$) ranging in age from 14 to 18 years ($M_{\text{age}} = 15.50 \pm 1.30$ years) who were competing in their sport at the time of collection. Injured athletes were excluded from the study in an effort to avoid the emergence of perceptions that do not accurately reflect the experiences of youth athletes actively engaged in their sport. Participants were recruited from competitive youth programs from the Midwestern region of the United States via direct contact with volleyball program directors, coaches, and parents. A total of 55 teams were represented by at least one athlete or more within the sample. Participants

reported an average of 5.7 years ($SD = 2.17$) of volleyball experience with 1.9 of those years spent with their current team ($SD = 1.31$ years). On average, participants reported 6.93 hours ($SD = 2.88$) of volleyball training in a week. Most of the participants identified themselves as a “starter” for their team (77.7%). All player positions were well represented within the sample with almost an equal number of outside hitters (23.1%), middles (25.6%), and defensive specialists/liberos (24.8%) and fewer setters (14.1%) and rightside hitters (12.4%). Just over half the sample report their head coach as female (54.5%). Participants typically reported their team won and lost an equal number of competitions throughout the season (45.5%) with the fewest reporting they had won all of their competitions (1.6%). Most of participants were competing at the highest level within their competitive club program (52.9%) and the two highest youth divisions across the country (67.9%). The majority of the sample identified their ethnicity as Not Hispanic/Latino (96.4%) and the majority of the sample identified their race as White (85.6%; see Table 8 for summary of demographic information).

Table 8. Demographic Information (N = 255)

	N	Minimum	Maximum	Mean (<i>SD</i>)
Age		14.0	18.0	15.5 (1.30)
Ethnicity			3.6% Hispanic/Latino	
Race				
White	214 (85.6%)			
Black	16 (6.4%)			
Asian	4 (1.6%)			
More than one race	14 (5.6%)			
Other	1 (0.4%)			
Prefer not to say	1 (0.4%)			
Years playing volleyball		1.0	14.0	5.7 (2.17)
Years with Team		1.0	10.0	1.9 (1.31)
Training hours (week)		1.5	21.0	6.9 (2.88)
Starter	195 (77.7%)			
Position				
Outside hitter	54 (23.1%)			
Middle	60 (25.6%)			
Rightside hitter	29 (12.4%)			
Setter	33 (14.1%)			
DS/Libero	58 (24.8%)			
Coach's sex				
Female	138 (54.5%)			
Male	115 (45.5%)			
Team Success (current season)				
Lost all competitions	5 (2.0%)			
Lost most competitions	57 (23.2%)			
Equal wins and losses	112 (45.5%)			
Won most competitions	68 (27.6%)			
Won all competitions	4 (1.6%)			
Competitive Level				
1s	91 (52.9%)			
2s	52 (30.2%)			
3s	29 (16.9%)			
Competitive Division				
Elite	70 (29.5%)			
National	91 (38.4%)			
National Select	29 (12.2%)			
State	16 (6.8%)			
Regional	31 (13.1%)			

Procedure

Procedures for the protection of human research participants were reviewed and accepted by an institutional ethics review board and was followed throughout the study (see Appendix C). Data were collected at one time point using self-report survey-based methodology. Participants completed a series of established questionnaires to assess perceptions of coach- and peer-created climate, athlete engagement, effort, and intention to continue participation. Collection occurred at the mid-point of the season in order to allow sufficient time to familiarize with teammates while avoiding potential bias late in the season due to individual and team performance success.

Approval from coaches and volleyball program organizers was obtained prior to direct contact with athletes. Consent and assent were collected from parents and participants respectively. The self-report questionnaire packet took participants about 15 minutes to complete (see Appendix D).

Data collection occurred just prior to or after participants' training sessions or competitions in the absence of the coaches. About half of the data was collected at a tournament ($N = 134$) where hundreds of teams were present. In this setting, coaches, parents, and players were approached by the primary investigator and asked about participation interest. This method of collection differed from planned data collections with specific club organizations ($N = 121$) in that the number of athletes completing the study at a time was typically lower (often only one or two athletes at a time). In general, data collection at tournaments was fruitful. However, it was a slow process due to rejection and small groups of athletes with sufficient time to complete the questionnaire packet. Recruiting whole volleyball organizations via phone and email was challenging, but successful once dates and times for collection were determined.

Measures

Demographic Information. Demographic information was collected about participants' age, ethnicity, race, years playing volleyball, years with current team, playing status (e.g., starter or non-starter), primary position, weekly training hours, coach's sex, team success, as well as competitive level and division to characterize the obtained sample.

Motivational Climate. Seminal qualitative peer motivational climate research (Vazou et al., 2004) and subsequent measurement development (Ntoumanis & Vazou, 2005) determined that peer motivational climate is characterized by similar higher order themes as the coach-created motivational climate (i.e., task-involving and ego-involving climates). The present study evaluated climate perceptions and the consistency between them at these higher orders rather than at the lower—factor level. The two distinct coach and peer motivational climate scales were used in this study. In order to ensure participants were accurately reporting on motivational climate perceptions of the different social agents, the language of the measures was slightly modified to clarify and reinforce whether the scale assessed coach or peer influence. These changes are specified below.

The existing coach-created motivation climate was assessed using the 33-item Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton et al., 2000). The PMCSQ-2 is characterized by two higher order task-involving and ego-involving themes, each consisting of three lower order factors. The three dimensions characterizing the task-involving climate include: effort/improvement, cooperative learning, and important role. The ego-involving climate dimensions include: unequal recognition, punishment for mistakes, intra-team rivalry. The items of this scale were adjusted to map directly to items Vazou and colleagues (2006) used in their coach and peer motivational climate research. This was done in an effort to differentiate between

coach and peer climate perceptions and ensure the influence of the coach is what is being assessed. The stem for each PMCSQ-2 item was modified to “On this team, the coach...” and some language within items was changed. For example, coaches are emphasized in certain items by removing terms that indicate teammates as the primary influencers of the climate and inserting language specific to coach actions: “On this team, *the coach emphasizes that* athletes should help each other learn”. The 17-item task-involving climate dimension includes items such as, “On this team, the coach makes players feel successful when they improve”. The 16-item ego-involving climate dimension includes items like, “On this team, the coach praises athletes only when they outplay teammates.” Participants were asked to respond to the items using a 5-point Likert scale ranging from (1) *strongly disagree* to (5) *strongly agree*. Reliability and validity of the modified PMCSQ-2 have been supported in a previous study with similar populations (see Vazou et al., 2006). Internal consistency reliability of the six coach motivational climate subscale scores were acceptable to excellent in the present study ($\alpha = .70$ to $.91$). A composite of the three task-involving subscales ($\alpha = .92$) and a composite of the three ego-involving subscales ($\alpha = .93$) were used in the primary analyses.

The 21-item Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ; Ntoumanis & Vazou, 2005) was used to measure the athletes’ perception of the peer motivational climate in their team. Task-involving and ego-involving climates make up the higher order factors of the scale. The task-involving climate is made up of three sub-dimensions, including: improvement, relatedness support, and effort. Two sub-dimensions characterize the ego-involving climate: intra-team competition and ability, and intra-team conflict. All items begin with the stem, “On this team, most athletes...”. Example items from the task-involving climate include: “...teach their teammates new things” (improvement), “...care about everyone’s

opinions” (relatedness support), and “...praise their teammates who try hard” (effort). Example items from the ego-involving climate include: “...encourage each other to outplay their teammates” (intra-team competition and ability) and “...criticize their teammates when they make mistakes” (intra-team conflict). Participants were asked to respond to the items using a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. Reliability and validity of PeerMCYSQ scores have been supported in a series of previous studies (see Ntoumanis & Vazou, 2005; Vazou et al., 2006). Internal consistency reliability of the five peer motivational climate subscales scores was acceptable to good in the present study ($\alpha = .72$ to $.80$). A composite of the three task-involving subscales ($\alpha = .86$) and a composite of the two ego-involving subscales ($\alpha = .80$) were used in the primary analyses.

It should be noted that additional items were included in the peer motivational climate scale, which brought the total item count of the measure to 25 rather than the original 21. These items were created in order to combat a potential intra-team competition and ability subscale reliability issue that has occurred previously in peer motivational climate research (Hein & Jöessar, 2015; Smith et al., 2010; Vazou, 2010; Vazou et al., 2006). The inclusion of these additional items was a proactive step toward managing this potential reliability issue.

Participants were asked to report to what degree they agreed with the following statements about their teammates: “...encourage competing against their teammates” (competition), “...are upset when they lose a competition to a teammate” (competition), “...want to be the best player on the team” (ability), and “...listen to the best player on the team more than others” (ability). However, in the present study the original intra-team competition and ability subscale items were not problematic ($\alpha = .77$). Therefore, none of the additional items included in the measure were included in primary analyses.

Athlete Engagement. Athlete engagement was assessed using the 16-item Athlete Engagement Questionnaire (AEQ; Lonsdale et al., 2007). This measure consists of four subscales, including: vigor, dedication, confidence, and enthusiasm. These items include statements like, “I feel energized when I participate in my sport” (vigor), “I am devoted to my sport” (dedication), “I believe I am capable of accomplishing my goals in my sport” (confidence), and “I enjoy my sport” (enthusiasm). Participants responded to items using a five-point Likert scale ranging from (1) *almost never* to (5) *almost always* about how frequently they have felt a particular way during their current sport season. Reliability and validity of AEQ scores have been supported in a series of previous studies using a similar sample (see Lonsdale et al., 2007; Curran et al., 2015). Internal consistency reliability of scores from the four athlete engagement subscales were acceptable to excellent in the present study ($\alpha = .79$ to $.85$). A composite of the four subscales ($\alpha = .91$) was also used in the primary analyses.

Effort. Participants reported perceptions of their effort by responding to two different scales. First, two items adapted from Ntoumanis (2005) and Ntoumanis and colleagues’ (2012) motivational climate research were used. The language was adjusted slightly in order to be more appropriate for the present sample and involved self-report rather than coach-report. These items included: 1) “Please report the amount of effort you put forth to try and improve your skill this season” and 2) “Please report the amount of effort you put forth to do your best when training and competing”. Responses were recorded on a 5-point Likert scale ranging from (1) *no effort at all* to (5) *exceptionally high levels of effort*. Internal consistency reliability of effort scores was acceptable in the present study ($\alpha = .73$).

The Intrinsic Motivation Inventory (IMI; McAuley, Duncan, & Tammen, 1989) effort subscale was also included to assess participants’ perceptions of their individual effort. The

language was adjusted to be volleyball specific. An example item included: “I put forth a lot of effort into volleyball this season.” Responses were recorded on a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. The reliability and validity of the effort scores, when adjusted in a similar manner, have been supported (e.g., Ullrich-French & Cox, 2009). Internal consistency reliability of scores from the IMI effort subscale was acceptable in the present study ($\alpha = .76$).

The degree of correlation that existed between the two sets of effort items was assessed. The results showed considerable correlation between the items and global effort scores (e.g., correlations approaching .70). Such potential multicollinearity may interfere with the quality and accuracy of the main study analyses. Following inspection of effort items, the decision was made to retain those from the IMI effort subscale and remove the two less established items created by Ntoumanis and colleagues (2005; 2012). These items were chosen for three reasons. First, the five items from the IMI provide a more comprehensive assessment of one’s perception of her effort. Second, the measure is designed to be used as a self-report measure unlike Ntoumanis and colleagues’ two items. Third, these items can be considered more established and trustworthy as they have been used in previous sport and physical activity literature.

Intentions to Continue. One item adapted from Ntoumanis (2005) was used to measure participants’ intentions to continue participating in their sport with their current program. Specifically, participants were asked to respond to the following item: “I intend to play my sport in this program next season.” Responses were recorded on a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. The present sample included athletes who will age-out of their respective programs as 18-year-old athletes within the following year ($n = 15$). Their

responses were removed from continuation analyses as they have no opportunity to participate next season with their current volleyball program.

Data Analysis

Internal consistency reliabilities of scores from the measures was examined using Cronbach's alpha. Cronbach's alpha coefficients, correlations, means, and standard deviations were obtained on all study variables. All analyses were completed using SPSS 24.0 (SPSS Inc., Chicago, IL). Preliminary multilevel analyses were done to address for the hierarchical structure of the data (e.g., athletes nested within teams). Cluster analysis was conducted using the task- and ego-involving climate coach and peer motivational climate variables to address the first purpose of the study. To address the second purpose of the study, motivational climate profiles that emerged from the cluster analysis were compared for differences on the set of dependent variables (i.e., athlete engagement-related responses) using one-way multivariate analysis of variance (MANOVA). Univariate follow-up tests (i.e., ANOVA and Scheffe' post hoc) were conducted upon obtaining a significant multivariate finding.

Results

Descriptive Statistics

Table 9 contains descriptive statistics, correlations, and alpha-values for all study variables. Participants generally reported high perceptions of task-involving coach and peer motivational climate dimensions ($M_{coach\ task} = 4.01$, $SD = 0.65$; $M_{peer\ task} = 5.37$, $SD = 0.91$) and moderate perceptions of ego-involving coach and peer motivational climate dimensions ($M_{coach\ ego} = 2.53$, $SD = 0.82$; $M_{peer\ ego} = 3.90$, $SD = 1.10$). Additionally, participants perceived high athlete engagement globally and across all four dimensions ($M_{global} = 4.38$, $SD = 0.50$; $M_{vigor} = 4.30$, $SD = 0.60$; $M_{dedication} = 4.56$, $SD = 0.55$; $M_{confidence} = 4.13$, $SD = 0.70$; $M_{enthusiasm} = 4.53$, $SD =$

0.62). Lastly, participants also reported high perceptions of effort ($M = 6.39$, $SD = 0.70$) and a moderate-to-high likelihood of continuing participating in volleyball within their respective programs ($M = 5.16$, $SD = 2.11$). Significant correlations among study variables were in theoretically consistent directions. Coach and peer climate perceptions were significantly correlated with each other with the strength of their association varying from weak to moderate ($|.21| - |.50|$). Task- and ego-involving climate perceptions were negatively correlated with one another. Coach and peer task-involving climates were also positively correlated with engagement variables as well as effort and intention to continue participation, while ego-involving climate variables were negatively related to these dependent variables. These significant climate-engagement relationships were weak-to-moderate with peer motivational climate variables fairly consistently correlating at a stronger magnitude. A significant positive relationship was found among all dependent variables (e.g., athlete engagement variables, effort, and intention to continue). Neither coach nor peer ego-involving climate significantly correlated with the vigor dimension of athlete engagement. Coach ego-involving climate also did not significantly associate with the dedication dimension of engagement or effort perceptions.

Table 9. Descriptive Statistics, Correlation, and Alpha Coefficients (N = 255)

	Variable	1	2	3	4	5	6	7	8	9	10	11
1	Coach Task Climate	.92										
2	Coach Ego Climate	-.57**	.93									
3	Peer Task Climate	.45**	-.21**	.86								
4	Peer Ego Climate	-.30**	.50**	-.40**	.80							
5	Vigor	.19**	-.08	.24**	-.06	.79						
6	Dedication	.20**	-.11	.33**	-.15*	.57**	.80					
7	Confidence	.32*	-.17**	.32**	-.14*	.49**	.57**	.83				
8	Enthusiasm	.21**	-.16*	.28**	-.17**	.70**	.57**	.45**	.85			
9	AE Global	.29**	-.16**	.36**	-.16**	.84**	.82**	.79**	.83**	.91		
10	Effort	.18**	-.12	.35**	-.21**	.53**	.68**	.42**	.49**	.64**	.76	
11	Continuation	.18**	-.31**	.18**	-.25**	.24**	.28**	.22**	.34**	.33**	.32**	-
	Possible Range	1-5	1-5	1-7	1-7	1-5	1-5	1-5	1-5	1-5	1-7	1-7
	<i>M</i>	4.01	2.53	5.37	3.90	4.30	4.56	4.13	4.53	4.38	6.39	5.16
	<i>SD</i>	.65	.82	.91	1.10	.60	.55	.70	.62	.50	.70	2.11

Note. Alpha values on diagonal, correlation values below diagonal, * $p < .05$ and ** $p < .01$ (two-tailed).

Multilevel Data Analysis

A multilevel regression analysis was conducted to determine if there were variations in coach and peer motivational climates as well as all outcome variables within (Level 1; e.g., athlete) and between (Level 2; e.g., team) teams. The multilevel analytic methods employed in the present study align with those proposed by Kashy and Kenny (2000) and Peugh and Enders (2005) when using unequal group sizes. The number of athletes representing a team ranged from one to ten (see Figure 3). Teams represented by at least two athletes were included in this preliminary analysis. Using a threshold of two or more athletes aligns with the perspective of many group process researchers regarding what constitutes a “group” and acknowledges that two individuals can be considered a group (Williams, 2010). It is possible that the athletes representing their team hold very different perspectives from their other teammates and therefore do not provide a comprehensive representation of their respective team perceptions. However, this threshold allowed for most teams in the sample to be represented in this preliminary analysis.

First, a null variance component model was tested, which contained only a response variable and no explanatory variables other than the intercept. For the preliminary purposes of these analyses no additional explanatory variables were added to the models. Next, intraclass correlations were calculated from the null model by dividing the intercept Level 2 variance by the sum of Levels 1 and 2 variances (Snijders & Bosker, 1999). These intraclass correlations are interpreted as the average correlation between responses of two members of the same team. A total of 56 teams were represented in the study sample, but only those with representation by two or more athletes were included in these analyses ($n = 49$). The number of teams in the sample is considered small, therefore, intraclass correlations were calculated for all response variables

regardless of the intercept's p -value. The results reported include a summary for all study variables.

The results indicated that the team membership did not meaningfully contribute to motivational climate, engagement, effort, and intention to continue perceptions. The average intraclass correlation across study variables was 0.11 with only one above a value of 0.20 (e.g., coach ego-involving climate). These findings suggest that the responses of athletes on the same team were weakly correlated to one another. The greater within-team variation and the weak relationship between responses of athletes on the same team suggests that analyses targeting differences within teams would be appropriate. Thus, the proposed cluster analytic techniques were conducted and are presented in the following sections.

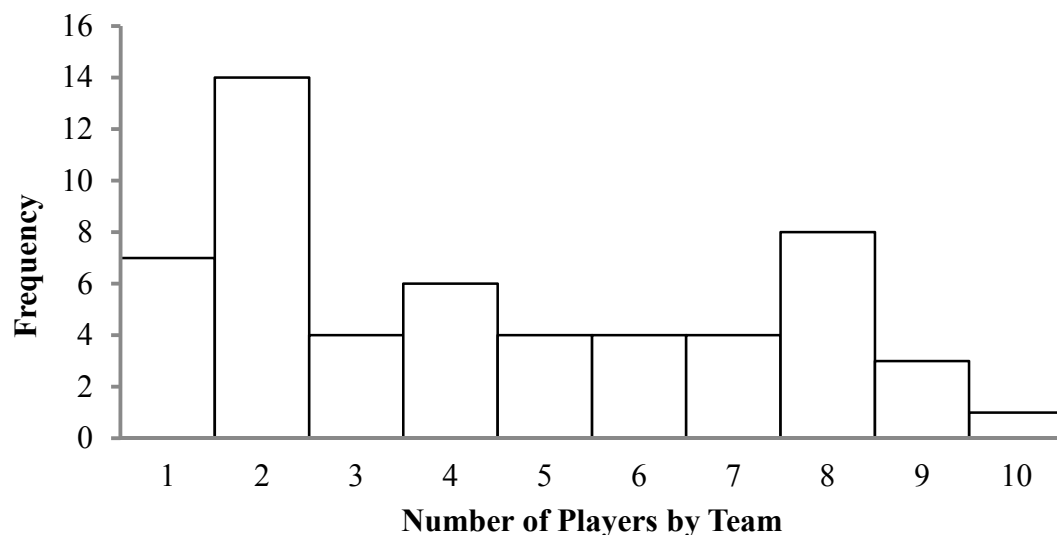


Figure 3. Histogram of Number of Players on a Team Included in Sample (N = 55)

Cluster Analysis

Outliers must be carefully considered when conducting cluster analysis because they can perturb cluster solutions (Hair, Anderson, Tatham, & Black, 1998). Univariate outliers ($z > \pm 3.0$) were observed in 10 cases. Examination of Mahalanobis distance with a $p < .001$ threshold

revealed four potential multivariate outlier cases. Results of analyses including and excluding the outlier cases were minimally discrepant and therefore these cases were retained in the sample. Therefore, results for all valid cases ($N = 255$) are reported below. Retention of such cases is advised in circumstances like these because outlier cases can represent genuine portions of the population (Hair et al., 1998).

The four coach and peer climate variables were standardized and coach task-involving climate, coach ego-involving climate, peer task-involving climate, and peer ego-involving climate z-scores were cluster analyzed. Nonhierarchical k -means cluster analysis using simple Euclidean distance as the similarity measure was conducted. Based on previous achievement goal theory profiling literature, three to four clusters were expected to best represent the data structure (Horn, Byrd, Martin, & Young, 2012; Kipp, Bolter, & Reichter, 2019). However, solutions specifying from two to six clusters were examined in the interest of fully evaluating the data. When two clusters were specified, no mixed or conflict profiles emerged. When three or four clusters were specified, non-redundant cluster profiles were obtained. However, specifying a three-cluster solution resulted in the absence of two consistent profiles that reflected one another. Redundant clusters emerged when more than four clusters were specified. Ultimately a four-cluster solution was settled on as the best representation of the present sample's unique combination of coach and peer climate perceptions. A four-cluster solution produced the maximum number of nonredundant profiles with fairly equal sample representation across profiles. Additionally, a four-cluster solution captured a profile marked by perceptions of coach high task/low ego and peer high task/low ego as well as a second profile characterized by coach low task/high ego and peer low task/high ego. It was important to capture profiles like these as they reflect those found in previous goal orientation literature (Smith, Balaguer, & Duda, 2006).

This allows for comparative analyses and a continued discussion of the adaptive and maladaptive nature of these different climates. The consistency of participants' placement within profiles was assessed by performing the analysis on a random selection of half the sample and then again on the remaining participants. The results of the two analyses were highly consistent in both magnitude and pattern of final cluster centers. Overall, the solution was stable in both analyses and therefore the full sample results are presented.

Table 10 contains the means, standard deviations, and standardized scores for the clustered variables (i.e., coach task-involving climate, coach ego-involving climate, peer task-involving climate, peer ego-involving climate). Clusters are arranged from least to most theoretically adaptive. Figure 2 pictorially represents the motivational climate profiles that emerged from the analysis. A z-score criterion of ± 0.5 was set to represent relatively high or low scores on the climate variables and assigned labels to profiles based on the set of these scores (Hodge & Petchlikoff, 2000). The cluster labels help simplify interpretation of the remaining analyses of this paper but are not intended to characterize the groups in absolute terms. Relatively low or high scores on constructs may not correspond to low or high response set values. For example, the profile possessing the lowest mean value for coach task-involving ($z = -1.56$, $M = 3.00$) exhibits a value above the scale midpoint of 2.5.

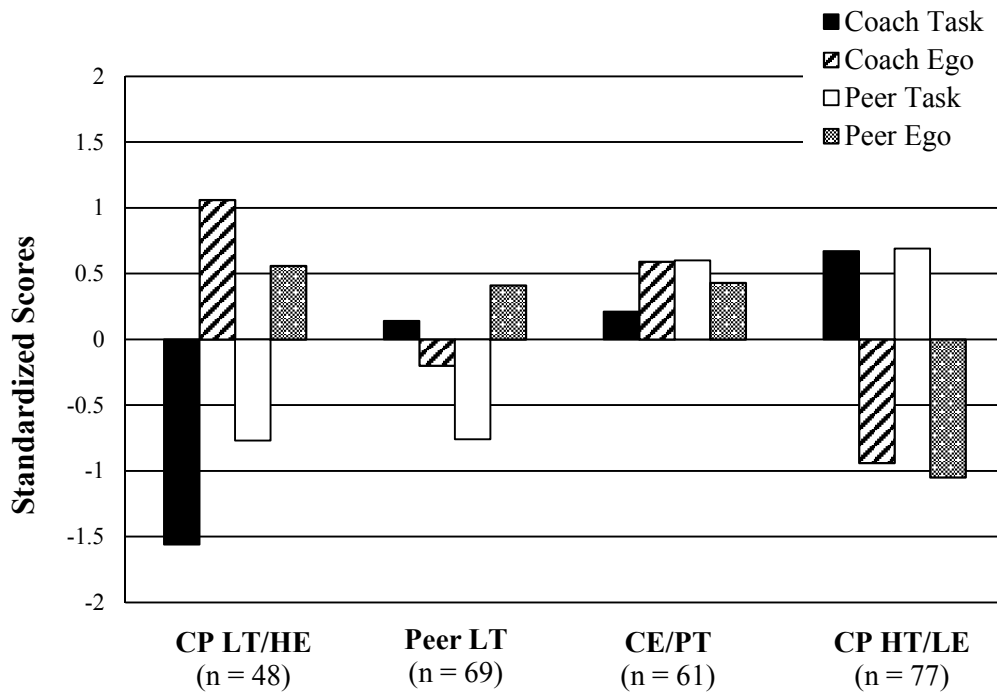
Table 10. Participant Numbers, Means, Standard Deviations, and Standardized Scores for Motivational Climate Profiles Resulting from *k*-Means Cluster Analysis

Cluster	n	Coach Task		Coach Ego		Peer Task		Peer Ego	
		M (SD)	Z	M (SD)	Z	M (SD)	Z	M (SD)	Z
CP LT/HE	48	3.00 (0.44)	-1.56	3.40 (0.71)	1.06	4.68 (0.95)	-0.77	4.46 (0.87)	0.56
Peer LT	69	4.11 (0.39)	0.14	2.37 (0.49)	-0.20	4.68 (0.62)	-0.76	4.29 (0.82)	0.41
CE/PT	61	4.15 (0.39)	0.21	3.00 (0.51)	0.59	5.93 (0.49)	0.60	4.30 (0.75)	0.43
CP HT/LE	77	4.45 (0.41)	0.67	1.76 (0.48)	-0.94	6.01 (0.54)	0.69	2.66 (0.75)	-1.05

Note. CP LT/HE = Coach and Peer Low Task/High Ego, Peer LT = Peer Low Task, CE/PT = Coach High Ego and Peer High Task, CP HT/LE = Coach and Peer High Task/Low Ego.

The first cluster is labeled the *Coach and Peer Low Task/High Ego* (CP LT/HE) profile ($n = 48$; 18.8%) because athletes in this profile perceive that their coach and teammates both promote low task and high ego climates within the team. Based on previous coach and peer motivational climate research and the absence of relatively moderate scores, the *CP LT/HE* profile is conceptually considered a fully maladaptive profile. The second cluster is labeled the *Peer Low Task* (Peer LT) profile ($n = 69$; 27.1%) because athletes in this profile perceive relatively low peer task-involving climate, moderate coach task- and ego-involving climate as well as moderate peer ego-involving climate. The *Peer LT* profile is one of two mixed profiles in the sample. The third cluster is labeled the *Coach Ego/Peer Task* (CE/PT) profile ($n = 61$; 23.9%). Athletes characterized by the *CE/PT* profile report relatively high coach ego-involving climate perceptions as well as high peer task-involving climate perceptions. The fourth, and most theoretically adaptive, cluster is labeled the *Coach and Peer High Task/Low Ego* (CP HT/LE)

profile (n = 77; 30.2%) because athletes in this profile perceive the coach and peer climates to be highly task-involving and relatively low with respect to ego-involvement.



Coach and Peer Motivational Climate Profiles

Figure 4. Four Cluster Solution of Coach and Peer Motivational Climate Variables

The motivational climate profiles were assessed for differences in sample representation based on a number of descriptive variables (e.g., playing status, primary position, division, participant age, playing status, coach's sex, team success, and competitive level). Table 11 provides demographics for each profile. Chi-square analysis showed no significant differences in playing status ($\chi^2(3) = 3.18, p = 0.37$), position ($\chi^2(12) = 12.30, p = 0.42$), or division ($\chi^2(12) = 17.02, p = 0.19$) representation across profiles. Significant differences were found for the representation of team success, coach's sex, competitive level, and athlete's age.

Chi-square analysis showed a significant difference in the age of participants represented across profiles, $\chi^2(12) = 28.80, p < .01$. Follow-up examination showed that 15-year-olds were

disproportionately underrepresented within the *CE/PT* profile ($\chi^2 = 7.29$, $p < .01$), while 18-year-olds were overrepresented ($\chi^2 = 7.78$, $p < .01$). The *CP HT/LE* profile was characterized by a disproportionate representation of 14-year-old athletes ($\chi^2 = 6.71$, $p < .01$), while 16-year-old athletes were underrepresented in this profile ($\chi^2 = 7.40$, $p < .01$). Chi-square analysis showed a significant difference in coach's sex representation across profiles, $\chi^2(3) = 10.31$, $p < .01$. Follow-up examination showed that male coaches were disproportionately represented within the *CP LT/HE* profile ($\chi^2 = 6.81$, $p < .01$). Chi-square analysis showed a significant difference in the representation of team success across profiles, $\chi^2(12) = 21.56$, $p < .01$. Follow-up examination showed that athletes who have won most competitions were disproportionately represented within the *CE/PT* profile ($\chi^2 = 10.50$, $p < .01$). Chi-square analysis showed a significant difference in competitive level representation across profiles, $\chi^2(6) = 18.36$, $p < .01$. Follow-up examination showed that the highest competitive level within organizations is disproportionately represented within the *CE/PT* profile ($\chi^2 = 15.13$, $p < .01$). However, nearly half the sample was missing data for this variable as some organizations do not differentiate between the competitive levels of same-age teams. Therefore, these significant differences must be interpreted with caution.

Table 11. Demographic Representation in Motivational Climate Profiles

	CP LT/HE	Peer LT	CE/PT	CP HT/LE
Age Representation in Profiles				
14 years old	16.7%	20.3%	28.3%	37.7%
15 years old	29.2%	33.3%	11.7%	24.7%
16 years old	37.5%	29.0%	26.7%	14.3%
17 years old	14.6%	13.1%	20.0%	19.5%
18 years old	2.0%	4.3%	13.3%	3.8%
Playing Status Representation in Profiles				
Starter	69.0%	78.0%	78.0%	82.0%
Non-Starter	31.0%	22.0%	22.0%	18.0%
Position Representation in Profiles				
Outside hitter	34.0%	17.5%	25.5%	19.4%
Middle	25.6%	25.4%	27.5%	23.6%
Rightside hitter	10.6%	14.3%	5.9%	16.7%
Setter	14.9%	9.5%	17.6%	15.3%
DS/Libero	14.9%	33.3%	23.5%	25.0%
Coach's Sex Representation in Profiles				
Female	37.5%	63.8%	48.3%	61.3%
Male	62.5%	36.2%	51.7%	38.7%
Team Success Representation in Profiles				
Lost all	4.2%	3.0%	1.8%	0.0%
Lost most	25.0%	32.8%	10.7%	22.7%
Equal	47.9%	40.3%	39.3%	53.3%
Won most	20.8%	23.9%	44.6%	22.7%
Won all	2.1%	0.0%	3.6%	1.3%
Competitive Level Representation in Profiles				
Level 1s	40.0%	43.5%	77.8%	48.8%
Level 2s	42.5%	30.4%	13.3%	36.6%
Level 3s	17.5%	26.1%	8.9%	14.6%
Competitive Division Representation in Profiles				
Elite	32.6%	22.4%	44.6%	22.9%
National	44.2%	43.3%	25.1%	41.4%
National Select	16.3%	14.9%	8.9%	10.0%
State	2.3%	7.5%	7.1%	8.6%
Regional	4.6%	11.9%	14.3%	17.1%
Years Participating by Profile				
Mean (SD)	5.90 (1.93)	5.75 (1.76)	5.83 (2.45)	5.33 (2.37)
Years with Team by Profile				
Mean (SD)	1.88 (1.10)	1.94 (1.27)	2.35 (1.68)	1.68 (1.06)
Weekly Training Hours by Profile				
Mean (SD)	8.12 (3.65)	6.70 (2.82)	7.36 (2.83)	6.00 (2.03)

Profile Group Difference Analysis

A one-way MANOVA was conducted to determine whether there were motivational climate profile differences on the dependent variables of interest in the present study (i.e., vigor, dedication, confidence, enthusiasm, global athlete engagement, and effort). The multivariate effect was significant, Pillai's trace = 0.19, $F(21, 726) = 2.45$, $p < 0.001$, $\eta_p^2 = 0.07$. Follow-up ANOVAs yielded significant univariate effects for all well-being-related variables with effect sizes ranging from 5% to 11% variance explained (see Table 12). Scheffé *post hoc* comparisons ($p < 0.05$) of the profile groups estimated marginal means were conducted for all dependent variables exhibiting a significant univariate effect to assess the nature of these differences. Significant differences were in theoretically expected directions. Specifically, those in the two least adaptive climate profile (*CP LT/HE* and *Peer LT*) reported significantly lower perceptions of all engagement, effort, and continuation variables than those in the most adaptive climate profile (*CP HT/LE*). The *CE/PT* group generally did not differ from the other groups with the exception of reporting higher confidence than those in the *CP LT/HE* profile. A separate one-way ANOVA excluding 18-year-olds was conducted and revealed significant differences in continuation perceptions across profiles, $F(3, 232) = 9.20$, $p < 0.001$, $\eta_p^2 = 0.11$. Those in the *CP HT/LE* group reported significantly higher continuation intentions than the three profile groups. Overall, the comparisons suggest that those reporting relatively lower task-involving climate perceptions (e.g., coach and peer or just peer climate) exhibit less adaptive athlete engagement, effort, and intention to continue.

Table 12. Univariate F, Effect Size, and Cluster Means, Standard Deviations, and Standardized Scores for Athlete Engagement, Effort, and Intention to Continue Variables

Variable	$F_{21, 726}$	n_p^2	Cluster							
			CP LT/HE (n = 48)		Peer LT (n = 69)		CE/PT (n = 61)		CP HT/LE (n = 77)	
			Mean (SD)	z	Mean (SD)	z	Mean (SD)	z	Mean (SD)	z
Vigor	3.71*	.05	4.19 ^a (0.63)	-0.18	4.19 ^a (0.63)	-0.18	4.28 ^{ab} (0.59)	-0.03	4.48 ^b (0.52)	0.30
Dedication	5.43**	.07	4.36 ^a (0.76)	-0.36	4.46 ^a (0.53)	-0.18	4.58 ^{ab} (0.54)	0.04	4.73 ^b (0.34)	0.31
Confidence	9.23**	.10	3.77 ^a (0.88)	-0.51	3.99 ^a (0.66)	-0.20	4.27 ^b (0.56)	0.20	4.35 ^b (0.58)	0.31
Enthusiasm	6.19**	.07	4.39 ^a (0.68)	-0.23	4.39 ^a (0.69)	-0.23	4.50 ^{ab} (0.67)	-0.50	4.77 ^b (0.39)	0.39
AE Global	8.86**	.11	4.18 ^a (0.62)	-0.40	4.26 ^a (0.49)	-0.24	4.41 ^{ab} (0.47)	0.06	4.58 ^b (0.38)	0.40
Effort	5.23**	.06	6.23 ^a (0.86)	-0.23	6.30 ^a (0.67)	-0.20	6.48 ^{ab} (0.77)	0.13	6.67 ^b (0.45)	0.33
◇ Continue	9.20**	.11	4.46 ^a (2.11)	-0.33	4.82 ^a (2.01)	-0.16	4.84 ^a (2.37)	-0.15	6.09 ^b (1.67)	0.44

Note. * $p < .05$, ** $p < .01$. Post hoc comparisons conducted for variables with significant univariate F. Cluster differences ($p < .05$) on variable scores indicated by distinct superscripts (*a* represents a lower value, *b* represents a higher value). ◇ One-way ANOVA $F_{3,232} = 9.20$, $p < .001$.

Discussion

The first purpose of this study was to identify existing motivational climate profiles within adolescent sport teams. To date, this is the only study that captures the complexity of the social youth sport context by clustering both coach and peer motivational climate variables. However, previous achievement goal theory research has identified general team, coach, and teacher climate profiles as well as goal orientation profiles using similar person-centered approaches. The distinct profiles that emerged in the present study cannot be directly compared to previously identified climate profiles due to differences in the variables that were cluster analyzed. Therefore, more cautious discussions of the general similarities and differences among the various achievement goal theory profiles are presented.

Prior to conducting the primary analysis for this study, the associations between and among coach and peer climate variables were assessed. Previous achievement goal theory research has considered task- and ego-orientations as independent constructs (Duda & Nicholls 1992; Fox, Goudas, Biddle, Duda, & Armstrong, 1994; Harwood, Cumming, & Fletcher, 2004; Roberts, Treasure, & Kavussanu, 1996; White & Duda, 1993; Smith et al., 2006) suggesting individuals can hold high or low perceptions of both orientations simultaneously (i.e., high task/high ego). Though less consistent, task- and ego-involving motivational climates have also been identified as independent to one another (Ames, 1984; Miller, Roberts, & Ommundsen, 2004; Ommundsen, Roberts, & Kavussanu, 1998; Ommundsen, Roberts, Lemyre, & Treasure, 2003). In the present study, the significant negative coach task- and ego-involving climate ($r = -0.57$) as well as peer task- and ego-involving climate ($r = -0.40$) associations were weak to moderate. While the relationships in the present study between these variables do not support the conceptualization of motivational climate types as orthogonal, the associations suggest a possibility of perceiving both task- and ego-involving climates simultaneously reinforced within a team. Further, coach and peer motivational climate perceptions were significantly correlated with each other with the strength of their association varying from weak to moderate ($r = |.21| - |.50|$). The magnitude of these relationships was nearly an exact replication of that found in previous coach and peer motivational climate research ($r = |.20| - |.49|$; Vazou et al., 2006). Aligning with previous research (Vazou, 2010; Vazou et al., 2006), these associations showed preliminary support for the idea that peer motivational climate perceptions in the present study are not a direct reflection of the coach motivational climate. The weaker strength of these associations, especially between coach ego-involving and peer task-involving climate perceptions ($r = -0.21$), suggested the possibility of identifying athletes possessing distinct coach

and peer climate perceptions (e.g., high coach ego, low peer ego). Collectively, these findings suggest that it was warranted to utilize cluster analysis to identify profiles characterized by unique combinations of coach and peer climate perceptions.

Similar to previous motivational climate profile research (Boixadós, Cruz, Torregrosa, Valiente, 2004; Goudas & Biddle, 1994; Horn et al., 2012; Kipp et al., 2019; Ommundsen et al., 1998; Ommundsen et al., 2003), four distinct groups best represented the climate perceptions of those in the present sample. Profiles that conceptually may be considered fully adaptive and maladaptive, respectively, as well as two mixed profiles were observed. The fully adaptive profile (i.e., *CP HT/LE*) that emerged was characterized by relatively high coach and peer task-involving as well as low coach and peer ego-involving climate perceptions. The fully maladaptive profile (i.e., *CP LT/HE*) is considered the antipode to the *CP HT/LE* profile with relatively low coach and peer task-involving as well as high coach and peer ego-involving climate perceptions. Additionally, the mixed profiles that emerged were either characterized by one (i.e., *Peer LT*) or two (i.e., *CE/PT*) relatively high as well as two or three moderate coach and/or peer climate perceptions. Initially, it was unclear which of the two mixed profiles was significantly more or less adaptive. Follow-up analysis suggests the *Peer LT* profile may be the less adaptive climate of the two. Specifically, profile means suggest that the *Peer LT* profile is more similar to the *CP LT/HE* profile than any other profile in the sample. Altogether, the composition of the profiles identified in the present study have some similarities to previous motivational climate profiles, but they also offer novel findings that contribute to the current motivational climate knowledgebase as a whole. These findings support the study's first hypothesis that distinct climates with varying combinations of climate perceptions would be identified within the sample.

Previous motivational climate profile work has more frequently relied upon median or mean split methods when identifying adult-created or general team climate profile groups (Goudas & Biddle, 1994; Horn et al., 2012; Miller et al., 2004; Ommundsen et al., 2003). The present research differs in that it incorporated peer motivational climate perceptions and utilized cluster analysis to identify distinct groups. Novel and meaningful groups were identified within the present sample that did not directly reflect those found in previous research. This is in part due to the fact that median split strategies mask the relevance of moderate climate perception scores, while cluster analysis does not. Median split profiling methods produce four motivational climate groups by design: 1) high task/high ego, 2) high task/low ego, 3) low task/high ego, 4) low task/low ego. This contrasts with cluster analysis which uncovers naturally occurring profiles in the data. Present sample profiles mapped well to the high task/low ego and low task/high ego groups, but profiles high in both task and ego for either coach or peer climate perceptions did not emerge. In fact, this profile type did not emerge across the range of cluster solutions tested (e.g., k-means cluster range from 2-6). One cluster (e.g., *CE/PT*), however, was characterized by climate perceptions trending in that direction with a peer ego z-score just shy of the criterion value of ± 0.5 (e.g., z-score = 0.43). It is possible additional constellations of coach and peer motivational climate perceptions exist in youth athlete samples. Future research should employ a similar person-centered approach to capture these naturally occurring profiles.

Previous motivational climate literature has identified a number of factors that contribute to differences in climate perceptions in youth sport (Ntoumanis & Biddle, 1999; Vazou, 2010). Similar descriptive differences were observed in the present motivational climate profiles, and additional factors were explored. Overall, the majority of athletes in this sample fell within the more adaptive climate profiles and perceived their climate to be generally more task-involving.

Given that the sample included only female athletes, this finding is consistent with previous research that suggests female athletes may be more sensitive to perceiving more task-involving cues than their male counterparts (Kavussanu & Roberts, 1996; Vazou et al., 2006). This may be linked to the previous finding that female athletes are more likely to evaluate their competence based on self-referenced criteria, such as skill improvement, rather than relying on peer comparison (Horn, Glenn, & Wentzell, 1993).

Controlling for athlete sex by only including female athletes in the present study limited potential noise in the data regarding sex differences. This enhances confidence in the authenticity of the profiles that emerged as genuine representations of young girls' motivational climate perceptions. If a sample included male and female athletes, then the profiles that would emerge would be capturing complex interactions of motivational climate perceptions within the whole sample. Comparisons between the sexes would occur by examining male and female representation within each profile, which would not provide any information about how the structure of the profiles may differ by sex. It is unclear if the profiles that emerged in the present study would also emerge in an all-male sample. Previous research has indicated that male athletes may be exposed to and perceive more ego-involving cues (Kavussanu & Roberts, 1996; White, Kavussanu, & Guest, 1998; Vazou et al., 2006). It is possible that profiles characterized by more prominent ego-involving perceptions may emerge within a sample of male athletes. Future research revealing potential sex differences in motivational climate profiles will further understanding of the socialization experiences of young male and female athletes.

Differences in athlete age, coach sex, and team success were also observed among the profiles. Younger athletes perceived more adaptive coach and peer motivational climates that are characterized by high task-involving climate perceptions, while older athletes reported

perceiving climates with a greater ego-involving presence. This is not entirely surprising because the structure of sport changes as children age, with a greater emphasis on competition and winning at higher levels of participation. Differences in age representation across profiles suggest that this may be a fruitful area to investigate more closely in future motivational climate research. Specifically, work capturing late childhood and early adolescence may highlight differences in the types of cues individuals attend to or perceive more often. Differences in young people's understanding of and ability to distinguish between effort and ability around this time period may suggest that there could be differences whether or not they perceive ego-involving cues within a team (Fry & Duda, 1997). Additionally, motivational climate research using a developmental framework may also identify shifts in the salience of motivational climates reinforced by different agents. Limited previous research has indicated that in a sample spanning 11 to 17 years, parent and coach motivational climates are significant predictors of young athletes' sport behaviors but peer motivational climate is not for the youngest athletes (Davies et al., 2015). A greater understanding of the developmental salience of these climates may help inform how different individuals shape optimal experiences for young people through their contributions to the sport social context.

Previous research has found that female coaches are more often linked to higher task-involving climate and male coaches to higher ego-involving climate (Vazou, 2010). However, this seems to be only partially supported by the profiles marked by higher task-involving climate perceptions that emerged in the present study. First, the representation of male coaches was highest in profiles marked by high ego-involving climate perceptions. Next, female coach representation was highest in the high task-involving climate perceptions. And somewhat surprisingly, the low peer task profile had high female coach representation. This finding

warrants further exploration as coach sex may not be as meaningful a predictor of climate perceptions specific to peers.

Lastly, athletes on more successful teams were over represented in the profile characterized by high coach ego- and peer task-involving climate perceptions. It is possible that this unique combination of climate perceptions where athletes feel equally challenged and supported contributes to optimal training, leading ultimately to enhanced performance. However, this study was not causal, and it would be premature to speculate. Future research might consider studying the training and performance consequences of being on a team where the coach and peer motivational climates are contradictory. This may clarify whether or not this climate profile is truly adaptive as this remains somewhat uncertain.

Collectively, these difference findings align with previous research suggesting that group- and team-level factors (e.g., team success, coach's sex, athlete sex, athlete age) explain some of the variance in coach and peer climate perceptions within a team (Vazou, 2010). Future research should aim to replicate the profiles that emerged across a broader sample of athletes from different sport types and within a broader age range. It is possible that differences in representation of these various factors across profiles will be even more distinct than they presently are.

The second purpose of this study was to examine potential profile differences on perceptions of athlete engagement, effort, and intention to continue. A series of comparative analyses were used to assess these differences (i.e., MANOVA). The obtained effect sizes were small (5-11%) but explained a meaningful portion of the variance in study outcome variables. These effect sizes are comparable to previous person-centered achievement goal theory research examining profile differences on sport-related motivational outcomes (Smith, Balaguer, & Duda,

2006). It is important to consider the effect sizes relative to the variability of responses in the sample. Athlete engagement scores were relatively high in the sample with means across dimensions ranging from 4.13 to 4.56 on a 5-point Likert scale. This suggests there is a relatively restrictive range in athlete engagement scores in the sample. A similar pattern was found for effort perceptions in that most athletes in the sample perceived they put forth exceptionally high effort. Nonetheless, significant differences emerged within this highly motivated sample and as based upon rather conservative Scheffé post hoc analyses. The effect sizes are small when interpreted at face value, but meaningful when these considerations are taken into account.

Unsurprisingly, the most theoretically maladaptive and adaptive climate profiles differed from one another significantly across all markers of engagement, effort, and intention to continue. Possibly more surprising is the finding that the climate profile characterized by low peer task-involving climate perceptions and moderate levels of the remaining climate variables showed similar profile differences. Specifically, athlete engagement, effort, and intention to continue perceptions were also significantly lower than the consistent high task/low ego climate profile. In general, the mean scores of outcome variables associated with this profile were higher than the climate marked by consistently high ego- and low task-involving climate perceptions. Finally, the only profile marked by different dominant coach and peer climate perceptions that emerged was not often significantly different from the other profiles. Athletes in this profile reported significantly higher confidence than those in the least adaptive climate profile and lower intentions to continue than those in the most adaptive profile. Collectively, these findings suggest the presence of a task-involving climate may be the key to higher quality sport experience regardless of the presence of ego-involving climate behaviors and attitudes from coaches or peers.

The finding that task-involving motivational climate is conducive to more adaptive perceptions of engagement, effort, and intentions to continue is certainly in line with previous research on this construct (Ntoumanis & Biddle, 1999). However, the composition of the climate profiles and the comparative analyses suggest that in the presence of an ego-involving climate, athletes may not always experience negative effects. This aligns with previous motivational climate research that has indicated that the ego-involving climate may not contribute as strongly or at all to the quality of athletes' experiences (Magyar, Feltz, & Simpson, 2004; Vazou et al., 2006). It appears in the present sample and others (Horn et al., 2012; Boixadós et al., 2004) that low task-involving climate perceptions may be what is tied to less adaptive experiences. For example, Boixadós and colleagues (2004) identified two climate profiles characterized by low task-involving perceptions that were significantly lower than high task-involving profiles on perceived ability, satisfaction, and moral behaviors. Ommundsen and colleagues' (2003) work suggests that ego-involving climate perceptions irrespective of perceived level of task-involving climate, tied to more anti-social behaviors and perspectives. Currently, previous research along with the findings of the present study tell conflicting stories regarding the ego-involving motivational climate. It appears that the positive effects of high task- and ego-involving climate perceptions may vary as a function of the outcome variables examined.

A unique finding of the present study was that associated with the profile marked by low peer task-involving climate and moderate perceptions of all other climate variables. Specifically, this profile was less adaptive than the *CE/PT* profile as it showed significantly lower mean scores across outcome variables than the high task/low ego profile. This suggests that the presence of a peer task-involving motivational climate may be especially important to how this group of young female athletes engage in their sport. This is unsurprising as peer task-involving

climate has been found to be facilitative of many adaptive individual- and group-level youth sport experiences (García-Calvo et al., 2014; Ntoumanis et al., 2007). Additionally, previous research has indicated that female athletes report higher perceptions of task-involving climate cues within their team (Vazou et al., 2006). This may contribute to an expectation that girls' teammates should encourage improvement, effort, and relatedness among one another. Therefore, the lack of a climate marked by task values may be linked to more negative side effects for female athletes than male athletes.

Given the lack of clarity on the salience of the profile characterized by different dominant coach and peer climate types (i.e., *CE/PT*), investigation into the demographics of this profile were warranted. Further analysis of the profile indicated that it is comprised of older athletes who have won most competitions at the highest level of play. It is possible having higher confidence perceptions may be a byproduct of not only team success (i.e., winning) but also individual success (i.e., college recruitment). As older athletes, they have endured shifts in the level of competition and have been successful enough to continue their participation at an elite level. Additionally, opportunities for less competitive youth volleyball participation are not as readily available later in adolescence. Future coach and peer motivational climate profile research may or may not support such ideas and may identify other possible combinations of climate perceptions. Team success appears to repeatedly tie to climate perceptions, but further investigations of individual success may offer clarity in how the concept of success relates specifically to how individual athletes perceive their sport motivational climate. Lastly, athletes reported being a member of their current team for over two years, which is the highest among the climate profiles. Commitment to the same team for a number of years may indicate that athletes are satisfied with social- or performance-related features of their experience. It is also possible

that the coach and teammates fulfill separate needs of the young athlete that complement each other. More research is needed to determine if there may be a temporal or even developmental effect in how coach and peer motivational climates are perceived. For example, assessing athletes' climate perceptions over multiple years of participation may highlight shifts in the social-motivational salience of climates created by different social agents. Taken together, the descriptive features of this climate profile align with previous goal orientation literature that suggests elite athletes have a tendency to be higher in task- as well as ego-orientation (Pensgaard & Roberts, 2000)

Altogether, the present study's findings support the hypothesis that at least one profile would emerge that shows athletes to perceive coach and peer climates similarly and another characterized by perceptions of coach and peer climates that differ from one another. Future research is needed to determine if these climate profiles are replicable using similar person-centered approaches across youth athlete populations. Additionally, the present sample only captured one mixed profile characterized by differences in the dominant climate a coach promotes in comparison to peers (i.e., *CE/PT*). Novel profiles could emerge in future research given the range of potential combinations of motivational climate perceptions. For example, some athletes may perceive their peers create and maintain relatively high ego- and low task-involving climates while their coach actively promotes relatively low ego- and high task-involving climates. Future research with broader samples should aim to determine if profiles marked by differences in coach and peer motivational climate perceptions are prevalent in other forms. Again, this work should target a broader age range, both male and female athletes, and diverse sport types to enhance the present understanding of combined coach and peer motivational climate perceptions.

The second hypothesis in this study was partially supported in that differences among the climate profiles in athlete engagement, effort, and intention to continue were significant. However, falling within the *CE/PT* profile does not appear to be significantly beneficial or detrimental. Athletes in the present study did not frequently differ from their peers in the remaining profiles on this study's specific outcome variables. One possibility for this may be due to the restricted range in athlete engagement scores reported. It would be interesting to learn if young athletes tend to report relatively high athlete engagement similar to those in the present study. Additionally, it is unclear if these findings would be replicated using different outcome variables. It is possible that meaningful differences can be found between profiles when assessing different motivation and well-being related variables. A potential area for future research would be to assess differences in burnout and engagement perceptions as some researchers view these as important maladaptive and adaptive experiential aspects of sport (Lonsdale et al., 2007). Additionally, this study utilized cross-sectional design and was a snapshot of the athletes' perceptions at one timepoint within the competitive season. It is unknown whether or not the *CE/PT* profile would significantly differ from others over time or at a different point in the season. Future longitudinal examinations could provide further clarity on the salience of perceiving different dominant coach and peer climates (e.g., high coach task/high peer ego).

In summary, the findings from the present study suggest that relatively high coach and peer task-involving and low ego-involving climate perceptions link to the most adaptive outcomes. Additionally, the present study suggests that when coaches and peers promote different climate types from one another it may actually associate with higher quality sport engagement. This was due in part to the presence of high peer task-involving perceptions in the

CE/PT profile. Across profiles it is evident that the task-involving climate is the more facilitative climate. Additionally, a lack of a task-involving climate, regardless of the level of ego-involving climate, may be linked to lower quality engagement, effort, and intentions to continue. Thus, coaches and peers should be mindful of how they contribute to or take away from task-involving climate cues in their teams. The present findings provide some evidence that perceiving high coach ego-involving climate along with high peer task climate may lead to more adaptive self-perceptions. A broader analysis of how these conflicting perceptions link to relevant sport-related motivation and well-being variables and how they do so over time may offer greater clarity to the potential benefits and detriments of the presence of said climate perceptions. In conclusion, by demonstrating and encouraging task-involving climate behaviors, attitudes, and values, coaches and peers thereby serve to promote higher quality athlete engagement and effort as well as a greater likelihood of continuing participation in competitive youth sport.

CHAPTER 4: GENERAL DISCUSSION

The social nature of adolescent physical activity contexts affords young people frequent interactions with key social agents who influence the quality of experiences and facilitation of psychosocial outcomes (Fraser-Thomas, Côté, & Deakin, 2005; Weiss & Raedeke, 2004). The sport context provides a unique opportunity through which these interactions and relationships can be examined (Smith, Ullrich-French, Walker, & Hurley, 2006; Ullrich-French & Smith, 2006). The adolescent period is characterized by a shift in the importance of particular relationships where a greater dependency on peers emerges. During this developmental period, the salience of peers increases when the frequency of peer interaction is heightened and children aim to develop a better sense of self in relation to others through peer norm-referencing and relationship building (Fry, 2000; McCarthy & Jones, 2007; Roberts, 1993; Sullivan, 1953).

Investigations of peer contributions to the broader social climate are warranted in that they foster a greater understanding of the complexities of this dynamic system that is particularly salient during adolescence. Peer research in the physical domain has developed significant traction over recent decades though it remains an understudied vein of the social climate relative to work focused on other agents (Smith, 2019; Smith, Mellano, & Ullrich-French, 2019). The extant work indicates that peers can foster or undermine positive youth sport involvement that may have long-term implications. One of the ways in which they do this is through their communication for success and failure within their respective teams. This is examined in the context of peer motivational climate, which is a set of situational goal or reward structures emphasized within a team. Athletes attitudes, behaviors, and values shape these climates which are characterized by rewarding mastery (i.e., task-involving) and social comparison (i.e., ego-

involving). These climate types link with various motivation and well-being variables relevant in the adolescent sport context.

The mastery and social comparison climates previously described have been identified as key predictors of adolescent athletes' self-perceptions, sport-related affect, and various adaptive and maladaptive behaviors (García-Calvo et al., 2014; Ntoumanis, Vazou, & Duda, 2007; Ntoumanis, Taylor, & Thørgersen-Ntoumani, 2012; Vazou, Ntoumanis, & Duda, 2006). Athlete perceptions of a task-involving peer motivational climate tend to associate with adaptive psychosocial outcomes in sport (i.e., enjoyment, commitment, and team cohesion), whereas perceptions of an ego-involving peer motivational climate generally associate with maladaptive outcomes (i.e., athlete burnout, anxiety, and antisocial attitudes). Research has also suggested there are intra-team differences in peer motivational climate perceptions (Vazou, 2010). This suggests athletes within the same team most likely do not experience the same experiential consequences as another member of their team due to their respective climate perceptions. Thus, it is important to examine features of their sport context that may contribute to these differences in order to better understand variation in the strength of associations between the climate and various psychosocial outcomes.

This dissertation was designed to closely examine the role of peers in shaping adolescent sport experiences by specifically targeting how the peer motivational climate associates with relevant sport-related psychosocial outcomes. Using person-centered approaches, the two studies in this dissertation addressed two knowledge gaps, including: (1) an understanding of the potential variation in the strength of associations between peer motivational climate and sport-related well-being as a function of individual differences in peer relationships and (2) an

understanding of how perceptions of peer motivational climate along with perceptions of coach motivational climate associate with the quality of young athletes' engagement.

Both studies account for additional environmental factors (e.g., peer relationships and coach motivational climate perceptions) to help explain how the peer motivational climate associates with young athletes' adaptive and maladaptive achievement patterns. Collectively, the results of this dissertation reinforce the importance of peer relationships in youth sport, highlight the importance of the peer motivational climate to adolescent sport experiences, and suggests the salience of the peer motivational climate may be dependent on additional features of the broader social context. The following discussion will summarize the findings of this dissertation project, highlight study limitations, and offer potential avenues for future research.

Given previously identified within-team differences in peer motivational climate perceptions (Vazou, 2010) and the salience of peer acceptance and friendship quality during adolescence (Sullivan, 1953), it was reasonable to believe peer relationships may be a significant factor within the social context that brings out differences in climate and well-being associations. Therefore, Study 1 was designed to capture distinct peer relationship profiles that may explain individual differences in how the peer motivational climate associated with sport enjoyment, anxiety, and athlete burnout in competitive adolescent sport. Five distinct profiles emerged from clustering peer acceptance, friendship quality, and friendship conflict variables that resembled those previously identified (Seidman et al., 1999; Smith, Ullrich-French, Walker, & Hurley, 2006). The five profiles were characterized as *~Isolate* (moderate peer acceptance, high friendship quality, high friendship conflict), *Reject* (low peer acceptance, low friendship quality, high friendship conflict), *Survive* (low peer acceptance, moderate friendship quality, moderate friendship conflict), *Thrive* (high peer acceptance, high friendship quality, low friendship

conflict), *~Alpha* (moderate peer acceptance, moderate friendship quality, high friendship conflict).

These profiles were assessed for differences in perceptions of peer motivational climate as well as enjoyment, anxiety, and burnout. In general, the more adaptive profiles perceive the motivational climate as more task-involving. Additionally, more adaptive profiles tended to report higher sport-related well-being (e.g., lower anxiety). Next, differences in motivational climate—well-being associations were assessed by profile. Fully adaptive (*Thrive*) and maladaptive (*Reject*) profiles showed few significant associations. The mixed profiles (*~Isolate*, *Survive*, *~Alpha*) were more sensitive to the peer motivational climate on their team. More specifically, the profile characterized by average quality sport friendship combined with relatively low peer acceptance exhibited a more consistent pattern of meaningful correlations between task-involving climate dimensions as well as enjoyment, anxiety, and burnout, than did other profiles. It appears that athletes in this profile benefit from perceiving their teammates promote a more task-involving climate, as this was tied to heightened enjoyment as well as lower anxiety and burnout. Thus, peer relationships in sport may determine the salience of peer motivational climate to well-being of adolescent athletes.

A particularly important finding of this study was the peer relationship profiles that emerged resembled those previously identified within and outside the context of sport (Seidman et al., 1999; Smith et al., 2006). This suggest stability in these profiles and enhances generalizability. This work and future profile work revealing similar variations in peer relationship quality will give structure to a complex and multilayered peer social system (Holt, Black, Tamminen, Fox, & Mandigo, 2008). This has potential to inform how peer relationships are understood across achievement domains. Future research is needed that addresses why

differences emerge between the fully adaptive and maladaptive profiles in comparison to the mixed profiles. It is possible that those in the *Thrive* and *Reject* profiles have a sense of clarity in their relationship status within the team and are therefore affected to a lesser degree by the existing climate. Previous youth sport participation literature has indicated that children may choose to participate in sport for social reasons (Allen, 2003, 2005; Allender, Cowburn, & Foster, 2006; Gould & Petchlickoff, 1998). Those reasons may differ across profiles making the climate more or less salient. Peer research has also demonstrated a significant tie between athletic and social competence or peer acceptance (Horn & Weiss, 1991). It is possible those with lower peer acceptance simply have lower athletic ability and benefit from being involved in a climate that does not emphasize comparison of ability (task-involving climate).

The first study of this dissertation provided evidence that variations in the quality of peer relationships were tied to differences in how peer motivational climate perceptions linked with well-being variables. More specifically, the findings indicated that the peer task-involving climate may serve as a protective climate for those who do not have optimal relationship quality. Study 2 was designed to capture another salient feature of the sport social context by assessing perceptions of the coach contributions to the broader team climate. Specifically, this study explored the engagement, effort, and continuation consequences of perceiving *consistent* or *conflicting* coach and peer climate perceptions. Four profile groups highlighting unique combinations of coach and peer motivational climate perceptions emerged from the dataset. The four profiles were characterized as *CP LT/HE* (low coach and peer task, high coach and peer ego), *Peer LT* (moderate coach task and ego, low peer task, moderate peer ego), *CE/PT* (moderate coach task, high coach ego, high peer task, moderate peer ego), and *CP HT/LE* (high coach and peer task, low coach and peer ego).

These profiles were assessed for differences in perceptions of the dimensions of athlete engagement, effort, and intentions to continue sport participation. Fully adaptive and maladaptive profiles reported the highest and lowest scores across all outcome variables respectively. The mixed profile characterized by low peer task-involving climate showed similar low scores also significantly different from the most adaptive profile. The one climate profile characterized by high coach ego- and high peer task-involving climate perceptions was generally not significantly different from other profiles. The means associated with this profile indicate that it is more adaptive than not. Findings associated with the mixed profiles suggest the peer task-involving climate may be particularly meaningful in shaping quality adolescent sport involvement.

Future research is needed to understand the impact of perceiving mixed team climate profiles like those found in this second study. Specifically, investigations should replicate the cluster analytic techniques with the intent to confirm the existence of the profiles found or discover novel combinations of coach and peer motivational climates. The structure of goal orientation or motivational climate profiles has been fairly consistent when cluster analytic techniques have been used (Harwood et al., 2003; Smith et al., 2006), but more work is needed that creates climate profiles of different agents. The profile group difference analysis in this study suggests that the peer task-involving climate is especially salient within this particular sample. This is similar to findings from previous motivational climate median-split profile work (Horn, Byrd, Martin, & Young, 2012). Unlike previous profile research (Ommundsen, Roberts, Lemyre, & Treasure, 2003), the function of the peer ego-involving climate in this data set was less clear as it did not emerge as high or low in either mixed profile. Perceiving the absence of peer task-involving climate when no other climate type is dominant appears to put athletes in

jeopardy of experiencing maladaptive outcomes. Further, this climate type may be protective when coaches promote ego-involving climates. Another possibility is that athletes competing at more competitive levels are more likely to accept when their coaches encourage social comparison over mastery and the presence of a coach ego-involving climate has minimal effect on the quality of their sport involvement (Horn et al., 2012).

To summarize, these studies used person-centered approaches to examine the role of the peer motivational climate in conjunction with additional features in the broader sport social climate to understand how young athletes may experience higher quality sport participation. Combined, results align with extant peer motivational climate research that suggests the task-involving climate and ego-involving climate associate with adaptive and maladaptive psychosocial outcomes respectively (Ntoumanis et al., 2007). Additionally, this research reinforces the importance of considering peers and peer relationships in the adolescent sport context (Smith, 2003; Smith, 2019). Collectively, the findings of this dissertation suggest that the peer task-involving climate may serve a protective function within the adolescent sport context. Specifically, perceiving higher levels of a peer task-involving climate within a team when other social-motivational phenomena are suboptimal gives athletes an opportunity to have higher or improved quality experiences in comparison to when they perceive the low peer task-involving climate. This is supported in Study 1 by the strengthened and adaptive task—well-being associations that emerged for athletes within the mixed peer relationship profiles. This is also supported in Study 2 by the low engagement, effort, and continuation scores that associated with a low peer task climate profile and higher scores when athletes perceived a high peer task-involving climate as well as with high coach ego-involving climate.

It is interesting to find that the peer task-involving climate may act as a buffer to maladaptive outcomes when suboptimal social-motivational phenomena are present. It is possible this occurs because this climate type satisfies fundamental needs particularly relevant to young athletes. In particular, the presence of this climate may fulfill individuals' needs for relatedness and competence. This idea aligns with basic psychological needs theory that identifies autonomy, relatedness, and competence as essential nutrients for growth and healthy functioning (Deci & Ryan, 2000). When these are satisfied, more intrinsic motivation, adaptive functioning, and well-being are expected (Ryan & Deci, 2002). This connection is unsurprising as the construction of the peer motivational climate measure used in the present study was informed by achievement goal theory and self-determination theory (Ntoumanis et al., 2005; Vazou et al., 2005). The opportunity to sense connection among teammates is heightened in this climate as it promotes relatedness support. Athletes who perceive high peer task-involving climate have an opportunity to feel a greater sense of competence regardless of their skill due to the focus on self-referenced criteria for success. Therefore, this high peer task-involving climate may satisfy needs whereas the absence of a peer task-involving climate may result in needs thwarting (Bartholomew, Ntoumanis, Ryan, & Thørgersen-Ntoumani, 2011). It is an encouraging avenue for future research to advance the current understanding of how and when the peer task-involving climate may serve a protective function against negative features within the broader social context.

While the present dissertation makes meaningful contributions to the study of peers in competitive adolescent sport settings, it is not without limitations. These limitations do not apply to both studies equally, but they generally include the following: 1) cross-sectional design, 2) measurement issues, 3) sample demographics, and 4) profile analysis methodology.

First, the use of cross-sectional and survey-based design in both studies limits the conclusions that can be made. Previous elite athlete research has indicated that how peer motivational climate perceptions link to psychosocial outcomes may differ over the course of a competitive season (García-Calvo et al., 2014). The findings of the present studies capture perceptions at the midpoint of the season but provide no evidence of temporal effects of peer motivational climate perceptions. Therefore, no causal conclusions can be discussed. Other youth athlete research has used a prospective design where peer climate perceptions were assessed early in the season and behavioral data was collected throughout a season (Jõesaar, Hein, & Hagger, 2011). However, this research does not truly capture how potential variations in climate perceptions contribute to changes in psychosocial outcomes. Therefore, assessing youth athlete climate perceptions multiple times throughout a sport season would be particularly informative as there is limited information in this area.

Second, the first study faced issues with the reliability of the intra-team competition and ability subscale scores. This too limits the conclusions that could be made about findings specific to the ego-involving climate. Fortunately, these issues did not emerge in the second study. However, these measurement issues are not uncommon in the peer motivational climate literature (Hein & Joessar, 2015; Ntoumanis & Vazou, 2005; Smith, Gustafsson, & Hassmén, 2010; Vazou, 2010; Vazou, Ntoumanis, & Duda, 2006). Study 2 offers possible alternative items to reliably capture this dimension of the climate, but future research should aim to discover what may be contributing to unreliable scores. For example, the reliability scores in Study 1 were assessed as a whole sample, boys only, and girls only. Though still considered unreliable, the alpha coefficient was higher for female athletes. This exploratory finding from Study 1 and the

reliable scores in Study 2, where sex was controlled for by only including female athletes in the sample, suggest that reliability of the subscale scores may differ by athlete sex.

Third, the samples in these studies were both a strength and a potential limitation to the generalizability of the findings based on these four identifiers: 1) sport type, 2) athlete sex, 3) athlete age, and 4) race/ethnicity. Future peer relationship and motivational climate research should be mindful of these limitations in designing and executing studies in youth sport context. Both studies controlled for potential sport type differences by sampling only from youth soccer players (Study 1) and youth volleyball players (Study 2). These sports were selected for the two studies for a number of reasons. Both sports are considered “team” sports where there are a significant number of individuals on the roster who participate in coactive play. This suggests that frequent interactions with teammates occurred within every training and practice. Interactions with teammates regularly may allow for more tangible peer motivational climate to be created. Particularly in the soccer sample, the roster size of each team suggested that there may be greater variability in the quality of peer relationships existing within the team. The smaller roster size of volleyball teams increased the probability of collecting data from the majority of athletes within a team. Twelve teams in the sample were represented by eight or more athletes, suggesting that most athletes on these teams participated in the present study. Capturing perspective of most athletes on a team strengthens the findings that emerge from any team-level analyses that are conducted.

Future peer motivational climate research should consider sampling from diverse sports including those that may be classified as “individual” as these athletes tend to train with others but compete alone. Early qualitative investigations that laid the conceptual landscape for the development of the Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ;

Ntoumanis & Vazou, 2005; Vazou, Ntoumanis, & Duda, 2005) included athletes from both individual and team sports in the sample. Therefore, the contents of the PeerMCYSQ should be applicable to individual sport athletes as well. However, these athletes are neglected in the peer motivational climate literature. An effort to avoid differences between sexes was made in Study 2 by sampling from only female athletes. While this can be viewed as a strength of the study, it also limits the generalizability of the findings outside of the specific context of adolescent female competitive volleyball. Future research should aim to ask similar questions but investigate in both male and female samples. It would be interesting to see if similar motivational climate profiles would emerge in male samples and if the peer task-involving climate would be as meaningful. Previous research suggests that boys tend to report higher peer ego-involving climate perceptions, while girls perceive more task-involving cues (Kavussanu & Roberts, 1996; Vazou, 2010; Vazou et al., 2006; White, Kavussanu, & Guest, 1998).

Athletes in the two studies fell into a relatively narrow age, which provides an in-depth analysis of the salience of peers and the motivational climate in shaping the quality of their sport experiences. Specifically, both studies sampled from 14 to 18-year-olds capturing middle-to-late adolescence. Future peer and motivational climate research should consider adopting a developmental approach to better understand the salience of age. Nicholls' (1989) achievement motivation theory served as a guiding framework for the present dissertation, but the developmental feature of this theory was not considered. Specifically, this framework acknowledges the importance of considering individuals' motivational perspectives across the lifespan due to changes in cognitive developmental processes that occur in childhood. Nicholls suggests that around age 12 children have gained a mature understanding of ability and are able to distinguish it from effort. Specifically, children are able to understand that high ability is

evident when individuals put forth less effort and demonstrate superior performance to others. This would suggest that as children age, they are more capable of identifying ego-involving cues in their team climate. It is also around this time when young people begin to effectively use their peers to determine their own competence, and competence perceptions are critical for sport continuation. Harter's (1978) competence motivation theory is another framework that could be used for similar developmental questions to understand the influence of different significant others as sources of competence information. Specifically, younger athletes may rely most heavily on adults as sources of competence, which in turn may make climate perceptions tied to adults most salient. Minimal motivational climate research has suggested there is a shift in motivational climate salience with age (Davies et al., 2015), but future work in the area specifically targeting age differences is warranted.

And finally, a very ethnically and racially diverse sample was obtained in Study 1 with a majority identifying as Hispanic/Latino (53.6%). Study 2 differed significantly with the majority identifying as White (85.6%). This dramatic ethnic and racial difference between the two samples was primarily driven by the region where data was collected. Specifically, the majority of the data from Study 1 was collected in the South Western part of the United States, while Study 2 data was collected solely in the Midwest in less diverse communities. The research in the present dissertation did not aim to explore racially/ethnically-related differences in peer relationships and peer motivational climate perceptions. However, further research may be warranted to understand if young people's identity plays a role in the salience of peer relationships and climate perceptions. It is premature to speculate whether or not these demographic differences between samples contributed to any differences in perceptions of study

variables. Future research should continue to collect from diverse samples in order to increase the generalizability of the findings.

Finally, the use of person-centered analysis in this study is certainly a strength of these studies as the research questions and outcomes were framed with reference to persons rather than variables (Magnusson, 1998). This method challenges the assumption underlying variable-centered approaches that the variable–outcomes relationship is the same across all members of the population (Laursen & Hoff, 2006). Person-centered methods assume population heterogeneity, suggesting different patterns of relationships occur for different people, and providing a more holistic view of the people being studied. Some argue that cluster analysis is limited in its generalizability because it is a data driven technique that explores structures within a given data set (Hair, Black, Babin, & Anderson, 2014). This would suggest that the profiles in this dissertation are specific to their relative *samples* and do not necessarily represent profiles that exist outside of these particular samples. The validity of that argument is lower for Study 1 because similar profiles have been identified in unique samples across settings (Seidman et al., 1999; Smith et al., 2006). Regardless of the low generalizability of this method, the analytic method was valuable in the present dissertation. Specifically, one study looked to replicate previously identified peer relationship clusters (Study 1) and the other asked an exploratory question about unique combinations of climate perceptions (Study 2).

This dissertation not only significantly contributed to the current sport peer knowledge base, but it also offers avenues for meaningful peer research in physical domains that extend beyond the limitations previously discussed. First, both studies examined a handful of outcome variables capturing athletes' well-being and engagement, but there are many others than should be investigated. Future research examining how the peer motivational climate links to

psychosocial outcomes should consider additional individual- and group-level outcomes (i.e., self-efficacy, team cohesion) (McLaren, Newland, Eys, & Newton, 2016). Moreover, there is a need for behaviors to be directly assessed (i.e., actual sport continuation) rather than perceptions of or expectations for certain behaviors (i.e., intentions to continue) (Ntoumanis et al., 2007). Additionally, future peer relationship profile work may consider examining the stability of an individual's placement in their profile as youth peer relationships are considered dynamic. Specifically identifying potential movement from one cluster to another and examining possible factors that may contribute to that shift in peer relationship quality would be informative. Further, previous research has found negative peer relationship constructs to be particularly salient in youth physical activity contexts (Delli Paoli, Smith, & Pontifex, 2017). Therefore, examining additional maladaptive peer relationship variables in profiles (i.e., social exclusion, peer rejection) may provide additional insight into existing relationship clusters in youth sport. Lastly, a longitudinal and developmental approach to motivational climate work may provide significant insight into how to facilitate most optimal outcomes for athletes across childhood. Therefore, following children across the transition from late childhood to adolescence would be particularly informative as there is limited information that strongly supports shifts in the importance of motivational climates shaped by different social agents (Davies, Stellino, Nicholls, & Coleman, 2016).

Together, these studies address how the peer social context contributes to the quality of psychosocial outcomes young athletes experience. Closely examining the peer motivational climate dimension of the broader social climate in youth sport significantly contributes to the emerging foundation of work in the area. Collectively, this dissertation offers a knowledge on how peers may enhance teammates' opportunity for positive sport experiences and reduce

vulnerability to negative sport experiences. Work in this arena has potential to ultimately inform youth sport coaching practices, team dynamics, and team culture to encourage positive interactions among teammates and promote higher quality youth athlete well-being.

APPENDICES

APPENDIX A

Study One Initial IRB Application Approval Letter

**MICHIGAN STATE
UNIVERSITY**

**Initial IRB
Application
Approval**

May 22, 2017

To: Alan Smith
IM Sports Circle
308 W. Circle Drive, Room 130

Re: **IRB#** 17-610 Category: EXPEDITED 5, 7
Approval Date: May 16, 2017
Expiration Date: May 15, 2018

Title: Youth Soccer Teammates and Motivation

The Institutional Review Board has completed their review of your project. I am pleased to advise you that **your project has been approved.**

The committee has found that your research project is appropriate in design, protects the rights and welfare of human subjects, and meets the requirements of MSU's Federal Wide Assurance and the Federal Guidelines (45 CFR 46 and 21 CFR Part 50). The protection of human subjects in research is a partnership between the IRB and the investigators. We look forward to working with you as we both fulfill our responsibilities.

Renewals: IRB approval is valid until the expiration date listed above. If you are continuing your project, you must submit an *Application for Renewal* application at least one month before expiration. If the project is completed, please submit an *Application for Permanent Closure*.

Revisions: The IRB must review any changes in the project, prior to initiation of the change. Please submit an *Application for Revision* to have your changes reviewed. If changes are made at the time of renewal, please include an *Application for Revision* with the renewal application.

Problems: If issues should arise during the conduct of the research, such as unanticipated problems, adverse events, or any problem that may increase the risk to the human subjects, notify the IRB office promptly. Forms are available to report these issues.

Please use the IRB number listed above on any forms submitted which relate to this project, or on any correspondence with the IRB office.

If we can be of further assistance, please contact us at 517-355-2180 or via email at IRB@msu.edu. Thank you for your cooperation.



**Office of Regulatory Affairs
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**Biomedical & Health
Institutional Review Board
(BIRB)**

**Community Research
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**Social Science
Behavioral/Education
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(SIRB)**

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c: Kathleen Mellano, Anthony Delli Paoli, Christine Pacewicz, Olufemi Oluyedun, Tyler Harris, Alexa Applefield, Casey Gallagher, Kelly Zotos, Kelsie Schwartz, Sydney Conroy

APPENDIX B

Study One Questionnaire Packet

Youth Soccer Teammates and Motivation



Team Name: _____

Your Name: _____

Contact Information: (Parent's email or phone number) _____

INSTRUCTIONS: Please read each statement carefully and decide which teenager you are more like. Then decide if that is “really true” for you or “sort of true” for you and check the corresponding box. Select only one box per question. Please make sure you answer all items.

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me
Sample Sentence							
	☐	☐	Some teenagers like to go to the movies in their spare time	BUT	Other teenagers would rather go to sports events	☐	☐
1.	☐	☐	Some teenagers find it hard to make friends	BUT	Other teenagers find it pretty easy to make friends	☐	☐
2.	☐	☐	Some teenagers know how to make teammates like them	BUT	Other teenagers <i>don't</i> know how to make teammates like them	☐	☐
3.	☐	☐	Some teenagers <i>don't</i> have the social skills to make friends	BUT	Other teenagers do have the skills to make friends	☐	☐
4.	☐	☐	Some teenagers understand how to get peers to accept them	BUT	Other teenagers <i>don't</i> understand how to get peers to accept them	☐	☐
5.	☐	☐	Some teenagers know how to become popular	BUT	Other teenagers <i>do not</i> know how to become popular	☐	☐

INSTRUCTIONS: Please read each statement carefully and decide how true the statement is when thinking about your best or closest friend on your current team. Write your best friend's name in the box below and think about him/her as you respond to the statements below. When you respond to the statement, indicate how true each statement is when thinking about your friend, where 1 means "Not at all true for my best friend and me" and 5 means "Really true for my best friend and me". There are no right or wrong answers, so please answer each question as honestly as you can.

My best friend's
first initial:

Circle the answer below each statement that best indicates how you feel about you and your best friend in soccer.	Not at all True	A Little True	Somewhat True	Mostly True	Really True
1. My friend gives me a second chance to perform a skill.	1	2	3	4	5
2. My friend and I can talk about anything.	1	2	3	4	5
3. My friend and I have common interests.	1	2	3	4	5
4. My friend and I do fun things.	1	2	3	4	5
5. My friend and I make up easily when we have a fight.	1	2	3	4	5
6. My friend and I get mad at each other.	1	2	3	4	5
7. My friend and I praise each other for doing sports well.	1	2	3	4	5
8. My friend and I stick up for each other in sports.	1	2	3	4	5
9. My friend and I do similar things.	1	2	3	4	5
10. I like to play with my friend.	1	2	3	4	5
11. My friend and I try to work things out when we disagree.	1	2	3	4	5
12. My friend and I fight.	1	2	3	4	5

My best friend's
first initial:

	Not at all True	A Little True	Somewhat True	Mostly True	Really True
13. My friend looks out for me.	1	2	3	4	5
14. After I make mistakes, my friend encourages me.	1	2	3	4	5
15. My friend and I have the same values.	1	2	3	4	5
16. When we have an argument, my friend and I talk about how to reach a solution.	1	2	3	4	5
17. My friend and I play well together.	1	2	3	4	5
18. My friend and I have arguments.	1	2	3	4	5
19. My friend and I think the same way.	1	2	3	4	5
20. My friend and I tell each other secrets.	1	2	3	4	5
21. My friend and I spend time together.	1	2	3	4	5
22. My friend has confidence in me during sports.	1	2	3	4	5

INSTRUCTIONS: Please read each statement carefully and decide if you ever feel this way about your current sport participation. Your current sport participation includes all the training you have completed during this season. Please indicate how often you have had this feeling or thought this season by circling a number 1 to 5, where 1 means “I almost never feel this way” and 5 means “I feel that way most of the time.” There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

How often do you feel this way about your current sport participation?	Almost Never	Rarely	Sometimes	Frequently	Most of the Time
1. I’m accomplishing many worthwhile things in my sport.	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 my sport would be better spent doing other things.	1	2	3	4	5
4. I feel overly tired from my sport participation.	1	2	3	4	5
5. I am not achieving much in my sport.	1	2	3	4	5
6. I don’t care about my sport performance as much as I use to.	1	2	3	4	5
7. I am not performing up to my ability in my sport.	1	2	3	4	5
8. I feel “wiped out” from my sport.	1	2	3	4	5
9. I’m not into my sport like I used to be.	1	2	3	4	5
10. I feel physically worn out from my sport.	1	2	3	4	5
11. I feel less concerned about being successful in my sport than I used to.	1	2	3	4	5
12. I am exhausted by the mental and physical demands of my sport.	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 my sport.	1	2	3	4	5
15. I have negative feelings toward my sport.	1	2	3	4	5

INSTRUCTIONS: Please read each statement carefully and decide how often you feel this way during your current sport season by circling a number 1 to 4, where 1 means “not at all” and 4 means “very much” There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

How often do you feel this way about your current sport participation?	Not at All	A Little Bit	Pretty Much	Very Much
1. It's hard to concentrate on the game.	1	2	3	4
2. My body feels tense.	1	2	3	4
3. I worry that I won't play well.	1	2	3	4
4. It is hard for me to concentrate on what I am supposed to do.	1	2	3	4
5. I worry that I will let others down.	1	2	3	4
6. I feel tense in my stomach.	1	2	3	4
7. I lose focus on the game.	1	2	3	4
8. I worry that I will not play my best.	1	2	3	4
9. I worry that I will play badly.	1	2	3	4
10. My muscles feel shaky.	1	2	3	4
11. I worry that I will mess up during the game.	1	2	3	4
12. My stomach feels upset.	1	2	3	4
13. I cannot think clearly during the game.	1	2	3	4
14. My muscles feel tight because I feel nervous.	1	2	3	4
15. I have hard time focusing on what my coach tells me to do.	1	2	3	4

INSTRUCTIONS: Please read the following questions/statements carefully and circle the response that best describes how you usually feel about your sport. Please answer each question openly and honestly. Please choose only one response for each question/statement.

	Not at All	Sort of	A Little	Pretty Much	Very Much
1. Do you <i>enjoy</i> playing soccer this season?	1	2	3	4	5
2. Are you <i>happy</i> playing soccer this season?	1	2	3	4	5
3. Do you have <i>fun</i> playing soccer this season?	1	2	3	4	5
4. Do you <i>like</i> playing soccer this season?	1	2	3	4	5

INSTRUCTIONS: Please read the following questions/statements carefully and circle the response that best describes how you usually feel about your sport. Please answer each question openly and honestly. Please choose only one response for each question/statement.

1.	How proud are you to tell people you play soccer?	Not at all proud 1	A little proud 2	Sort of proud 3	Proud 4	Very proud 5
2.	Do you want to keep playing soccer?	Not at all 1	A little 2	Sort of 3	Pretty much 4	Very much 5
3.	How dedicated are you to playing soccer?	Not at all dedicated 1	A little dedicated 2	Sort of dedicated 3	Dedicated 4	Very dedicated 5
4.	What would you be willing to do to keep playing soccer?	Nothing at all 1	A few things 2	Some things 3	Many things 4	Anything it takes 5
5.	How hard would it be for you to quit?	Not at all hard 1	A little hard 2	Sort of hard 3	Hard 4	Very hard 5
6.	How determined are you to keep playing soccer?	Not at all determined 1	A little determined 2	Sort of determined 3	Determined 4	Very determined 5

INSTRUCTIONS: Please read each statement carefully and decide the degree to which you agree by circling a number 1 to 7, where 1 means “strongly disagree” and 7 means “strongly agree” There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

On this team, most athletes...	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. Help each other improve.	1	2	3	4	5	6	7
2. Encourage each other to outplay their teammates.	1	2	3	4	5	6	7
3. Offer to help their teammates develop new skills.	1	2	3	4	5	6	7
4. Care more about the opinion of the most able teammates	1	2	3	4	5	6	7
5. Make their teammates feel valued.	1	2	3	4	5	6	7
6. Work together to improve the skills they don't do well.	1	2	3	4	5	6	7
7. Make negative comments that put their teammates down.	1	2	3	4	5	6	7
8. Try to do better than their teammates.	1	2	3	4	5	6	7
9. Criticize their teammates when they make mistakes.	1	2	3	4	5	6	7
10. Teach their teammates new things.	1	2	3	4	5	6	7
11. Encourage their teammates to try their hardest.	1	2	3	4	5	6	7
12. Look pleased when they do better than their teammates	1	2	3	4	5	6	7
13. Make their teammates feel accepted.	1	2	3	4	5	6	7
14. Want to be with the most able teammates.	1	2	3	4	5	6	7
15. Praise their teammates who try hard.	1	2	3	4	5	6	7

On this team, most athletes...	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
16. Complain when the team doesn't win.	1	2	3	4	5	6	7
17. Are pleased when their teammates try hard.	1	2	3	4	5	6	7
18. Care about everyone's opinion.	1	2	3	4	5	6	7
19. Set an example on giving forth maximum effort.	1	2	3	4	5	6	7
20. Laugh at their teammates when they make mistakes.	1	2	3	4	5	6	7
21. Encourage their teammates to keep trying after they make a mistake.	1	2	3	4	5	6	7

INSTRUCTIONS: Please answer all of the following questions.

1. What is your age? _____
2. What is your sex? Female Male
3. What is your ethnicity? Hispanic or Latino NOT Hispanic or Latino
4. What is your race?
 - a. American Indian or Alaska Native
 - b. Asian
 - c. Black or African American
 - d. Native Hawaiian or Other Pacific Islander
 - e. White
 - f. More than one race
 - g. Other
 - h. Prefer not to say
5. How many years have you participated in soccer? _____
6. What position do you play on your team? _____
7. How many years have you been a member of your current team? _____
8. Approximately how many hours a week do you spend playing soccer? _____
9. Do you intend to continue playing soccer?

Absolutely not	Most likely not	Undecided	Most likely	Definitely
1	2	3	4	5

APPENDIX C

Study Two Initial IRB Application Approval Letter

MICHIGAN STATE UNIVERSITY

Initial Study APPROVAL Revised Common Rule

April 23, 2019

To: Alan Lyle Smith

Re: **MSU Study ID:** STUDY00002470
IRB: Biomedical and Health Institutional Review Board
Principal Investigator: Alan Lyle Smith
Category: Expedited 7
Submission: Initial Study STUDY00002470
Submission Approval Date: 4/23/2019
Effective Date: 4/23/2019
Study Expiration Date: **None; however modification and closure submissions are required (see below).**

Title: Youth Volleyball Motivation

This submission has been approved by the Michigan State University (MSU) BIRB. The submission was reviewed by the Institutional Review Board (IRB) through the Non-Committee Review procedure. The IRB has found that this study protects the rights and welfare of human subjects and meets the requirements of MSU's Federal Wide Assurance (FWA00004556) and the federal regulations for the protection of human subjects in research (e.g., 2018 45 CFR 46, 21 CFR 50, 56, other applicable regulations).



Office of Regulatory Affairs Human Research Protection Program

4000 Collins Road
Suite 136
Lansing, MI 48910

517-355-2180
Fax: 517-432-4503
Email: hrpp@msu.edu
www.hrpp.msu.edu

How to Access Final Documents

To access the study's final materials, including those approved by the IRB such as consent forms, recruitment materials, and the approved protocol, if applicable, please log into the Click™ Research Compliance System, open the study's workspace, and view the "Documents" tab. To obtain consent form(s) stamped with the IRB watermark, select the "Final" PDF version of your consent form(s) as applicable in the "Documents" tab. Please note that the consent form(s) stamped with the IRB watermark must typically be used.

Expiration of IRB Approval: The IRB approval for this study does not have an expiration date. Therefore, continuing review submissions to extend an approval period for this study are not required. **Modification and closure submissions are still required (see below).**

Modifications: Any proposed change or modification with certain limited exceptions discussed below must be reviewed and approved by the IRB prior to implementation of the change. Please submit a Modification request to have the changes reviewed.

New Funding: If new external funding is obtained to support this study, a Modification request must be submitted for IRB review and approval before new funds can be spent on human research activities, as the new funding source may have additional or different requirements.

Immediate Change to Eliminate a Hazard: When an immediate change in a research protocol is necessary to eliminate a hazard to subjects, the proposed change need not be reviewed by the IRB prior to its implementation. In such situations, however, investigators must report the change in protocol to the IRB immediately thereafter.

Reportable Events: Certain events require reporting to the IRB. These include:

- Potential unanticipated problems that may involve risks to subjects or others
- Potential noncompliance
- Subject complaints
- Protocol deviations or violations
- Unapproved change in protocol to eliminate a hazard to subjects
- Premature suspension or termination of research
- Audit or inspection by a federal or state agency
- New potential conflict of interest of a study team member
- Written reports of study monitors
- Emergency use of investigational drugs or devices
- Any activities or circumstances that affect the rights and welfare of research subjects
- Any information that could increase the risk to subjects

Please report new information through the study's workspace and contact the IRB office with any urgent events. Please visit the Human Research Protection Program (HRPP) website to obtain more information, including reporting timelines.

Personnel Changes: Key study personnel must be listed on the MSU IRB application for expedited and full board studies and any changes to key study personnel must be submitted as modifications. Although only key study personnel need to be listed on a non-exempt application, all other individuals engaged in human subject research activities must receive and maintain current human subject training, must disclose conflict of interest, and are subject to MSU HRPP requirements. It is the responsibility of the Principal Investigator (PI) to maintain oversight over all study personnel and to assure and to maintain appropriate tracking that these requirements are met (e.g. documentation of training completion, conflict of interest). When non-MSU personnel are engaged in human research, there are additional requirements. See HRPP Manual Section 4-10, Designation as Key Project Personnel on Non-Exempt IRB Projects for more information.

Prisoner Research: If a human subject involved in ongoing research becomes a prisoner during the course of the study and the relevant research proposal was not reviewed and approved by the IRB in accordance with the requirements for

research involving prisoners under subpart C of 45 CFR part 46, the investigator must promptly notify the IRB.

Site Visits: The MSU HRPP Compliance office conducts post approval site visits for certain IRB approved studies. If the study is selected for a site visit, you will be contacted by the HRPP Compliance office to schedule the site visit.

For Studies that Involve Consent, Parental Permission, or Assent Form(s):

Use of IRB Approved Form: Investigators must use the form(s) approved by the IRB and must typically use the form with the IRB watermark.

Copy Provided to Subjects: A copy of the form(s) must be provided to the individual signing the form. In some instances, that individual must be provided with a copy of the signed form (e.g. studies following ICH-GCP E6 requirements). Assent forms should be provided as required by the IRB.

Record Retention: All records relating to the research must be appropriately managed and retained. This includes records under the investigator's control, such as the informed consent document. Investigators must retain copies of signed forms or oral consent records (e.g., logs). Investigators must retain all pages of the form, not just the signature page. Investigators may not attempt to de-identify the form; it must be retained with all original information. The PI must maintain these records for a minimum of three years after the IRB has closed the research and a longer retention period may be required by law, contract, funding agency, university requirement or other requirements for certain studies, such as those that are sponsored or FDA regulated research. See HRPP Manual Section 4-7-A, Recordkeeping for Investigators, for more information.

Closure: If the research activities no longer involve human subjects, please submit a Continuing Review request, through which study closure may be requested. Closure indicates that research activities with human subjects are no longer ongoing, have stopped, and are complete. Human research activities are complete when investigators are no longer obtaining information or biospecimens about a living person through interaction or intervention with the individual, obtaining identifiable private information or identifiable biospecimens about a living person, and/or using, studying, analyzing, or generating identifiable private information or identifiable biospecimens about a living person.

For More Information: See the HRPP Manual (available at <http://hrpp.msu.edu>).

Contact Information: If we can be of further assistance or if you have questions, please contact us at 517-355-2180 or via email at IRB@msu.edu. Please visit <http://hrpp.msu.edu> to access the HRPP Manual, templates, etc.

Expedited Category. Please see the appropriate research category below for the full regulatory text.

Expedited 1. Clinical studies of drugs and medical devices only when condition (a) or (b) is met.

(a) Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required. (Note: Research on marketed drugs that significantly increases the risks or decreases the acceptability of the risks associated with the use of the product is not eligible for expedited review.)

(b) Research on medical devices for which (i) an investigational device exemption application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling.

Expedited 2. Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows:

(a) from healthy, nonpregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550 ml in an 8 week period and collection may not occur more frequently than 2 times per week; or

(b) from other adults and children, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 3 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

Expedited 3. Prospective collection of biological specimens for research purposes by noninvasive means.

Examples: (a) hair and nail clippings in a nondisfiguring manner; (b) deciduous teeth at time of exfoliation or if routine patient care indicates a need for extraction; (c) permanent teeth if routine patient care indicates a need for extraction; (d) excreta and external secretions (including sweat); (e) uncannulated saliva collected either in an unstimulated fashion or stimulated by chewing gumbase or wax or by applying a dilute citric solution to the tongue; (f) placenta removed at delivery; (g) amniotic fluid obtained at the time of rupture of the membrane prior to or during labor; (h) supra- and subgingival dental plaque and calculus, provided the collection procedure is not more invasive than routine prophylactic scaling of the teeth and the process is accomplished in accordance with accepted prophylactic techniques; (i) mucosal and skin cells collected by buccal scraping or swab, skin swab, or mouth washings; (j) sputum collected after saline mist nebulization.

Expedited 4. Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications.)

Examples: (a) physical sensors that are applied either to the surface of the body or at a distance and do not involve input of significant amounts of energy into the subject or an invasion of the subject's privacy; (b) weighing or testing sensory acuity; (c) magnetic resonance imaging; (d) electrocardiography, electroencephalography, thermography, detection of naturally occurring radioactivity, electroretinography, ultrasound, diagnostic infrared imaging, doppler

blood flow, and echocardiography; (e) moderate exercise, muscular strength testing, body composition assessment, and flexibility testing where appropriate given the age, weight, and health of the individual.

Expedited 5. Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis). (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(4). This listing refers only to research that is not exempt.)

Expedited 6. Collection of data from voice, video, digital, or image recordings made for research purposes.

Expedited 7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)

Expedited 8. Continuing review of research previously approved by the convened IRB as follows:

- (a) where (i) the research is permanently closed to the enrollment of new subjects; (ii) all subjects have completed all research-related interventions; and (iii) the research remains active only for long-term follow-up of subjects; or
- (b) where no subjects have been enrolled and no additional risks have been identified; or
- (c) where the remaining research activities are limited to data analysis.

Expedited 9. Continuing review of research, not conducted under an investigational new drug application or investigational device exemption where categories two (2) through eight (8) do not apply but the IRB has determined and documented at a convened meeting that the research involves no greater than minimal risk and no additional risks have been identified.

APPENDIX D

Study Two Questionnaire Packet



Youth Volleyball Motivation

Team Name: _____

Level:

Division:

1s		2s		3s
Elite	National	National Select	State	Regional

INSTRUCTIONS: Think about playing for your team over the course of the season and recall what it is usually like on this team. As you respond, please keep in mind how your TEAMMATES create this atmosphere. Please read each statement carefully and decide the degree to which you agree by circling a number 1 to 7, where 1 means “strongly disagree” and 7 means “strongly agree”. There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

On this team, <u>MOST</u> <u>ATHLETES...</u>	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. Help each other improve.	1	2	3	4	5	6	7
2. Encourage each other to outplay their teammates.	1	2	3	4	5	6	7
3. Offer to help their teammates develop new skills.	1	2	3	4	5	6	7
4. Care more about the opinion of the most able teammates	1	2	3	4	5	6	7
5. Make their teammates feel valued.	1	2	3	4	5	6	7
6. Work together to improve the skills they don't do well.	1	2	3	4	5	6	7
7. Make negative comments that put their teammates down.	1	2	3	4	5	6	7
8. Try to do better than their teammates.	1	2	3	4	5	6	7
9. Criticize their teammates when they make mistakes.	1	2	3	4	5	6	7
10. Teach their teammates new things.	1	2	3	4	5	6	7
11. Encourage their teammates to try their hardest.	1	2	3	4	5	6	7
12. Look pleased when they do better than their teammates	1	2	3	4	5	6	7
13. Make their teammates feel accepted.	1	2	3	4	5	6	7
14. Want to be with the most able teammates.	1	2	3	4	5	6	7

On this team, <u>MOST</u> <u>ATHLETES...</u>	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
15. Praise their teammates who try hard.	1	2	3	4	5	6	7
16. Complain when the team doesn't win.	1	2	3	4	5	6	7
17. Are pleased when their teammates try hard.	1	2	3	4	5	6	7
18. Care about everyone's opinion.	1	2	3	4	5	6	7
19. Set an example on giving forth maximum effort.	1	2	3	4	5	6	7
20. Laugh at their teammates when they make mistakes.	1	2	3	4	5	6	7
21. Encourage their teammates to keep trying after they make a mistake.	1	2	3	4	5	6	7
22. Encourage competing against their teammates.	1	2	3	4	5	6	7
23. Are upset when they lose a competition to a teammate.	1	2	3	4	5	6	7
24. Want to be the best player on the team.	1	2	3	4	5	6	7
25. Listen to the best player on the team more than others	1	2	3	4	5	6	7

INSTRUCTIONS: Think about playing for your team over the course of the season and recall what it is usually like on this team. As you respond, please keep in mind how your COACH creates this atmosphere. Please read each statement carefully and decide the degree to which you agree by circling a number 1 to 5, where 1 means “strongly disagree” and 5 means “strongly agree”. There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

On this team, <u>THE COACH</u> ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Encourages athletes to help each other learn.	1	2	3	4	5
2. Gets mad when a player makes a mistake.	1	2	3	4	5
3. Wants athletes to try new skills.	1	2	3	4	5
4. Gives most of her/his attention to the ‘stars’.	1	2	3	4	5
5. Believes that each player contributes to the team in some important way.	1	2	3	4	5
6. Emphasizes that athletes should help each other learn.	1	2	3	4	5
7. Focuses on whether athletes improve on each game/practice.	1	2	3	4	5
8. Punishes athletes when they make a mistake.	1	2	3	4	5
9. Praises athletes only when they outplay teammates.	1	2	3	4	5
10. Favors some athletes more than others.	1	2	3	4	5
11. Gives chances to athletes to help each other get better and excel.	1	2	3	4	5
12. Notices only the top athletes.	1	2	3	4	5
13. Yells at athletes for messing up.	1	2	3	4	5
14. Encourages athletes to work on their weaknesses.	1	2	3	4	5

On this team, <u>THE COACH</u> ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
15. Makes each athlete feel as if they are an important team member.	1	2	3	4	5
16. Takes the athletes out of a game for making mistakes.	1	2	3	4	5
17. Shows that each player has an important role.	1	2	3	4	5
18. Emphasizes that athletes should always try their best.	1	2	3	4	5
19. Lets only the best athletes play in a game.	1	2	3	4	5
20. Thinks only the starters contribute to the success of the team.	1	2	3	4	5
21. Rewards trying hard.	1	2	3	4	5
22. Encourages athletes to do better than their teammates in a game.	1	2	3	4	5
23. Emphasizes athletes working together as a team.	1	2	3	4	5
24. Makes it clear who he/she thinks are the best athletes on the team.	1	2	3	4	5
25. Emphasizes that athletes should feel successful when they improve.	1	2	3	4	5
26. Encourages athletes to outplay the other athletes on the team.	1	2	3	4	5
27. Shows that athletes at all skill levels have an important role on the team.	1	2	3	4	5
28. Praises only the athletes with the best performance record.	1	2	3	4	5
29. Makes athletes feel afraid to make mistakes.	1	2	3	4	5

On this team, <u>THE COACH</u> ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
30. Believes that all athletes are crucial to the success of the team.	1	2	3	4	5
31. Emphasizes that athletes should feel good when they try their best.	1	2	3	4	5
32. Has her/his own favorites.	1	2	3	4	5
33. Makes sure athletes improve on skills they are not good at.	1	2	3	4	5

INSTRUCTIONS: Please read each statement carefully and decide how often you feel this way during your current sport season by circling a number 1 to 5, where 1 means “almost never” and 5 means “almost always”. There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

How often do you feel this way during your current sport season?	Almost Never	Rarely	Sometimes	Frequently	Almost Always
1. I believe I am capable of accomplishing my goals in sport.	1	2	3	4	5
2. I am dedicated to achieving my goals in sport.	1	2	3	4	5
3. I feel energized when I participate in my sport.	1	2	3	4	5
4. I feel excited about my sport.	1	2	3	4	5
5. I feel capable of success in my sport.	1	2	3	4	5
6. I am determined to achieve my goals in sport.	1	2	3	4	5
7. I feel energetic when I participate in my sport.	1	2	3	4	5
8. I am enthusiastic about my sport.	1	2	3	4	5
9. I believe I have the skills/technique to be successful in my sport.	1	2	3	4	5
10. I am devoted to my sport.	1	2	3	4	5
11. I feel really alive when I participate in my sport.	1	2	3	4	5
12. I enjoy my sport.	1	2	3	4	5
13. I am confident in my abilities.	1	2	3	4	5
14. I want to work hard to achieve my goals in sport.	1	2	3	4	5
15. I feel mentally alert when I participate in my sport.	1	2	3	4	5
16. I have fun in my sport.	1	2	3	4	5

INSTRUCTIONS: Please read each statement carefully and decide which value represents you best by circling a number 1 to 7, where 1 means “strongly disagree” and 7 means “strongly agree”. There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

1. I intend to play volleyball in this program next season.

Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

INSTRUCTIONS: Please read each statement carefully and decide which value represents you best. There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

1. Please report the amount of effort you put forth to try and improve your skill this season.

No effort at all		Moderate Effort		Exceptionally high effort
1	2	3	4	5

2. Please report the amount of effort you put forth to do your best this volleyball season.

No effort at all		Moderate Effort		Exceptionally high effort
1	2	3	4	5

3. I put forth a lot of effort into playing volleyball this season.

Not at all true			Somewhat true			Very true
1	2	3	4	5	6	7

4. I don't try hard to do well at volleyball this season.

Not at all true			Somewhat true			Very true
1	2	3	4	5	6	7

5. I try hard in volleyball this season.

Not at all true			Somewhat true		Very true	
1	2	3	4	5	6	7

6. It is important to me to do well in volleyball this season.

Not at all true			Somewhat true		Very true	
1	2	3	4	5	6	7

7. I don't put much energy into playing volleyball this season.

Not at all true			Somewhat true		Very true	
1	2	3	4	5	6	7

INSTRUCTIONS: Please answer all of the following questions.

1. How successful has your team been this season against other teams you have competed against?

Have lost all competitions	Have lost most competitions	About equal	Have won most competitions	Have won all competitions
1	2	3	4	5

2. What is your **coach's** sex? Female Male

3. What is **your** age? _____

4. What is **your** ethnicity? Hispanic or Latino NOT Hispanic or Latino

5. What is **your** race?
 - a. American Indian or Alaska Native
 - b. Asian
 - c. Black or African American
 - d. Native Hawaiian or Other Pacific Islander
 - e. White
 - f. More than one race
 - g. Other
 - h. Prefer not to say

6. How many years have you participated in volleyball? _____

7. How many years have you been a member of your current team? _____

8. Approximately how many hours a week do you spend playing volleyball? _____

9. Would you consider yourself a "starter" on your current team? Yes No

10. What is your primary position on your team?

Outside Hitter	Middle	Rightside Hitter	Setter	DS/Libero
1	2	3	4	5

Thank you!

REFERENCES

REFERENCES

- Allen, J. B. (2003). Social motivation in youth sport. *Journal of Sport & Exercise Psychology*, 25(4), 551-567.
- Allen, J. B. (2005). Measuring social motivational orientations in sport: An examination of the construct validity of the SMOSS. *International Journal of Sport & Exercise Psychology*, 3(2), 147-161.
- Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: A review of qualitative studies. *Health Education Research*, 21, 826-835.
- Ames, C. (1984). Achievement attributions and self-instructions under competitive and individualistic goal structures. *Journal of Educational Psychology*, 76(3), 478-487.
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84, 261-271.
- Atkins, M. R., Johnson, D. M., Force, E. C., & Petrie, T. A. (2013). "Do I still want to play?" Parents' and peers' influences on girls' continuation in sport. *Journal of Sport Behavior*, 36(4), 329-345.
- Atkins, M. R., Johnson, D. M., Force, E. C., & Petrie, T. A. (2015). Peers, parents, and coaches, oh my! The relation of the motivational climate to boys' intention to continue in sport. *Psychology of Sport and Exercise*, 16, 170-180.
- Bartholomew, K.J., Ntoumanis, N., Ryan, R.M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology*, 33, 75-102.
- Beck, N., Petrie, T. A., Harmison, R. J., & Moore, E. W. G. (2017). Parent, coach, and peer created motivational climates: Relationships to goal orientations and mental toughness. *International Journal of Sport Psychology*, 48(3), 185-205.
- Bergman, L. R., & Magnusson, D. (1997). A person-oriented approach in research on developmental psychopathology. *Development and psychopathology*, 9(2), 291-319.
- Boixadós, M., Cruz, J., Torregrosa, M., & Valiente, L. (2004). Relationships among motivational climate, satisfaction, perceived ability, and fair play attitudes in young soccer players. *Journal of Applied Sport Psychology*, 16(4), 301-317.

- Brustad, R. J., Babkes, M. L., & Smith, A. L. (2001). Youth in sport: Psychological considerations. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology* (2nd ed.) (pp. 604–635). New York: John Wiley & Sons.
- Bukowski, W. M., & Hoza, B. (1989). Popularity and friendship: Issues in theory, measurement, and outcome. In T. J. Berndt, & G. W. Ladd (Eds.), *Peer relationships in child development* (pp. 15–45). New York: John Wiley & Sons.
- Carr, S., & Weigand, D. A. (2001). Parental, peer, teacher and sporting hero influence on the goal orientations of children in physical education. *European physical education review*, 7(3), 305-328.
- Chan, D. K., Lonsdale, C., & Fung, H. H. (2012). Influences of coaches, parents, and peers on the motivational patterns of child and adolescent athletes. *Scandinavian Journal of Medicine & Science in Sports*, 22(4), 558-568.
- Chase, M. A., & Machida, M. (2011). The role of sport as a social status determinant for children: Thirty years later. *Research Quarterly for Exercise and Sport*, 82, 731-739.
- Coakley, J., & White, A. (1992). Making decisions: Gender and sport participation among British adolescents. *Sociology of Sport Journal*, 9(1), 20-35.
- Cox, A. E., Duncheon, N., & McDavid, L. (2009). Peers and teachers as sources of relatedness perceptions, motivation and affective responses in physical education. *Research Quarterly for Exercise and Sport*, 80(4), 765–773.
- Cox, A. E., & Ullrich-French, S. (2010). The motivational relevance of peer and teacher relationship profiles in physical education. *Psychology of Sport and Exercise*, 11(5), 337-344.
- Curran, T., Hill, A. P., Hall, H. K., & Jowett, G. E. (2015). Relationships between the coach-created motivational climate and athlete engagement in youth sport. *Journal of Sport & Exercise Psychology*, 37(2), 193-198.
- Davies, M. J., Babkes Stellino, M., Nichols, B. A., & Coleman, L. M. (2016). Other-initiated motivational climate and youth hockey players' good and poor sport behaviors. *Journal of Applied Sport Psychology*, 28(1), 78-96.
- Deci, E. L., & Ryan, R. M. (2000). Target article: the “what” and “why” of goal pursuits: human needs and the self-determination of behavior. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory*, 11(4), 227-268.
- DeFreese, J. D., & Smith, A. L. (2013). Areas of worklife and the athlete burnout-engagement relationship. *Journal of Applied Sport Psychology*, 25(2), 180-196.

- Delli Paoli, A. G., Smith, A. L., & Pontifex, M. B. (2017). Does Walking Mitigate Affective and Cognitive Responses to Social Exclusion?. *Journal of Sport & Exercise Psychology*, 39(2), 97-108.
- Duda, J. L., & Balaguer, I. (2007). Coach-Created Motivational Climate. In S. Jowette & D. Lavallee (Eds.), *Social Psychology in Sport* (pp. 117-130). Champaign, IL, US: Human Kinetics.
- Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology*, 84(3), 290-299.
- Eklund, R. C., & Cresswell, S. L. (2007). Athlete burnout. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of Sport Psychology (3rd Edition)* (pp.621 – 641). Hoboken, NJ: John Wiley & Sons.
- Eklund, R. C., & DeFreese, J. D. (2015). Athlete burnout: What we know, what we could know, and how we can find out more. *International Journal of Applied Sports Sciences*, 27(2), 63-75.
- Ettekal, A. V., Ferris, K. A., Batanova, M., & Syer, T. (2016). Adolescent athletes' perception of the peer-motivational climate in sport: Do they matter for empathic concern?. *Research in Human Development*, 13(2), 142-156.
- Fields, S. K., Collins, C. L., & Comstock, R. D. (2010). Violence in youth sports: hazing, brawling and foul play. *British Journal of Sports Medicine*, 44(1), 32-37.
- Fitzgerald, A., Fitzgerald, N., & Aherne, C. (2012). Do peers matter? A review of peer and/or friends' influence on physical activity among American adolescents. *Journal of Adolescence*, 35, 941-958.
- Fox, K., Goudas, M., Biddle, S., Duda, J., & Armstrong, N. (1994). Children's task and ego goal profiles in sport. *British Journal of Educational Psychology*, 64(2), 253-261.
- Fraser-Thomas, J., & Côté, J. (2009). Understanding adolescents' positive and negative developmental experiences in sport. *The Sport Psychologist*, 23(1), 3-23.
- Fry, M. D. (2000). A developmental analysis of children's and adolescents' understanding of luck and ability in the physical domain. *Journal of Sport & Exercise Psychology*, 22(2), 145-166.
- Fry, M. D. & Duda, J. L. (1997). A developmental examination of children's understanding of effort and ability in the physical and academic domains. *Research Quarterly for Sport and Exercise*, 68, 331-344.
- García-Calvo, T., Leo, F. M., Gonzalez-Ponce, I., Sánchez-Miguel, P. A., Mouratidis, A., & Ntoumanis, N. (2014). Perceived coach-created and peer-created motivational climates

- and their associations with team cohesion and athlete satisfaction: Evidence from a longitudinal study. *Journal of Sports Sciences*, 32(18), 1738-1750.
- Goudas, M., Biddle, S., & Fox, K. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology*, 64(3), 453-463.
- Gould, D., & Petlichkoff, L. (1988). Participation motivation and attrition in young athletes. *Children in sport*, 3, 161-178.
- Hair, J.F., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). *Multivariate data analysis (5th ed.)*. Upper Saddle River, NJ: Prentice Hall.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis: Pearson new international edition (7th ed.)*. Essex: Pearson Education Limited.
- Hallal, P. C., Victora, C. G., Azevedo, M. R., & Wells, J. C. K. (2006). Adolescent physical activity and health. *Sports Medicine*, 36(12), 1019-1030.
- Harter, S. (1978). Effectance motivation reconsidered. Toward a developmental model. *Human Development*, 21(1), 34-64.
- Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development*, 53(1), 87-97.
- Harter, S. (1988). *Manual for the self-perception profile for adolescents*. Denver, CO: University of Denver.
- Harter, S. (2012). *Self-perception profile for adolescents: Manual and questionnaires*. Denver, CO: Univeristy of Denver.
- Hartup, W. W. (1996). The company they keep: Friendships and their developmental significance. *Child Development*, 67, 1-13.
- Harwood, C., Cumming, J., & Fletcher, D. (2004). Motivational profiles and psychological skills use within elite youth sport. *Journal of Applied Sport Psychology*, 16(4), 318-332.
- Harwood, C.G., Keegan, R.J., Smith, J.M., & Raine, A.S. (2015). A systematic review of the intrapersonal correlates of motivational climate perceptions in sport and physical activity. *Psychology of Sport and Exercise*, 18, 9-25.
- Hein, V., & Jõesaar, H. (2015). How perceived autonomy support from adults and peer motivational climate are related with self-determined motivation among young athletes. *International Journal of Sport & Exercise Psychology*, 13(3), 193-204.

- Hodge, K., Lonsdale, C., & Jackson, S. A. (2009). Athlete engagement in elite sport: An exploratory investigation of antecedents and consequences. *The Sport Psychologist*, 23(2), 186-202.
- Hodge, K., & Petlichkoff, L. (2000). Goal profiles in sport motivation: A cluster analysis. *Journal of Sport & Exercise Psychology*, 22(3), 256-272.
- Hodges, E. V., Malone, M. J., & Perry, D. G. (1997). Individual risk and social risk as interacting determinants of victimization in the peer group. *Developmental Psychology*, 33(6), 1032-1039.
- Holt, N. L. (Ed.). (2016). *Positive youth development through sport*. New York, NY: Routledge.
- Holt, N. L., Black, D. E., Tamminen, K. A., Fox, K. R., & Mandigo, J. L. (2008). Levels of social complexity and dimensions of peer experiences in youth sport. *Journal of Sport & Exercise Psychology*, 30, 411-431.
- Horn, T. S. (2004). Developmental perspectives on self-perceptions in children and adolescents. In M.R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 101-143). Morgantown, WV: Fitness Information Technology.
- Horn, T. S. (2008). *Advances in sport psychology* (3rd ed.). Leeds: Human Kinetics.
- Horn, T. S., & Amorose, A. J. (1998). Sources of competence information. *Advances in Sport and Exercise Psychology Measurement*, 49-63.
- Horn, T. S., Byrd, M., Martin, E., & Young, C. (2012). Perceived motivational climate and team cohesion in adolescent athletes. *Sport Science Review*, 21(3-4), 25-48.
- Horn, T.S., Glenn, S.D., & Wentzell, A.B. (1993). Sources of information underlying personal ability judgments in high school athletes. *Pediatric Exercise Science*, 5, 263-274.
- Horn, T.S., & Hasbrook, C.A. (1987). Psychological characteristics and the criteria children use for self-evaluation. *Journal of Sport Psychology*, 9, 208-221.
- Horn, T. S., & Weiss, M. R. (1991). A developmental analysis of children's self-ability judgments in the physical domain. *Pediatric Exercise Science*, 3(4), 310-326.
- Jimerson, S. R., Campos, E., & Greif, J. L. (2003). Toward and understanding of definitions and measures of school engagement and related terms. *California School Psychologist*, 8, 7-27.
- Jõesaar, H., Hein, V., & Hagger, M. S. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise*, 12(5), 500-508.

- Jõesaar, H., Hein, V., & Hagger, M. S. (2012). Youth athletes' perception of autonomy support from the coach, peer motivational climate and intrinsic motivation in sport setting: One-year effects. *Psychology of Sport and Exercise*, 13(3), 257-262.
- Kashy, D. A., & Kenny, D. A. (2000). The analysis of data from dyads and groups. In H. T. Reis & C. M. Judd (Eds.) *Handbook of research methods in social and personality psychology* (pp. 451-477). New York, NY: Cambridge University Press.
- Kavussanu, M., & Roberts, G. C. (1996). Motivation in physical activity contexts: The relationship of perceived motivational climate to intrinsic motivation and self-efficacy. *Journal of Sport & Exercise Psychology*, 18, 264-280.
- Keegan, R. J., Harwood, C. G., Spray, C. M., & Lavallee, D. E. (2009). A qualitative investigation exploring the motivational climate in early career sports participants: Coach, parent and peer influences on sport motivation. *Psychology of Sport and Exercise*, 10(3), 361-372.
- Keegan, R. J., Spray, C. M., Harwood, C. G., & Lavallee, D. E. (2014). A qualitative synthesis of research into social motivational influences across the athletic career span. *Qualitative Research in Sport, Exercise and Health*, 6(4), 537-567.
- Kipp, L. E., Bolter, N. D., & Phillips Reichter, A. (2019). Motivational climate profiles, pubertal status, and well-being among female adolescent aesthetic sport athletes. *Pediatric Exercise Science*, 1-7.
- Laursen, B., & Hoff, E. (2006). Person-centered and variable-centered approaches to longitudinal data. *Merrill-Palmer Quarterly*, 1982, 377-389.
- LaVoi, N. M., (2002). *Examining relationships in the sport context*. Retrieved from ProQuest. (3056333)
- Lee, K., Kang, S., & Kim, I. (2017). Relationships among stress, burnout, athletic identity, and athlete satisfaction in students at Korea's physical education high schools: Validating differences between pathways according to ego resilience. *Psychological Reports*, 120, 585-608.
- Lonsdale, C., Hodge, K., & Jackson, S. A. (2007). Athlete engagement: II. Development and initial validation of the Athlete Engagement Questionnaire. *International Journal of Sport Psychology*, 38(4), 471-492.
- Lonsdale, C., Hodge, K., & Raedeke, T. D. (2007). Athlete engagement: I. A qualitative investigation of relevance and dimensions. *International Journal of Sport Psychology*, 38(4), 451-470.

- Maehr, M. L., & Nicholls, J. G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), *Studies in cross-cultural psychology* (pp. 221-267). New York: Academic Press.
- Magnusson, D. (1998). The logic and implications of a person-oriented approach. In R.B. Cairns, L.R. Bergman, & J. Kagan (Eds.), *Methods and models for studying the individual* (pp. 33-64). Thousand Oaks, CA: Sage.
- Malina, R. M., Bouchard, C., & Bar-Or, O. (2004). *Growth, maturation, and physical activity*. Human Kinetics.
- Magyar, T. M., Feltz, D. L., & Simpson, I. P. (2004). Individual and crew level determinants of collective efficacy in rowing. *Journal of Sport & Exercise Psychology*, 26(1), 136-153.
- McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*, 60(1), 48-58.
- McCarthy, P. J., & Jones, M. V. (2007). A qualitative study of sport enjoyment in the sampling years. *The Sports Psychologist*, 21, 400-416.
- McLaren, C. D., Newland, A., Eys, M., & Newton, M. (2017). Peer-initiated motivational climate and group cohesion in youth sport. *Journal of Applied Sport Psychology*, 29(1), 88-100.
- Miller, B. W., Roberts, G. C., & Ommundsen, Y. (2004). Effect of perceived motivational climate on moral functioning, team moral atmosphere perceptions, and the legitimacy of intentionally injurious acts among competitive youth football players. *Psychology of Sport and Exercise*, 6, 461-477.
- Newton, M., Duda, J. L., & Yin, Z. (2000). Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes. *Journal of Sports Sciences*, 18(4), 275-290.
- Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, 91(3), 328-346.
- Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, MA: Harvard University Press.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology*, 97(3), 444-453.
- Ntoumanis, N., & Biddle, S. J. (1999). A review of motivational climate in physical activity. *Journal of Sports Sciences*, 17(8), 643-665.

- Ntoumanis, N., Taylor, I. M., & Thøgersen-Ntoumani, C. (2012). A longitudinal examination of coach and peer motivational climates in youth sport: Implications for moral attitudes, well-being, and behavioral investment. *Developmental Psychology*, 48(1), 213.
- Ntoumanis, N., & Vazou, S. (2005). Peer motivational climate in youth sport: Measurement development and validation. *Journal of Sport & Exercise Psychology*, 27, 432-455.
- Ntoumanis, N., Vazou, S., & Duda, J. L. (2007). Peer-created motivational climate. In S. Jowett, & D. Lavalley (Eds.), *Social psychology in sport* (pp. 145-156). Champaign, IL: Human Kinetics.
- Nunnally, J.C. & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). NY: Mc-Graw-Hill.
- Ommundsen, Y., Roberts, G. C., & Kavussanu, M. (1998). Perceived motivational climate and cognitive and affective correlates among Norwegian athletes. *Journal of Sports Sciences*, 16(2), 153-164.
- Ommundsen, Y., Roberts, G. C., Lemyre, P. N., & Treasure, D. (2003). Perceived motivational climate in male youth soccer: Relations to social-moral functioning, sportspersonship and team norm perceptions. *Psychology of Sport and Exercise*, 25, 397-413.
- Pacewicz, C. E., Mellano, K. T., & Smith, A. L. (2019). A meta-analytic review of the relationship between social constructs and athlete burnout. *Psychology of Sport and Exercise*, 43, 155-164.
- Pensgaard, A. M., & Roberts, G. C. (2000). The relationship between motivational climate, perceived ability and sources of distress among elite athletes. *Journal of Sports Sciences*, 18(3), 191-200.
- Peugh, J. L., & Enders, C. K. (2005). Using the SPSS mixed procedure to fit cross-sectional and longitudinal multilevel models. *Educational and Psychological Measurement*, 65(5), 717-741.
- Raedeke, T. D., & Smith, A. L. (2001). Development and preliminary validation of an athlete burnout measure. *Journal of Sport & Exercise Psychology*, 23(4), 281-306.
- Raedeke, T. D., & Smith, A. L. (2009). *The athlete burnout questionnaire manual* (Vol. 4). Fitness Information Technology.
- Roberts, G. (1993). Motivation in sport: Understanding and enhancing the motivation and achievement of children. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 405-420). New York: MacMillan.
- Roberts, G. C., Treasure, D. C., & Conroy, D. E. (2007). Understanding the dynamics of motivation in sport and physical activity: An achievement goal interpretation. In G.

- Tenenbaum & R. C. Eklund (Eds.), *Handbook of Sport Psychology* (3rd ed., pp. 3-30). Hoboken, NJ: Wiley.
- Roberts, G. C., Treasure, D. C., & Kavussanu, M. (1996). Orthogonality of achievement goals and its relationship to beliefs about success and satisfaction in sport. *The Sport Psychologist*, 10(4), 398-408.
- Rubin, K. H., Bukowski, W. M., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 571-645). Hoboken, NJ: Wiley.
- Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: University of Rochester Press.
- Scanlan, T. K., Simons, J. P., Carpenter, P. J., Schmidt, G. W., & Keeler, B. (1993). The Sport Commitment Model: Measurement development for the youth-sport domain. *Journal of Sport & Exercise Psychology*, 15(1), 1-15.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71-92.
- Seidman, E., Chesir-Teran, D., Friedman, J.L., Yoshikawa, H., Allen, L., & Roberts, A. (1999). The risk and protective functions of perceived family and peer microsystems among urban adolescents in poverty. *American Journal of Community Psychology*, 27, 211-237.
- Seifriz, J.J., Duda, J.L. & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport & Exercise Psychology*, 14, 375-391.
- Smith, A. L. (2003). Peer relationships in physical activity contexts: A road less traveled in youth sport and exercise psychology research. *Psychology of Sport and Exercise*, 4, 25-39.
- Smith, A. L. (2007). Youth peer relationships in sport. In S. Jowett & D. Lavalley (Eds.), *Social psychology in sport* (pp. 41-54). Champaign, IL: Human Kinetics.
- Smith, A. L. (2019). A case for peer-focused efforts to understand and promote physical activity in young people. *Kinesiology Review*, 8(1), 32-39.
- Smith, A. L., Balaguer, I., & Duda, J. L. (2006). Goal orientation profile differences on perceived motivational climate, perceived peer relationships, and motivation-related responses of youth athletes. *Journal of Sports Sciences*, 24(12), 1315-1327.

- Smith, A. L., Gustafsson, H., & Hassmén, P. (2010). Peer motivational climate and burnout perceptions of adolescent athletes. *Psychology of Sport and Exercise*, 11(6), 453-460.
- Smith, A. L., Mellano, K. T., & Ullrich-French, S. (2019). Peer relationships. In T. S. Horn & A. L. Smith (Eds.), *Advances in Sport and Exercise Psychology* (4th ed., pp. 133-150). Chicago, IL: Human Kinetics.
- Smith, A. L., Ullrich-French, S., Walker, E. & Hurley, K. S. (2006). Peer relationship profiles and motivation in youth sport. *Journal of Sport & Exercise Psychology*, 28, 362-382.
- Smith, R. E., Smoll, F. L., & Schutz, R. W. (1990). Measurement and correlates of sport-specific cognitive and somatic trait anxiety: The Sport Anxiety Scale. *Anxiety Research*, 2(4), 263-280.
- Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. London: Sage.
- SPSS, I. (2016). IBM SPSS statistics 24. *Algorithms*. Chicago: IBM SPSS Inc.
- Stensel, D. J., Gorely, T., & Biddle, S. J. H. (2008). Youth health outcomes. In A. L. Smith & S. J. H. Biddle (Eds.), *Youth physical activity and sedentary behavior: Challenges and solutions* (pp. 31-57). Champaign, IL: Human Kinetics.
- Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. New York: Norton.
- Tabachnick, B.G. & Fidell, L.S. (2013). *Using multivariate statistics* (5th ed.). Needham Heights, MA: Allyn & Bacon.
- Ullrich-French, S., & Cox, A. (2009). Using cluster analysis to examine the combinations of motivation regulations of physical education students. *Journal of Sport & Exercise Psychology*, 31(3), 358-379.
- Ullrich-French, S., & Smith, A. L. (2006). Perceptions of relationships with parents and peers in youth sport: Independent and combined prediction of motivational outcomes. *Psychology of Sport and Exercise*, 7(2), 193-214.
- Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth sport participation. *Psychology of Sport and Exercise*, 10(1), 87-95.
- Vazou, S. (2010). Variations in the perceptions of peer and coach motivational climate. *Research Quarterly for Exercise and Sport*, 81(2), 199-211.
- Vazou, S., Ntoumanis, N., & Duda, J. L. (2005). Peer motivational climate in youth sport: A qualitative inquiry. *Psychology of Sport and Exercise*, 6(5), 497-516.

- Vazou, S., Ntoumanis, N., & Duda, J. L. (2006). Predicting young athletes' motivational indices as a function of their perceptions of the coach-and peer-created climate. *Psychology of Sport and Exercise*, 7(2), 215-233.
- Weiss, M. R., & Duncan, S. C. (1992). The relationship between physical competence and peer acceptance in the context of children's sports participation. *Journal of Sport & Exercise Psychology*, 14(2), 177-191.
- Weiss, M. R., Ebbeck, V., & Horn, T. S. (1997). Children's self-perceptions and sources of physical competence information: A cluster analysis. *Journal of Sport & Exercise Psychology*, 19, 52-70.
- Weiss, M. R. & Ferrer-Caja, E. (2002). Motivational orientations and sport behavior. In T.S. Horn (Ed.), *Advances in sport psychology* (2nd ed., pp. 101-183). Champaign, IL: Human Kinetics.
- Weiss, M. R., & Raedeke, T. D. (2004). Developmental Sport and Exercise Psychology: Research Status on Youth and Directions Toward a Lifespan perspective. In M. R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 1-26). Morgantown, WV: Fitness Information Technology.
- Weiss, M.R., & Smith, A.L. (1999). Quality of youth sport friendships: Measurement development and validation. *Journal of Sport & Exercise Psychology*, 21(2), 145-166.
- Weiss, M. R., & Smith, A. L. (2002). Friendship quality in youth sport: Relationship to age, gender, and motivation variables. *Journal of Sport & Exercise Psychology*, 24(4), 420-437.
- Weiss, M. R., Smith, A. L., & Theeboom, M. (1996). "That's what friends are for": Children's and teenagers' perceptions of peer relationships in the sport domain. *Journal of Sport & Exercise Psychology*, 18(4), 347-379.
- Weiss, M. R., & Stuntz, C. P. (2004). A little friendly competition: Peer relationships and psychosocial development in youth sport and physical activity contexts. In M. R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 165-196). Morgantown, WV, US: Fitness Information Technology.
- Williams, K. D. (2010). Dyads can be groups (and often are). *Small Group Research*, 41(2), 268-274.
- White, S. A., & Duda, J. L. (1993). Dimensions of goals and beliefs among adolescent athletes with physical disabilities. *Adapted Physical Activity Quarterly*, 10(2), 125-136.
- White, S. A., Kavussanu, M., & Guest, S. M. (1998). Goal orientations and perceptions of the motivational climate created by significant others. *European Journal of Physical Education*, 3(2), 212-228.