THE PEER SOCIAL CONTEXT AND ATHLETES' PERCEPTIONS OF BURNOUT

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PUBLIC ABSTRACT

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Athlete burnout is a negative experience in sport that is characterized by emotional and physical exhaustion, the perception of reduced achievement, and sport devaluation. Athlete burnout is linked with stress, negative emotional states, and a loss in motivation. Such consequences can affect athletes' engagement in sport as well as their overall well-being and health. Research shows that perceptions of athlete burnout can be influenced by physical (e.g., training), psychological (e.g., coping responses), and social (e.g., coaches) factors. When examining social factors, research has largely examined how coaches' behaviors and interactions with athletes relate to and influence athlete burnout. Though important when considering an athletes' sport experiences, little is known about how teammates influence athletes' experiences of burnout. This dissertation examined the interactions and communication of teammates to understand how peers influence athletes' perceptions of burnout.

The purpose of the first study was to understand if social interactions with teammates were related to athletes' sport experiences of burnout and engagement. The study also sought to understand if feelings of loneliness explained the relationship between teammate interactions and athletes sport experiences. Adolescent athletes completed a survey on teammate-based social interactions, loneliness, burnout, and engagement one time during their season. For both boys and girls, social interactions with teammates related to feelings of loneliness. However, social interactions related to athletes' sport experiences only in girls. Additionally, for girls only, loneliness explained the relationship of social interactions with burnout and engagement. Results

suggest that social interactions among teammates are linked with adolescent athletes' feelings of loneliness, and, for girls, their perceptions of burnout and engagement.

The purpose of the second study was to (a) examine the communication structure of sport teams and how communication linked with perceptions of loneliness and relatedness and (b) examine if communication with teammates influenced athletes' perceptions of burnout. Adolescent baseball and softball athletes completed a survey on their communication with teammates and their sport experiences twice across their season. Athletes frequently talked with teammates at practice. Athletes with relatively low perceptions of relatedness and high feelings of loneliness were on the periphery of team networks. Athlete burnout perceptions at time one predicted athletes' perceptions of burnout at time two. Results indicate that communication with teammates does not heighten burnout perceptions later in the season.

The purpose of the third study was to (a) describe communication profiles of athletes and (b) examine the importance of these profiles by assessing profile group differences on athletes' perceptions of burnout, engagement, satisfaction, and enjoyment. Collegiate track and field athletes completed a survey at the end of their season assessing communication with teammates and their motivational sport experiences. Three profiles were found, characterized by different levels of communication processes. Athletes with greater team identity were more likely to be in the Supportive Communicators profile. Males were more likely to be in the Functional Communicators profile than the other two profiles. The most adaptive profile (i.e., the Supportive Communicators) was found to have more positive motivational sport experiences than the other two profiles. Together, this series of studies suggests that communication among teammates can be an important contributor to athletes' burnout perceptions.

ABSTRACT

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Athlete burnout is a negative experience in sport that has adverse effects on individuals' health and well-being. Early qualitative work highlighted the importance of considering the social context when examining athlete burnout. Yet, little research has been conducted on the social contributors of athlete burnout with a lack of attention paid to the role of teammates. Accordingly, this dissertation examined how teammates contribute to and/or change athletes' perceptions of burnout through their interactions and communication.

The purpose of study one was to examine the relationship between social interactions and athletes' sport experiences and if loneliness explained this relationship. Adolescent athletes (N = 279) completed established measures of teammate-based interactions, loneliness, burnout, and engagement. Relationships differed by sex. Social support (β = -0.46) for girls, co-rumination (β = 0.19, 0.20) for girls and boys, respectively, and peer rejection (β = 0.23, 0.31) for girls and boys, respectively, predicted feelings of loneliness. For girls, (a) loneliness predicted athlete burnout (β = 0.24) and athlete engagement (β = -0.22) and (b) loneliness mediated the relationship of social support, co-rumination, and peer rejection with burnout and engagement. Results suggest that interactions among teammates contribute to loneliness in adolescent athletes, and, for girls, perceptions of loneliness contribute to burnout and engagement.

The purpose of study two was to (a) examine the communication structure of sport teams and how communication linked with social perceptions and (b) examine if communication with teammates influenced athletes' perceptions of burnout. Adolescent softball and baseball players

(N = 176, 15 teams) completed network questions pertaining to the frequency of speaking with teammates and closest friends on their team as well as established measures of loneliness, relatedness, team identity, burnout and engagement twice during their season. Athletes with relatively low perceptions of relatedness and high feelings of loneliness were on the periphery of team networks. For all models, initial burnout perceptions predicted burnout perceptions at time two (βs = .37 to .40, all $p < 0.001$), explaining 14 to 15% of the variance in burnout perceptions at time two. Results indicate that communication with teammates did not heighten athletes' perceptions of burnout over time.

The purpose of study three was to (a) describe communication profiles of athletes and (b) examine the salience of these profiles by assessing profile group differences on athletes' motivational sport experiences. Collegiate track and field athletes (N = 219) completed measures of team communication, team identity, burnout, engagement, enjoyment, and satisfaction at the end of their season. Three profiles were found: the Less Effective Communicators, the Supportive Communicators, and the Functional Communicators. Athletes with greater team identity were more likely to be in the Supportive Communicators profile ($p < 0.001$). Males were more likely to be in the Functional Communicators profile than the other two profiles ($p = 0.01$). The Less Effective Communicators had greater perceptions of burnout (ps < 0.01) and lower perceptions of engagement ($p < 0.01$ and $p < 0.05$), satisfaction ($p < 0.001$ and $p = 0.001$), and enjoyment ($p < 0.001$ and $p < 0.05$) than the Supportive and Functional Communicators. Supportive Communicators had greater satisfaction ($p < 0.001$) and enjoyment ($p < 0.001$) than the Functional Communicators. Results indicate that different profiles of communication occur in track and field with implications for athletes' sport experiences. Collectively these studies suggest interactions with teammates can be salient contributors to athletes' burnout perceptions.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: GENERAL INTRODUCTION

Sport is a common activity for youth that can foster development and enhance well-being (Fraser-Thomas, Côté, & Deakin, 2005). Through participation, youth can acquire external assets such as support from social agents and close relationships as well as internal assets such as values, social competencies, resiliency, and identity (Fraser-Thomas et al., 2005; Petitpas, Cornelius, Van Raalte, & Jones, 2005). These assets can promote positive peer relationships, skill-development, motivation, and prolonged engagement in sport (Fraser-Thomas et al., 2005; Ullrich-French & Smith, 2009), fostering psychological, social, and motor development (Fraser-Thomas et al., 2005; Weiss, 2007). Because of these potential positive effects on development, sport is an important context to consider when examining youth development. However, positive sport outcomes that lead to effective development are not automatic through sport participation. Youth athletes can experience injury, diminished perceptions of self-esteem, and negative peer and coach interactions (Fraser-Thomas et al., 2005). Such experiences can diminish motivation and engagement in sport, promote maladaptive relationships, and increase vulnerability toward athlete burnout (Fraser-Thomas et al., 2005). Subsequently, these consequences can lead to the discontinuation of sport and hamper development. Thus, the examination of how to promote positive sport experiences and continued sport participation is salient to the development and well-being of youth.

The study of motivation in sport is one research area that affords an understanding of how to promote positive outcomes in sport and continued sport participation. Youth participate in sport for many reasons and these motives are linked to continued participation (Klint & Weiss, 1987). Within sport and exercise psychology, the motivational literature highlights three salient motives for participation. These motives include: to experience enjoyment, to develop

perceptions of competence, and to make friends and socialize (see Weiss, 2013). Sport environments that foster positive affect, greater perceptions of competence, and adaptive social relationships enhance athletes' motivation and influence motivated behavior (i.e., persistence, effort, and commitment) (Horn & Newton, 2019; Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993). Characteristics of these sport environments include mastery-oriented climates (i.e., focus on task and skill development), positive reinforcement, social support from salient others, and the satisfaction of individuals' basic psychological needs (i.e., autonomy, competence, relatedness) (Ames, 1990; Harter, 1978; Nicholls, 1984; Ryan & Deci, 2002; Weiss, Weiss, & Amorose, 2010). Understanding such characteristics provides knowledge on how to promote continued sport participation and positive development in youth. Yet, the sport context can also diminish athletes' motivation and lead to negative sport experiences (e.g., decreased engagement and burnout). Diminishing motivation and burnout can cause athletes to discontinue sport participation and affect well-being and development.

Within the study of motivational sport experiences, athlete burnout has become a prominent research area. Athlete burnout is defined as a negative cognitive-affective experience characterized by perceptions of emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation (Raedeke, 1997). Perceptions of athlete burnout are shown to positively associate with amotivation, stress, and negative affect (Goodger, Gorely, Lavallee, & Harwood, 2007), undermining athletes' enthusiasm for sport. Thus, athlete burnout is a negative outcome of competitive sport involvement that is tied with maladaptive consequences. Such consequences can influence sport participation, development, and well-being of individuals (Coakley, 2009; Gould, Tuffey, Udry, & Loehr, 1996).

Early conceptualizations of athlete burnout were guided by stress-based theories (Smith 1986; Silva, 1990). Silva (1990) proposed a training stress perspective whereby maladaptive responses to training culminated in burnout. However, stress from training is not always linked with athlete burnout (see Black & Smith, 2007; Gould, Tuffey et al., 1996). Because stress from training is not always an antecedent of burnout, a more comprehensive stress perspective (i.e., see Smith, 1986) is often used to examine perceptions of athlete burnout. Smith (1986) proposed a cognitive-affective model of athlete burnout that highlights the role of chronic stress in fostering burnout. This model describes four stages of the stress process that lead to perceptions of burnout. The first stage consists of the various demands placed on an athlete (e.g., training, social relationships, and perceived pressure). In the second stage, athletes cognitively appraise these demands. When demands are appraised as threatening and cannot be met, maladaptive physiological responses (e.g., mood disturbance, arousal) can occur in the third stage. Such responses are part of a feedback loop that can reinforce or alter one's appraisal of demands. Finally, the cognitive appraisal and physiological responses of an individual lead to coping behaviors in the fourth stage. In the presence of threatening appraisals and adverse physiological responses, poor coping behaviors may occur (e.g., avoidant behavior). This process is also influenced by athletes' motivation and personality. Thus, both situational and personal factors contribute to an individual's appraisal and response to environmental demands as well as his or her coping behaviors.

Smith's (1986) cognitive-affective model acknowledges that, beyond training, there are multiple sources of stress that place demands on athletes. The presence of other sources of stress that influence perceptions of burnout is supported by the findings of Gould, Tuffey and colleagues (1996). Gould, Tuffey and colleagues described two different strains by which an

athlete can experience burnout (i.e., a physical and psychosocial strain). In line with Silva (1990), the physical strain is the result of one's initial inability to meet the demands of training. The psychosocial strain is driven by personal (e.g., motivation concerns, personality characteristics) and environmental (e.g., pressure from parents, lack of friends) demands. These findings suggest that many factors can influence perceptions of burnout in athletes, indicating that the burnout process for one athlete may not be the same process as in another athlete.

Attending to psychosocial sources of stress, Schmidt and Stein (1991) and Raedeke (1997) highlighted the role of commitment in the development of burnout. Athletes who participate in sport because they feel as though they must participate (i.e., entrapped in sport) are more vulnerable to burnout than athletes who are attracted to their sport (i.e., want to participate). Thus, psychological (e.g., low autonomy) and social (e.g., high social constraints from salient others) factors can contribute to burnout perceptions. Also attending to the social context of sport, Coakley's (1992) sociological perspective proposes that the organizational structure of sport as well as a lack of control over one's sport participation fosters burnout; hence, burnout is situated in certain social contexts. These perspectives, along with early qualitative work (see Udry, Gould, Bridges, & Tuffey, 1997), highlight the need to consider social factors when studying burnout.

Within the athlete burnout literature, few empirical efforts have been made to examine the social contributors to burnout or the social contexts in which burnout occurs. The work that has examined such factors has largely focused on how coach behaviors, parent behaviors, or the behaviors of social agents in general associate with athletes' perceptions of burnout. Despite the importance of peers in the physical activity context (see Smith, 2003), their role in fostering or diminishing perceptions of burnout is not well understood. Because athletes frequently interact

with their teammates, they have the potential to greatly influence athletes' sport experiences, and subsequently, influence their perceptions of burnout. Thus, these agents are important to consider when examining athletes' experiences in sport and their psychological, social, and motor development.

During adolescence, youth spend increasingly more time with peers (Rubin, Bukowski, & Parker, 2006). This increase in time spent with peers offers the potential to form meaningful relationships where peer comparison can occur. Such experiences with peers provide youth opportunities to develop socially, emotionally, and cognitively (Rubin et al., 2006). A prominent developmental theoretical perspective, Sullivan's (1953) Interpersonal Theory of Psychiatry, highlights the importance of different levels of peer experiences. This theory suggests that it is important to consider acceptance by the peer group and specific friendships in older children and adolescents. Friendship and peer group acceptance are distinct but related constructs; thus, they distinctly contribute to youth development. In sport, athletes can form intimate friendships with teammates, yet, they also have the potential to perceive overall acceptance or rejection from the team (Smith, 2007). These peer experiences can affect perceptions of social relationships (e.g., feelings of relatedness, loneliness; Woodhouse, Dykas, & Cassidy, 2012) and athletes' motivational outcomes (Ullrich-French & Smith, 2006). As peer experiences can contribute to perceptions of social relationships and motivational outcomes, it would seem likely that peer experiences have the potential to affect perceptions of athlete burnout.

Indeed, the small body of work that has examined the role of teammates in fostering and/or diminishing perceptions of burnout in athletes of various levels (e.g., youth, collegiate) has found that perceived social support and satisfaction with social support from teammates along with perceived peer motivational climate are associated with burnout perceptions

(DeFreese & Smith, 2013b; Smith, Gustafsson, & Hassmén, 2010). Additionally, negative aspects of social relationships are linked with athlete burnout. Bullying and conflict with teammates as well as overall negative social interactions with teammates are positively associated with burnout (Byrd, 2018; Smith et al., 2010; Yildiz, 2015). These findings support the earlier work of Udry and colleagues (1997) which found that burned out athletes reported a greater amount of negative interactions with teammates. Such findings suggest that interactions and communication between teammates, and the climate that is reinforced through teammates' behaviors, may influence vulnerability to burnout. Thus, work directed at understanding how peer interactions and communication influence athletes' perceptions of burnout is warranted.

Such work is particularly important in adolescent and young adult contexts. As young people transition from childhood to adolescence and into young adulthood, the sport environment typically becomes increasingly competitive. A competitive environment lends itself to the potential of experiencing physical and mental exhaustion, perceiving a reduction in performance, and devaluing sport (i.e., burnout perceptions). Such maladaptive experiences can affect motivation to continue participating in sport and influence psychological, social, and motor development. The sport environment also provides many opportunities for social interactions, particularly between teammates, which can shape athletes' experiences in sport. Teammates who frequently converse and work together at practice will share information with one another and express emotions and attitudes. Such interactions have the potential to change information available to an individual and influence her/his attitudes, feelings, or behaviors. Moreover, interactions can foster (or undermine) relationships among teammates, affecting perceptions of closeness (e.g., emotional closeness, relatedness), friendship quality, and acceptance. Closeness and friendship quality can contribute to the type of communication

between individuals as well as the amount of time spent communicating (Roberts & Dunbar, 2011). As such, the network of communication in a team may influence athletes' perceptions of burnout and motivation, and, in turn, affect athletes' well-being and development. Though teammates are an important agent in the sport context, there is a lack of understanding of how teammate interaction and communication contribute to burnout and engagement in sport. Moreover, it is not known if exchanges of information between teammates can exacerbate or mitigate perceptions of burnout over time. The three studies presented within this dissertation address this gap in understanding. Addressing different research questions, each study broadly focuses on how teammates contribute to and/or change athletes' perceptions of burnout through their interactions and communication.

Study one was designed to examine the link between a broad array of social interactions between teammates and perceptions of athlete burnout and engagement. Such an approach afforded an understanding of the nature and relative salience of social interactions in associating with burnout and engagement. In addition, as interactions with peers can affect perceptions of loneliness which is linked with emotional, behavioral, and health issues (Hawkley & Cacioppo, 2010), perceptions of loneliness were examined. Thus, the purpose of study one was to examine the relationship between social interactions and athletes' sport experiences and if loneliness explained this relationship.

As study one examined the relationship between social interactions and athletes' perceptions of loneliness and sport experiences at one time point, influence could not be observed. The purpose of study two was to (a) examine the communication structure of sport teams and how communication linked with social perceptions (i.e., loneliness and relatedness) and (b) examine if frequency of communication with teammates influenced athletes' perceptions

of burnout. A social network perspective was used to guide the study, providing information about how the structure of communication on a sport team influences social and burnout perceptions. Additionally, this perspective affords an examination of friendships and peer-acceptance within a team by capturing ties between teammates. A two-time point design was used, enabling the assessment of how communication with teammates influences and changes athletes' perceptions of burnout over a sport season.

Communication between teammates may be a channel for which perceptions of burnout are shared; however, perceptions of burnout may also be tempered through communication with teammates. Whether communication fosters or mitigates perceptions of burnout may depend on the type of communication between teammates. The purpose of study three was to (a) describe communication profiles of athletes and (b) examine the salience of these profiles by assessing profile group differences on athletes' perceptions of burnout, engagement, satisfaction, and enjoyment. Study three used a person-centered approach to gain a better understanding of what communication among teammates fosters or diminishes positive sport experiences.

Together, this series of studies addresses how the peer social context contributes to athletes' perceptions of burnout. Research focused on how interactions and communication between teammates contribute to and change athletes' perceptions of burnout provides novel information on the role of peers in sport. By studying social interactions and communication between teammates, we begin to understand how exchanges of information shape athlete sport experiences. Additionally, examination of athletes' networks provides information about the potential for transfer of burnout among teammates, enabling an understanding of how burnout may cluster within and 'spread' across a team. This research also provides knowledge on how to promote positive sport experiences by targeting peers. This work can inform coaching practices,

team policies, and team structure to promote positive interactions among teammates and decrease vulnerability to negative social experiences and burnout.

CHAPTER 2: STUDY ONE

TEAMMATE SOCIAL INTERACTIONS, LONELINESS, AND SPORT EXPERIENCES OF ADOLESCENT ATHLETES

Preface

This study began as the practicum research project of the first author (Pacewicz, C. E.) with the guidance of Dr. Alan L. Smith. Preliminary results were presented in October of 2017 at the Canadian Society for Psychomotor Learning and Sport Psychology (SCAPPS) annual conference in St. John's, Newfoundland, Canada as well as in November of 2017 at Michigan State University in East Lansing, Michigan. Data collection concluded in March of 2018.

Abstract

The social context of youth sport, including agents such as coaches and teammates, can contribute to athletes' social perceptions as well as their overall sport experiences. Athletes' interactions with their coaches and teammates have been linked with the sport experiences of burnout and engagement. However, absent is an understanding of how athletes' cognitive-affective responses to social interactions (e.g., loneliness) explain this relationship. Therefore, the purpose of the current study was to examine the relationship between social interactions and sport experiences and if loneliness mediates this relationship. Adolescent athletes (N = 279) completed established measures of teammate-based social interactions, loneliness, burnout, and engagement. Relationships differed by sex. Social support (β = -0.46) for girls, co-rumination (β = 0.19, 0.20) for girls and boys, respectively, and peer rejection (β = 0.23, 0.31) for girls and boys, respectively, predicted feelings of loneliness. For girls, loneliness predicted athlete burnout (β = 0.24) and athlete engagement (β = -0.22). Additionally, for girls, loneliness mediated the relationship of social support, co-rumination, and peer rejection with burnout and engagement. Results suggest that social interactions among teammates are important contributors to loneliness in adolescent athletes, and, for girls, perceptions of loneliness contribute to burnout and engagement. Continued examination of athletes' perceptions of loneliness will extend understanding of youth athletes' sport experiences with implications for well-being.

Introduction

Sport is a context for the development of youth that can foster physical and psychological well-being. The social context, including agents such as coaches and peers, can influence youth sport experiences (e.g., athlete burnout and athlete engagement). Agents in the sport environment positively and negatively affect youth athletes' sporting experiences, which influence outcomes of sport participation (Weiss, 2013). Within a team, athletes spend a considerable amount of time in direct interaction with their teammates. These interactions can influence their sporting experiences as well as their perceptions of social relationships. Thus, the purpose of the current study is to examine the relationship between social interactions and athletes' sport experiences and if loneliness explains this relationship.

One experience that may occur because of sport participation is athlete engagement. Athlete engagement is a cognitive-affective state characterized by confidence, dedication, vigor, and enthusiasm (Lonsdale, Hodge, & Jackson, 2007). The environment in which athletes participate can influence their motivation, enjoyment, commitment, and self-perceptions, which can enhance or hinder their engagement (Hodge, Lonsdale, & Jackson, 2009; Lonsdale, Hodge, & Raedeke, 2007). In turn, athlete engagement has been shown to positively relate to flow (Hodge et al., 2009) and negatively relate to burnout (Lonsdale, Hodge, & Jackson, 2007). Within youth sport, Curran, Hill, Hall, and Jowett (2015) found that a coach-created mastery climate positively related to athlete engagement in adolescent athletes, highlighting the importance of the social context in fostering this adaptive sport experience.

Though sport is an activity that can foster positive experiences such as athlete engagement, this is not always the result of sport participation. Sport can also lead to adverse experiences such as athlete burnout. Athlete burnout consists of three core dimensions:

emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation (Raedeke, 1997; Raedeke & Smith, 2001). Emotional and physical exhaustion is characterized by athletes' feelings of fatigue. Reduced sense of accomplishment involves athletes' negative perceptions of their performance. Sport devaluation is athletes' diminishing feelings toward their sport (Raedeke, 1997). In demanding situations, these core dimensions of burnout have been shown to increase over time for some athletes (i.e., over a sport season; Adie, Duda, & Ntoumanis, 2012; Balaguer et al., 2012; Isoard-Gautheur, Guillet-Descas, Gaudreau, & Chanal, 2015; Martinent, Decret, Guillet-Descas, & Isoard-Gautheur, 2014) and vary across individuals. Athlete burnout has also been shown to negatively relate to athlete engagement (Lonsdale, Hodge, & Jackson, 2007; DeFreese & Smith, 2013a).

R. E. Smith (1986) proposed a cognitive-affective model of athlete burnout whereby chronic stress and cognitive appraisals of stress affect the coping mechanisms, physiological outcomes, and behaviors of athletes. Stress can result from the inability to adapt to training and has been associated with athlete burnout (Cresswell & Eklund, 2006a, 2007). However, burnout has also been associated with psychosocial and environmental factors (see Gustafsson, Kenttä, & Hassmén, 2011; Smith, Pacewicz, & Raedeke, 2019; Udry, Gould, Bridges, & Tuffey, 1997). These findings suggest that burnout perceptions can be influenced by multiple factors, including the social context.

The social context of sport includes various agents (e.g., coaches, parents, officials, and teammates) who interact with athletes. Research concerning athlete burnout and social interactions has largely examined social support (see Pacewicz, Mellano, & Smith, 2019). Social support refers to social interactions with important others that are aimed at generating positive outcomes (Bianco & Eklund, 2001). Past research has examined overall social support, social

support from coaches, and the behaviors of coaches that shape the sport climate. Perceptions of overall social support are negatively associated with global burnout as well as the three core dimensions (Cresswell, 2009; Cresswell & Eklund, 2004; Pacewicz et al., in-press, Raedeke & Smith, 2001, 2004). Similarly, received social support from coaches is negatively associated with global burnout and moderates the relationship between stress and athlete burnout (Lu et al., 2015). These findings suggest that social support may buffer the effects of stress in athletes, decreasing vulnerability to burnout. Concerning athlete engagement, social support has not been explicitly examined. However, the negative relationships between burnout and social support as well as burnout and engagement suggest that social support would be positively related to athlete engagement, enhancing positive sport outcomes.

Included in the sport social context are agents' behaviors which can shape the team climate. With respect to coaches, such factors have been examined regarding athlete burnout and athlete engagement. Coach autonomy-support is negatively related to athlete burnout (Adie et al., 2012; Balaguer et al., 2013; Isoard-Gautheur, Guillet-Descas, & Lemyre, 2012) and positively related to subjective vitality whereas controlling coach behaviors are positively related to athlete burnout (Balaguer et al., 2013). On the other hand, athlete engagement is positively related to a coach-created mastery climate (Curran et al., 2015). Adaptive coach-created sport climates seem to enhance positive outcomes of sport and promote well-being of athletes. However, teammates (i.e., peers) play a significant role in athletes' experiences in sport and warrant assessment when examining the sport experiences of youth athletes (see Smith, 2003). In particular, during adolescence, peers become a point of social reference and can shape development (Jackson & Rodriguez-Tomé, 1993). Among adolescent athletes, perceived peer motivational climate is associated with burnout levels. Greater ego-involving characteristics (i.e., intra-team

competition, ability, and conflict) and lower task-involving characteristics (i.e., improvement, relatedness support, and effort) are related to higher burnout levels in athletes (Smith, Gustafsson, & Hassmén, 2010). For collegiate athletes, perceived social support and satisfaction with social support from teammates is negatively linked with burnout (DeFreese & Smith, 2013b). Furthermore, perceived social support is more important than actual, or received, social support (DeFreese & Smith, 2013b). These findings suggest that peers and the social support they provide are related to adaptive or maladaptive sport outcomes of athletes.

The assessment of burnout and social interactions in the sport context is limited and mostly focuses on social support (Pacewicz et al., 2019). Because athlete burnout is a negative consequence of sport, we must also understand how negative social interactions influence the development of burnout. Negative social interactions have been positively associated with global burnout and all three burnout dimensions and negatively associated with subjective well-being (DeFreese & Smith, 2014). However, DeFreese and Smith (2014) examined negative social interactions in general which did not afford a more nuanced examination of the relationship between teammate interactions, burnout, and subjective well-being. Outside of the sport context, among working adults and athletic trainers, negative social interactions between co-workers are positively associated with burnout (Boren, 2014; DeFreese & Mihalik, 2016). Furthermore, negative social interactions are shown to suppress the positive effects of social support on the development of burnout in working adults (Boren, 2014).

Similar to co-workers, teammates work together and depend upon one another; therefore, the simultaneous examination of positive social interactions (e.g., social support) and negative social interactions may afford a better understanding of how athletes' sport experiences are affected by teammates. Moreover, aligned with Sullivan's (1953) interpersonal theory of

psychiatry, the assessment of teammate interactions both at the friendship level and the team (i.e., group) level are needed because the peer group and dyadic friendship influence well-being in adolescents. Close friendships within a team may mitigate the negative effects of overall teammate rejection, highlighting the need to assess both group and friendship level characteristics of peer relationships.

Specific negative social interactions at the friendship level (i.e., co-rumination and conflict) and at the peer-group level (i.e., peer rejection) have been previously studied among children and adolescents (Dodge et al, 2003; Ommundsen, Roberts, Lemyre, & Miller, 2005; Rose, 2002; Smith et al., 2010). Co-rumination, the excessive use of negative problem talk in a supportive social interaction, is positively associated with friendship quality and closeness and is more prevalent in girls (Rose, 2002). Co-rumination has also been positively associated with the internalization of depression symptoms and anxiety in adolescents (Rose, 2002). Thus, co-rumination seems to enhance feelings associated with agents (e.g., friends) but, at the same time, can hinder well-being. Though co-rumination has not been examined in the sport context, this peer interaction seems relevant due to the nature of athletic teams. Teammates frequently interact and may take part in co-ruminating to cope with the physical and psychological demands of sport. As research within child development has found this behavior to negatively relate to well-being and positively relate to friendship quality, these findings can be extended to the sport context. Co-rumination may strengthen friendships within a team but enhance vulnerability to burnout. Moreover, co-rumination may hinder engagement because constant rumination over problems can serve to undermine characteristics of engagement (i.e., enthusiasm, dedication, vigor, and confidence).

Conflict, arising from a disagreement between two or more people, has been associated with negative psychosocial outcomes in youth (Storch & Masia-Warner, 2004). It is a negative aspect of friendship (Weiss & Smith, 1999, 2002; Weiss, Smith, Theeboom, 1996) and is also a characteristic of an ego-involving peer climate (Vazou, Ntoumanis, & Duda, 2005). In the context of sport, conflict is linked to poor sport performance and communication, low team cohesion, higher levels of competitive anxiety, and negative emotional outcomes in adolescent athletes (Partridge & Knapp, 2016). Additionally, conflict among peers is associated with higher levels of athlete burnout (Gustafsson, Hassmén, Kentä, & Johansson, 2008; Smith et al., 2010), indicating that this social interaction is important to examine when assessing youth athletes' sporting experiences.

A final negative social interaction found among children and adolescents is peer rejection. Peer rejection pertains to the act of excluding individuals from a peer group and has been associated with aggression, anti-social behavior, and lower levels of self-esteem in youth (Dodge et al., 2003; Jiang, Zhang, Ke, Hawk, & Qui, 2015; Weiss & Smith, 2002). Moreover, rejected children have reported significantly higher levels of loneliness than their peers (Asher & Wheeler, 1985; Parker & Asher, 1993). On the other hand, social (i.e., peer) acceptance and social competence have been negatively related to feelings of loneliness (Haugen, Säfvenbom, & Ommundsen, 2013; Parker & Asher, 1993; Woodhouse, Dykas, & Cassidy, 2012). Within the larger peer group (e.g., a team), perceptions of companionship with close friends are positively related to friendship quality, enjoyment, and commitment in youth athletes (Weiss and Smith, 2002). Additionally, these perceptions can buffer the effects of loneliness (Parker & Asher, 1993). Though peer rejection and companionship have not been examined with the sport outcomes of athlete engagement and athlete burnout, past findings indicate that these social

interactions may relate to and affect such sport experiences. That is, perceptions of positive social relationships (i.e., inclusion and companionship) may enhance the psychological well-being of athletes (i.e., decreased feelings of loneliness), fostering positive sport experiences and diminishing negative experiences.

Various social interactions occur at the friendship and peer-group level and these interactions can influence perceptions of one's relationships, including loneliness (Burgess, Ladd, Kochenderfer, Lambert, & Birch, 1999). Loneliness has been defined as an aversive emotional response that occurs when a discrepancy exists between one's perceived interpersonal relationships and desired relationships (Peplau & Perlman, 1982). Loneliness includes both a cognitive component (i.e., recognizing a discrepancy in one's relationships) and an affective component (i.e., resulting negative emotions). This negative perception is common in adolescence due to the particular importance of peers and the fundamental need to belong during this developmental period (Baumeister & Leary, 1995). Social interactions can contribute to perceptions of belonging and inclusion and positive friendship quality; yet, social interactions can also contribute to perceptions of a lack of acceptance and poor friendship quality. When social interactions are negative they can contribute to feelings of loneliness (Burgess et al., 1999). In addition, loneliness is associated with maladaptive outcomes including depression, social anxiety, and lower life satisfaction (Moore & Schultz, 1983). Because of these relationships, loneliness may be associated with athletes' sporting experiences of burnout and engagement whereby greater loneliness increases burnout perceptions and decreases engagement. Thus, loneliness may mediate the relationships between social interactions and athlete burnout/engagement.

Past research findings indicate that both positive and negative social interactions associate with athletes' sport experiences. However, what is not known is if athletes' cognitive-affective responses (e.g., loneliness) to such social interactions explain this relationship. To address this gap in the literature, the purpose of the current study was to examine the relationship between social interactions and athletes' sport experiences of burnout and engagement and if loneliness mediates this relationship in adolescent athletes. It was hypothesized that (a) positive social interactions (i.e., social support from all teammates and companionship with one's best friend on the team and with all teammates) would negatively associate with perceptions of loneliness and athlete burnout and positively predict athlete engagement; (b) negative social interactions (i.e., co-rumination with one's best friend on the team and rejection from all teammates) would positively associate with loneliness and athlete burnout and negatively associate with athlete engagement; (c) conflict would positively associate with athlete burnout and negatively associate with athlete engagement but would not predict loneliness[1]; and (d) loneliness would mediate the relationship between social interactions and athlete burnout and engagement. Additionally, as research has shown that girl's friendships are marked by greater self-disclosure, intimacy, and perceptions of caring beginning in middle childhood and early adolescence (Rubin, Bukowski, & Parker, 2006), it was hypothesized that (e) girls would report greater social support, companionship with one's best friend, and co-rumination than boys.

Method

Participants

Approval by Michigan State University's institutional review board was obtained prior to conducting the study (see Appendix A). Data were collected from a sample of 279 (female =

[1] Conflict was not hypothesized to predict loneliness because empirical evidence suggests that the effects of aggression (which may lead to conflict) on loneliness change with development (Sandstrom & Coie, 1999). Aggression and conflict may only link with loneliness in childhood. Furthermore, within adolescents, aggression is shown not to associate with loneliness (Woodhouse et al., 2012).

146) adolescent athletes. Participants ranged in age from 13 to 19 years (*M* = 15.9, *SD* = 1.3) and competed in swimming (n = 3), track and field (n = 33), cross country (n = 83), lacrosse (n = 25), basketball (n = 16), baseball (n = 17), softball (n = 102). A Hispanic or Latino ethnicity was reported by 9% of the participants. The majority of participants self-identified as White (76.7%). Remaining participants self-identified as Asian (4.3%), Black or African American (3.2%), American Indian or Alaska Native (.4%), more than one race (11.5%), other (1.0%), or prefer not to say or did not respond (2.9%). Average involvement in participants' respective sport was 6.0 years (*SD* = 3.4). Average involvement on one's current team was 2.6 years (SD = 1.7) and average time spent training per week was 11.7 hours (*SD* = 6.6).

Measures

Demographics. Participants were asked to report their age, sex, ethnicity, race, and year in high school. Participants were also asked to report the sport they currently participated in, length of time playing the current sport, length of time with the current team, and estimated weekly hours spent training.

Positive Social Behaviors.

Social support. Perceived satisfaction with social support from teammates was assessed by six items adapted from the Social Support Questionnaire-Short Form (SSS-SF; Sarason, Sarason, Shearin, & Pierce, 1987). Athletes reported their satisfaction with the overall social support they receive from their teammates (e.g., "To what extent are you satisfied with the overall support you receive from your teammates…when you feel under stress and need to be distracted from your worries?") on a 5-point Likert scale (1 = *very dissatisfied*, 5 = *very satisfied*). Scores across items were averaged to calculate an aggregate support satisfaction score. Research using the modified version of the measure in athlete populations supports the internal

consistency reliability of the measure and has shown expected theoretical associations with relevant constructs (DeFreese & Smith, 2013; DeFreese & Smith, 2014; Raedeke & Smith, 2004). Internal consistency of scores for the present study was $\alpha = 0.91$.

Companionship. Companionship was assessed between best friends on a team and between all teammates. To examine companionship between best friends, the companionship and pleasant play subscale of the Sport Friendship Quality Scale (SFQS; Weiss & Smith, 1999) was used. The scale consists of four items. Participants rated how true each item was when thinking about their best or closest friend on their current sport team (e.g., "My friend and I spend time together") on a 5-point Likert scale (1 = *not at all true*, 5 = *really true*). The average of the four items was used to represent companionship at the dyad level. The SFQS has been previously validated among children and adolescents in sport (Weiss & Smith, 1999; Weiss & Smith, 2002). Reliability for the entire SFQS has been supported (Weiss & Smith, 1999; Weiss & Smith, 2002). Regarding the companionship and pleasant play subscale, test-retest reliability is also supported (0.77-0.86; Weiss & Smith, 1999; Weiss & Smith, 2002). In the current study, internal consistency reliability of scores was $\alpha = 0.88$.

To examine companionship at the team level, the companionship subscale (three items) from the Positive and Negative Social Exchanges scale (PANES; Newsom et al., 2005) was used. Participants reported the degree to which they were satisfied by each item when thinking about their teammates (e.g., "In general, how satisfied are you when your teammates…include you in things they were doing?"). Each item was rated on a 4-point Likert scale (1 = *not at all satisfied*, 4 = *very satisfied*). The items were averaged and used to represent companionship at the team level. Acceptable internal consistency reliability as well as validity have been

previously reported (Newsom et al., 2005). In the current study, internal consistency reliability of scores was $\alpha = 0.90$.

Negative Social Behaviors.

***Co-rumination*.** The Co-Rumination Questionnaire (Rose, 2002) was used to assess the extent to which participants co-ruminated with close teammates. The 27-item questionnaire was originally developed to measure co-rumination amongst close same-sex friends in children and adolescents (e.g., "When one of us has a problem, we talk about it for a long time") and has demonstrated good internal consistency ($\alpha = 0.96$-0.97; Rose, 2002; Rose, Carlson, & Waller, 2007). Past work has supported the validity of the measure (see Davidson et al., 2014). In the current study, the questionnaire was modified to have participants report on close teammates on their current team. Each item was rated on a 5-point Likert scale (1 = *not at all true*, 5 = *really true*). A co-rumination score was calculated by averaging responses on all 27 items. Internal consistency reliability of scores in the present study was $\alpha = 0.96$.

***Rejection*.** One subscale (three items) from the Positive and Negative Social Exchanges scale (PANES; Newsom et al., 2005) was used to examine perceptions of rejection among teammates. Participants reported the degree to which they were bothered by each item when thinking about their teammates (e.g., "In general, how bothered are you when teammates…leave you out of activities you would have enjoyed?") on a 4-point Likert scale (1 = *not at all bothered*, 4 = *very bothered*). An aggregate score was calculated by averaging scores across the items. Acceptable internal consistency reliability as well as validity have been reported (Newsom et al., 2005). Additionally, all negative social exchange items (n = 12) were previously used with athletes and demonstrated internal consistency reliability (α =0 .93; DeFreese & Smith, 2014). In the current study, internal consistency reliability of scores was $\alpha = 0.86$.

Conflict. The conflict subscale of the Sport Friendship Quality Scale (SFQS; Weiss & Smith, 1999) was used to assess conflict between teammates. The scale consists of three items. Participants rated how true each item was when thinking about their best or closest friend on their current sport team (e.g., "My best friend and I have arguments") on a 5-point Likert scale (1 = *not at all true*, 5 = *really true*). Scores were calculated by averaging responses across the three items. The SFQS has been validated among children and adolescents (Weiss & Smith, 1999; Weiss & Smith, 2002). Reliability for the measure (Weiss & Smith, 1999; Weiss & Smith, 2002) has been supported as well as test-retest reliability of the conflict subscale (α = 0.87-0.92; Weiss & Smith, 1999; Weiss & Smith, 2002). Internal consistency reliability of scores was α = 0.89.

Loneliness. Feelings of loneliness were examined by using a subset of three items from the Loneliness and Social Dissatisfaction Questionnaire (Asher, Hymel, & Wheeler, 1984; Asher & Wheeler, 1985). This subset of questions (i.e., "I feel alone", "I feel left out of things", and "I'm lonely") was used because the construct under consideration is feelings of loneliness and these items directly target such feelings. Participants reported how true each statement was when thinking about themselves in general on a 5-point Likert scale (1 = *not true at all*, 5 = *always true*). Scores across all three items were averaged to obtain an overall score of perceived loneliness. This subset of questions has been used with children in the past and has demonstrated convergent validity and acceptable internal consistency reliability (α = 0.77; Parker & Asher, 1993). In the current study, internal consistency reliability of scores was α = 0.90.

Athlete burnout. Athletes' perceptions of burnout were measured using the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001, 2009). The measure is comprised of 15 items that assess the athlete burnout dimensions of emotional and physical exhaustion (e.g., "I feel overly tired form my sport participation"), reduced sense of accomplishment (e.g., "I am not

performing up to my ability in my sport"), and sport devaluation (e.g., "I'm not into my sport like I used to be"). Responses are on a 5-point Likert scale (1 = *almost never*, 5 = *almost always*) reflecting athletes' frequency of experiencing perceptions of burnout during their current sport participation. Subscale scores were calculated by averaging scores of items for each respective dimension while a global burnout index was calculated by averaging scores on all items. Reliability and validity have been supported in previous research (Raedeke & Smith, 2001, 2009). Internal consistency reliability of scores in the current study were $\alpha = 0.88$ for global burnout and $\alpha = 0.72$ to 0.90 for burnout subscales.

Athlete engagement. Perceptions of engagement were measured using the 16 item Athlete Engagement Questionnaire (AEQ; Lonsdale, Hodge, & Jackson, 2007). The measure assesses the engagement dimensions of confidence (e.g., "I feel capable of success in my sport"), dedication (e.g., I am dedicated to achieving my goals in sport"), enthusiasm (e.g., "I am excited about my sport"), and vigor (e.g., "I feel energized when I participate in my sport"). Participants rated how often they experienced each item during their current sport season on a 5-point Likert scale (1 = *almost* never, 5 = *almost always*). Subscales were calculated by averaging scores of items for each dimension. A total engagement score was calculated by averaging responses on all 16 items. Validity of the measure is supported through research showing expected associations with constructs theoretically linked to engagement (Hodge, Lonsdale, & Jackson, 2009; Lonsdale, Hodge, & Jackson, 2007). The measure has also been used with adolescent athletes and demonstrated construct validity and acceptable reliability ($\alpha = .74$-$.81$; Curran et al., 2015). Internal consistency reliability of scores in the current study were $\alpha = 0.95$ for total engagement and $\alpha = 0.85$ to 0.89 for engagement subscales.

Procedure

Ethical approval was obtained by the institutional review board (IRB) prior to conducting the study (see Appendix A). Head coaches were contacted via email or phone to ask for their team's participation. Once permission from coaches was obtained, meetings with athletes were arranged. The first author met with all teams to describe the study, distribute consent and assent forms, and administer the questionnaire battery. Written consent from legal guardians as well as assent from participants was obtained before completion of the questionnaire battery which appears in Appendix B.

Data Analysis

Data were screened for missing values, violations of assumptions, and outliers (Tabachnick & Fidell, 2013). Descriptive statistics, bivariate correlations, and scale reliabilities were calculated for all variables. Multivariate analyses of variance (MANOVA) were used to examine differences in study variables between boys and girls and interdependent and independent sport teams. To assess the study hypothesis concerning the mediating effects of loneliness on the relationship between social interactions and athletes' burnout and engagement, the mediating model (see Figure 2.1) was assessed using observed variable path analysis in *M*plus version 7.4 (Muthén & Muthén, 1998-2015). The global burnout index and total engagement score were used as the dependent variables in separate analyses. Overall fit of the models was assessed using the exact fit chi-square test, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Residual (SRMR). Bias-corrected bootstrapped confidence intervals were used to assess mediation. Significant mediation was detected if confidence intervals did not span zero. This technique was chosen because bias-corrected resampling methods provide more accurate confidence intervals for

mediating analyses because no assumption is made about the sampling distribution of the indirect effect (MacKinnon, Lockwood, & Williams, 2004). Differences in the structural parameters (i.e., path coefficients) across boys and girls were examined with a multiple-group path analysis. This analysis involved testing two nested models: a fully invariant model where all paths were constrained to be equal across boys and girls and a fully unconstrained model where all paths could differ between boys and girls. To examine the nested models of the multiple-group path analysis, a chi-square difference tests was used. A significant chi-square difference test indicates that the more complex model fits the data better (i.e., the unconstrained model).

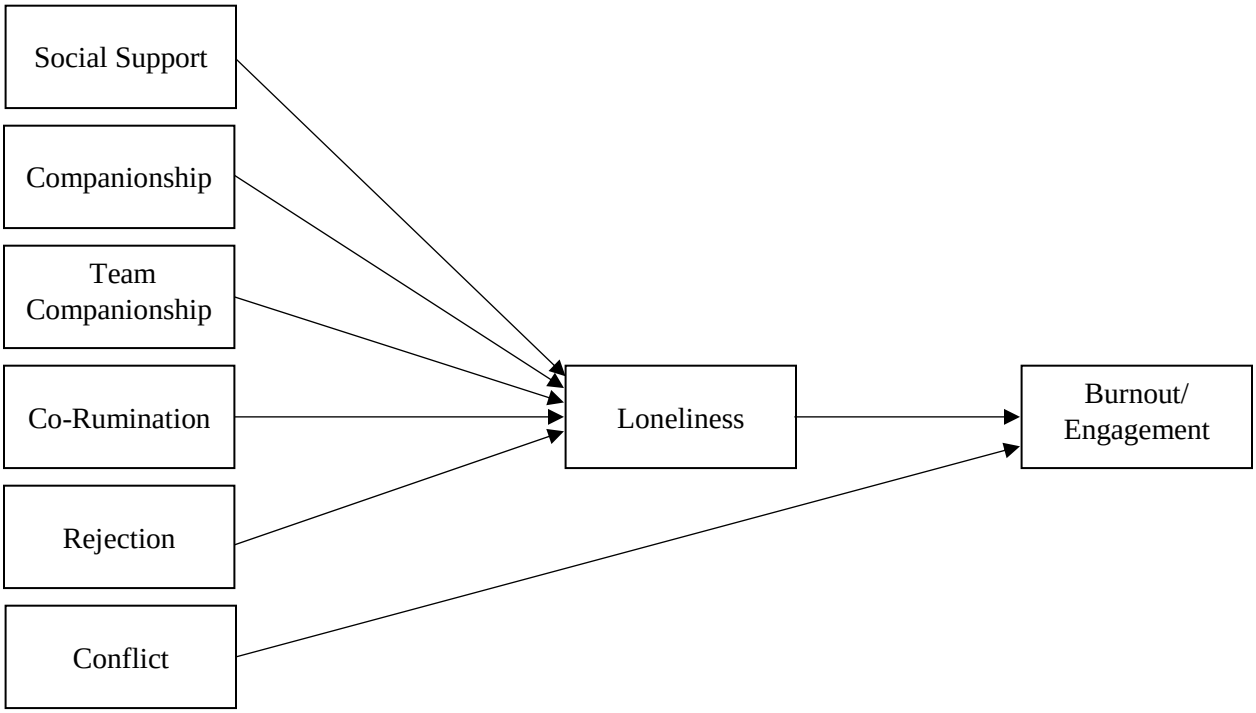

Figure 2.1. Observed Path Analysis

Results

Preliminary data screening

Preliminary evaluation of skewness and kurtosis values revealed slight deviations from normality; however, skewness was no greater than (1.6) and kurtosis was no greater than (2.6). Such deviations from normality are lower than the criterion (i.e., skewness > 2 and kurtosis > 7)

linked with issues in maximum likelihood (ML) based studies (Finney & DiStefano, 2013). Missing data was limited (0.01%) and was handled in *M*plus using ML estimation. Subsequent screening for Multivariate outliers (Mahalanobis distance, χ^2 [9] = 27.88, $p < 0.001$; Tabachnick & Fidell, 2013) revealed three outliers. When these participants were removed, no substantive differences in results were found, thus, these cases were included in the following analyses.

Descriptive statistics

Descriptive statistics appear in Table 2.1. Participants reported relatively low-to-moderate levels of burnout dimensions and global burnout. Relative to the sample, participants reported high levels of engagement dimensions and total engagement. Additionally, participants reported low-to-moderate feelings of loneliness. Correlations among the burnout dimensions as well as correlations among the engagement dimensions were consistent with previous research (Lonsdale, Hodge, & Jackson, 2007; Raedeke & Smith, 2009). Burnout dimensions and global burnout were negatively correlated with engagement dimensions and total engagement. Participants reported moderate-to-high levels of perceived social support, companionship with a best friend on their team, and companionship with teammates, moderate levels of peer rejection and co-rumination, and low-to-moderate levels of conflict.

Two one-way multivariate analyses of variance (MANOVA) were conducted to examine if boys and girls differed on social interactions and dependent variables (i.e., loneliness, burnout, and engagement), respectively. For the social interaction variables, there was a significant multivariate test statistic (Wilks $\Lambda = .83$; F (6, 267) = 9.09, $p < 0.001$; partial $\eta^2 = 0.17$). Follow-up univariate *F*-tests indicated significant sex differences for companionship with one's best friend on the team (F (1, 272) = 30.27, $p < 0.001$, partial $\eta^2 = 0.10$), co-rumination (F (1, 272) = 8.73, $p = 0.003$, partial $\eta^2 = 0.13$), and peer rejection (F (1, 272) = 21.48, $p < 0.001$, partial $\eta^2 =$

0.07)). On average, girls had higher scores than boys for companionship with one's best friend on the team (*M* female = 4.54, *SD* = 0.06; *M* male = 4.07, *SD* = 0.06), co-rumination (*M* female = 2.4, *SD* = 0.06; *M* male = 2.37, *SD* = 0.07), and peer rejection (*M* female = 2.80, *SD* = 0.07; *M* male = 2.36, *SD* = 0.07). For the dependent variables, the multivariate test statistic was not significant (Wilks Λ = .99; F (3, 269) = .792, p = .499; partial η^2 = 0.01).

Two one-way multivariate analyses of variance (MANOVA) were conducted to examine if interdependent (i.e., lacrosse, basketball, baseball and softball) and independent (i.e., swimming, track and field, and cross country) differed on social interactions and dependent variables (i.e., loneliness, burnout, and engagement), respectively. For the social interaction variables, there was a significant multivariate test statistic (Wilks Λ = .95; F (6, 267) = 2.22, p = .041; partial η^2 = 0.05). Follow-up univariate *F*-tests indicated significant differences for companionship with one's best friend on the team (F (1, 272) = 7.29, p = 0.007, partial η^2 = 0.03). On average, athletes on interdependent sport teams reported high levels of companionship with a best friend on their team (*M* independent = 4.18, *SE* = 0.74; *M* interdependent = 4.42, *SE* = 0.73). For the dependent variables, the multivariate test statistic was significant (Wilks Λ = .93; F (3, 269) = 6.79, $p < 0.001$; partial η^2 = 0.07). Follow-up univariate *F*-tests indicated significant differences for perceptions of burnout (F (1, 271) = 11.46, p = 0.001, partial η^2 = 0.04) and engagement (F (1, 271) = 13.18, $p < 0.001$, partial η^2 = 0.05). On average, athletes on interdependent sport teams reported lower perceptions of burnout (*M* independent = 2.27, *SE* = 0.62; *M* interdependent = 2.02, *SE* = 0.58) and higher perceptions of engagement (*M* independent = 4.04, *SE* = 0.61; *M* interdependent = 4.30, *SE* = 0.56).

Table 2.1

Descriptive Statistics for Study Variables (N = 279)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Social Support	*.91*															
2. Companionship	.29**	*.88*														
3. Team Companionship	.43**	.21**	*.90*													
4. Co-Rumination	.32**	.30**	.25**	*.96*												
5. Peer Rejection	-.05	.24**	.10	.24**	*.86*											
6. Conflict	-.10	-.02	-.05	.12	.08	*.89*										
7. Loneliness	-.37**	-.08	-.23	.11	.31**	.08	*.90*									
8. Exhaustion	-.05	-.07	.01	.22**	.18**	.18**	.16**	*.90*								
9. Reduced Accomplishment	-.30**	-.21**	-.11	.02	.10	.17**	.30**	.37**	*.72*							
10. Sport Devaluation	-.26**	-.08	-.10	.08	.19**	.22**	.30**	.42**	.58**	*.83*						
11. Global Burnout	-.24**	-.14*	-.08	.15*	.21**	.24**	.31**	.79**	.78**	.83**	*.88*					
12. Confidence	.26**	.20**	.07	.08	.01	-.10	-.22**	-.29**	-.60**	-.53**	-.57**	*.85*				
13. Dedication	.23**	.22**	.13*	.14*	.07	-.09	-.17**	-.22**	-.51**	-.61**	-.54**	.73**	*.88*			
14. Enthusiasm	.31**	.15*	.08	.07	-.02	-.11	-.24**	-.36**	-.51**	-.67**	-.64**	.70**	.70**	*.89*		
15. Vigor	.28**	.23**	.09	.08	-.03	-.10	-.21**	-.40**	-.51**	-.57**	-.61**	.66**	.66**	.80**	*.87*	
16. Total Engagement	.31**	.22**	.10	.11	.01	-.12	-.24**	-.36**	-.60**	-.67**	-.67**	.87**	.87**	.91**	.89**	*.95*
Possible Range	1-5	1-5	1-4	1-5	1-4	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
M	3.67	4.31	3.53	2.49	1.87	2.59	2.47	2.07	1.86	2.13	4.17	4.31	4.25	4.00	4.18	1.90
SD	.87	.74	.64	.80	.90	.81	.88	.64	.77	.61	.65	.69	.70	.72	.61	.94

Notes. **p* < .05; ***p* < .01; Cronbach's alpha values appear on the matrix diagonal in italics; Correlations appear below the diagonal.

Mediation analyses

Two observed path analyses were conducted, one for each dependent variable. Fit indices for the proposed mediating model with global burnout as the outcome revealed good fit to the data, $\chi^2(1, N = 279) = 0.011$, $p = 0.915$; RMSEA = 0.000 ($C.I._{LB} = 0.000$, $C.I._{UB} = 0.061$); CFI = 1.000; SRMR = 0.001. Social support (β = -0.18), companionship with one's best friend (β = -0.16), co-rumination (β = 0.18), conflict (β = 0.18), and loneliness (β = 0.16) significantly associated with global burnout[2]. Companionship at the team level (β = 0.02) and peer rejection (β = 0.05) did not significantly associate with global burnout. Social support (β = -0.34), companionship at the team level (β = -0.15), co-rumination (β = 0.21), and peer rejection (β = 0.27) significantly associated with loneliness. Companionship with one's best friend on the team (β = -0.07) did not associate with loneliness. Loneliness significantly mediated the relationship between social support and burnout, team companionship and burnout, co-rumination and burnout, and peer rejection and burnout (see Table 2.2).

Fit indices for the proposed mediating model with total engagement as the outcome revealed good fit to the data, $\chi^2(1, N = 279) = 0.021$, $p = 0.884$; RMSEA = 0.000 ($C.I._{LB} = 0.000$, $C.I._{UB} = 0.078$); CFI = 1.000; SRMR = 0.001. Social support (β = 0.23), companionship with one's best friend (β = 0.15), and loneliness (β = -0.17) significantly associated with total engagement. Team companionship (β = -0.08), co-rumination (β = 0.02), peer-rejection (β = 0.05), and conflict (β = -0.09) did not associate with total engagement. Social support (β = -0.34), companionship at the team level (β = -0.15), co-rumination (β = 0.21), and peer rejection (β = 0.27) significantly predicted loneliness. Predictors of loneliness remained the same from the model with burnout as the dependent variable. Loneliness significantly mediated the relationship between social support and engagement, team companionship and engagement, co-rumination

[2] Standardized coefficients reported in text for all direct and indirect effects.

and engagement, and peer rejection and engagement (see Table 2.2). Explained variance for loneliness, burnout, and engagement was 27%, 21%, and 15% respectively.

Table 2.2
Standardized Direct and Indirect Effects of Study Variables on Burnout and Engagement for Total Sample

	Direct Effect (SE)	Indirect Effect (SE)	95% Confidence Interval
Loneliness			
Social Support	-0.34** (0.07)	--	--
Companionship	-0.07 (0.07)	--	--
Team Companionship	-0.15* (0.07)	--	--
Co-rumination	0.24** (0.06)	--	--
Peer Rejection	0.27** (0.06)	--	--
Global Burnout			
Social Support	-0.18** (0.07)	-0.053 (0.03)	-0.114, -0.012
Companionship	-0.16* (0.07)	--	--
Team Companionship	0.02 (0.07)	-0.023 (0.02)	-0.069, -0.001
Co-rumination	0.18** (0.06)	0.033 (0.02)	0.006, 0.074
Peer Rejection	0.12 (0.06)	0.043 (0.02)	0.010, 0.094
Conflict	0.18** (0.06)	--	--
Loneliness	0.16* (0.07)	--	--
Total Engagement			
Social Support	0.23** (0.08)	0.059 (0.03)	0.013, 0.128
Companionship	0.15* (0.07)	--	--
Team Companionship	-0.08 (0.06)	0.025 (0.02)	0.002, 0.077
Co-rumination	0.02 (0.07)	-0.036 (0.02)	-0.081, -0.008
Peer Rejection	0.05 (0.07)	-0.047 (0.02)	-0.099, -0.012
Conflict	-0.09 (0.06)	--	--
Loneliness	-0.17* (0.08)	--	--

Note. Analyses based on 5,000 bias-corrected bootstrapped samples; *$p < .05$; **$p < .01$.

Multi-group path analyses

To assess differences in the specified model by sex, a multi-group path analysis (i.e., group = female or male) was conducted for each outcome variable. Regarding global burnout, the fully invariant model fit the data poorly: $\chi^2(21, N = 279) = 58.942$, $p < 0.001$; RMSEA = 0.114 ($C.I._{LB} = 0.080$, $C.I._{UB} = 0.149$); CFI = 0.692; SRMR = 0.281. The unconstrained model fit the data well: $\chi^2(2, N = 279) = .346$, $p = 0.841$; RMSEA = 0.000 ($C.I._{LB} = 0.000$, $C.I._{UB} = 0.095$);

CFI = 1.000; SRMR = 0.005. The chi-square difference test of the nested models was significant ($p < 0.001$), indicating that the unconstrained model (i.e., path coefficients allowed to vary among boys and girls) fit the data better. Examining the unconstrained model, for female participants, companionship with one's best friend ($\beta = -0.24$), conflict ($\beta = 0.21$), co-rumination ($\beta = 0.23$), and loneliness ($\beta = 0.24$) significantly associated with global burnout. Social support ($\beta = -0.46$), co-rumination ($\beta = 0.19$), and peer rejection ($\beta = 0.23$) significantly associated with loneliness. Loneliness significantly mediated the relationship between social support and burnout, co-rumination and burnout, and peer rejection and burnout (see Table 2.3). Explained variance for loneliness and burnout was 40% and 32%, respectively. For males, no social variables directly associated with global burnout. Peer rejection ($\beta = 0.31$) and co-rumination ($\beta = 0.20$) significantly associated with loneliness. Loneliness did not significantly mediate the relationship between the social variables and global burnout (see Table 2.4). Explained variance for loneliness and burnout was 16% and 12%, respectively.

Regarding total engagement, fully invariant model fit the data poorly: $\chi^2(2, N = 279) = 63.876$, $p < 0.001$; RMSEA = 0.121 ($C.I._{LB} = 0.088$, $C.I._{UB} = 0.155$); CFI = 0.701; SRMR = 0.282. The unconstrained model fit the data well: $\chi^2(2, N = 279) = .389$, $p = 0.823$; RMSEA = 0.000 ($C.I._{LB} = 0.000$, $C.I._{UB} = 0.100$); CFI = 1.000; SRMR = 0.005. The chi-square difference test of the nested models was significant ($p < 0.001$), indicating that the unconstrained model (i.e., path coefficients allowed to vary among boys and girls) fit the data better. Examining the unconstrained model, for female participants, social support ($\beta = 0.22$), companionship with one's best friend ($\beta = 0.22$), and loneliness ($\beta = -0.22$) significantly associated with athlete engagement (team companionship approached significance, $p = 0.055$). Predictors of loneliness remained the same from the model with burnout as the dependent variable. Loneliness

significantly mediated the relationship between social support and engagement, co-rumination and engagement, and peer rejection and engagement (see Table 2.3). Explained variance for engagement was 21%. For male participants, no social variables directly associated with total engagement; however, social support approached significance ($p = 0.051$). Predictors of loneliness remained the same from the model with burnout as the dependent variable. Loneliness did not significantly mediate the relationship between the social variables and global burnout (see Table 2.4). Explained variance for engagement was 13%.

Table 2.3
Standardized Direct and Indirect Effects of Study Variables on Burnout and Engagement for Girls

	Direct Effect (SE)	Indirect Effect (SE)	95% Confidence Interval
Loneliness			
Social Support	-0.46** (0.09)	--	--
Companionship	-0.05 (0.07)	--	--
Team Companionship	-0.16 (0.09)	--	--
Co-rumination	0.19** (0.06)	--	--
Peer Rejection	0.23** (0.07)	--	--
Global Burnout			
Social Support	-0.16 (0.10)	-0.111 (0.05)	-0.239, -0.035
Companionship	-0.24** (0.08)	--	--
Team Companionship	0.04 (0.09)	--	--
Co-rumination	0.23** (0.07)	0.045 (0.02)	0.011, 0.104
Peer Rejection	0.06 (0.09)	0.055 (0.03)	0.016, 0.121
Conflict	0.22** (0.08)	--	--
Loneliness	0.24** (0.09)	--	--
Total Engagement			
Social Support	0.22* (0.10)	0.101 (0.05)	0.022, 0.225
Companionship	0.22** (0.08)	--	--
Team Companionship	-0.15 (0.08)	--	--
Co-rumination	-0.02 (0.08)	-0.041 (0.02)	-0.101, -0.008
Peer Rejection	0.04 (0.09)	-0.050 (0.03)	-0.113, -0.012
Conflict	-0.15 (0.09)	--	--
Loneliness	-0.22* (0.09)	--	--

Note. Analyses based on 5,000 bias-corrected bootstrapped samples; *$p < .05$; **$p < .01$.

Table 2.4
Standardized Direct and Indirect Effects of Study Variables on Burnout and Engagement for Boys

	Direct Effect (SE)	Indirect Effect (SE)	95% Confidence Interval
Loneliness			
Social Support	-0.17 (0.10)	--	--
Companionship	-0.08 (0.10)	--	--
Team Companionship	-0.11 (0.10)	--	--
Co-rumination	0.20* (0.09)	--	--
Peer Rejection	0.31** (0.09)	--	--
Global Burnout			
Social Support	-0.17 (0.11)	--	--
Companionship	-0.10 (0.10)	--	--
Team Companionship	0.05 (0.06)	--	--
Co-rumination	0.06 (0.11)	0.019 (0.03)	-0.017, 0.097
Peer Rejection	0.17 (0.11)	0.029 (0.04)	-0.032, 0.120
Conflict	0.11 (0.09)	--	--
Loneliness	0.09 (0.11)	--	--
Total Engagement			
Social Support	0.23 (0.12)	--	--
Companionship	0.09 (0.11)	--	--
Team Companionship	-0.01 (0.11)	--	--
Co-rumination	0.09 (0.12)	-0.030 (0.03)	-0.104, 0.006
Peer Rejection	0.07 (0.11)	-0.046 (0.04)	-0.142, 0.014
Conflict	-0.02 (0.09)	--	--
Loneliness	-0.15 (0.11)	--	--

Note. Analyses based on 5,000 bias-corrected bootstrapped samples; *$p < .05$; **$p < .01$.

Discussion

The current study examined how adolescent athletes' interactions with their teammates associate with the sport experiences of athlete burnout and engagement and how athletes' feelings of loneliness mediated these relationships. Results highlight how distinct interactions amongst teammates relate to burnout and engagement, and how these relationships differ by sex. Additionally, results suggest that loneliness is an important contributor to burnout and engagement and that this aversive state mediates the relationship between teammates' social interactions and their sport experiences for girls.

When examining the sample as a whole, the hypothesized model (see Figure 2.1) fit the data well. Consistent with past findings, social support from teammates was negatively associated with athlete burnout (DeFreese & Smith, 2013b; DeFreese & Smith, 2014) and conflict with teammates was positively associated with burnout (Smith et al., 2010). Companionship with one's closest friend on the team was also negatively associated with burnout. Findings indicate that social support from teammates as well as companionship from a close friend on a team may diminish burnout perceptions of athletes while conflict with a teammate may enhance such perceptions. Additionally, co-rumination was positively associated with burnout. Thus, negative problem talk among teammates is linked with greater burnout perceptions. However, co-rumination was also positively correlated with social support, coinciding with findings in child development literature showing that co-rumination is linked with friendship quality and closeness (Rose, 2002; Rose, Schwartz-Mette, Glick, Smith, & Luebbe, 2014). Such findings suggest that youth athletes' perceptions of social support may be fostered by ruminating with teammates; however, the content of this rumination may contribute to athlete burnout (e.g., ruminating about fatigue, issues with the coach, poor performance, etc.). In other words, the behavior of co-rumination may be problematic relative to the topics that are frequently discussed between teammates. Further examination of this social interaction will be needed to assess what content of co-ruminating drives the relationship with athlete burnout.

The link between social interactions and athletes' sport experiences differed by sex. For girls, companionship with one's best, co-rumination, and conflict significantly associated with perceptions of burnout, whereas, for boys, no social interactions were linked with burnout perceptions. Results suggest that having a close friend on a team may decrease burnout perceptions in girls while conflict and co-ruminating may enhance such perceptions. The non-

significant findings for boys suggest that, for this sample of athletes, social interactions do not contribute to burnout perceptions. This finding may be explained by the different characteristics of friendships between female and male adolescents. Female adolescents tend to have friendships marked by greater self-disclosure, intimacy, and perceptions of caring and more fragile relationships (Richey & Richey, 1980; Rubin, Bukowski, & Parker, 2006; Sharabany, Gershoni, & Hofman, 1981). Thus, social interactions that convey these friendship characteristics (or the lack thereof; e.g., companionship, co-rumination, conflict) would more likely affect adolescent girls' experiences in the sport context such as perceptions of burnout. This is not to say that such characteristics are unimportant for boys as past research has shown that self-disclosure and friendship closeness are valued by adolescent boys (Sharabany et al., 1981). Rather, it may be that for this sample of athletes, social interactions do not affect adolescent boys' perceptions of burnout. Future work should attend to other outcomes (e.g., enjoyment, satisfaction in sport, overall well-being) to better understand how social interactions with teammates link with and influence adolescent boys' experiences in sport.

There is a paucity of research examining how the social context contributes to athlete engagement. The current study found that social support positively associated with engagement, indicating that greater social support from teammates is linked with greater engagement in adolescent athletes. Through positive interactions that result in perceptions of support, athletes' may develop greater confidence and enthusiasm for their sport, enhancing their engagement. Additionally, companionship with a close friend on one's team was positively associated with engagement. Having a teammate that provides companionship may afford additional social support, enhancing enthusiasm and one's engagement. It may also be that perceiving companionship with a teammate provides a salient reason to invest time and effort into one's

sport (Weiss, 2013), enhancing dedication and one's overall engagement. Continued examination of how the social context contributes to athletes' engagement is warranted and will provide a greater understanding of how to promote this adaptive sport experience. For instance, it would be valuable to examine how interactions among teammates influence the perceived peer climate of a team (i.e., mastery or ego). Such work would afford an understanding of how interactions with teammates shape a team's climate and athletes' resulting engagement.

Similar to the findings regarding burnout, multi-group analysis highlighted differences in the hypothesized relationships between social interactions and engagement for male and female athletes. For girls, companionship with one's best friend on a team as well as social support significantly associated with engagement. For boys, no social interactions were linked with engagement, though social support approached significance ($p = 0.051$). Results suggest social support from teammates may increase engagement in girls and boys. On the other hand, perceiving companionship from a good friend on the team may be more salient for girls' engagement than for boys.

Positive and negative social interactions associated with loneliness. For girls, social support negatively related while peer rejection and co-rumination positively related to loneliness. For boys, peer rejection and co-rumination positively related to loneliness. These results are consistent with previous findings that higher perceptions of loneliness are associated with rejection while lower perceptions are associated with friendship quality and acceptance (Asher & Paquette, 2003; Asher & Wheeler, 1985). Results also indicate that co-rumination is positively associated with loneliness in adolescents. In other words, greater negative problem talk among teammates is linked with greater feelings of loneliness. In the current study, co-rumination was positively correlated with adaptive social interactions as well as global burnout and loneliness.

This points to the adaptive and maladaptive consequences of this social interaction and supports previous findings. Co-rumination is consistently associated with higher friendship quality and closeness (Rose, 2002; Rose et al., 2007; Rose et al., 2014), yet it is also associated with greater internalization of depression symptoms and greater anxiety (Rose, 2002; Rose et al., 2014). Overall, these results suggest that social interactions among teammates are important contributors to loneliness in athletes. However, companionship with a best friend on the team did not associate with feelings of loneliness. This finding suggests that the absence or presence of a close/best friend on one's team does not contribute to perceptions of loneliness in this sample of adolescent athletes. This finding corresponds to the literature that highlights the subjective nature of loneliness. For some individuals, perceptions of loneliness can be high, even when one has many close friendships and is accepted by the larger peer group (Asher & Paquette, 2003). For others, perceptions of loneliness can be low even when one lacks friends and is not accepted (Asher & Paquette). Additionally, it may be that athletes' close friend on the team was someone whom they socialize with at practice and competition but was not an important social relationship outside the sport context, and, therefore, did not contribute to their loneliness. Examination of friendship ties and reciprocated ties with teammates may provide greater understanding of how close friendships with teammates contribute to perceptions of loneliness in athletes as well as their burnout and engagement.

Loneliness positively associated with burnout and negatively associated with engagement, but, as indicated by the multi-group path analyses, these relationships were only significant for girls. This finding suggests female athletes who experience loneliness may have greater susceptibility to burnout and have diminished engagement, indicating that not only is the social context an important contributor to girls' sport experiences, but so too are the perceptions

of their social relationships. Moreover, loneliness mediated the relationship of social support, co-rumination, and peer rejection with female athletes' sport experiences. This extends the burnout/engagement literature in that the relationships between teammate social interactions and athletes' experiences of burnout and engagement were explained by perceptions of loneliness in female athletes. Co-rumination and peer rejection may foster feelings of loneliness, which then increases burnout and decreases engagement. On the other hand, social support may diminish feelings of loneliness, which then decreases burnout and increases engagement. It should be noted that the mediating effects were small which may be explained by the measurement of loneliness. The present study assessed overall perceptions of loneliness. To better explain the relationship between athletes' social interactions and sport experiences, future research should use specific measures of loneliness (i.e., loneliness with peers) as loneliness has been shown to differ by social agent (Goossens et al., 2009). Such a design may better explain the social interaction – burnout/engagement relationships. Though loneliness did not significantly associate with burnout or engagement in boys, these findings should not imply that males do not experience loneliness. In the current study, boys and girls did not significantly differ on their perceptions of loneliness. Thus, feelings of loneliness are similar among male and female adolescent athletes. Such feelings may contribute to athletes' sport experiences differently.

Further consideration of the present study's limitations reveals additional future directions. The present study assumed social interactions and friendships with teammates were valued by athletes. Future work should examine the importance of friendships with one's teammates. This would help explain why, for some athletes, teammate social interactions and friendships do not influence their sport experiences. The study design did not allow for the assessment of the temporal nature of the relationships among teammates' social interactions and

athletes' perceptions of loneliness, burnout, and engagement. The knowledge base would benefit from longitudinal designs aimed at examining these relationships. Additionally, as communication between teammates occurs through interactions (Hanin, 1992), future work should consider if communication between teammates is a channel for which athletes transfer perceptions of burnout or engagement. Such work would enhance our understanding of how the peer context shapes athlete sport experiences. Assessment across multiple time points would also enable the examination of the interplay between burnout and engagement. It is proposed that burnout and engagement are opposites on a continuum (Lonsdale, Hodge, & Jackson, 2007); however, some evidence suggests that burnout and engagement are distinct constructs (see DeFreese & Smith, 2013a). Examining burnout and engagement across time (i.e., a sport season), would shed light on the burnout – engagement relationship.

In the current study, both positive and negative social interactions amongst teammates were examined. Multiple types of interactions can occur between teammates and these interactions may simultaneously impact sport experiences (i.e., perceptions of loneliness, burnout, and engagement). This also suggests that multiple types of communication between athletes occur. However, there is a lack of understanding of what communication occurs between teammates and how this communication links with athletes' sport experiences. Future work could utilize a person-centered approach to address how various types of communication combine and if these combinations predict athletes' sport experiences. More specifically, athletes may partake in different types of communication with teammates and such differences can be used to create profiles composed of different communication. These profiles may be used to examine differences in burnout and engagement, extending understanding of how athletes' sport experiences may be influenced by teammates' communication.

These limitations acknowledged, the present study extends the understanding of how the social context of sport associates with youth athletes' perceptions of burnout and engagement. Both positive and negative social interactions amongst teammates are important contributors to athletes' sport experiences. Moreover, the present work suggests that social interactions with one's teammates may enhance or diminish perceptions of loneliness. For girls, such perceptions may increase burnout vulnerability and decrease engagement. Thus, teammates are important social agents that can influence athletes' sporting experiences.

CHAPTER THREE: STUDY TWO

TEAMMATE SOCIAL NETWORK EXPOSURE AND ATHLETE BURNOUT

Preface

Preliminary results were presented in October of 2018 at the Canadian Society for Psychomotor Learning and Sport Psychology (SCAPPS) annual conference in Toronto, Ontario, Canada. Additional preliminary results have been accepted for presentation at the 2019 North American Society for the Psychology of Sport and Physical Activity (NASPSPA) annual conference in Baltimore, Maryland and the 2019 European Congress of Sport & Exercise Psychology meeting in Münster, Germany.

Abstract

The social context of sport can shape athletes' perceptions, behaviors, and experiences. Yet, greater understanding of teammate influence on athletes' sport specific experiences is needed. The purpose of the current study was to (a) descriptively examine the communication structure of sport teams and how communication linked with feelings of connection and loneliness with teammates and (b) examine if communication with teammates influenced athletes' perceptions of burnout. Adolescent softball and baseball players (N = 176; 15 teams) completed network questions pertaining to the frequency of speaking with teammates and closest friends on the team as well as established measures of loneliness, relatedness, team identity, burnout and engagement twice across their season. Athletes frequently talked with teammates at practice. Descriptive assessment of team networks revealed that athletes with relatively low perceptions of relatedness and high feelings of loneliness were on the periphery of team networks. Communication with teammates outside of practice was negatively linked with perceptions of loneliness and relatedness at both time points. Teammate influence was modeled using four multiple linear regression and exposure terms. For all models, initial burnout perceptions (βs = .37 to .40, all $p < 0.001$) predicted burnout perceptions at time two, explaining 14 to 15% of the variance in burnout perceptions at time two. Athlete engagement at time one, average exposure to teammates' burnout and engagement at time one, and team identity did not predict burnout at time two. Results indicate that communication with teammates did not heighten athletes' perceptions of burnout over time. Future work should examine various types of communication between teammates to assess if specific messages from teammates contribute to burnout perceptions over a season.

Introduction

Within sport, social interactions commonly occur between athletes and their teammates where communication occurs. Such communication can influence athletes' affect, thoughts, and behaviors, as well as how they cope with the demands of sport, shaping their experiences (Jackson, 1993; Smith, 1986). Such experiences can include athlete burnout and athlete engagement. Athlete burnout is a maladaptive psychosocial experience (Raedeke, 1997), whereas athlete engagement is a positive cognitive-affective state (Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007). Though communication between teammates is common, little is known about how this communication influences athletes' perceptions of burnout and engagement. The present study examines if communication with teammates can influence an individual's perceptions of burnout.

Athlete burnout consists of three core dimensions: emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation (Raedeke, 1997). Emotional and physical exhaustion is characterized by feelings of fatigue (e.g., low energy and constantly tired). Reduced sense of accomplishment involves an athlete's negative perception of his or her performance (e.g., lack of progress despite effort in training). Sport devaluation encompasses an athlete's diminishing interest and negative attitude toward his or her sport (Raedeke, 1997). These core dimensions can occur simultaneously and contribute to athletes' overall perceptions of burnout. Additionally, for some athletes, these dimensions have been shown to increase across a sport season (Adie, Duda, & Ntoumanis, 2012; Isoard-Gautheur, Guillet-Descas, Gaudreau, & Chanal, 2015; Raedeke & Smith, 2009).

Within athlete burnout literature, there are many theoretical perspectives that describe the antecedents and consequences of this maladaptive sport experience. One perspective is R. E.

Smith's (1986) cognitive-affective model of athlete burnout. This model highlights the role of chronic stress in fostering burnout. Specifically, when demands are placed on an athlete, he or she evaluates the resources available to meet those demands (i.e., cognitive appraisal). Cognitive appraisals shape an athletes' coping mechanisms which, in turn, affect his or her physiological and behavioral outcomes. Stress resulting from the inability to adapt to training demands has been associated with athlete burnout (Cresswell & Eklund, 2006a, 2007; Silva, 1990). Yet, stress from training is not always associated with burnout (Black & Smith, 2007), indicating that other forms of stress may influence perceptions of burnout. Gould, Tuffey, Udry, and Loehr (1996) found support for the influence of other forms of stress on burnout perceptions. Gould and colleagues described two strains of burnout. These strains consisted of a physical strain and a psychosocial strain. The physical strain is a result of the inability to meet the demands of training for one's sport whereas the psychosocial strain is driven by personal and environmental demands. In other words, stress can result from training demands as well as demands emanating from psychological and social factors. Such findings indicate the necessity to consider psychosocial factors when examining burnout in sport (Gustafsson, Kenttä, & Hassmén, 2011).

Social factors include various aspects of the sport context an athlete is involved in (i.e., practice and competition). Within the social context of sport, agents (i.e., officials, coaches, parents, and teammates) can contribute to an athlete's sport experiences. Udry, Gould, Bridges, and Tuffey (1997) qualitatively examined the influence of salient others on former elite junior tennis players' burnout. Burned out athletes reported negative interactions with coaches and parents more so than positive interactions. These findings indicate that perceived interactions between athletes and social agents in their environment can contribute to burnout experiences.

Quantitative examination of social contributors to burnout have examined a variety of interactions involving coaches, teammates, and social agents in general (see Pacewicz, Mellano, & Smith, 2019). Examining rugby players, Cresswell and Eklund (2004) and Cresswell (2009) found that social support, from social agents in general, is a contributor to burnout whereby lower perceived social support is associated with higher levels of burnout. Similarly, Raedeke and Smith (2004) and DeFreese and Smith (2013b) reported a negative relationship between perceptions of burnout and social support from others and social support specifically from teammates, respectively. Aside from social support, other interactions have been shown to contribute to athletes' perceptions of burnout. Overall negative interactions (e.g., unwanted advice, failure to provide help, insensitive behavior, and rejection; DeFreese & Smith, 2014), conflict (Smith, Gustafsson, & Hassmén, 2010), and bullying (Yildiz, 2015) are positively associated with burnout. From this research, it seems that social interactions perceived by athletes link with burnout perceptions.

Though social interactions are linked with athletes' burnout perceptions (see Study 1), it may be the communication within these interactions that drive the relationship. Communication between individuals is a channel for which information, attitudes, and feelings can be expressed. Sharing of information and personal feelings can foster social perceptions (Rose, 2002). Communication may increase perceptions of relatedness with others, which in turn, may enhance perceptions of social relationships, diminishing feelings of loneliness (Baumeister & Leary, 1995). Thus, through communication, social interactions have the potential to influence or change information available to an individual, affecting his or her attitudes, emotions, and behaviors. The unintentional influence of one's attitudes, affect, and behavior on another individual is referred to as social contagion (Levy & Nail, 1993).

Social contagion can occur through nonconscious processing and conscious processing (Levy & Nail, 1993). Nonconscious processing involves the automatic mimicking of other's affect, attitudes, and behaviors (Hatfield, Cacioppo, & Rapson, 1994). Conscious processing involves comparing affect, attitudes, and behaviors with those of others and being aware of such comparisons (Hsee, Hatfield, & Chemtob, 1992). Through nonconscious or conscious processing, individuals' affect, attitudes, and behaviors can change to reflect those with whom they interact and communicate with (Levy & Nail, 1993).

Social contagion or influence has been observed when assessing employee burnout (conceptually similar to athlete burnout but centered on the organizational context; see Maslach & Jackson, 1984) and employee engagement (i.e., positive cognitive-affective state characterized by energy, involvement, and efficacy in work) (Maslach & Leiter, 1997). Bakker and Schaufeli (2000) examined burnout in teachers with specific attention paid to the frequency of teachers talking with colleagues about problems they faced in the work environment. A significant interaction between prevalence of burnout among colleagues and the frequency of interactions with colleagues was found when predicting burnout dimensions (i.e., within the organizational context, burnout dimensions include exhaustion, depersonalization, and reduced personal accomplishment, see Maslach & Jackson, 1984). Teachers' exhaustion, depersonalization, and feelings of reduced personal accomplishment were heightened when colleagues were burned out and when teachers talked frequently about work problems. Follow-up analyses indicated that when a teacher infrequently talked with colleagues, burnout among colleagues did not affect his or her burnout level. Such findings suggest that teachers' burnout can tie to the frequency of interaction with burned out colleagues.

As teachers' burnout is linked with greater frequency of talking with burned out colleagues, it may be that talking to engaged colleagues is linked with lower perceptions of burnout. Such speculation is supported by the findings of Bakker, van Emmerik, and Euwema (2006) who examined the transfer of burnout and engagement among Royal Dutch constabulary officers working in teams. Officers self-reported their burnout and engagement levels while burnout and engagement at the team level was determined by categorizing participants as burned out/engaged from their self-reported levels. The percentage of burnout out/engaged officers per team were used in analyses. After controlling for job demands and available resources (i.e., characteristics of the work environment), team-level burnout was positively associated with all burnout dimensions at the individual level. Similar results were found for engagement whereby team-level engagement was positively associated with the three engagement dimensions at the individual level. Burnout, as well as engagement, among team members (colleagues) predicted burnout in officers. Thus, team (i.e., colleague) burnout and engagement contributed to individual burnout and engagement beyond the contributions made by job demands and resources within the work context. Additionally, after controlling for job demands, resources, and burnout at the team-level, engagement at the team-level negatively predicted burnout at the individual level. This suggests that engagement among team members can buffer the effects of team members' burnout on an individuals' level of burnout. These results were also found when examining individuals' engagement. After controlling for job demands, resources, and engagement at the team-level, burnout at the team-level negatively predicted engagement at the individual level, highlighting that burnout among team members may weaken the effect of team-level engagement on individuals' engagement.

The aforementioned empirical evidence points to the ability for interactions and communication between individuals to transfer or influence perceptions of burnout and engagement in organizational settings. Though burnout in sport is conceptualized differently than burnout in organizational contexts (i.e., burnout in sport is centered around sport performance, see Raedeke, 1997), such influence may also be observed among sport teammates. Teammates frequently communicate with each other at practice and competition, as well as outside of the sport context (e.g., during school, other extracurricular activities, hanging out, etc.). This communication can include the sharing of information (e.g., feedback about skills, etc.) and discussion of workouts, competitions, coach behaviors, and other teammates, resulting in the display of certain behaviors, attitudes, and affect. Communication and interactions may lead to contagion of the perceptions of exhaustion, reduced achievement, and sport devaluation, particularly because of the accumulated time spent with teammates. Such transfer may also be found with regard to perceptions of engagement in athletes. Athlete engagement is defined as a positive cognitive-affective state characterized by confidence, dedication, vigor, and enthusiasm (Lonsdale et al., 2007; Lonsdale et al., 2007). Through social interactions, teammates may share positive attitudes and affect toward their sport and partake in behaviors that display vigor and enjoyment. As was found by Bakker and colleagues (2006), burnout and engagement may interact and contribute to one another.

Though past research findings suggest that interactions and communication can influence perceptions of burnout and engagement in the organizational context, this work has examined this social contagion process at one time point. This research design limits inferences that can be made about contagion. For instance, instead of influencing co-workers' burnout/engagement, it may be that workers themselves select certain colleagues to talk to because they share similar

attitudes and affect or partake in the same behaviors. To better understand how colleagues, or in the case of sport, teammates, influence individuals' levels of burnout and engagement, a longitudinal research design that considers an individual's prior burnout/engagement as well as the exposure to others' burnout/engagement is necessary.

As the contagion of perceptions of burnout and engagement may occur as a result of influence or selection, a social network perspective can be used to guide future work. A social network perspective is centered on the study of patterns of social relationships among people and assumes outcomes are explained by interactions (Wasserman & Faust, 1994). Within this perspective, various theories of social influence describe how social interaction provides a path by which social influence or contagion may occur. Of particular relevance to our question is the social influence network theory (Friedkin & Johnsen, 1990; Friedkin & Johnsen, 1997). This theory attempts to model and explain the flow of between-person influence that affects individuals' opinions. This theory recognizes that both interpersonal interactions (communication between individuals that result in responses) and intrapersonal factors (an individual's current attitude or opinion) influence changes in one's opinion.

Teammate communication may serve as a channel for which perceptions of burnout and engagement are shared. Through unconscious and conscious processes, individuals' attitudes, affect, and behaviors can change to reflect those with whom they interact (Hatfield et al., 1994; Levy & Nail, 1993). Yet, an athlete's initial level of burnout or engagement also influences his or her change across time (Friedkin & Johnsen, 1997). If an athlete's initial burnout is high, he or she may be influenced differently than an athlete who initially has a lower level of burnout. For the athlete who has a higher initial burnout level, he or she may have a smaller change because of interacting with burned out teammates, but the higher levels may be more easily maintained.

However, these processes may change when considering engagement of teammates. This engagement may serve to reduce an athlete's burnout. Influence may also depend on an athlete's identification with the team and his or her sense of belonging on the team (i.e., collective/social identity). When individuals are linked to a group via identification, bonds or links between group members strengthen (Markovsky & Chaffee, 1995) and individuals internalize the group's values and behaviors (Deaux, Reid, Mizrahi, & Cotting, 1999; Terry & Hogg, 1996). Thus, transfer or contagion of teammates' attitudes, affect, and/or behaviors may more likely occur when an athlete identifies strongly with her or his team.

This influential process may be particularly salient in adolescent athletes. During adolescence, young people spend more time with their peers and use their peers as a social reference point (Kirchler, Palmonari, & Pombeni, 1993). Interactions with the peer group become more salient than interactions with other agents, and can influence emotions, cognitions, and values of adolescents (Jackson, 1993). Because of the additional time spent with peers, transfer of burnout and engagement in adolescent athletes may readily occur. Moreover, positive interactions and frequent communication with peers (i.e., teammates) may enhance feelings of relatedness (Baumeister & Leary, 1995; Ryan & Deci, 2002). As a result, feelings of connection with teammates may increase motivation (Ryan & Deci, 2002) and decrease perceptions of loneliness (Baumeister & Leary, 1995).

Utilizing a social network perspective involves examining social relationships (i.e., ties) between people. A technique that enables this is social network analysis. Social network analysis quantifies ties between members of a group and affords the assessment of the structure of a network. More importantly, one can determine how the structure may work (i.e., how the structure affects individuals within the network). In other words, social structures and personal

attributes are examined at the same time. People in the network represent nodes while interpersonal relationships represent ties. Thus, within a sport team, each athlete is represented by a node and is connected to other teammates through ties (Lusher, Robins, & Kremer, 2010). Influence of such ties is examined through exposure terms (i.e., frequency of interacting /communicating with reported ties) allowing the examination of how a network may influence an individual's behaviors, attitudes, and affect.

Empirical evidence supports the influence of a social network on burnout and engagement in the organizational context (see Bakker & Schaufeli, 2002; Bakker, van Emmerik, & Euwema, 2006; Kim, Youngs, & Frank, 2017). This same influence may be observed in the sport context among teammates. Both athlete burnout and engagement are experiences in sport and can be influenced by the social context of sport (Coakley, 1993; Gould, Udry et al., 1996). In light of this evidence, there is little understanding of how the structure of a team's network influences athletes' social perceptions as well as the role of communication between teammates in shaping perceptions of burnout. To address this gap in the literature, the purpose of the current study was twofold. The first purpose of the current study was to descriptively examine the communication structure of sport teams and how communication linked with feelings of connection and loneliness with teammates. It was hypothesized that athletes at the center of their team's communication network would have greater feelings of connection (i.e., relatedness) with teammates and lower feelings of loneliness. It was hypothesized that athletes who communicated more with teammates would have greater perceptions of relatedness and lower perceptions of loneliness. The second purpose of the current study was to examine if communication with teammates influenced athletes' perceptions of burnout. It was hypothesized that (a) exposure to teammate burnout perceptions through communication would positively predict burnout

perceptions at time two (b) exposure to teammate engagement perceptions through communication would negatively predict burnout perceptions at time two. It was also hypothesized that (a) stronger identification with one's team would predict burnout at time two and (b) greater physical training would predict burnout at time two.

Method

Participants

Data were collected from a purposive sample of male and female adolescent (13-18 years; *M* = 15.8, *SD* = 1.3) baseball and softball athletes. This population was chosen because (a) teammates (i.e., peers) play a significant role in athletes' experiences at this time in development, (b) a narrowing of focus regarding sport participation during adolescence usually occurs, (c) both baseball and softball teams have finite rosters, enabling a complete examination of a team's social network, and (d) teammates on such teams are interdependent and have frequent opportunities to interact during practice and competition. A priori power analysis, assuming a moderate effect size, alpha of .05, and a beta of .20 (i.e., 80% power), suggested that a minimum of 85 participants were needed at the individual (first) level. However, as athletes are nested within teams, adequate power is necessary to examine random slope variances at the team (second) level. Thus, at least 10 teams were needed. Fifteen teams agreed to participate (softball = 8). Across all 15 teams, a total of 204 athletes could have participated. Of these 204 athletes, 176 participated (86% of possible athletes, 51% female). Of the 176 athletes who participated, 155 completed measurers at both time points and 21 athletes completed measures only at one time point (time one data only, n =16; time two data only, n = 5). Four teams participated in travel softball while 11 teams participated in high school softball (n = 4) and baseball (n = 7). A Hispanic or Latino ethnicity was reported by 4.7% of the participants. The majority of

participants self-identified as White (80.7%). Remaining participants self-identified as Asian (2.8%), Black or African American (4.0%), more than one race (6.3%), other (2.3%), or prefer not to say or did not respond (3.9%). Average involvement in participants' respective sport was 8.6 years (*SD* = 3.2). Average involvement on one's current team was 2.1 years (*SD* = 1.5). Participants reported training, on average, 11.6 hours (*SD* = 4.9) a week and 7.8 (*SD* = 3.4) months of the year. Of the 176 participants, 57 reported participating only in softball or baseball (32.3%). The majority of teams reported not having captains. When captains were present, captains were selected by a team vote or by the coach based on leadership qualities.

Design and Procedure

Ethical approval was obtained by the institutional review board (IRB) prior to conducting the study (see Appendix C). To obtain participants, coaches from high schools and travel teams located in the Midwest were contacted via email and/or phone. Coaches of high school teams and travel teams located in the Midwest region were contacted via phone or email to describe the purpose of the study and to ask permission for the participation of their athletes. If a coach agreed to have his/her team participate, a meeting was set up for the investigator to meet in person with the team, describe the study, and distribute the questionnaire battery (see Appendix D) for the first time. Parental consent for athletes under the age of 18 was obtained via an online consent form or a hard copy of the consent form before athletes participated. During the first data collection (time one), athletes answered demographic questions and completed network questions pertaining to the frequency of interactions with teammates and closest friends on their team as well as established measures of loneliness, relatedness, burnout, and engagement. During the second data collection (time two), these same measures were completed. On average, time points were 4.5 weeks apart. Participants were encouraged to answer all items on the measures

and were told that there were no right or wrong answers. Additionally, participants were informed that they could withdraw from the study at any time without penalty. Due to the nature of the study, names initially appeared on the questionnaire battery. This afforded the research team to match participants with their responses across both time points as well as correctly record social network information. Once responses were matched and data were entered, participant names were removed from the questionnaire batteries and replaced with ID numbers. Thus, data is identifiable only by ID code.

Measures

Demographic information. Athletes were asked to report their age, sex, ethnicity, race, year in high school, position they most often play, length of time playing their current sport (years), length of time with their current team, and estimated weekly hours spent training. Athletes were asked how captains are selected on their current team and if they were a captain for their team. Additionally, athletes were asked to report how often they practice or compete in their current sport on a yearly basis (i.e., how many months out of the year he/she practices or competes in the current sport) as well as what other sports, if any, they participate in.

Relatedness. The acceptance subscale of the Need for Relatedness Scale (Richer & Vallerand, 1998) was used to measure athletes' perceptions of their perceived connectedness with their teammates. The scale was originally developed to assess relatedness in the workplace; thus, the stem of the subscale was modified to reflect connectedness with teammates (i.e., "In my relationships with my teammates, I feel…"). This stem was followed by five adjectives (e.g., "supported", "valued") to which participants indicated to what extent they agreed with the five statements. Responses were on a 7-point Likert scale (1 = *do not agree* to 7 = *very strongly agree*). A total score for perceptions of relatedness with teammates was calculated by averaging

the five items. Reliability and construct validity of the measure in the physical domain is supported in past research (Standage, Duda, & Ntoumanis, 2008). In addition, this scale has successfully been modified to reflect connectedness specifically with teammates in previous athlete burnout work (see Adie, Duda, & Ntoumanis, 2008). Internal consistency reliability of scores in the current study was $\alpha = 0.90$ for time one and $\alpha = 0.92$ for time two.

Loneliness. Loneliness in relation to peers (i.e., teammates) was measured with the Peers subscale of the Loneliness and Aloneness Scale for Children and Adolescents (LACA, Marcoen, Goosens, & Caes, 1987). The subscale consists of 12 items assessing perceptions of loneliness with friends and classmates. For the current study, the subscale was modified to reflect the sport context (i.e., 'classmates' and 'people' were changed to 'teammates'; school was changed to 'practice'). Participants rated how often they felt a certain way (e.g., "I feel left out by my teammates") on a 4-point Likert scale (1 = *never* to 4 = *often*). An overall score for perceived loneliness with teammates was calculated by averaging responses across all 12 items. Reliability, validity, and measurement invariance of the LACA is supported in past research (see Danneel, Maes, Vanhalst, Bijttebier, & Goosens, 2018; Marcoen & Goossens, 1993). Internal consistency reliability of scores in the current study was $\alpha = 0.91$ for time one and $\alpha = 0.90$ for time two.

Identification with team. Identification with one's team (i.e., identification with the collective; social identity) were assessed with a seven-item scale (see Frank, 2009). This scale is similar to the social interaction dimension of social identification described by Deaux and colleagues (1999). For the current study, the subscale was modified to reflect the sport context (i.e., 'teachers' was changed to 'teammates'; 'school' was changed to 'team'). Participants rated how strongly they agreed to each item (e.g., "I belong on this team", "I identify with other athletes on this team") on a 4-point Likert scale (1 = *strongly disagree* to 4 = *strongly agree*). An

overall score for perceived identity with one's team was calculated by averaging responses across all seven items. Internal consistency has been supported (Frank, 2009). Internal consistency reliability of scores in the current study was $\alpha = 0.77$ for time one and $\alpha = 0.84$ for time two.

Network items. Four specific statements aimed at gathering information about ties between teammates were developed for this study. For three of the network items, participants were given a roster of their team and asked to rate (a) how often they talk with each teammate during practice (1 = *less than once a week*, 2 = *once a week*, 3 = *three to five times a week*, 4 = *one or two times a day*, to 5 = *three or more times a day*) (b) how often they directly work with each teammate practicing skills, and (c) how often they talk with each teammate outside of practice. For the fourth network question, participants were asked to list their closest friends on the team and to rate how often they interact with these individuals each day. One additional descriptive question asked participants to write what topics they most often discussed when talking with their closest friends on their team.

Athlete burnout. The Athlete Burnout Questionnaire (ABQ**;** Raedeke & Smith, 2001; 2009) was used to assess athletes' perceptions of burnout. This 15 item self-report questionnaire consists of three subscales (i.e., measuring the core dimensions of burnout: emotional and physical exhaustion, reduced accomplishment, and sport devaluation), each consisting of 5 items. Participants were asked to indicate how often they felt a certain way during their current sport participation (e.g., "I feel physically worn out from my sport"). Responses were on a 5-point Likert scale (1 = *almost never* to 5 = *almost always*). Scores were calculated by averaging items for each specific dimension. A global burnout index was calculated by averaging all 15 items of the questionnaire. Internal consistency of the subscales has previously been supported as well as

convergent, discriminant, and construct validity (see Cresswell & Eklund, 2006b; Raedeke & Smith, 2009). Internal consistency reliability of scores in the current study were α = 0.84 for global burnout and α = 0.75 to 0.86 for burnout subscales at time one and α = 0.90 for global burnout and α = 0.79 to 0.88 for burnout subscales at time two.

Athlete engagement. The Athlete Engagement Questionnaire (AEQ; Lonsdale, Hodge, & Jackson, 2007) was used to assess athletes' engagement in their sport. The AEQ is a 16-item questionnaire comprised of four subscales (i.e., measuring the four core dimensions of engagement: confidence, dedication, enthusiasm, and vigor). Participants rated how often they felt a certain way during their current sport season (e.g., "I am dedicated to achieving my goals in sport", "I am enthusiastic about my sport"). Responses were on a 5-point Likert scale (1 = *almost never* to 5 = *almost always*). Scores for each dimension were calculated by averaging items for each respective dimension. A total engagement score was calculated by averaging all 16 items. Support for reliability and validity has been found in past research (DeFreese & Smith, 2013a; Hodge et al., 2009; Lonsdale et al., 2007). Additionally, this questionnaire has been used with adolescent athletes and demonstrated acceptable internal consistency reliability (α = 0.74 to 0.81; Curran, Hill, Hall, & Jowett, 2015) and construct validity. Internal consistency reliability of scores in the current study were α = 0.94 for total engagement and α = 0.83 to 0.88 for engagement subscales at time one and α = 0.96 for total engagement and α = 0.86 to 0.91 for engagement subscales at time two.

Data Analysis

Data were screened for missing values, violations of assumptions, and outliers (Tabachnick & Fidell, 2013). Subscale scores were calculated for all measures (e.g., emotional and physical exhaustion, reduced accomplishment, and sport devaluation for athlete burnout).

Descriptive statistics, bivariate correlations, and scale reliabilities were calculated for all variables.

In accordance with the first purpose, to descriptively examine the communication structure of sport teams and how this structure linked with feelings of connection and loneliness, visual representation of social networks was produced using UCINET software (Borgatti, Everett, & Freeman, 2002). This program visually represents ties within teams. Nodes represent athletes, a one-way arrow represents communication with a teammate at least once a day (i.e., a rating of 4 or 5), and a two-way arrow represents reciprocated communication between teammates of at least once a day (i.e., a rating of 4 or 5). Attributes of nodes (i.e., athletes) were added to the visual representation of the social networks. Multivariate linear regression was used to assess if total communication predicted perceptions of relatedness and loneliness.

To examine the second purpose, if frequency of communication with teammates influenced athletes' perceptions of burnout, multilevel linear modeling (MLM) for a two-level model was conducted in SPSS 24. This analytical technique was used because athletes are nested within teams and are not independent of one another (Raudenbush & Bryk, 2002). An assumption of MLM is that significant variance exists at the highest level (i.e., level two for the current study – teams). If significant variance does not exist, MLM is not an appropriate technique to use. If significant variation at level two is not present, a multiple linear regression can be used to examine predictors at level one.

The social network exposure to burnout was modeled via an influence model as the purpose of the study was to examine how communication with teammates influenced athletes' perceptions of burnout. The level one model is specified as: $Y_{1ijt} = B_{0j} + B_{1j}Y_{1ijt-1} + B_{2j}Y_{2ijt-1} + B_{3j}[Mean(W_{ii'} * Y_{1i'jt-1})]_{ij} + B_{4j}[Mean(W_{ii'} * Y_{2i'jt-1})]_{ij} + B_{5j}Y_{3ij} + B_{6j}Y_{4ij} + e_{ij}$. Y_{1ijt} is perceptions

of burnout at time two for athlete i on team j, B_{0j} is average burnout for team j at time two, and $B_{1j}Y_{1ijt-1}$ is perceptions of burnout at time one for athlete i on team j. Burnout at time one is accounted for in the model (a) to examine the effect of a network's influence and (b) to avoid biased estimates (Frank & Xu, 2018). $B_{2j}Y_{2ijt-1}$ is engagement at time one for athlete i on team j. $B_{3j}[Mean(W_{ii'} * Y_{1i'jt-1})]_{ij}$ is the exposure term for burnout where $W_{ii'}$ consists of the frequency of communication of athlete i with teammate i' and $Y_{1i'jt-1}$ is teammate i' perceptions of burnout at time one on team j. $B_{4j}[\Sigma W_{ii'} * Y_{2i'jt-1}]_{ij}$ is the exposure term for engagement where $W_{ii'}$ consists of the frequency of communication of athlete i with teammate i', and $Y_{2i'jt-1}$ is teammate i' perceptions of burnout at time one on team j. $B_{5j}Y_{3ij}$ is a control variable that represents physical training demand for athlete i on team j at time two. This is accounted for as athlete burnout has been shown to be influenced by physical factors (Gould, Udry et al., 1996). The term $B_{6j}Y_{4ij}$ is a control variable that represents team identity (i.e., identification with one's team) for athlete i on team j at time two. Finally, e_{ij} is an error term. If significant variation exists at level two, level two is specified as: $B_{0j} = Y_{00} + Y_{01}(\text{sport type})_{0j} + Y_{02}(\text{level})_{0j} + \mu_{0j}$. B_{0j} is average burnout for team j at time two. Y_{00} is an intercept. $Y_{01}(\text{sport type})_{0j}$ indicates the sport type of a team, thus differences among baseball and softball can be observed. $Y_{02}(\text{level})$ indicates the level of a team (i.e., high school or travel), and μ_{0j} is an error term for team j.

In total, four different models were conducted (one for each network question) to address our hypotheses that (a) exposure to teammate burnout perceptions through communication would positively predict burnout perceptions at time two and (b) exposure to teammate engagement perceptions through communication would negatively predict burnout perceptions at time two. The four models enabled us to predict athletes' perceptions of burnout at time two from the average exposure to teammates' burnout and engagement perceptions at time one, after

controlling for athletes' perceptions of burnout and engagement at time one, physical training demand, and team identity. Across all four models, the exposure terms for burnout and engagement, contained in level one, differed while level two remained consistent. For model one, the exposure term for both burnout and engagement was calculated by multiplying frequency of talking (i.e., communicating) with teammates in practice by teammates' perceptions of burnout or engagement at time one. The average was then taken of this value. Thus, the exposure terms represent the normative amount of exposure to teammates' burnout and engagement at time one. A positive coefficient for the burnout exposure term would indicate that when athletes are exposed to teammate perceptions of burnout through communication, burnout perceptions increase later in the season. A negative coefficient for the engagement exposure term would indicate that when athletes are exposed to teammate perceptions of engagement through communication, burnout perceptions decrease later in the season.

Similar to model one, the exposure terms for both burnout and engagement in models two and three were calculated by multiplying (a) frequency of directly working with teammates in practice (i.e., model two) and (b) frequency of talking with teammates outside of practice/competition (i.e., model three) by teammates' perceptions of burnout or engagement at time one and then taking the average of these values. Again, the exposure terms represent the normative amount of exposure to teammates' burnout and engagement at time one. A positive coefficient for the burnout exposure term would indicate that when athletes are exposed to teammate perceptions of burnout through directly working with teammates or talking outside of practice/competition, burnout perceptions increase later in the season. A negative coefficient for the engagement exposure term would indicate that when athletes are exposed to teammate

perceptions of engagement through directly working with teammates or talking outside of practice/competition, burnout perceptions decrease later in the season.

The exposure term for model four was calculated by multiplying frequency of talking with an athlete's closest friends on the team by the close friends' burnout or engagement perceptions at time one and taking the average of these values. Similar to the first three models, the exposure term represents the normative amount of exposure to close friends' perceptions of burnout and engagement. A positive coefficient for the burnout exposure term would indicate that when athletes are exposed to close friends' perceptions of burnout through communication, burnout perceptions increase later in the season. A negative coefficient for the engagement exposure term would indicate that when athletes are exposed to close friends' perceptions of engagement through communication, burnout perceptions decrease later in the season.

The exposure terms for the aforementioned models were used because teammates' burnout and engagement perceptions may influence their attitudes, feelings, and behaviors toward sport, subsequently influencing their communication. In other words, an athlete may have heightened vulnerability of increasing perceptions of burnout because he or she is exposed to teammates' burnout through communication.

Results

Preliminary data screening

Preliminary evaluation of skewness and kurtosis values revealed slight deviations from normality with no values greater than 0.70 (skewness) and 0.60 (kurtosis) for study variables except loneliness (skewness = 1.5 time one and 1.4 time two; kurtosis = 1.9 time one and 1.3 time two. These values were acceptable for the present analyses as loneliness was not included in

the influence models. Subsequent screening for Multivariate outliers (Mahalanobis distance, χ^2 [5] = 20.515, $p < 0.001$; Tabachnick & Fidell, 2013) revealed no outliers.

Descriptive statistics

Descriptive statistics appear in Tables 3.1 and 3.2. Participants reported relatively low-to-moderate levels of burnout dimensions and global burnout at both time one and time two. Relative to the sample, participants reported high levels of total engagement at time one and time two. Correlations among the burnout dimensions were consistent with previous research (Raedeke & Smith, 2009). Burnout dimensions and global burnout at time one were negatively correlated with total engagement at time one and time two. Burnout dimensions and global burnout at time one and time two were negatively linked with total engagement at time two. Participants reported low feelings of loneliness at time one and time two. Feelings of loneliness at time one was positively correlated with the burnout dimensions of reduced accomplishment and sport devaluation as well as global burnout one. Feelings of loneliness at time one and time two were also positively correlated with all burnout dimensions and global burnout at time two. Loneliness at time one was negatively linked with engagement and team identification at time one and time two. Loneliness at time two was negatively linked with engagement and team identification at time two. Perceptions of relatedness with teammates was high at both time one and time two as well as perceptions of identification with one's team. Perceived relatedness at time one was negatively correlated with feelings of loneliness, global burnout, reduced accomplishment, and sport devaluation, and positively correlated with team identity and engagement time one and time two. Perceived relatedness at time one was negatively correlated with exhaustion only at time one. Team identification at time one was negatively associated with reduced accomplishment, sport devaluation, and global burnout at time one and time two. Team

identification at time two was negatively associated with reduced accomplishment, sport devaluation, and global burnout at time two. Team identification at time one was positively linked with engagement at time one and time two. Team identification at time two was positively linked with engagement at time two.

Two two-by-two repeated measures multivariate analyses of variance (MANOVA) were conducted to examine (a) if boys and girls and (b) athletes on travel teams and athletes on high school teams differed on the main constructs of interest (i.e., relatedness, loneliness, global burnout, and engagement) across time points. When examining the difference between boys and girls, there was a significant multivariate test statistic for sex (Wilks $\Lambda = .83$; F (4, 148) = 7.52, $p < 0.001$; partial $\eta^2 = 0.17$) and time (Wilks $\Lambda = .93$; F (4, 148) = 2.85, $p = 0.026$; partial $\eta^2 = 0.07$). Follow-up univariate F-tests indicated significant sex differences for perceptions of loneliness (F (1, 151) = 4.49, $p = .036$, partial $\eta^2 = 0.03$). On average, girls had higher scores for feelings of loneliness (M girls = 1.51, SD = 0.51; M boys = 1.34, SD = 0.41) at time one and time two (M girls = 1.40, SD = 0.46; M boys = 1.29, SD = 0.40). Follow-up univariate F-tests indicated significant time differences for feelings of loneliness (F (1, 151) = 6.02, $p = .015$, partial $\eta^2 = 0.04$). Feelings of loneliness decreased from time one to time two for the sample (T1 M = 1.41, SD = 0.47; T2 M = 1.35, SD = 0.44). When examining the difference between athletes on travel teams and high school teams, there was a significant multivariate test statistic for level of competition (Wilks $\Lambda = .87$; F (4, 148) = 5.79, $p < 0.001$; partial $\eta^2 = 0.14$). Follow-up univariate F-tests indicated significant differences for perceptions of relatedness (F (1, 151) = 12.48, $p = 0.001$, partial $\eta^2 = 0.08$) for athletes on travel teams as compared to athletes on high school teams. On average, athletes on travel teams had higher perceptions of relatedness at time

one (*M* travel = 6.08, *SD* = 0.99; *M* high school = 5.37, *SD* = 0.09) and time two (*M* travel = 6.04, *SD* = 0.94; *M* high school = 5.46, *SD* = 1.21).

Table 3.2

Descriptive Statistics for Study Variables (N = 176)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Relatedness T1	*.90*															
2. Loneliness T1	-.61**	*.90*														
3. Team Identity T1	.45**	-.31**	*.77*													
4. Exhaustion T1	-.18*	.14	-.13	*.83*												
5. Reduced Acc. T1	-.48**	.37**	-.37**	.44**	*.75*											
6. Devaluation T1	-.21**	.17*	-.28**	.50**	.52**	*.86*										
7. Global BO T1	-.34**	.27**	-.32**	.80**	.78**	.85**	*.84*									
8. Total Engage. T1	.35**	-.23**	.45**	-.42**	-.64**	.74**	-.74**	*.94*								
9. Relatedness T2	.70**	-.45**	.40**	-.09	-.33**	-.08	-.19*	.29**	*.92*							
10. Loneliness T2	-.44**	.68**	-.30**	.24**	.33*	.16*	.29**	-.27**	-.52**	*.90*						
11. Team Identity T2	.38**	-.25**	.64**	-.04	-.31**	-.22*	-.24*	.39**	.57**	-.36**	*.84*					
12. Exhaustion T2	-.22**	.28**	-.16	.58**	.39**	.31**	.52**	-.30**	-.11	.33**	-.13	*.88*				
13. Reduced Acc. T2	-.48**	.37**	-.31**	.35**	.65**	.39**	.56**	-.46**	-.36**	.44**	-.42**	.40**	*.79*			
14. Devaluation T2	-.26**	.17*	-.29**	.39**	.53**	.70**	.67**	-.59**	-.16*	.25**	-.36**	.44**	.64**	*.88*		
15. Global BO T2	-.38**	.33**	-.31**	.54**	.64**	.58**	.72**	-.55**	-.25**	.42**	-.37**	.75**	.83**	.86**	*.90*	
16. Total Engage. T2	.44**	-.31**	.43**	-.36**	-.58**	-.63**	-.64**	.77**	.41**	-.39**	.57**	-.34**	-.67**	-.78**	-.74**	*.96*
Possible Range	1-7	1-4	1-4	1-5	1-5	1-5	1-5	1-5	1-7	1-4	1-4	1-5	1-5	1-5	1-5	1-5
M	5.50	1.45	3.29	2.09	1.98	1.72	1.93	4.32	5.62	1.34	3.37	2.03	2.01	1.80	1.95	4.30
SD	1.12	0.50	0.44	0.67	0.60	0.76	0.55	0.57	1.16	0.43	0.51	0.71	0.69	0.76	0.59	0.58

Notes. *$p < .05$; **$p < .01$; Cronbach's alpha values appear on the matrix diagonal in italics; Correlations appear below the diagonal; Reduced Acc. = Reduced Accomplishment; Global BO = Global Burnout; Total Engage. = Total Engagement; T1 = Time one; T2 = Time 2.

Table 3.2
Variable Means and Standard Deviations at Time One and Time Two

	Time One M (*SD*)	Time Two M (*SD*)
Relatedness	5.50 (1.12)	5.62 (1.16)
Loneliness	1.45 (0.50)	1.34 (0.43)
Team Identity	3.29 (0.44)	3.37 (0.51)
Exhaustion	2.09 (0.67)	2.03 (0.71)
Reduced Acc.	1.98 (0.60)	2.01 (0.69)
Devaluation	1.72 (0.76)	1.80 (0.76)
Global BO	1.93 (0.55)	1.95 (0.59)
Total Engage.	4.32 (0.57)	4.30 (0.58)

Note. Reduced Acc. = Reduced Accomplishment; Global BO = Global Burnout; Total Engage. = Total Engagement.

Team networks

Team networks were modeled using communication with teammates at practice. This communication (i.e., network question one) was used because it enabled the assessment of how all athletes on a team were connected at practice. Ties represent talking at least one time a day (i.e., a score of 4 or 5). This cut-off was chosen because it denotes frequent communication. Most teams were characterized by high communication among all teammates (see Figure 3.1). Attributes of nodes (i.e., athletes within a team) were added to the team networks. Specifically, scores for feelings of relatedness and loneliness were assessed (see Figure 3.1). Low perceptions of relatedness (i.e., $\leq$ 3.26; 2 SDs below the mean) and high feelings of loneliness (i.e., $\geq$ 2.45; 2 SDs above the mean) are represented by node color and node shape. Specifically, a black node represents an athlete who reported low perceptions of relatedness at time one and a circle node represents an athlete who reported high feelings of loneliness at time one. Three athletes reported low levels of relatedness and high levels of loneliness and were at the periphery of their team networks. Athletes at the center of their networks did not report relatively low perceptions of relatedness. The majority of athletes (8 out of 11; 73%) who reported relatively high feelings of loneliness were also on the periphery of their team networks. Additional descriptive analyses

were conducted to examine the link between communication and perceptions of relatedness and loneliness. Four multivariate linear regressions with one predictor (i.e., total communication per network question) and four criterion (i.e., relatedness T1, loneliness T1, relatedness T2, loneliness T2) were conducted. The multivariate test statistic was significant for communication outside of practice ($V(4, 169) = 7.55$, $p < 0.001$, partial $\eta^2 = .15$). Communication with teammates outside of practice was significantly associated with relatedness at time one ($F(1, 172) = 25.47$, $p < 0.001$, partial $\eta^2 = 0.13$; B = -4.07, $p < 0.001$), loneliness at time one $F(1, 172) = 21.69$, $p < 0.001$, partial $\eta^2 = 0.11$; B = -4.10, $p < 0.001$), relatedness at time two ($F(1, 172) = 10.63$, $p = 0.001$, partial $\eta^2 = 0.06$; B = -4.88, $p = 0.001$), and loneliness at time two ($F(1, 172) = 10.68$, $p = 0.001$, partial $\eta^2 = 0.06$; B = -4.01, $p = 0.001$). The multivariate test statistics for communication at practice ($V(4, 170) = 0.40$, $p = 0.811$, partial $\eta^2 = 0.01$), directly working with teammates ($V(4, 161) = 0.80$, $p – 0.529$, partial $\eta^2 = 0.02$), and with close friends ($V(4, 170) = 0.37$, $p = 0.83$, partial $\eta^2 = 0.01$) were not significant, indicating communication in these contexts did not link with perceptions of loneliness or relatedness.

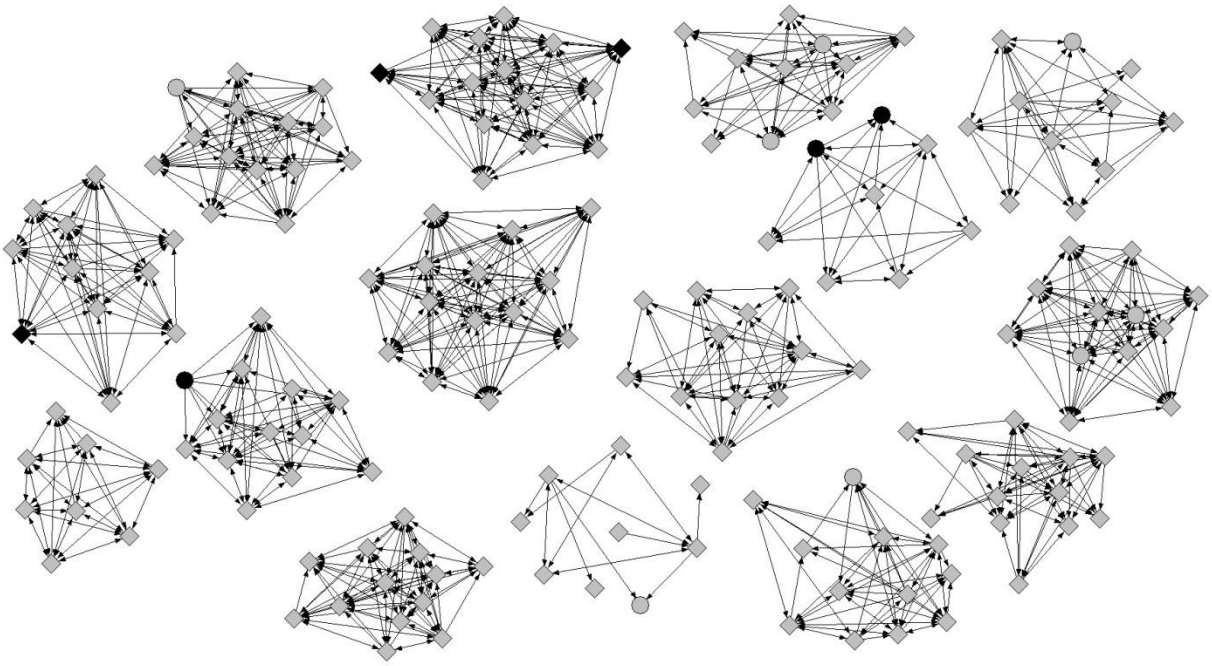

Figure 3.1. Team Networks

Burnout exposure

As MLM assumes significant variation at the highest level (Raudenbush & Bryk, 2002), a baseline model (i.e., unconditional model) with no predictors was conducted. The unconditional model reported that 2.6% of the variance in athletes' burnout levels at time two was at the team level (i.e., level two) and this variance was not significant. Due to the insignificant team level variance, it was not appropriate to use MLM. Thus, only level one of the influence models were examined using multiple linear regression.

Four separate multiple linear regressions were conducted, one for each of the network questions. Athletes' perceptions of global burnout at time two were predicted by athletes' perceptions of global burnout at time one, athletes' perceptions of engagement at time one, normative exposure to teammates' burnout and engagement perceptions at time one, weekly training hours, and perceptions of team identity. All models were significant (see Table 3.3). For

all models the only significant predictor was athletes' perceptions of burnout at time one (β = .38, $p < 0.001$, β = .40, $p < 0.001$, β = .38, $p < 0.001$, β = .37, $p < 0.001$, respectively).

Table 3.3
Influence of Teammate Turnout on Athlete Burnout at Time Two (N = 176)

	Model 1 During Practice		Model 2 Directly Work		Model 3 Outside Practice		Model 4 Close Friends	
	B (SE)	β	B (SE)	β	B (SE)	β	B (SE)	β
GB at T1	.47 (.11)	.38**	.50 (.12)	.40**	.46 (.11)	.38**	.45 (.12)	.37**
ENG at T1	-.06 (.08)	-.08	-.05 (.08)	-.07	-.08 (.08)	-.09	-.08 (.08)	-.09
GB Exposure	.04 (.10)	.08	-.01 (.13)	-.03	-.01 (.02)	-.37	-.01 (.06)	-.02
ENG Exposure	-.00 (.04)	-.01	-.01 (.06)	-.06	.01 (.02)	.34	.01 (.03)	.06
Training	-.01 (.01)	-.07	-.01 (.01)	-.05	-.01 (.01)	-.07	-.01 (.01)	-.07
Identity	.07 (.18)	.04	.15 (.18)	.08	.11 (.18)	.06	.09 (.18)	.05
R^2 ($F_{6, 117}$)	.15 (3.32)*		.15 (3.40)*		.15 (3.32)*		.14 (3.37)*	

Notes. GB = Global Burnout; ENG = Total Engagement; GB Exposure = average exposure to teammate change in burnout; ENG Exposure = average exposure to teammate change in engagement; Exposure terms differ by network question used for each model; *$p \leq 0.01$, **$p \leq 0.001$.

Discussion

The purpose of the present study was to assess the communication structure of adolescent baseball and softball team networks and communication linked with perceptions of loneliness and relatedness and examine if communication with teammates influenced an athlete's perception of burnout over time. Networks were characterized by high communication between teammates at practice which may explain the high perceptions of relatedness reported by athletes. Some athletes at the periphery of their team networks reported relatively lower perceptions of relatedness and higher feelings of loneliness. These descriptive findings indicate that connection with teammates through communication may not necessarily decrease vulnerability to loneliness. Athletes' initial perceptions of burnout predicted burnout perceptions at time two. Exposure to teammates' burnout perceptions at time one did not predict athletes' burnout perceptions later in the season.

As friendships can differ for female and male adolescents, differences were assessed between the softball and baseball athletes. Softball players reported greater perceptions of loneliness than baseball players. Though softball players reported higher feelings of loneliness compared to the baseball players, caution should be taken when interpreting such differences. Both softball and baseball players reported relatively low feelings of loneliness at time one (*M* = 1.51 and 1.34, respectively, 1-5 scale) and time two (*M* = 1.40 and 1.29, respectively). Additionally, for the whole sample, feelings of loneliness significantly decreased from time one (*M* = 1.41) to time two (*M* = 1.35). Past research has shown spending time with peers, peer acceptance, and friendship negatively link with loneliness in adolescents (Goosens & Marcoen, 1999; Woodhouse, Dykas, & Cassidy, 2012) whereas peer rejection positively links with loneliness (see Study 1). As athletes in the current study spent a large amount of time with their teammates (*M* weekly training hours = 11.6), frequently communicated with teammates at practice, and perceived high connection with teammates, this may explain why athletes reported relatively low feelings of loneliness and saw a decrease in loneliness across time. Feelings of loneliness may be low and/or decrease for adolescents in the sport context if they are highly connected with teammates and frequently interact with salient others.

Along with addressing differences between female and male adolescent athletes, differences between travel and high school softball/baseball athletes were examined. Travel softball athletes reported greater perceptions of relatedness as compared to high school softball and baseball athletes. This difference is most likely due to the nature of travel softball. Athletes tend to move up to an older age category with the same teammates, playing with the same girls for multiple years. Additionally, athletes can begin playing travel softball at the age of ten and spend much time traveling far distances with teammates. The increased time spent with

teammates may be why the travel softball players reported higher perceptions of relatedness. However, it should be noted that both travel and high school softball/baseball athletes reported relatively high perceptions of relatedness with teammates, indicating athletes in both competitive levels felt connected to their teammates.

Descriptive examination of team networks revealed that athletes frequently communicated with their teammates at practice suggesting teammates were highly connected. As intra-team communication is linked with social and task cohesion (Sullivan & Short, 2011), future work should examine if frequency of communication and connectivity of team networks link with cohesion. Findings would have implications for peer relations and team performance. Team networks also revealed that structure of communication among teammates may help explain athletes' social perceptions at the periphery of the team network, rather than the center. Athletes reporting relatively low perceptions of relatedness were on the periphery of their team network. Though these athletes were connected to other teammates, they still reported feeling less connected to teammates. As the need to belong (i.e., need for relatedness) is satisfied when individuals have frequent positive interactions with salient others and perceive they are cared for (Baumeister & Leary, 1995), these athletes may have qualitatively different communication with teammates. To help explain why not all athletes at the periphery of their team networks report low perceptions of relatedness, future work utilizing a mixed method design should assess team networks and the type and quality of communication between athletes. This work would provide understanding of how communication with teammates helps satisfy or thwart the need to belong, having implications for athlete well-being. Examination of team networks also revealed that the majority of athletes (8 out of 11; 73%) who reported relatively high feelings of loneliness were also on the periphery of their team networks. Low feelings of loneliness existed despite being

connected to teammates. Thus, just spending time with peers in the sport context may not decrease susceptibility to loneliness in adolescents. It may also depend on the type of interaction (see Study 1) and communication with one's teammates and the quality of one's relationships with teammates. Future work should examine if relationship quality with teammates explains the link between teammate communication and feelings of loneliness. Such work would broaden our understanding of how the social context of sport contributes to athletes' psychological well-being. Finally, communication with teammates outside practice was linked with perceptions of loneliness and relatedness at both time points. Greater communication with teammates outside of practice was linked with lower perceptions of loneliness, suggesting that communication with teammates outside of sport may help diminish feelings of loneliness. Thus, friendships made in sport may help decrease psychological ill-being if individuals communicate outside of the sport context. However, surprisingly, greater communication with teammates outside of practice was also linked with lower perceptions of relatedness. It may be that communication outside of the sport context helps foster dyadic relationships but not overall perceptions of team belonging and connection. Future work should further address this finding by examining dyadic friendships with teammates and how communication in such friendships contributes to athletes' perceptions of relatedness with teammates and team identity.

Along with assessing how the structure of communication on teams linked with athlete perceptions of relatedness and loneliness, the current study examined if communication with teammates influenced an athlete's perception of burnout over time. Perceptions of burnout at time one explained 14 to 15% of the variance in burnout perceptions at time two. Results indicate that greater initial perceptions of burnout contribute to greater burnout perceptions later in the season. This result supports the chronic nature of burnout (Smith et al., 2019). Coaches,

athletic personnel, and athletes should be aware that, if not addressed, burnout perceptions can increase over a season, having implications for athlete motivation, satisfaction with one's sport, enjoyment, and well-being. Thus, coaches and athletes need to look for early warning signs of burnout (e.g., mood changes, chronic fatigue) and take steps to reduce burnout perceptions (e.g., provide adequate rest, teach effective coping strategies). As limited work has addressed the development of burnout (see Isoard-Gautheur, Guillet-Descas, Gaudreau, & Chanal, 2015), future work should examine developmental trajectories of burnout perceptions. Such work would provide clarity on how this negative motivational sport experience develops over time. Though initial perceptions of burnout predicted burnout perceptions later in the season, it is important to note that much of the variance in burnout at time two was not explained, supporting the athlete burnout literature that highlights how many factors (i.e., psychosocial and physical) can contribute to burnout perceptions (Gould, Tuffey, et al., 1996; Smith et al., 2019).

Though research supports the contagion of burnout perceptions in organizational settings (see Bakker & Schaufeli, Bakker et al., 2006; Kim et al., 2017; Rountree, 1984), exposure to teammates' burnout through communication did not predict burnout perceptions later in the season. This finding suggests that burnout may not transfer between teammates as was hypothesized. The lack of transfer between teammates is positive, as transfer of burnout perceptions among teammates could be detrimental for team dynamics (e.g., cohesion) and team performance. However, the measurement of communication may have limited the ability to assess transfer of burnout perceptions. Communication with teammates was assessed by asking athletes to report the frequency in which they talked to each teammate in various settings. It may be that specific types of communication (e.g., co-rumination, see study one) contribute to the transfer of contagion of burnout perceptions among teammates. Future work should consider

asking athletes to report their frequency of talking about sport related problems as well as performance decrements to provide a more nuanced understanding of what communication contributes to athlete burnout perceptions and if communication with teammates can influence burnout perceptions over time. Additionally, as burnout is described as motivation gone awry (Gould, 1996), future work should consider if and how communication with teammates' influences athletes' motivation over a season and if changes in motivation predict burnout perceptions. Such work could shed light on the time precedence of athlete burnout and motivation (Smith et al., 2019).

Along with exposure to teammates' burnout, initial engagement perceptions and exposure to teammates' engagement did not predict athlete burnout perceptions at time two. Findings indicate that athletes' engagement perceptions do not influence their burnout perceptions later in a season. In contrast to what was hypothesized as well as what has been found in the organizational setting (see Bakker et al., 2006), exposure to teammates' engagement did not predict athlete burnout at time two. Thus, for the present study, it seems that engagement among teammates does not influence vulnerability of burnout. These findings may be explained by work that suggests negative emotions are more contagious than positive emotions (McIntosh, Druckman, & Zajonc, 1994). Athlete engagement is a positive cognitive-affective experience in sport; therefore, engagement may be less likely to influence vulnerability to burnout. In addition, physical training demands and identification with one's team did not predict burnout at time two. The lack of association of physical training demand with burnout is not surprising as stress from training is not always associated with burnout (Black & Smith, 2007; Gould, Tuffey, et al., 1996). As was found, social factors were more salient to burnout perceptions in the present sample of athletes. Team identification did not predict athlete burnout at time two, indicating that

the strength of identification with one's team did not influence athlete burnout at time two. The finding that team identification (i.e., collective identity) did not predict burnout at time two corresponds with the lack of association between exposure to teammates' change in burnout via communication. This noted, though team identification did not predict burnout at time two, this is not to say team identity is unimportant to the sport experiences of adolescent athletes. Because identification with a group strengthens bonds between members (Markovsky & Chaffee, 1995) and a group's values and behaviors are internalized (Deaux, Reid, Mizrahi, & Cotting, 1999; Terry & Hogg, 1996), research should assess how teammate communication influences team identity across a season and how this affects sport outcomes (e.g., enjoyment and commitment).

Consideration of the present study's limitations reveals additional future directions. Nonverbal communication (e.g., facial expressions) was not assessed; however, this form of communication can send information and may contribute to perceptions of burnout. Future work should consider if nonverbal communication between teammates contributes to perceptions of burnout. As people differ in the ability to send and receive nonverbal messages (Buck, 1984), future work should also assess if influence (i.e., transfer) of burnout perceptions occurs and/or is greater in athletes who receive nonverbal messages more easily. The present study was delimited to adolescent baseball and softball athletes. As such, results may not be generalizable outside of this context. Valuable next steps include replication of the present study and assessment of burnout exposure in the collegiate setting. The present study should be replicated in the adolescent softball and baseball population to support (or refute) the current findings. Additionally, in order to generalize the findings, other adolescent sport teams should be assessed including both independent (e.g., cross country) and interdependent (e.g., soccer) teams. Assessment of burnout exposure in the collegiate setting is important because college athletes

spend considerable time with teammates, often eating meals, taking classes, and living together. Because of this, athletes, particularly close friends, may communicate often and have high exposure to teammates' burnout – or other motivational experiences – via communication. This high exposure to teammates may be more influential than exposure in adolescent sport teams and consequently, collegiate athletes' well-being may be largely influenced by teammates.

These limitations acknowledged, the findings of the current study extend the understanding of how the structure of team communication links with social perceptions and the social contributors of athlete burnout. Sociograms of teams revealed that athletes who reported relatively low levels of relatedness and/or low levels of loneliness were at the periphery of their team network. Communication was not a channel for which burnout perceptions were shared among teammates, indicating that burnout may not transfer among teammates. As the transfer of burnout among teammates could be detrimental to team dynamics and performance as well as teammate relationships, the lack of influence from communication is adaptive for team functioning.

CHAPTER FOUR: STUDY THREE

COMMUNICATION PROFILES AND MOTIVATIONAL EXPERIENCES OF ATHLETES

Abstract

Sport occurs in a social context where interactions and communication occur between athletes and social agents. In particular, athletes often communicate with their teammates and this communication can contribute to their psychological states and physical performance. Through verbal and nonverbal messages, athletes communicate with one another and exchange information, attitudes, and feelings which can influence their motivational experiences. Collegiate track and field athletes (N = 219) completed established measures of team communication, team identity, burnout, engagement, enjoyment, and satisfaction. Communication profiles were examined using latent profile analysis. Using the three-step method in *M*plus, predictors (i.e., team belonging and sex) of profile membership and profile differences in perceptions of motivational sport experiences were examined. Three profiles were found: the Less Effective Communicators, the Supportive Communicators, and the Functional Communicators. Athletes with greater team identity were more likely to be in the Supportive Communicators profile ($p < 0.001$). Males were more likely to be in the Functional Communicators profile than the other two profiles ($p = 0.01$). The Less Effective Communicators had greater perceptions of burnout (ps < 0.01) and lower perceptions of engagement ($p < 0.01$ and $p < 0.05$), satisfaction ($p < 0.001$ and $p = 0.001$), and enjoyment ($p < 0.001$ and $p < 0.05$) than the Supportive and Functional Communicators. Supportive Communicators had greater satisfaction ($p < 0.001$) and enjoyment ($p < 0.001$) than the Functional Communicators. Results indicate that different profiles of communication occur in track and field with implications for athletes' sport experiences.

Introduction

Within the social context of sport, communication between teammates contributes to psychological states and physical performance of athletes (Hanin, 1992). Communication is defined as the transmission of information with or without intent (Littlejohn & Foss, 2008). Communication occurs between teammates occurs through interactions (Hanin, 1992), whereby verbal and nonverbal messages are transmitted between athletes. Such communication enables the exchange of information, attitudes, and feelings which can influence sport experiences and athletes' satisfaction and enjoyment. As multiple forms of communication can occur between teammates, unique combinations of communication (i.e., profiles) can be used to better approximate the social context of athletes. The current study examines communication processes among teammates and how these processes link with athletes' motivational experiences. Specifically, the study seeks to examine the salience of communication profiles to athletes' perceptions of burnout, engagement, satisfaction, and enjoyment.

In sport, a variety of social interactions can occur which influence athletes' sport experiences as well as their well-being. One maladaptive motivational experience that can occur is athlete burnout. Athlete burnout is defined as a multi-dimensional, negative cognitive-affective experience that occurs due to chronic stress in one's environment (Smith, 1986). This experience is characterized by perceptions of emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation (Raedeke, 1997). Greater perceptions of athlete burnout are linked with lower perceptions of engagement, a positive experience characterized by confidence, dedication, vigor, and enthusiasm (see Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007). Greater burnout perceptions also link with lower perceptions of enjoyment and satisfaction in sport (Raedeke, 1997; Schmidt & Stein, 1991). Thus, examining

what factors exacerbate perceptions of burnout and reduce engagement, enjoyment, and satisfaction should afford an understanding of how to mitigate suboptimal motivational experiences in sport for athletes, contributing to greater athlete well-being.

Though perceptions of athlete burnout can be fueled by physical stress (Silva, 1990), athletes are also faced with psychosocial stressors. In particular, when considering the factors that exacerbate perceptions of burnout, attending to the social context in which athletes train and compete is important. This context subsumes the culture of sport, sport organizations, and various social agents. Regarding social agents in sport, past qualitative research has found that interactions with coaches, parents, and teammates are linked with athletes' motivational experiences, including burnout (Udry, Gould, Bridges, & Tuffey, 1997). Additionally, in the educational setting, frequent interactions with colleagues who reported higher levels of burnout, predicted higher levels of burnout in teachers (Bakker & Schaufeli, 2000; Kim, Youngs, & Frank, 2017). Results suggest that teachers' perceptions of burnout are heightened when colleagues are burned out and when colleagues talk (i.e., communicate) frequently about problems in work (Bakker & Schaufeli, 2000; Kim et al., 2017). This influence may also occur in the sport setting as teammates frequently communicate with each other at practice and competition, as well as outside of the sport context. However, this influence may largely depend on the type of communication between teammates as well as an athlete's identification with her or his team.

Within sport, teammates frequently interact, and these interactions occur through various forms of communication. Intra-team communication can convey messages pertaining to the planning and execution of sport tasks, the evaluation of one's performance, and the stimulation of motivation (Hanin, 1992). Additionally, communication can transmit messages of acceptance

as well as task-irrelevant messages that convey information outside of the sport performance context (Hanin, 1992; Kassing et al., 2004). Intra-team communication, as conceptualized by Sullivan and Feltz (2003), consists of four distinct types of messages teammates convey (i.e., acceptance, distinctiveness, positive conflict, and negative conflict). Messages of acceptance communicate feelings of appreciation and consideration between teammates. Messages of distinctiveness communicate a shared but unique identity among teammates. Messages of positive conflict expresses constructive solutions to deal with team disruptions. Messages of negative conflict include exchanges that are confrontational and emotional. These four types of messages contribute to effective or ineffective communication among teammates (Sullivan & Feltz, 2003).

Intra-team communication as defined by Sullivan and Feltz (2003) has been linked with social and task cohesion, athlete satisfaction, and role clarity (Cunningham & Eys, 2007; Sullivan & Feltz, 2003; Sullivan & Gee, 2007; Sullivan & Short, 2011). In other words, effective intra-team communication that conveys messages of acceptance, distinctiveness, and constructive conflict (i.e., positive conflict) is linked with greater cohesion, athlete satisfaction, and role clarity. On the other hand, ineffective intra-team communication that conveys messages of destructive conflict (i.e., negative conflict) is linked with lower cohesion, athlete satisfaction, and role clarity. Thus, communication among teammates may influence group dynamics within a team and consequently affect athletes' motivational experiences. Greater amounts of effective intra-team communication may be positively linked with perceptions of engagement, satisfaction, and enjoyment and negatively linked with perceptions of burnout. Additionally, perceptions of belonging on one's team (i.e., collective/social identity) may help explain differences in communication between athletes. When individuals identify with a group and

perceive they belong to a group, they share common emotional bonds (Markovsky & Chaffee, 1995) and internalize a group's values and behaviors (Terry & Hogg, 1996). Accordingly, athletes' feelings and actions are then guided by the group (Stets & Burke, 2000; Terry & Hogg, 1996). If athletes perceive that they belong on their team, emotional bonds may strengthen, affecting communication with teammates and influencing athletes' feelings and actions. Thus, team identity may relate to and predict the type of communication athletes have with their teammates (i.e., group members).

The sport communication literature highlights four distinct types of messages teammates can convey (i.e., acceptance, distinctiveness, positive conflict, and negative conflict) that contribute to effective or ineffective communication (Sullivan & Feltz, 2003). However, intra-team communication may convey other messages to athletes with implications for perceptions of burnout and engagement (see Study 1 and 2). For instance, through self-disclosure, or the communication of feelings and thoughts, individuals can convey messages of support, friendship, and connection (Parker & Asher, 1993; Rose, 2002). For athletes, such communication processes may enhance motivation and enjoyment in sport (Scanlan, Carpenter, Lobel, & Simons, 1993; Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993). However, topics of self-disclosure are not always positive which can negatively influence an individual's own attitudes, emotions, and behaviors (Levy & Nail, 1993). One form of communication related to self-disclosure that is negative in nature is co-rumination (Rose, 2002). Co-rumination refers to communication within a dyadic relationship that consists of excessively discussing problems and focusing on negative feelings (Rose, 2002). This form of communication is linked with high quality, close friendships as well as aspects of depression and anxiety (Rose, 2002; Rose, Glick, Smith, Schwartz-Mette, & Borowski, 2017). Also, as was found in study one of this dissertation, co-rumination with

teammates is linked with greater perceptions of loneliness and athlete burnout. These findings collectively indicate that this type of communication may have both adaptive (i.e., perceptions of high friendship quality, enjoyment in sport) and maladaptive (i.e., depression symptoms, anxiety, loneliness, burnout) outcomes for individuals, including athletes. Athletes who frequently co-ruminate with their teammates may perceive stronger friendships with these teammates, linking with greater enjoyment and satisfaction in sport. Yet, co-rumination with one's teammates may also link with negative outcomes (e.g., greater perceptions of burnout and lower perceptions of engagement). These associations may be particularly strong when the focus of communication is sport related. Perceptions of burnout may be facilitated by the continual discussion of sport related problems, reinforcing the negative aspects and diminishing the positive aspects of sport for an athlete.

Co-rumination is linked with both adaptive and maladaptive outcomes in sport (see Study 1). This form of communication may be linked with adaptive outcomes due to self-disclosure and feelings of emotional closeness with others (Rose, 2002). Feelings of emotional closeness with others are also linked with messages of support (Cutrona & Russell, 1990; Rees & Hardy, 2000). As research has suggested that messages of emotional support are linked with positive outcomes (Rees & Hardy, 2000), this form of communication is salient when considering how communication among teammates links with athletes' motivational experiences. Emotional support is characterized by communication that conveys comfort, security, and that one is cared for (Rees & Hardy, 2000; Richman, Rosenfeld, & Hardy, 1993). This form of support can be communicated verbally (e.g., offering moral support and validating one's feelings) and nonverbally (e.g., listening and facial expressions). Within the organizational literature, emotional support is a salient form of communication for nurses and for teachers (Ellis & Miller,

1994; Ray & Miller, 1991). For nurses, this type of communication is positively linked with the motivational related experiences of retention and commitment and negatively linked with burnout. For teachers, perceived emotional support from co-workers is indirectly linked with job satisfaction through role ambiguity. These findings correspond with athlete burnout literature that highlights the importance of perceived overall social support in mitigating perceptions of burnout (DeFreese & Smith, 2013b; Raedeke & Smith, 2004). It may be the presence of an emotionally supportive network that leads to positive experiences (i.e., higher perceptions of engagement, friendship quality, and acceptance and lower perceptions of burnout) for athletes.

As various forms of communication between teammates occur at the same time, attending to multiple types of communication will better approximate the sport environment of athletes. For instance, athletes may communicate messages of acceptance, distinctiveness, positive/negative conflict, excessive problem talk, and support during practice or competition. To best understand the salience of communication among teammates for adaptive motivational experiences, we must capture the unique combinations of communication (i.e., profiles) that occur in the sport context.

To understand how combinations of communication processes are linked to perceptions of motivational experiences, a person-centered approach can be used. Such an approach affords the assessment of unique combinations of communication (i.e., profiles) and if athletes with different communication profiles have distinct perceptions of their sport experiences. Assessing communication profiles of athletes will help distinguish what messages between individuals are most salient for enhancing positive motivational experiences. Therefore, the purpose of the current study was to (a) describe communication profiles of athletes and (b) examine the salience of these profiles by assessing profile group differences on athletes' perceptions of burnout,

engagement, satisfaction, and enjoyment. Due to the exploratory nature of the assessment of communication profiles, no hypotheses were made regarding the number of profiles that would emerge. However, it was expected that profiles would emerge that were characterized by varying levels of adaptive (i.e., acceptance, distinctiveness, positive conflict, and emotional support) and maladaptive (i.e., negative conflict) communication. Co-rumination may reflect both adaptive and maladaptive communication. It was hypothesized that (a) greater perceptions of team identity would predict membership in more adaptive communication profiles, (b) males would more likely be in profiles with greater levels of conflict, and (c) athletes with profiles of more adaptive communication processes would report greater perceptions of engagement, satisfaction, and enjoyment and lower perceptions of burnout.

Method

Participants

Participants included a convenience sample of female and male collegiate track and field athletes (N = 219, 57.5% female; 18-24 years; *M* = 20.2, *SD* = 1.4). Athletes participated in different athletic associations and divisions. Specifically, athletes represented 13 teams from Divisions I (n = 73 athletes), II (n = 54 athletes), and III (n = 34 athletes) of the National Collegiate Athletic Association (NCAA), five teams from the National Association of Intercollegiate Athletes (NAIA; n = 55 athletes), and one team from the National Junior College Athletic Association (NJCAA; n = 3 athletes). Among all participants, a Hispanic or Latino ethnicity was reported by 2% of the participants. The majority of participants self-identified as White (70.8%). Remaining participants self-identified as Asian (0.5%), Black or African American (18.7%), American Indian or Alaska Native (0.9%), Native Hawaiian or Other Pacific Islander (0.5%), more than one race (6.4%), other (0.5%), or prefer not to say or did not respond

(1.7%). Average involvement competing in track and field was 7.0 years (*SD* = 2.8). Average involvement on one's current team was 2.3 years (*SD* = 1.2). Average time spent training per week was 16.6 hours (*SD* = 5.3). Participants reported training, on average, for 10.0 months (*SD* = 2.0) out of the year. Responses about how captains were selected ranged. Athletes reported that captains were chosen by a team vote, by the coaches, that there were no captains, or that they did not know how captains were chosen. When coaches chose captains, athletes reported that captains were chosen based upon (a) seniority and/or (b) ability and performance.

Design and Procedures

Ethical approval was obtained by the institutional review board (IRB) prior to conducting the study (see Appendix E). To obtain participants, track and field coaches universities and colleges in the Midwest were contacted via email and/or phone. If a coach agreed to have his/her team participate, a meeting was arranged where the study was explained and the questionnaire battery was distributed and completed (see Appendix F). Athletes were also recruited at local track meets. Athletes who agreed to participate answered demographic questions and established measures pertaining to communication with their teammates and motivational experiences once during their sport season.

Measures

Demographic information. Athletes were asked to report their age, sex, ethnicity, race, year in college, athletic association and division, main event when competing, length of time competing in their current sport (years), length of time with their current team, and estimated weekly hours spent training (including competition). Athletes were asked to report how often they practice or compete in their current sport on a yearly basis (i.e., how many months out of

the year he/she practices or competes in the current sport). Additionally, athletes were asked to indicate how captains are selected on their current team and if they are a captain for their team.

Intra-team communication. The 15-item revised Scale for Effective Communication in Team Sports (SECTS-2; Sullivan & Feltz, 2003; Sullivan & Short, 2011) was used to measure effective communication among teammates. The measure consists of four subscales (i.e., acceptance, *n* items = 4; positive conflict, *n* items = 4; negative conflict, *n* = 4; and distinctiveness, *n* = 3) and measures how teammates usually communicate with each other (e.g., "when our team communicates, we communicate anger through body language"). Participants were asked to consider their team as a whole when responding to each statement. Responses were on a 7-point Likert scale (1 = *hardly ever*, 7 = *almost always*). Subscale scores were calculated by averaging items for each subscale, respectively. This measure has been used with both interdependent (e.g., volleyball) and independent (e.g., track and field, swimming) sport teams (Kim, Magnusen, & Andrew, 2016; Sullivan & Short, 2011). Internal consistency, factor structure, and construct validity is supported in the literature (see Sullivan & Short, 2011). Internal consistency reliability of scores in the current study was $\alpha = 0.75$ for the entire measure and $\alpha = 0.75$-0.78 for the acceptance, positive conflict, and negative conflict subscales. The internal consistency reliability for the distinctiveness subscale was $\alpha = 0.59$. Due to low reliability of this subscale, the subscale was not used in subsequent analyses.

Co-rumination. The 27-item Co-Rumination Questionnaire (CRQ; Rose, 2002) was used to assess the extent to which participants co-ruminate with close teammates. The measure was originally developed to assess co-rumination amongst close same-sex friends in children and adolescents (e.g., "When one of us has a problem, we talk about it for a long time") and has demonstrated good internal consistency ($\alpha = 0.96$-0.97; Rose, 2002; Rose, Carlson, & Waller,

2007). Past work has supported the validity of the measure (see Davidson et al., 2014). Each item was rated on a 5-point Likert scale (1 = *not at all true*, 5 = *really true*). For the current study, the questionnaire was modified to ask participants to report on their closest teammates on their current team. Additionally, the stem was modified to address issues or problems in sport rather than problems in general (i.e., how well does each statement describe your closest teammates and you when discussing sport related issues or problems?"). A total score was calculated by averaging responses on all items. Internal consistency reliability of scores in the current study was $\alpha = 0.93$.

Emotional support. The 3-item emotional support scale (Rees, Hardy, & Evans, 2007) informed by Rees and Hardy (2000) was used to measure emotional support from teammates. Participants were asked to rate how often a teammate uses communication to convey the listed items (e.g., "how often does a teammate use communication to convey that they are always there for you"). The stem was modified from its original format to specifically address communication between teammates. Responses were on a 5-point Likert scale (i.e., 1 = *not at all* to 5 = *a lot*). A total score was calculated by averaging items for the respective subscales. Reliability and validity of the scale is supported (Rees et al., 2007). Internal consistency reliability of scores in the current study was $\alpha = 0.89$.

Perceptions of team identity. Perceptions of identity on one's team (i.e., identification with the collective) were assessed with a seven-item scale (see Frank, 2009). This scale is similar to the social interaction dimension of social identification described by Deaux and colleagues (1999). For the current study, the subscale was modified to reflect the sport context (i.e., 'teachers' changed to 'teammates'; 'school' changed to 'team'). Participants rated how strongly they agreed with each item (e.g., "I belong on this team", "I identify with other athletes on this

team") on a 4-point Likert scale (1 = *strongly disagree* to 4 = *strongly agree*). An overall score for perceived team identity was calculated by averaging responses across all seven items. Internal consistency has been supported (Frank, 2009). Internal consistency reliability of scores in the current study was $\alpha = 0.85$.

Athlete burnout. The 15-item Athlete Burnout Questionnaire (ABQ**;** Raedeke & Smith, 2001; 2009) was used to assess athletes' perceptions of burnout. This self-report questionnaire consists of three subscales measuring the core dimensions of burnout (i.e., emotional and physical exhaustion, reduced accomplishment, and sport devaluation) each consisting of 5 items. Participants were asked to indicate how often they experienced each item during their current sport season (e.g., "I am not achieving much in my sport"). Responses were on a 5-point Likert scale (1 = *almost never* to 5 = *almost always*). A global burnout index was calculated by averaging all 15 items of the questionnaire. Subscale scores were calculated by averaging items for each specific dimension. Internal consistency of the subscales has previously been supported as well as convergent, discriminant, and construct validity (see Cresswell & Eklund, 2006b; Raedeke & Smith, 2009). Internal consistency reliability of scores in the current study was $\alpha = 0.93$ for global burnout and $\alpha = 0.82 – 0.90$ for burnout dimensions.

Athlete engagement. The 16-item Athlete Engagement Questionnaire (AEQ; Lonsdale, Hodge, & Jackson, 2007) was used to assess athletes' engagement in their sport. The AEQ is comprised of four subscales measuring the four core dimensions of engagement (i.e., confidence, dedication, enthusiasm, and vigor). Participants rated how often they experienced each item during their current sport season (e.g. "I feel capable of success in my sport"). Responses were on a 5-point Likert scale (1 = *almost never* to 5 = *almost always*). A total engagement score was calculated by averaging all 16 items. Scores for each dimension were calculated by averaging

items for each respective dimension. Past research has supported the reliability and validity of the scale (DeFreese & Smith, 2013a; Hodge et al., 2009; Lonsdale, et al., 2007). Internal consistency reliability of scores in the current study was $\alpha = 0.94$ for total engagement and $\alpha = 0.83 – 0.88$ for engagement dimensions.

Athlete satisfaction. Athlete satisfaction was assessed with the Athlete Satisfaction Questionnaire (ASQ; Riemer & Chelladurai, 1998). The 56-item measure includes 15 categories of satisfaction (i.e., individual performance, team performance, ability utilization, strategy, personal treatment, training and instruction, team task contribution, team social contribution, ethics, team integration, personal dedication, budget, medical personnel, academic support services, and external agents). However, for the purpose of the current study, several of these categories (i.e., subscales) were considered not relevant to team communication. Therefore, based on Riemer and Chelladurai's (1998) definitions of the categories, the following subscales were used in the current study: team task contribution ($n = 3$ items; e.g., "the extent to which teammates provide me with instruction"), team social contribution ($n = 3$ items; e.g., " the role I play in the social life of the team), team integration ($n = 4$ items; e.g., the degree to which teammates share the same goal"), and personal dedication ($n = 4$ items; e.g., "my commitment to the team"). Participants were asked to rate how satisfied they were with each item with respect to the current sport season. Responses were on a 7-point Likert scale (1 = *not at all satisfied* to 7 = *extremely satisfied*). A score of total athlete satisfaction was calculated by averaging all 15 items. Subscale scores were calculated by averaging items for each respective subscale. Construct validity, criterion validity, and internal reliability is supported (see Reimer & Chelladurai, 1998). Internal consistency reliability of scores in the current study was $\alpha = 0.92$ for total satisfaction and $\alpha = 0.87 – 0.93$ for satisfaction categories.

Enjoyment. Enjoyment was measured with the 4-item subscale of the Sport Commitment Questionnaire (Scanlan, Carpenter, Schmidt, et al., 1993). Participants were asked to choose the response that best described how they usually felt about their current sport (e.g., "Do you enjoy playing your sport this season?). Responses were on a 5-point Likert scale (1 = *not at all* to 5 = *very much*). Internal consistency of the subscale as well as face and discriminant validity have previously been supported (Scanlan, Carpenter, Schmidt, et al., 1993). Internal consistency reliability of scores in the current study was $\alpha = 0.96$.

Data Analysis

Initial data screening was conducted to examine the data for missing values, violations of assumptions, and outliers (Tabachnick & Fidell, 2013). Subscale scores were calculated for all constructs. Descriptive statistics, bivariate correlations, and scale reliabilities were calculated for all variables. As intra-team communication has been shown to differ between male and female athletes (Cunningham & Eys, 2007; Sullivan & Feltz, 2003), a one-way multivariate analyses of variance (MANOVA) was conducted to examine if female and male athletes differed on teammate communication (i.e., acceptance, positive conflict, negative conflict, co-rumination, and emotional support). A second MANOVA was conducted to examine if female and male athletes differed on motivational sport experiences (i.e., burnout, engagement, satisfaction, and enjoyment).

To describe communication profiles of athletes, exploratory latent profile analysis was conducted in M*plus* version 7.4 (Muthén & Muthén, 1998-2015; Nylund et al., 2007). Profiles classified athletes by their scores on communication variables. Nested models, beginning with a *k* class model of one and increasing the number of classes by 1 class in each subsequent model, were estimated (Nylund, Asparouhov, & Muthén, 2007). In total, five models were estimated. To

avoid local maxima, 5,000 random start values were used (Berlin, Williams, & Parra, 2014). After 100 iterations, 500 optimizations were used for final solutions. Estimation of models ceased when the additional class (i.e., profile) did not meaningfully contribute to the interpretation of communication profiles.

As exploratory latent profile analysis is data driven (i.e., profiles will emerge whether or not these profiles exist), various characteristics were used (model fit indices and practicality) to determine what model was retained for subsequent analyses (Berlin et al., 2014). Fit indices included the Bayesian Information Criteria (BIC), the sample-size adjusted BIC (SSA-BIC), and the Bootstrap Likelihood Ratio Test (BLRT). Smaller BIC and SSA-BIC values indicate better model fit. However, the information criteria fit indices (i.e., BIC and SSA-BIC) penalize for model complexity. Thus, simpler models may be favored over more complex models even if they are not the correct model (Pastor & Gagné, 2013). This limitation can be overcome by also assessing likelihood ratio tests (LRT; null hypothesis significance test; Nylund et al., 2007). The BLRT creates a distribution of the LRT statistic and the data for each bootstrapped sample is fit to both the *k*-1 and *k* class models (Nylund et al., 2007). A significant BLRT *p* value indicates better fit of the *k* class model compared to the *k*-1 class model. In other words, the more complex model (*k*) is favored over the more parsimonious model (i.e., *k*-1). Entropy values were also examined. Entropy indicates the precision of classification of participants into classes/profiles. Values range from zero to one where a higher value suggests better precision (Berlin et al., 2014). Practicality was assessed by examining the number of cases within each class. Models with small classes are concerning as power and precision may suffer (Berlin et al., 2014). Finally, models were also examined with respect to interpretability. If a more complex model fit the data better than a more parsimonious model but the additional class did not add to the

interpretability of communication profiles among track and field athletes, then the more parsimonious model was considered and accepted as the final model.

Once the best fitting model was established, a MANOVA was used to examine differences in communication between the classes (i.e., profiles) followed by univariate analyses and pairwise Bonferroni corrected comparisons with 95% bias corrected bootstrap estimates of the differences between profiles. These corrections are used because multiple comparisons are conducted on a single data set and adjustments are made to estimates for bias and skewness, respectively. The three-step method (see Asparouhov & Muthén, 2014) utilizing a Wald chi-square test (R3STEP in M*plus*) was used to assess if team identity and sex were predictors of the latent profiles. Additionally, the three-step method (DU3STEP in M*plus*) was used to assess profile differences on athletes' perceptions of burnout, engagement, satisfaction, and enjoyment. The three-step approach was used because it fixes measurement parameters at their estimated values before examining group differences on the predictor (i.e., team identity) and outcome (i.e., burnout, engagement, satisfaction, and enjoyment) variables. The predictor and outcome analyses were conducted separately as the R3STEP and DU3STEP cannot be conducted in the same model in M*plus.*

Results

Preliminary data screening

Evaluation of skewness and kurtosis values revealed slight deviations from normality; however, skewness was no greater than (1.2) and kurtosis was no greater than (1.1). Such deviations from normality are lower than the criterion (i.e., skewness > 2 and kurtosis > 7) linked with issues in maximum likelihood (ML) based studies (Finney & DiStefano, 2013). Missing data was limited (0.02%) and was handled in *M*plus using ML estimation. No new data is

created, instead, temporary imputations are generated to find the optimal parameter estimates (Enders, 2013). Subsequent screening for Multivariate outliers (Mahalanobis distance, χ^2 [13] = 34.53, $p < 0.001$; Tabachnick & Fidell, 2013) revealed five outlier cases. When these participants were removed for the latent profile analysis, differences in the four and five class models were found, thus, these cases were not included in the primary analysis.

Descriptive statistics

Descriptive statistics appear in Table 4.1. Relative to the sample, participants reported moderate-to-high overall intra-team communication, high perceived acceptance from teammates and positive conflict with teammates and moderate levels of negative conflict with teammates. Participants also reported moderate levels of co-rumination with a close friend on their team and moderate-to-high levels of perceived emotional support and team identity. Participants reported relatively low-to-moderate levels of athlete burnout dimensions and moderate levels of global athlete burnout. Participants reported moderate-to-high levels of engagement dimensions and total engagement. Additionally, participants reported moderate-to-high levels of satisfaction with their athletic experiences and high enjoyment. Correlations among the burnout dimensions as well as correlations among the engagement dimensions were consistent with previous research (Lonsdale, Hodge, & Jackson, 2007; Raedeke & Smith, 2009). Athlete burnout dimensions and global athlete burnout were negatively correlated with engagement dimensions and total engagement, satisfaction subscales, and enjoyment.

Two one-way MANOVAs were conducted to examine if female and male athletes differed on teammate communication (i.e., acceptance, positive conflict, negative conflict, co-rumination, and emotional support) and motivational sport experiences (i.e., burnout, engagement, satisfaction, and enjoyment), respectively. For teammate communication, there was

a significant multivariate test statistic (Wilks $\Lambda = 0.95$; F (5, 207) = 2.34, $p = 0.043$; partial $\eta^2 = 0.05$). Follow-up univariate F-tests indicated that male and female athletes significantly differed on negative conflict with teammates (F (1, 211) = 5.49, $p = .020$, partial $\eta^2 = .03$). On average, female athletes had lower scores than male athletes for negative conflict (M female = 2.49, SD = 1.22; M male = 2.87, SD = 1.03). For the motivational sport experiences, the multivariate test statistic was not significant (Wilks $\Lambda = 0.98$; F (4, 203) = 0.85, $p = .496$; partial $\eta^2 = 0.02$).

Table 4.1

Descriptive Statistics for Study Variables (N = 219)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Intra-Team Communication	*.75*																	
2. Acceptance	.71**	*.75*																
3. Pos. Conflict	.81**	.77**	*.78*															
4. Neg. Conflict	.29**	-.32**	-.11	*.75*														
5. Co-Rumination	.21**	-.02	.13	.26**	*.93*													
6. Support	.31**	.48**	.39**	-.35**	.06	*.90*												
7. Team Identity	.25**	.42**	.33**	-.27**	-.02	.46**	*.85*											
8. Exhaustion	.05	-.04	-.06	.21**	.13	-.11	-.16*	*.90*										
9. Reduced Acc.	-.09	-.11	-.12	.11	.05	-.20**	-.34**	.54**	*.82*									
10. Devaluation	-.06	-.16*	-.15*	.25**	.08	-.19**	-.34**	.68**	.66**	*.89*								
11. Global Burnout	-.03	-.12	-.13	.22**	.10	-.19**	-.32**	.86**	.83**	.91**	*.93*							
12. Dedication	.15*	.22**	.19**	-.19**	-.00	.18**	.35**	-.34**	-.50**	-.62**	-.55**	*.88*						
13. Vigor	.18**	.13	.22**	-.05	.01	.14*	.30**	-.54**	-.54**	-.62**	-.65**	.66**	*.85*					
14. Enthusiasm	.13	.20**	.18**	-.17*	.04	.22**	.39**	-.47**	-.59**	-.68**	-.66**	.72**	.84**	*.88*				
15. Confidence	.11	.09	.11	-.02	-.00	.07	.24**	-.38**	-.59**	-.52**	-.57**	.63**	.58**	.61**	*.83*			
16. Total Engagement	.16*	.18*	.20**	-.12	.02	.18**	.37**	-.50**	-.63**	-.71**	-.70**	.86**	.89**	.92**	.80**	*.94*		
17. Athlete Sat.	.34**	.50**	.42**	-.25**	.00	.53**	.55**	-.19**	-.35**	-.30**	-.32**	.34**	.34**	.38**	.27**	.39**	*.92*	
18. Enjoyment	.14*	.28**	.20**	-.22**	.00	.22**	.43**	-.50**	-.61**	-.70**	-.70**	.58**	.61**	.72**	.52**	.70**	.46**	*.96*
Possible Range	1-7	1-7	1-7	1-7	1-5	1-5	1-4	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-7	1-5
M	4.12	5.10	4.32	2.66	2.79	3.96	3.31	2.84	2.59	2.30	2.56	4.22	3.85	4.07	3.99	4.03	5.20	4.11
SD	0.73	1.15	1.21	1.17	0.68	0.97	0.58	1.00	0.86	1.06	0.85	0.72	0.78	0.84	0.74	0.67	0.99	0.98

Notes. $*p < .05$; $**p < .01$; Cronbach's alpha values appear on the matrix diagonal in italics; Correlations appear below the diagonal; Pos. Conflict = Positive Conflict; Neg. Conflict = Negative Conflict; Support= Emotional Support; Reduced Acc. = Reduced Accomplishment; Athlete Sat. = Athlete Satisfaction.

Latent profile analysis

Model fit was assessed based on fit indices, practicality, and interpretability. Fit indices of the five estimated models are found in Table 4.2. Regarding fit indices, BIC values decreased up to the three-class model and then increased for the four- and five-class model, SSA-BIC values decreased across each subsequent model, and BLRT values were significant for all models. Entropy increased with all additional classes. The BIC indicated that the three-class model fit best while the other fit indices suggested the four- and five-class models fit best. However, the four- and five-class models contained small classes (four class model: n = 16; five-class model: n = 13, n = 19). To avoid the potential of low power and precision due to a small class (Berlin et al., 2014), the more parsimonious three-class model was retained as the final model.

Table 4.2
Fit Indices of the Latent Profile Models (N = 214)

Classes	BIC	SSA-BIC	BLRT *p* value	Entropy
1	3071.612	3039.925	--	--
2	2887.223	2836.523	$p < 0.001$	0.796
3	2832.845	2763.132	$p < 0.001$	0.829
4	2836.280	2747.555	$p < 0.001$	0.833
5	2839.837	2732.009	$p < 0.001$	0.850

Note. BLRT *p* value and entropy not applicable for the one-class model.

The one-way MANOVA examining differences in communication between the three classes was significant (Pillai's Trace = 0.94; F (10, 406) = 35.76, $p < 0.001$; partial $\eta^2 = .47$). Follow-up univariate tests with Bonferroni pairwise comparisons are in Table 4.3. Class two reported significantly higher levels of communication of acceptance, positive conflict, and support relative to class one and three. Class two reported significantly lower levels of communication of negative conflict relative to class one and three. Class one and two did not significantly differ on level of co-rumination but both classes reported higher levels than class

three[1]. Class three reported significantly higher levels of acceptance, positive conflict, and emotional support relative to class one. There were no significant differences between class one and three for negative conflict. Based on these class differences, class one was labeled as "Less Effective Communicators", class two was labeled as "Supportive Communicators", and class three was labeled as "Functional Communicators".

Table 4.3
Class Differences in Communication Mean Scores

	Class 1 (n = 45)		Class 2 (n = 79)		Class 3 (n = 90)		Univariate Test Statistics	
Communication Variables	*M*	*SE*	*M*	*SE*	*M*	*SE*	*F*(10, 404)	Partial η^2
Acceptance	3.46_c	0.08	6.22_a	0.06	4.93_b	0.06	398.24**	0.80
Pos. Conflict	2.81_c	0.10	5.44_a	0.08	4.04_b	0.07	222.70**	0.68
Neg. Conflict	3.12_a	0.17	2.16_b	0.13	2.83_a	0.12	12.64**	0.11
Co-Rum	2.92_a	0.10	2.87_a	0.08	2.66_b	0.07	2.96	0.03
Support	3.03_c	0.11	4.59_a	0.08	3.91_b	0.08	63.48**	0.38

Note. **$p < .01$; Pos. Conflict = Positive Conflict; Neg. Conflict = Negative Conflict; Co-Rum = Co-Rumination; Within each row, subscale means with the subscript "a" are significantly higher than means with the subscripts "b", and "c", subscale means with the subscript "b" are significantly higher than means with the subscripts "c" (determined through independent *t*-tests with Bonferroni corrections). Univariate *F*-test for Co-Rumination, $p = 0.054$.

Predictors of class membership and outcome differences

The three-step method (see Asparouhov & Muthén, 2014) utilizing a Wald chi-square test (R3STEP in M*plus*) was used to assess if team identity and sex were predictors of the latent classes. Regarding team identity, when class two (i.e., the Supportive Communicators) was used as the reference group, the odds ratio for membership in class one (i.e., Less Effective Communicators) was 0.03 (parameter log OR estimate = -3.41, $SE = 0.52$, $p < 0.001$). Athletes with higher team identity have greater odds of being in class two over class one. When class two (i.e., the Supportive Communicators) was used as the reference group, the odds ratio for membership in class three (i.e., Functional Communicators) was 0.17 (parameter log OR

[1] The univariate *F* test approached significance ($p = 0.054$); results should be considered with caution.

estimate = -1.78, *SE* = 0.44, $p < 0.001$). Athletes with higher team identity have greater odds of being in class two over class three. When class one (i.e., Less Effective Communicators) was used as the reference group, the odds ratio for membership in class three (i.e., the Functional Communicators) was 5.10 (parameter log OR estimate = 1.63, *SE* = 0.46, $p < 0.001$). Athletes with higher team identity have greater odds of belonging in class three over class one. Regarding sex, when class two (i.e., the Supportive Communicators) was used as the reference group, the odds ratio for membership in class three (i.e., Functional Communicators) was 2.69 (parameter log OR estimate = 0.99, *SE* = 0.38, $p = 0.01$). If an athlete was male, the odds of belonging in class three was 2.69 times higher than belonging in class two. The odds ratio for class one (i.e., Less Effective Communicators) in reference to class two (i.e., Supportive Communicators) was not significant (OR = 1.14; parameter log OR estimate = 0.13, *SE* = 0.43, $p = 0.76$). When class one (i.e., Less Effective Communicators) was used as the reference group, the odds ratio for membership in class three (i.e., the Functional Communicators) was 2.36 (parameter log OR estimate = 0.86, *SE* = 0.43, $p = 0.04$). If an athlete was male, the odds of belonging in class three was 2.36 times higher than belonging in class one.

The three-step method (DU3STEP in M*plus*) was used to assess group differences on athletes' perceptions of burnout, engagement, satisfaction, and enjoyment (see Table 4.4). The Wald chi-square tests indicated significant overall differences between the three classes in reported motivational sport experiences. Pairwise comparisons indicated that class one reported significantly greater perceptions of global burnout than class two and three and lower perceptions of engagement, satisfaction, and enjoyment than class two and three. Class two and three did not significantly differ in perceptions of global burnout or engagement. However, class two reported significantly higher perceptions of satisfaction and enjoyment than class three.

Table 4.4
Class Mean Scores and Chi-Square Tests for Differences in Motivational Sport Experiences (N = 214)

	BURNOUT		ENGAGE		SATISFACT		ENJOY	
Class	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
1	2.98	0.151	3.71	0.120	4.41	0.151	3.48	0.212
2	2.46	0.103	4.17	0.080	5.93	0.099	4.65	0.082
3	2.43	0.100	4.07	0.075	5.03	0.097	4.02	0.123
Comparison	χ^2	*p*	χ^2	*p*	χ^2	*p*	χ^2	*p*
Overall test	9.99	0.007	10.55	0.005	81.49	0.000	42.12	0.000
1 vs 2	8.43	0.004	10.38	0.001	72.36	0.000	26.60	0.000
1 vs 3	7.95	0.005	5.89	0.015	11.14	0.001	3.93	0.048
2 vs 3	0.04	0.100	0.77	0.329	35.88	0.000	16.03	0.000

Note. ENGAGE = Engagement; SATISFACT = Satisfaction; ENJOY = Enjoyment.

Discussion

The current research offers a description of communication profiles of collegiate track and field athletes and shows the salience of these profiles by demonstrating profile differences of athletes' motivational sport experiences. Three profiles with distinct communication processes were found and labeled as the Less Effective Communicators, the Supportive Communicators, and the Functional Communicators. Greater perceptions of team identity predicted higher probability of membership in the Supportive Communicators profile. Being a male athlete predicted higher probability of membership in the Functional Communicators profile. Finally, athletes of different profiles differed in perceived motivational sport experiences. Such findings indicate that we must consider multiple types of communication simultaneously to understand how communication links with athlete burnout, engagement, satisfaction, and enjoyment.

As various forms of communication between teammates can occur at the same time (see Hanin, 1992; Sullivan & Feltz, 2003), the current study used a person-centered approach to better approximate the sport environment. Prior to examining communication profiles, differences in communication between female and male athletes were assessed. Male athletes reported a greater degree of negative conflict than female athletes. Such differences are

consistent with past research that has found negative conflict to be greater among male athletes (Cunningham & Eys, 2007; Sullivan & Feltz, 2003). The finding that male athletes have more confrontation is supported in the broader communication literature as research has suggested that men are more verbally aggressive in social situations (Miller, 1985) and are concerned with status, dominance, and competition, particularly in all-male settings (Aries, 1976; Leaper & Anderson, 1997). There were no differences in acceptance, positive conflict, co-rumination, and emotional support between female and male athletes. The lack of differences found for these affective/emotionally based types of communication suggests female and male athletes' communication is more similar than dissimilar (see Sullivan, 2004). The similarities found can be explained by the value men and women place on affectively oriented communication (e.g., comforting, conflict management, and support) with same-sex and opposite-sex friends (Holmstrom, 2009). As both men and women value affectively oriented communication with friends, they most likely convey messages of acceptance and support, co-ruminate, and work to constructively resolve conflict.

Profiles characterized by varying levels of communication processes were observed in the present study. Specifically, three communication profiles were found among the sample of collegiate track and field athletes. The first profile, labeled as the Less Effective Communicators, was characterized by lower levels of acceptance, positive conflict, and emotional support relative to the two other profiles. This profile also had greater levels of negative conflict than the second profile (i.e., the Supportive Communicators) and greater levels of co-rumination than the third profile (i.e., the Functional Communicators; univariate *F* test approached significance). Thus, this profile was characterized by less interpersonal communication of appreciation and consideration, less open and constructive communication to handle conflict, and less exchanges

of emotional support than the other two profiles. Additionally, this profile was characterized by relatively more exchanges of anger and agitation and greater co-rumination with a close teammate. This profile of communication suggests less effective communication with teammates (Sullivan & Feltz, 2003) as adaptive communication processes were lower and maladaptive communication processes were higher among athletes in this profile.

The second profile, labeled as the Supportive Communicators, had the highest reported levels of acceptance, positive conflict, and emotional support, relative to the other two profiles. This profile also had lower levels of negative conflict relative to the two other profiles and higher levels of co-rumination than the Functional Communicators. Thus, this profile was characterized by greater interpersonal communication of appreciation and consideration, a greater amount of open and constructive communication to handle conflict, and more exchanges of emotional support than the other two profiles. This profile was also characterized by less exchanges of anger and agitation but greater co-rumination with a close teammate. This profile of communication suggests effective communication with teammates (Sullivan & Feltz, 2003) highlighted by multiple communication processes of support. This profile of communication suggests closeness, self-disclosure, and emotional support between individuals. Because closeness, self-disclosure, and emotional support are linked with friendship quality (Camarena, Sarigiani, & Petersen, 1990; Rose, 2002; Weiss & Smith, 1999), results indicate that athletes with this communication profile could have higher friendship quality with their teammates. Future research should examine communication profiles of athletes and if friendship quality with teammates varies by profile.

The third profile, labeled as the Functional Communicators, had greater levels of acceptance, positive conflict, and emotional support than the Less Effective Communicators but

lower levels of these communication processes than the Supportive Communicators. Additionally, this profile was characterized by similar levels of negative conflict as the Less Effective Communicators and had the lowest levels of co-rumination among the three profiles. Co-rumination is linked with both adaptive (e.g., emotional closeness, support, close friendships) and maladaptive (e.g., depression and anxiety) outcomes. As excessive problem talk can exacerbate problems and is linked with perceptions of loneliness and burnout in sport (see Study 1), the combination of communication processes in this profile indicates functional communication. Supportive messages are conveyed while ruminating about sport related problems is lower, relative to the other profiles. Additionally, though anger and disagreements are conveyed within this profile, such conflict may not impede communication among athletes when messages of positive conflict also occur.

Three distinct profiles of communication were found among the sample of track and field athletes. Athletes' perceived team identity (i.e., collective/social identity) predicted the odds of membership in each profile. Using the Supportive Communicators profile as the reference group, results indicated that the odds of belonging in the Less Effective Communicators and the Functional Communicators profiles was lower when team identity increased. Additionally, the odds of belonging in the Functional Communicators profile in reference to the Less Effective Communicators profile increased when team identity increased. Thus, the greater an athlete's perceived team identity, the greater probability the athlete would be classified in the Supportive Communicators profile or the Functional Communicators profile. This suggests that greater perceived identity with one's team may contribute to the type of communication between teammates. If athletes perceive that they belong on their team and share a collective identity with their teammates, their communication may be more supportive with exchanges of appreciation

and consideration. These results can be explained by the finding that individuals who identify with a group and perceive that they belong to a group share common emotional bonds (Markovsky & Chaffee, 1995). Athletes who share common emotional bonds with their teammates are more likely to convey messages of acceptance, support, and open communication as well as co-ruminate (Rose, 2002) about sport related problems with teammates than athletes who do not share emotional bonds with teammates. These findings imply that by targeting athletes' sense of identity with their team, we may change the type of communication between teammates. As the current study examined team identity as a global construct, future work should consider examining the dimensions of social identity (i.e., cognitive centrality, ingroup affect, and ingroup ties; Cameron, 2004) and how the dimensions link with communication between teammates. Additionally, previous work has found that all three social identity dimensions moderate the relationship between ingroup antisocial norms and self-reported antisocial behaviors in young adult female athletes (Benson, Bruner, & Eys, 2017). Specifically, results suggest that greater team identity can strengthen the link between ingroup (i.e., team) antisocial norms and antisocial behavior. Strong team identification may also help explain the link between teammate communication and motivational sport experiences. Informed by social identity theories (Stets & Burke, 2000; Terry & Hogg, 1996), if athletes more strongly identify with their team, their feelings and actions are guided by the group. Thus, team identity may strengthen the link between teammate communication and athletes' sport experiences because messages from teammates are more salient. Future work, guided by social identity theories, should examine if the dimensions of social identity moderate the relationship between teammate communication and motivational sport experiences.

As research has found communication processes can differ between men and women, sex was used as a predictor of the communication profiles. Male athletes had greater odds of belonging in the Functional Communicators profile (i.e., class three) than the Supportive Communicators profile (i.e., class two) and the Less Effective Communicators profile (i.e., class one). These findings indicate that male athletes were more likely to belong in the Functional Communicators profile than the Supportive Communicators profile and the Less Effective Communicators profile. The Functional Communicators profile was characterized by lower levels of acceptance, positive conflict, co-rumination, and emotional support and higher levels of negative conflict as compared to the Supportive Communicators profile and lower levels of co-rumination as compared to the Less Effective Communicators. The greater odds of men belonging in the Functional Communicators profile than the Supportive Communicators profile corresponds with the communication literature that men have greater confrontation and women possess greater skill in emotional exchanges (Aries, 1976; Holmstrom, 2009). Additionally, the greater odds of men belonging in the Functional Communicators profile than the Less Effective Communicators profile corresponds with the lower levels of co-rumination found in boys and men (see Rose, 2002 and study one). Sex did not predict the odds of belonging in the Less Effective Communicators profile over the Supportive Communicators profile. This corresponds with recent findings that men and women value affectively oriented communication with same-sex and opposite-sex friends. Thus, female and male athletes should have the same probability of belonging in the Less Effective Communicators profile.

In addition to examining predictors of communication profiles, this study sought to examine profile differences on athletes' motivational sport experiences. The Less Effective Communicators (i.e., class/profile one) had greater perceptions of global athlete burnout and

lower perceptions of engagement, satisfaction, and enjoyment than the Supportive Communicators and the Functional Communicators. Thus, athletes in this profile had greater perceived maladaptive and lower perceived adaptive motivational sport experiences. These findings support past work that has shown ineffective communication to be linked with lower levels of athlete satisfaction (Sullivan & Gee, 2007). These results also support and extend the findings from study one and study two. Results indicate that communication is linked with athlete sport experiences of burnout and engagement and that various combinations of communication with teammates can differentially link with athletes' motivational sport experiences. Interestingly, the Less Effective Communicators profile had similar levels of co-rumination as the Supportive Communicators profile. It may be that in the presence of greater conflict and lower perceptions of acceptance and emotional support, this type of communication links with maladaptive sport outcomes (i.e., athlete burnout). Thus, excessive problem talk about sport-related issues may contribute to perceptions of athlete burnout, and consequently affect engagement, satisfaction, and enjoyment when messages of appreciation, consideration, and open communication are relatively low.

The Supportive and Functional Communicators did not differ on their perceptions of athlete burnout and athlete engagement. Though lower levels of acceptance, positive conflict, emotional support, and co-rumination and higher levels of negative conflict were observed in the Functional Communicators profile, similar perceptions of athlete burnout and engagement were reported. Such findings indicate that there may be a threshold of adaptive communication that, when reached, enables perceptions of burnout to remain lower and perceptions of engagement to remain higher. If the threshold of adaptive communication is reached, the presence of negative conflict (i.e., anger and agitation) may not be inherently bad. Though study one found that

conflict was positively linked with athlete burnout, study three suggests that in the presence of other adaptive forms of communication, negative conflict may not contribute to athlete burnout (or diminish athlete engagement). Thus, coaches and team leaders should reinforce messages of support, appreciation, and consideration between teammates. Such messages may help negate the effects of conflict on athletes' sport experiences of burnout and engagement. However, these two profiles did differ on perceived satisfaction and enjoyment. The Supportive Communicators had greater perceptions of satisfaction and enjoyment than the Functional Communicators. These differences may be explained by the greater levels of negative conflict in the Functional Communicators profile. As satisfaction in sport has been linked with effective communication (Sullivan & Gee, 2007), the presence of negative conflict – an attribute of ineffective communication – may drive these differences in satisfaction and enjoyment. These differences have implications for athletes' intrinsic motivation as satisfaction and enjoyment are central to one's motivation (Harter, 1978; Roberts, 2012). Over time, diminished satisfaction and enjoyment may negatively affect an athlete's intrinsic motivation. Thus, intrinsic motivation may be greatest among athletes in the Supportive Communicators profile. Future research should consider how teammate communication links with and influences athletes' motivation over time. This would provide a greater understanding of how teammates' influence athletes' sport experiences and the social contributors of athlete motivation. As male athletes were more likely to be in the Functional Communicators profile than the Supportive Communicators profile, males may be more susceptible to motivational consequences due to lower satisfaction and enjoyment. To shift male athletes from the Functional Communicators to the Supportive Communicators profile, anger and destructive conflict should be avoided or limited. Athletes

should be taught how to constructively discuss conflict and strategies to avoid immediately conveying anger towards a teammate.

Overall, results indicate that teammate communication contributes to athletes' motivational sport experiences. Together, exchanges of appreciation, consideration, emotional support, and open communication about problems may lower vulnerability to athlete burnout and enhance athlete engagement, satisfaction, and enjoyment. Such findings support previous work highlighting qualities of effective and ineffective communication in sport (Hanin, 1992; Sullivan & Feltz, 2003, 2011). Findings also extend understanding of effective communication as messages of support and co-rumination about problems seem to also be important qualities of teammate communication. Additionally, though communication can serve as performance enhancing (see Hanin, 1992), the present study suggests that communication is also linked with athletes' motivational experiences. Thus, communication among teammates has implications beyond performance and may influence athlete psychological well- and ill-being. Future work should consider how group dynamics and communication link with athletes' motivational sport experiences to extend our understanding of how communication links with athlete well- and ill-being. As intra-team communication has been linked with task and social cohesion in both adult and youth athlete populations (McLaren & Spink, 2018; Sullivan & Short, 2011), task cohesion has been linked with athlete burnout (Pacewicz, Vaughan, Smith, & Raedeke, in preparation), and group cohesion has been linked with commitment and enjoyment in sport (Donkers, Martin, Paradis, & Anderson, 2015), future work should consider if cohesion explains the link between intra-team communication and athletes' motivational sport experiences. Such work would provide a better understanding of how communication between teammates relates to group dynamics, and in turn, how group dynamics relate to athletes' motivational sport experiences.

Further consideration of the present study's limitations reveals additional future directions. The current study examined intra-team communication among collegiate track and field athletes. Because of this delimitation, results may not be generalizable outside of this population. Future work should examine communication profiles in different sports as well as in youth athletes. Such work would test the reproducibility of the profiles found in the current study and if these profiles transcend the collegiate level. Additionally, this delimitation may explain why the distinctiveness subscale of the SECTS-2 was unreliable. This subscale, as defined by Sullivan and Feltz (2003) and Sullivan and Short (2011), measures a team's uniqueness from other teams. Yet, the items within the subscale pertain to nicknames and distinct slang terms and gestures used by teammates. Though these items reflect unique team aspects, they may not be relevant to collegiate track and field athletes. Future work should consider the applicability of this communication process in independent sport teams as well as the reliability of this subscale as past work with both independent sport athletes and interdependent sport athletes has suggested low reliability (see Cunningham & Eys, 2007; Kim et al., 2016; McLaren & Spink, 2018). Finally, the current study utilized a one-time point design – athletes completed the established measures at the end of the outdoor track and field season. This design does not enable the assessment of causality or change in perceptions of burnout, engagement, satisfaction, and enjoyment. Future work should examine changes in athletes' motivational sport experiences across a season and if these changes differ by communication profile. Such work would afford an understanding of how communication with teammates influences motivational sport experiences across a season. This work would provide implications for coaches and team leaders on what communication should be fostered (or deterred) among teammates to improve perceptions of

engagement, satisfaction, and enjoyment, and decrease perceptions of burnout, contributing to athletes' well-being.

These limitations acknowledged, the current study extends the understanding of how teammate communication links with athletes' motivational sport experiences. Multiple types of intra-team communication were examined, better approximating the sport environment of athletes. Three distinct communication profiles emerged. Team identity predicted profile membership whereby greater perceptions of team identity predicted a higher probability of membership in the Supportive Communicators profile. Additionally, these profiles differed on athletes' motivational sport experiences. The present work suggests that various combinations of communication with teammates may explain differences in athletes' perceptions of burnout, engagement, satisfaction, and enjoyment. Thus, when examining communication among teammates, we must be aware that multiple types of communication occur simultaneously in athletes' environments and the combination of communication processes may have implications for athletes' sport experiences and well-being.

CHAPTER FIVE: GENERAL DISCUSSION

Sport can be a context for positive development, providing opportunities to socialize with peers, acquire and practice motor skills, and develop leadership and sportsmanship (Fraser-Thomas, Côté, & Deakin, 2005). Such opportunities can enhance motivation and engagement in one's sport and lead to social, motor, and psychological development. However, sport participation does not always foster positive development. For instance, athletes can train too intensively leading to exhaustion or injury, learn and participate in unsportsmanlike behavior, and experience conflict with peers and coaches. Such experiences can lead to negative outcomes including decreased motivation and athlete burnout, affecting the social, motor, and psychological development of individuals.

Athlete burnout is a negative consequence of sport participation with implications for athletes' mental and physical well-being, their social relationships, and satisfaction and enjoyment of their sport (Smith, Pacewicz, & Raedeke, 2019). Athlete burnout is linked with chronic stress, amotivation, feelings of entrapment, and physical and psychosocial factors (Gould, Tuffey, Udry, & Loehr, 1996; Raedeke, 1997; Smith, 1986; Schmidt & Stein, 1991). Because burnout can negatively influence athletes' sport experiences and, consequently, their well-being and development, continued empirical efforts are warranted to understand the psychological and social contributors to this outcome.

Research has examined antecedents of athlete burnout, allocating less attention to the social contributors of this cognitive-affective experience. Because sport occurs in a social context, such factors are important to consider. Within the work that has examined social contributors to burnout, focus has been on coaches, or social agents in general, with a relative lack of attention paid specifically to the role of teammates. Teammates are important to consider

because athletes spend much time in direct interaction with their teammates, and these interactions and communication may influence their sporting experiences, well-being, and development. Though teammates are an important agent in the sport context, there is a lack of understanding of how teammate interaction and communication contribute to athletes' motivational experiences in sport. Moreover, it is not known if exchanges between teammates can influence perceptions of burnout over time. As such, the studies in the present dissertation addressed these notable knowledge gaps. The three studies of this dissertation were designed to understand (a) how teammate interactions and communication contribute to burnout and engagement in sport, (b) if exchanges of information between teammates can exacerbate or mitigate perceptions of burnout over time, and (c) if profiles of communication link with athletes' motivational sport experiences.

Study one was designed to examine the link between social interactions with teammates and perceptions of athlete burnout and engagement. As interactions with peers can affect perceptions of loneliness which is linked with emotional, behavioral, and health issues (Hawkley & Cacioppo, 2010), perceptions of loneliness were examined. Thus, study one examined the relationship between social interactions and adolescent athletes' sport experiences and if loneliness explained this relationship, enhancing our understanding of how peer interactions link with and shape social perceptions and motivational sport experiences. For girls, results suggested that greater companionship and lower conflict and co-rumination were associated with lower perceptions of athlete burnout. Additionally, for girls, greater social support from teammates and companionship with a best or close friend on the team linked with greater perceptions of engagement. Overall, positive social interactions with teammates, particularly with a best or close teammate, meaningfully linked with positive sport experiences in girls. On the other hand,

interactions with teammates did not link with boys' perceptions of engagement or burnout. As social relationships are qualitatively distinct between boys and girls (Daniels-Beirness, 1989), this may explain the current findings. The teammate interactions measured in study one may be more salient to girls' peer relationships and, as a result, more salient to their sport experiences.

In addition to examining the relationships between teammate interactions and athletes' perceptions of burnout and engagement, study one also examined the relationship between teammate interactions and feelings of loneliness. For girls, social support from teammates linked with lower feelings of loneliness. This corresponds with previous findings indicating that social support explains the link between sport participation and loneliness (Taliaferro, Rienzo, Miller, Pigg, & Dodd, 2010). Lower perceptions of loneliness in athletes may be due to the social support perceived from peers. Additionally, results of study one indicated that for both boys and girls, co-rumination with and rejection from teammates linked with greater feelings of loneliness. Results suggest that peer interactions in sport meaningfully contribute to adolescents' feelings of loneliness, as teammate interactions explained a moderate amount of variance in loneliness for both girls (i.e., 27%) and boys (i.e., 16%). These findings add to our understanding of how peer interactions in the sport context link with aspects of well- and ill-being. Frequent problem talk with teammates as well as perceptions of rejection contribute to feelings of loneliness. For girls, feelings of loneliness explained the link between teammate interactions and burnout and engagement. These findings offer practical implications for team dynamics and team communication. Though co-rumination with a teammate can strengthen friendships and may offer a way for athletes to cope by providing support (Folkman & Lazarus, 1985; Rose, 2002; Rose, Schwartz-Mette, Glick, Smith, & Luebbe, 2014), this type of communication can contribute to perceptions of loneliness and burnout. Individuals in leadership positions (e.g.,

coaches, team captains) should work to limit rumination with teammates, particularly surrounding sport and performance-related topics. Inclusion of all teammates should be emphasized and promoted through team building activities. Improving team relations should not only contribute to greater well-being, but also contribute to greater cohesion among team members (Eys, Loughead, Bray, & Carron, 2009). Future work should consider if aspects of team dynamics (i.e., task and social cohesion) explain the link between teammate communication and markers of psychological ill- and well-being. Such work would have implications for athletes' social perceptions, intrinsic motivation, athletic performance, and team performance.

Study one found that teammate interactions linked with perceptions of loneliness in adolescent athletes. Moreover, loneliness explained the link between teammate interactions and perceptions of burnout and engagement in girls. Though the effect sizes were small, these findings extend our understanding of how teammate interaction and social perceptions link with athlete motivational sport experiences. Continued exploration of feelings of loneliness in the sport context is warranted to understand how sport fosters or diminishes this marker of psychological ill-being. Findings of study one highlighted that the social context of sport is an important factor to consider when examining athletes' motivational sport experiences (see Pacewicz, Mellano, & Smith, 2019) as well as perceptions of one's social relationships (i.e., loneliness). Because study one examined the relationship between teammate interactions and athletes' perceptions of loneliness and sport experiences at one time point, influence could not be observed. To address this limitation, study two utilized a two-time point design to (a) descriptively examine the communication structure of sport teams and how communication

linked with social perceptions (i.e., loneliness and relatedness) and (b) examine if frequency of communication with teammates influences athletes' perceptions of burnout.

Sociograms of adolescent softball and baseball teams showed that teammates communicated frequently with each other at practice. Moreover, athletes' who reported relatively lower perceptions of relatedness and higher perceptions of loneliness were on the periphery of their team networks. These athletes reported communicating with teammates at practice (i.e., were connected to teammates), yet they felt less connected to teammates. It may be that these athletes communicate differently with their teammates, consequently affecting their perceptions of relatedness. As study two did not examine what messages are exchanged by teammates, future work should assess specific types of communication and if these various types of communication differentially affect athlete perceptions of relatedness. Additionally, because not all athletes at the periphery of their team networks reported lower perceptions of relatedness and greater feelings of loneliness, this suggests some athletes may have different quality friendships with their teammates, influencing their social perceptions. Future work should consider if friendship quality explains the link between teammate communication and athletes' feelings of relatedness and loneliness, extending our understanding of how the sport context contributes to athletes' social perceptions influencing psychological well-being. As Sullivan's (1953) interpersonal theory of psychiatry highlights the need to consider both peer acceptance and dyadic friendship, future work should examine if peer acceptance and friendship quality link with athlete perceptions of relatedness and loneliness. Findings would have implications for youth athletes' intrinsic motivation, enjoyment in sport, and psychological well-being. Other valuable next steps include comparison of athlete perceptions of peer acceptance and relatedness with actual (i.e.,

observed) connection via communication. Such work would provide a descriptive account of athletes' perceptions of connection on their team with an objective measure of connection.

An important contribution to our understanding of peers in the physical activity context is the finding that communication with teammates links with feelings of loneliness in athletes (study one and two). The limited work that has addressed peers in the physical activity context and feelings of loneliness has reported a negative relationship between physical activity/sport participation and loneliness (Haugen, Säfvenbom, & Ommundsen, 2013; Page, Frey, Talbert, & Falk, 2001; Taliaferro, Rienzo, Miller, Pigg, & Dodd, 2010). This dissertation enhances our understanding of when the physical activity context promotes or hinders psychological well-being. It seems that the physical activity context can promote psychological well-being if teammate interactions are positive and athletes' feel connected to their teammates. Findings from study one and two have implications for athlete motivation and well-being. Perceptions of relatedness and aspects of peer relationships are linked with motivational experiences in sport (Ryan & Deci, 2002; Smith, Ullrich-French, Walker, Hurley, 2006) and loneliness is linked with depression and lower life satisfaction (Moore & Schultz, 1983). Intrinsic motivation may decrease for athletes that have negative interactions with teammates and do not perceive they are connected with their teammates. Additionally, athletes with chronic feelings of loneliness may be at risk for more severe maladaptive outcomes (e.g., depression). Coaches and team leaders should strive for inclusion and acceptance of all teammates and promote team bonding to foster feelings of connection and belonging. Team bonding can be promoted through team outings, team building activities, and group meetings to discuss goals.

Along with assessing the structure of teams' communication and how athlete perceptions of relatedness and loneliness linked with teammate communication, study two examined if

communication with teammates influenced an athlete's perception of burnout over time. Results suggest that initial perceptions of burnout (i.e., time one) influence burnout later in the season, supporting the chronic nature of burnout. As initial perceptions of burnout explained a moderate amount of variance in burnout perceptions at time two, this suggests that monitoring symptoms of burnout and taking steps to reduce burnout perceptions may help decrease burnout perceptions over time. However, there are many other factors (e.g., physical and psychosocial) that may contribute to heightened burnout perceptions (see Gustafsson, Kenttä, & Hassmén, 2011; Smith, et al., 2019). To best help prevent increases in perceptions of burnout, such factors need to be attended to.

Contrary to what has been found in organizational contexts (Bakker & Schaufeli, Baker et al., 2006; Kim et al., 2017), exposure to teammates' burnout through communication did not influence burnout perceptions across time. As transfer of burnout among teammates could negatively affect team dynamics and performance, this finding is adaptive for team functioning. However, the broad measurement of teammate communication may have limited the ability to assess influence through exposure to burnout. Because study two did not examine specific types of communication, it is not known if specific types of communication are more influential for changing athletes' burnout perceptions. Future work should examine the frequency of problem talk between close friends as well as the frequency of supportive messages to better understand if communication can influence athletes' perceptions of burnout. Study two should also be replicated within the same population (i.e., adolescent softball and baseball athletes) as well as in different populations with longer time periods between measurements. This will provide additional evidence against – or in support of – the contagion of burnout perceptions among teammates.

Though communication between teammates did not influence athletes' burnout perceptions over time, communication may still be salient for athletes' motivational sport experiences as intra-team communication is linked with athlete satisfaction (Sullivan & Gee, 2007). Whether communication fosters or diminishes perceptions of motivational sport experiences may depend on the type of communication between teammates. To address this gap in our knowledge, study three used a person-centered approach to gain a better understanding of what communication among teammates fosters or diminishes positive sport experiences. Thus, the purpose of study three was to (a) describe communication profiles of athletes and (b) examine the salience of these profiles by assessing profile differences on athletes' perceptions of burnout, engagement, satisfaction, and enjoyment.

Three profiles characterized by different levels of communication were found: the Less Effective Communicators, the Supportive Communicators, and the Functional Communicators. The three profiles of communication were predicted by athletes' perceptions of team identity and sex. Higher perceptions of team identity predicted a greater probability of membership in the Supportive Communicators profile. This finding suggests that by identifying with one's team, more adaptive forms of communication may occur between teammates. This result corresponds with findings that show identification with a group is linked with common emotional bonds between group members (Markovsky & Chaffee, 1995) and that social integration is linked with social support (Cutrona & Russell, 1987). A greater sense of identification with one's team may consequently impact the messages sent to teammates (i.e., greater amount of supportive messages). Because study three utilized a one-time point design, influence of team identity on communication between teammates cannot be determined. Future work should examine if team identity influences messages sent by athletes' over a season, if communication influences team

identity, or if the relationship is cyclical. Sex was also a predictor of membership in the Functional Communicators profile when the Supportive Communicators profile was used as the reference group. This result suggests that male athletes were more likely to belong in the Functional Communicators profile than the Supportive Communicators profile. The likelihood of belonging in the Less Effective Communicators profile was not predicted by sex.

Study three also examined the salience of the communication profiles by assessing profile group differences on athletes' perceptions of burnout, engagement, satisfaction, and enjoyment. The Less Effective Communicators profile had significantly higher perceptions of maladaptive (i.e., athlete burnout) and significantly lower perceptions of adaptive motivational sport experiences (i.e., athlete engagement, satisfaction, and enjoyment) as compared to the Supportive and Functional Communicators. The Supportive and Functional Communicators did not differ on their perceptions of athlete burnout and athlete engagement despite that these two profiles differed in respect to their communication. Though the Functional and Supportive Communicators did not differ with regard to athlete burnout and engagement, they did differ on perceived satisfaction and enjoyment. The Supportive Communicators had greater perceptions of satisfaction and enjoyment than the Functional Communicators.

Study three found that three profiles of communication existed in the sample of track and field athletes. These profiles explained differences in athlete motivational sport experiences, adding to our understanding of teammate communication from study one and two. Not only does communication with teammates link with and influence motivational sport experiences of athletes, but we must consider multiple types of communication simultaneously to approximate a sport environment and better understand how teammate communication links with athletes' sport experiences. These findings acknowledged, it is important to note that even though fit indices are

used to help determine the best fitting model, latent profile analysis is subjective because the researcher chooses the best fitting model. Latent profile analysis provided a valuable tool to address the exploratory question of whether communication profiles existed in sport. However, profiles, or classes, emerged from the present sample. Thus, profiles do not necessarily represent profiles that exist outside of the sample, affecting generalizability of results. Future work should seek to replicate the findings in track and field athletes as well as other sports to confirm the profiles of communication found in the study. It may be that different messages are salient in different sports which would lead to different profiles. Additionally, different profiles may exist in interdependent and independent (e.g., softball) teams due to the nature of such sports.

The three studies of this dissertation highlight the importance of and extend understanding of how teammates contribute to athletes' motivational experiences in sport. Utilizing different methodological approaches, each study assessed how interactions and communication with teammates linked with or influenced athlete burnout. Combined, results support the early qualitative burnout work that highlighted the need to consider social factors when studying burnout (Gould, Tuffey, Udry, & Loehr, 1996; Udry, Gould, Bridges, & Tuffey, 1997) and the importance of considering peers – and peer networks – in sport (Smith, 2003). Results suggest that communication and interactions with teammates in sport are linked with loneliness, relatedness, burnout, and other motivational sport experiences (i.e., engagement, satisfaction, and enjoyment). The messages exchanged between teammates may contribute to feelings of loneliness, diminish engagement, satisfaction, and enjoyment, and heighten vulnerability to burnout. Thus, teammate communication may facilitate or hinder positive development through sport. This dissertation also found that communication with teammates is salient for both youth and collegiate athletes' sport experiences. Such findings indicate that peers

are motivationally salient in both the youth (see Smith, 2003) and collegiate sport context and contribute to athlete sport experiences.

While the current dissertation makes meaningful contributions to the study of teammates in sport, limitations were present. The samples for all three studies were largely composed of White athletes who lived in the Midwestern United States. The demographics of participants may help shape their communication and interactions with teammates, influencing the results of the present dissertation. Future work should seek to examine communication between teammates in more diverse samples to assess if characteristics of individuals shape communication with peers in sport. Additionally, studies were designed to specifically attend to perceptions of burnout in sport. Perceptions of burnout was identified as the key construct of interest because it is a maladaptive sport experience (Raedeke, 1997) linked with motivation and well-being (Smith, Pacewicz, & Raedeke, 2019). While the present studies enhanced our understanding of perceptions of athlete burnout by examining teammate communication and interaction, there are many other outcomes of sport participation that warrant attention (e.g., intrinsic motivation, commitment, overall well-being).

Examination of teammate communication extended our understanding of peers in the sport context; however, teammate interactions occur in a context with other social agents (e.g., coaches, parents, officials). Teammate communication should be examined with reference to such agents. Therefore, a logical next step to advance our understanding of teammate communication is to simultaneously assess communication with other social agents and how this communication interacts and affects athlete motivational sport experiences. Such work would provide a more holistic understanding of how processes in athletes' environment combine and shape athlete sport experiences. Another valuable next step for research is to simultaneously

examine peer relationships in sport and in school. Sport is a common activity for youth, providing ample time to socialize with friends (Fraser-Thomas, Côté, & Deakin, 2005), yet, athletes may (a) have better relationships outside of the sport context and/or (b) communicate and interact with teammates during school hours. Thus, peer relationships and peer communication may be more or less salient to athlete motivational sport experiences depending on relational value, time spent together, and context (teammate or non-teammate). Examining peer relationships and teammate communication in and outside of the sport context would help bridge understanding of how interactions with peers in various settings influence athlete sport experiences and development.

Finally, the studies in the present dissertation did not utilize a developmental approach (Smith, Dorsch, & Monsma, 2012; Weiss & Raedeke, 2004). Study one and two used samples of adolescent athletes and study three utilized a sample of collegiate athletes. Future work should examine if communication with teammates and profiles of communication differ by development as interactions and peer friendships change from early childhood, to middle childhood, to adolescence, and young adulthood (Rubin, Bukowski, & Parker, 2006).

There are numerous avenues to pursue to better understand peer communication in sport and physical activity. Future research on peers in sport should address the aforementioned limitations and advance novel research questions. For instance, stemming from this dissertation, researchers may be interested in understanding if teammate communication can influence athlete behavior (e.g., antisocial behaviors, doping) in sport. Utilization of a social network perspective would be advantageous to such work. Additionally, researchers may be further interested in the mechanisms that explain the link between communication and athletes' motivational sport experiences. Exploring possible mechanisms (e.g., content of communication, relational value)

would add to our understanding of how communication with teammates affects outcomes of sport.

Together, the three studies in this dissertation begin to address the gap in our understanding of how teammates contribute to burnout perceptions. Study one and study three highlight how peer interaction and communication link with athlete motivational sport experiences. Furthermore, study three reinforced the need to assess combinations of communication – or other processes – to better approximate the sport environment and understand athlete sport experiences. Study two supported the chronic nature of burnout and found that exposure to teammate burnout through communication may not influence burnout perceptions over time. These studies provide a foundation to pursue additional research examining the role of teammates on burnout perceptions. Continued examination of how communication with teammates influences athlete motivational experiences is needed as such experiences have implications for athlete psychological, social, and motor development as well as athlete well-being.

APPENDICES

APPENDIX A

Study One – Human Research Protection Program Approval Letter

MICHIGAN STATE
UNIVERSITY

Initial IRB Application Approval

January 30, 2017

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

Re: **IRB#** 17-084 Category: EXPEDITED 7
Approval Date: January 30, 2017
Expiration Date: January 29, 2018

Title: Teammates and Youth Sport Experiences

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.

c: Christine Pacewicz

Office of Regulatory Affairs
Human Research Protection Programs

Biomedical & Health Institutional Review Board (BIRB)

Community Research Institutional Review Board (CRIRB)

Social Science Behavioral/Education Institutional Review Board (SIRB)

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APPENDIX B

Study One – Questionnaire Packet

Demographic Questions

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. Year in high school: Freshman Sophomore Junior Senior
6. What sport are your currently involved in? _____
7. How many years have you participated in your current sport? _____
8. How many years have you been a member of your current team? _____
9. Approximately how many hours a week do you train for your sport? _____

Social Support Questionnaire –Short Form (Sarason, Sarason, Shearin, & Pierce, 1987)

INSTRUCTIONS: Please carefully read each statement and indicate to what extent you are satisfied with the overall support you receive from your teammates in each situation where 1 means "very dissatisfied" and 5 means "very satisfied". There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

To what extent are you satisfied with the overall support you receive from your teammates…	**Very Dissatisfied**				**Very Satisfied**
1. When you feel under stress and need to be distracted from your worries?	1	2	3	4	5
2. When you are under pressure or are tense and need help relaxing?	1	2	3	4	5
3. When you are at your worst or your best, you feel accepted?	1	2	3	4	5
4. When you need to feel cared about, regardless of what is happening to you?	1	2	3	4	5
5. When you are feeling generally down-in-the-dumps and need to feel better?	1	2	3	4	5
6. When you are very upset and need to be consoled?	1	2	3	4	5

Sport Friendship Quality Scale (SFQS; Weiss & Smith, 1999)

Companionship and Conflict Subscales

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 the initial of your friend's first name in the box below and think about him/her as you respond to the statements below. When you respond to the statements, 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.

Friend's First Initial:

How true are the statements below when thinking about your best/closest friend on your team?	**Not at all True**	**A Little True**	**Somewhat True**	**Mostly True**	**Really True**
1. My best friend and I get mad at each other.	1	2	3	4	5
2. My best friend and I fight.	1	2	3	4	5
3. My best friend and I have arguments.	1	2	3	4	5
4. I like to play with my friend	1	2	3	4	5
5. My friend and I do fun things.	1	2	3	4	5
6. My friend and I play well together.	1	2	3	4	5
7. My friend and I spend time together.	1	2	3	4	5

Positive and Negative Social Exchanges (Newsom et al., 2005)

Companionship Subscale (Team Level)

INSTRUCTIONS: Please read each statement carefully and decide how satisfied you are by the following interactions with your current teammates by circling a number 1 to 4, where 1 means "Not at all satisfied" and 4 means "Very satisfied". There are no right or wrong answers, so please answer each question as honestly as you can.

In general, how satisfied are you when your teammates…	**Not at all satisfied**			**Very satisfied**
1. Provide you with good company and companionship?	1	2	3	4
2. Include you in things they were doing?	1	2	3	4
3. Do social or recreational activities with you?	1	2	3	4

Co-Rumination Questionnaire (Rose, 2002)

INSTRUCTIONS: Think about the way you usually are with your best or closest friends on your current sports team. Please read each statement carefully and decide how true the statement is when thinking about these teammates by circling a number 1 to 5, where 1 means "not at all true" and 5 means "really true". There are no right or wrong answers, so please answer each question as honestly as you can.

How well does each statement describe your closest teammates and you?	**Not at all True**	**A Little True**	**Somewhat True**	**Mostly True**	**Really True**
1. We spend most of our time together talking about problems that my friend or I have.	1	2	3	4	5
2. If one of us has a problem, we will talk about the problem rather than talking about something else or doing something else.	1	2	3	4	5
3. After my friend tells me about a problem, I always try to get my friend to talk more about it later.	1	2	3	4	5
4. When I have a problem, my friend always tries really hard to keep me talking about it.	1	2	3	4	5
5. When one of us has a problem, we talk about it for a long time.	1	2	3	4	5
6. When we see each other, if one of us has a problem, we will talk about the problem even if we had planned to do something else together.	1	2	3	4	5
7. When my friend has a problem, I always try to get my friend to tell me every detail about what happened.	1	2	3	4	5
8. After I've told my friend about a problem, my friend always tries to get me to talk more about it later.	1	2	3	4	5
9. We talk about problems that my friend or I are having almost every time we see each other.	1	2	3	4	5
10. If one of us has a problem, we will spend our time together talking about it, no matter what else we could do instead.	1	2	3	4	5

How well does each statement describe your closest teammates and you?	Not at all True	A Little True	Somewhat True	Mostly True	Really True
11. When my friend has a problem, I always try really hard to keep my friend talking about it.	1	2	3	4	5
12. When I have a problem, my friend always tries to get me to tell every detail about what happened.	1	2	3	4	5

When we talk about a problem that one of us has…	Not at all True	A Little True	Somewhat True	Mostly True	Really True
13. We will keep talking even after we both know all of the details about what happened.	1	2	3	4	5
14. We talk for a long time trying to figure out all the different reasons why the problem might have happened.	1	2	3	4	5
15. We try to figure out every one of the bad things that might happen because of the problem.	1	2	3	4	5
16. We spend a lot of time trying to figure out parts of the problem we can't understand.	1	2	3	4	5
17. We talk a lot about how bad the person with the problem feels.	1	2	3	4	5
18. We'll talk about every part of the problem over and over.	1	2	3	4	5
19. We talk a lot about the problem in order to understand why it happened.	1	2	3	4	5
20. We talk a lot about all of the different bad things that might happen because of the problem.	1	2	3	4	5
21. We talk a lot about parts of the problem that don't make sense to us.	1	2	3	4	5
22. We talk for a long time about how upset it has made one of us with the problem.	1	2	3	4	5

When we talk about a problem that one of us has…	Not at all True	A Little True	Somewhat True	Mostly True	Really True
23. We usually talk about that problem every day even if nothing new has happened.	1	2	3	4	5
24. We talk about all of the reasons why the problem might have happened.	1	2	3	4	5
25. We spend a lot of time talking about what bad things are going to happen because of the problem.	1	2	3	4	5
26. We try to figure out everything about the problem, even if there are parts that we may never understand.	1	2	3	4	5
27. We spend a long time talking about how sad or mad the person with the problem feels.	1	2	3	4	5

Positive and Negative Social Exchanges (Newsom et al., 2005)

Peer Rejection Subscale

INSTRUCTIONS: Please read each statement carefully and decide how bothered you are by the following interactions with your current teammates by circling a number 1 to 4, where 1 means "Not at all bothered" and 4 means "Very bothered". There are no right or wrong answers, so please answer each question as honestly as you can.

In general, how bothered are you when your teammates…	**Not at all bothered**			**Very bothered**
1. Leave you out of activities you would have enjoyed?	1	2	3	4
2. Forget or ignore you?	1	2	3	4
3. Fail to spend enough time with you?	1	2	3	4

Feelings of Loneliness and Social Dissatisfaction (Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985)

Feelings of Loneliness Subscale

INSTRUCTIONS: Please carefully read each statement and indicate how true the statement is when thinking about yourself in general. When responding, 1 means "not at all true" and 5 means "always true". There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items.

In general, how true is each statement when thinking about yourself?	**Not at all True**	**Hardly True**	**Sometimes True**	**Mostly True**	**Always True**
1. I feel alone.	1	2	3	4	5
2. I feel left out of things.	1	2	3	4	5
3. I'm lonely.	1	2	3	4	5

Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001, 2009)

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

Athlete Engagement Questionnaire (AEQ; Lonsdale, Hodge, & Jackson, 2007)

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

APPENDIX C

Study Two – Human Research Protection Program Approval Letter

MICHIGAN STATE
UNIVERSITY

Initial Study APPROVAL

April 24, 2018

To: Alan Lyle Smith

Re: **MSU Study ID:** STUDY00000598
IRB: Biomedical & Health Institutional Review Board (BIRB)
Principal Investigator: Alan Lyle Smith
Category: Expedited 7a, 7b
Submission: Initial Study STUDY00000598
Submission Approval Date: 4/24/2018
Effective Date: 4/24/2018
Project Expiration Date: 4/23/2019

Title: Youth Baseball and Softball Athletes' Sport Experiences

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 research project 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., 45 CFR 46, 21 CFR 50, 56, other applicable regulations).

Documents Approved:
- Survey Packet, Category: Other;
- Recruitment Phone Script, Category: Recruitment Materials;
- Parent Consent, Category: Consent Form;
- Consent (age 18 and over), Category: Consent Form;
- Recruitment Email, Category: Recruitment Materials;
- Protocol, Category: IRB Protocol;
- Communicating Link to Electronic Parent Consent, Category: Consent Form;
- Additional Personnel, Category: Other;
- Script for Athlete Meetings.docx, Category: Recruitment Materials;
- Assent (under age 18), Category: Consent Form;

Continuing Review: IRB approval is valid until the expiration date listed above. If the research continues to involve human subjects, you must submit a Continuing Review request at least one month before expiration.

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. If changes are made at the time of continuing review, please submit a Modification and Continuing Review request.

Office of Regulatory Affairs
Human Research Protection Program

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Lansing, MI 48910

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

APPENDIX D

Study Two – Questionnaire Packet

Demographic Questions

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. Year in high school: Freshman Sophomore Junior Senior
6. What position do you play most often? _____
7. How many years have you participated in your current sport? _____
8. How many years have you been a member of your current team? _____
9. How are team captains selected for your current team? _____

    _____
10. Are you a captain of your team? YES NO
11. Approximately how many hours a week do you train for your sport? _____
12. How many months out of the year do you practice/compete in your current sport? _____
13. If you participate in other sports, please list them here: _____

    _____

Need for Relatedness Scale (Richer & Vallerand, 1998)

Acceptance Subscale

INSTRUCTIONS: These statements are a list about what you may feel towards your teammates. Please indicate to what extent you agree with each statement where 1 means "do not agree at all" and 7 means "very strongly agree".

In my relationships with my teammates, I feel:	**Do Not Agree**	**Very Slightly Agree**	**Slightly Agree**	**Moderately Agree**	**Agree**	**Strongly Agree**	**Very Strongly Agree**
1. supported	1	2	3	4	5	6	7
2. understood	1	2	3	4	5	6	7
3. listened to	1	2	3	4	5	6	7
4. valued	1	2	3	4	5	6	7
5. safe	1	2	3	4	5	6	7

Loneliness and Aloneness Scale for Children and Adolescents (LACA; Marcoen, Goossens, & Caes, 1987)

Loneliness with Peers Subscale

INSTRUCTIONS: Please read each statement carefully. Please indicate how often you feel a certain way where 1 means "never" and 4 means "often".

How often do you have these thoughts:	**Never**	**Seldom**	**Sometimes**	**Often**
1. I think I have fewer friends than others.	1	2	3	4
2. I feel isolated from my teammates.	1	2	3	4
3. I feel excluded by my teammates.	1	2	3	4
4. I want to be better integrated in the team	1	2	3	4
5. Making friends is hard for me.	1	2	3	4
6. I am afraid my teammates won't let me join in.	1	2	3	4
7. I feel alone at practice.	1	2	3	4
8. I think there is no single teammate to whom I can tell everything.	1	2	3	4
9. I feel abandoned by my teammates.	1	2	3	4
10. I feel left out by my teammates	1	2	3	4
11. I feel sad because nobody wants to join in with me.	1	2	3	4
12. I feel sad because I have no friends.	1	2	3	4

Perceptions of Team Identity (Deaux, Reid, Mizrahi, & Cotting, 1999)

INSTRUCTIONS: Please read each statement carefully and ***decide how strongly you agree with each statement when thinking about your current team***, where 1 means "strongly disagree" and 4 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.

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
1. Other athletes on this team matter to me	1	2	3	4
2. I belong to this team	1	2	3	4
3. I matter to other athletes on this team	1	2	3	4
4. I am accepted by athletes on this team	1	2	3	4
5. I identify with other athletes on this team	1	2	3	4
6. This team has made me the athlete I am	1	2	3	4
7. I would not be the same athlete on another team	1	2	3	4

Network Question One

INSTRUCTIONS: In the table below, please fill in the circle that indicates, on average, how often you talk with each teammate *during practice this sport season*.

Teammate Name (First and Last)	ID Code	Less than once a week	1 time a week	3-5 times a week	1-2 times a day	3 or more times a day
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5

Network Question Two

INSTRUCTIONS: In the table below, please fill in the circle that indicates, on average, how often you directly work with each teammate *when practicing skills this sport season*. Examples include throwing/catching a ball, working on the tee, etc.

Teammate Name (First and Last)	ID Code	Less than once a week	1 time a week	3-5 times a week	1-2 times a day	3 or more times a day
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5

Network Question Three

INSTRUCTIONS: In the table below, please fill in the circle that indicates, on average, how often you talk with each teammate *outside of practice during this sport season*.

Teammate Name (First and Last)	ID Code	Less than once a week	1 time a week	3-5 times a week	1-2 times a day	3 or more times a day
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5

Network Question Four

INSTRUCTIONS: In the table below, please list who your closest friends are on your current team. Then, please fill in the circle that indicates, on average, how often you talk with these friends during this sport season. You do not need to fill all the rows, just make sure you list your closest friends and rate, on average, how often you talk.

Teammate Name (First and Last)	ID Code	Less than once a week	1 time a week	3-5 times a week	1-2 times a day	3 or more times a day
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5

Descriptive Question on Communication Topics

When talking with your closest friends on the team, what topics do you most often discuss?

_____
_____
_____
_____
_____
_____

Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001; 2009)

INSTRUCTIONS: Please read each statement carefully and decide how often you 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**	**Almost Always**
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

Athlete Engagement Questionnaire (AEQ; Lonsdale, Hodge, & Jackson, 2007)

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

APPENDIX E

Study Three – Human Research Protection Program Approval Letter

MICHIGAN STATE
UNIVERSITY

EXEMPT DETERMINATION
Revised Common Rule

March 5, 2019

To: Alan Lyle Smith

Re: **MSU Study ID:** STUDY00002288
Principal Investigator: Alan Lyle Smith
Category: Exempt 2ii
Exempt Determination Date: 3/5/2019
Limited IRB Review: Not Required.

Title: Communication Profiles and Motivational Experiences of Athletes

This study has been determined to be exempt under 45 CFR 46.104(d) 2ii.

Principal Investigator (PI) Responsibilities: The PI assumes the responsibilities for the protection of human subjects in this study as outlined in Human Research Protection Program (HRPP) Manual Section 8-1, Exemptions.

Office of Regulatory Affairs
Human Research Protection Program

4000 Collins Road
Suite 136
Lansing, MI 48910

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

Continuing Review: Exempt studies do not need to be renewed.

Modifications: In general, investigators are not required to submit changes to the Michigan State University (MSU) Institutional Review Board (IRB) once a research study is designated as exempt as long as those changes do not affect the exempt category or criteria for exempt determination (changing from exempt status to expedited or full review, changing exempt category) or that may substantially change the focus of the research study such as a change in hypothesis or study design. See HRPP Manual Section 8-1, Exemptions, for examples. If the study is modified to add additional sites for the research, please note that you may not begin the research at those sites until you receive the appropriate approvals/permissions from the sites.

Please contact the HRPP office if you have any questions about whether a change must be submitted for IRB review and approval.

New Funding: If new external funding is obtained for an active study that had been determined exempt, a new initial IRB submission will be required, with limited exceptions. If you are unsure if a new initial IRB submission is required, contact the HRPP office. IRB review of the new submission must be completed before new funds can be spent on human research activities, as the new funding source may have additional or different requirements.

Reportable Events: If issues should arise during the conduct of the research, such as unanticipated problems that may involve risks to subjects or others, or any

problem that may increase the risk to the human subjects and change the category of review, notify the IRB office promptly. Any complaints from participants that may change the level of review from exempt to expedited or full review must be reported to the IRB. 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: After determination of the exempt status, the PI is responsible for maintaining records of personnel changes and appropriate training. The PI is not required to notify the IRB of personnel changes on exempt research. However, he or she may wish to submit personnel changes to the IRB for recordkeeping purposes (e.g. communication with the Graduate School) and may submit such requests by submitting a Modification request. If there is a change in PI, the new PI must confirm acceptance of the PI Assurance form and the previous PI must submit the Supplemental Form to Change the Principal Investigator with the Modification request (available at hrpp.msu.edu).

Closure: Investigators are not required to notify the IRB when the research study can be closed. However, the PI can choose to notify the IRB when the study can be closed and is especially recommended when the PI leaves the university. 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 HRPP Manual, including Section 8-1, Exemptions (available at 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 hrpp.msu.edu to access the HRPP Manual, templates, etc.

Exemption Category. The full regulatory text from 45 CFR 46.104(d) for the exempt research categories is included below. [1234]

Exempt 1. Research, conducted in established or commonly accepted educational settings, that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Exempt 2. Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview

procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

(i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;

(ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or

(iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).

Exempt 3. (i) Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection and at least one of the following criteria is met:

(A) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;

(B) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or

(C) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).

(ii) For the purpose of this provision, benign behavioral interventions are brief in duration, harmless, painless, not physically invasive, not likely to have a significant adverse lasting impact on the subjects, and the investigator has no reason to think the subjects will find the interventions offensive or embarrassing. Provided all such criteria are met, examples of such benign behavioral interventions would include having the subjects play an online game, having them solve puzzles under various noise conditions, or having them decide how to allocate a nominal amount of received cash between themselves and someone else.

APPENDIX F

Study Three – Questionnaire Packet

Demographic Questions

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. Year in college: Freshman Sophomore Junior Senior
6. What NCAA Division is your team in? I II III
7. What is your main event when competing? _____
8. How many years have you competed in your current sport? _____
9. How many years have you been a member of your current team? _____
10. Approximately how many hours a week do you train (practice and competition) for your sport? _____
11. How many months out of the year do you practice and/or compete for your sport? _____
12. How are captains selected on your team? _____

    _____
13. Are you a captain on your team? YES NO

Revised Scale for Effective Communication in Sports Teams
(SECTS-2; Sullivan & Short, 2011)

INSTRUCTIONS: The following items are concerned with how your teammates usually communicate with each other. The statements refer to any situation in which the team interacts, not just games or practices. Please consider the ***team as a whole*** when answering these questions. Read each question and answer honestly.

When our team communicates, we…	**Hardly Ever**						**Almost Always**
1. Use nicknames	1	2	3	4	5	6	7
2. Shout when upset	1	2	3	4	5	6	7
3. Get all problems out in the open	1	2	3	4	5	6	7
4. Trust each other	1	2	3	4	5	6	7
5. When disagreements arise, we try to communicate directly with those that we have a problem	1	2	3	4	5	6	7
6. Communicate our feelings honestly	1	2	3	4	5	6	7
7. Use slang that only team members would understand	1	2	3	4	5	6	7
8. Get in "each other's faces" when we disagree	1	2	3	4	5	6	7
9. Use gestures that only team members would understand	1	2	3	4	5	6	7
10. Communicate anger through body language	1	2	3	4	5	6	7
11. Share thoughts with one another	1	2	3	4	5	6	7
12. Show that we lose our temper	1	2	3	4	5	6	7

13. Are willing to discuss our feelings	1	2	3	4	5	6	7
14. Try to make sure all players are included	1	2	3	4	5	6	7
15. Compromise with each other when we disagree	1	2	3	4	5	6	7

Co-Rumination Questionnaire (Rose, 2002)

INSTRUCTIONS: Think about the way you usually are with your best or closest friends on your current sport team. Please read each statement carefully and decide how true the statement is when thinking about these teammates by circling a number 1 to 5, where 1 means "not at all true" and 5 means "really true". There are no right or wrong answers, so please answer each question as honestly as you can.

How well does each statement describe your closest teammates and you when discussing SPORT related issues or problems?	**Not at all True**	**A Little True**	**Somewhat True**	**Mostly True**	**Really True**
1. We spend most of our time together talking about problems that my friend or I have.	1	2	3	4	5
2. If one of us has a problem, we will talk about the problem rather than talking about something else or doing something else.	1	2	3	4	5
3. After my friend tells me about a problem, I always try to get my friend to talk more about it later.	1	2	3	4	5
4. When I have a problem, my friend always tries really hard to keep me talking about it.	1	2	3	4	5
5. When one of us has a problem, we talk about it for a long time.	1	2	3	4	5
6. When we see each other, if one of us has a problem, we will talk about the problem even if we had planned to do something else together.	1	2	3	4	5
7. When my friend has a problem, I always try to get my friend to tell me every detail about what happened.	1	2	3	4	5
8. After I've told my friend about a problem, my friend always tries to get me to talk more about it later.	1	2	3	4	5
9. We talk about problems that my friend or I are having almost every time we see each other.	1	2	3	4	5
10. If one of us has a problem, we will spend our time together talking about it, no matter what else we could do instead.	1	2	3	4	5

How well does each statement describe your closest teammates and you when discussing SPORT related issues or problems?	**Not at all True**	**A Little True**	**Somewhat True**	**Mostly True**	**Really True**
11. When my friend has a problem, I always try really hard to keep my friend talking about it.	1	2	3	4	5
12. When I have a problem, my friend always tries to get me to tell every detail about what happened.	1	2	3	4	5

When we talk about a SPORT related problem that one of us has…	**Not at all True**	**A Little True**	**Somewhat True**	**Mostly True**	**Really True**
13. We will keep talking even after we both know all of the details about what happened.	1	2	3	4	5
14. We talk for a long time trying to figure out all the different reasons why the problem might have happened.	1	2	3	4	5
15. We try to figure out every one of the bad things that might happen because of the problem.	1	2	3	4	5
16. We spend a lot of time trying to figure out parts of the problem we can't understand.	1	2	3	4	5
17. We talk a lot about how bad the person with the problem feels.	1	2	3	4	5
18. We'll talk about every part of the problem over and over.	1	2	3	4	5
19. We talk a lot about the problem in order to understand why it happened.	1	2	3	4	5
20. We talk a lot about all of the different bad things that might happen because of the problem.	1	2	3	4	5
21. We talk a lot about parts of the problem that don't make sense to us.	1	2	3	4	5
22. We talk for a long time about how upset it has made one of us with the problem.	1	2	3	4	5

When we talk about a SPORT related problem that one of us has…	Not at all True	A Little True	Somewhat True	Mostly True	Really True
23. We usually talk about that problem every day even if nothing new has happened.	1	2	3	4	5
24. We talk about all of the reasons why the problem might have happened.	1	2	3	4	5
25. We spend a lot of time talking about what bad things are going to happen because of the problem.	1	2	3	4	5
26. We try to figure out everything about the problem, even if there are parts that we may never understand.	1	2	3	4	5
27. We spend a long time talking about how sad or mad the person with the problem feels.	1	2	3	4	5

Emotional Support (Rees, Hardy, & Evans, 2007)

INSTRUCTIONS: Please read the following questions/statements carefully and rate, ***how often a teammate uses communication to convey the following to you***. Please answer each question openly and honestly. Please choose only one response for each question/statement.

How often does a teammate use communication to convey that they will:	**Not at All**				**A Lot**
1. Always be there for you?	1	2	3	4	5
2. Give you moral support?	1	2	3	4	5
3. Listen to your concerns?	1	2	3	4	5

Perceptions of Team Identity (Deaux, Reid, Mizrahi, & Cotting, 1999)

INSTRUCTIONS: Please read each statement carefully and ***decide how strongly you agree with each statement when thinking about your current team***, where 1 means "strongly disagree" and 4 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.

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
1. Other athletes on this team matter to me	1	2	3	4
2. I belong to this team	1	2	3	4
3. I matter to other athletes on this team	1	2	3	4
4. I am accepted by athletes on this team	1	2	3	4
5. I identify with other athletes on this team	1	2	3	4
6. This team has made me the athlete I am	1	2	3	4
7. I would not be the same athlete on another team	1	2	3	4

Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001; 2009)

INSTRUCTIONS: Please read each statement carefully and decide ***how often you 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 season?	**Almost Never**	**Rarely**	**Sometimes**	**Frequently**	**Almost Always**
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

Athlete Engagement Questionnaire (AEQ; Lonsdale, Hodge, & Jackson, 2007)

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

Subscales from Athlete Satisfaction Questionnaire (ASQ; Reimer & Chelladurai, 1998)

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

I am satisfied with…	**Not at all Satisfied**			**Moderately Satisfied**			**Extremely Satisfied**
1. The extent to which teammates provide me with instruction	1	2	3	4	5	6	7
2. The guidance I receive from teammates	1	2	3	4	5	6	7
3. The constructive feedback I receive from my teammates	1	2	3	4	5	6	7
4. My social status on the team	1	2	3	4	5	6	7
5. The role I play in the social life of the team	1	2	3	4	5	6	7
6. The degree to which my teammates accept me on a social level	1	2	3	4	5	6	7
7. How the team works to be the best	1	2	3	4	5	6	7
8. The degree to which teammates share the same goal	1	2	3	4	5	6	7
9. Team member's dedication to work together toward team goals	1	2	3	4	5	6	7
10. The extent to which teammates play as a team	1	2	3	4	5	6	7
11. The degree to which I do my best for the team	1	2	3	4	5	6	7
12. My dedication during practices	1	2	3	4	5	6	7
13. My enthusiasm during competitions	1	2	3	4	5	6	7
14. My commitment to the team	1	2	3	4	5	6	7

Enjoyment Subscale from Sport Commitment Questionnaire
(SCQ; Scanlan, Carpenter, Schmidt, et al., 1993)

INSTRUCTIONS: Please read the following questions/statements carefully and circle the response that best describes how you usually feel about your ***sport this season***. 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 *enjoy* playing your sport this season?	1	2	3	4	5
2. Are you *happy* playing your sport this season?	1	2	3	4	5
3. Do you have *fun* playing your sport this season?	1	2	3	4	5
4. Do you *like* playing your sport this season?	1	2	3	4	5

REFERENCES

REFERENCES

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Autonomy support, basic need satisfaction and the optimal functioning of adult male and female sport participants: A test of basic needs theory. *Motivation and Emotion*, *32*, 189-199. doi: 10.1007/s11031-008-9095-z

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2012). Perceived coach-autonomy support, basic need satisfaction and the well- and ill-being of elite youth soccer players: A longitudinal investigation. *Psychology of Sport and Exercise, 13*, 51–59. doi: 10.1016/j.psychsport.2011.07.008

Al-Yaaribi, A., & Kavussanu, M. (2017). Teammate prosocial and antisocial behaviors predict task cohesion and burnout: The mediating role of affect. *Journal of Sport & Exercise Psychology*, *39*, 199-208.

Al-Yaaribi, A., Kavussanu, M., & Ring, C. (2016). Consequences of prosocial and antisocial behavior for the recipient. *Psychology of Sport and Exercise, 26*, 102-112. doi: 10.1016/j.psychsport.2016.06012

Ames, C. (1990). Motivation: What teachers need to know. *Teachers College Record, 91*, 409-421.

Aries, E. (1976). Interaction patterns and themes of male, female, and mixed groups. *Small Group Behavior*, *7*, 7-18.

Asher, S. R., Hymel, S., & Wheeler, V. A. (1984). Loneliness in children. *Child Development, 55*, 1456-1464.

Asher, S. R., & Paquette, J. A. (2003). Loneliness and peer relations in childhood. *Current Directions in Psychological Science, 12*, 75-78.

Asher, S. R., & Wheeler, V. A. (1985). Children's loneliness: A comparison of rejected and neglected peer status. *Journal of Consulting and Clinical Psychology*, *53*, 500-505.

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling: A Multidisciplinary Journal, 21*, 329-341. doi: 10.1080/10705511.2014.915181

Bakker, A. B., & Schaufeli, W. B. (2000). Burnout contagion processes among teachers. *Journal of Applied Social Psychology, 30*, 2289-2308.

Bakker, A. B., van Emmerik, H., & Euwema, M. C. (2006). Crossover of burnout and engagement in work teams. *Work and Occupations, 33*, 464-489.

Balaguer, I., González, L., Fabra, P., Castillo, I., Mercé, J., & Duda, J. L. (2012). Coaches' interpersonal style, basic psychological needs and the well- and ill- being of young soccer players: A longitudinal analysis. *Journal of Sports Sciences, 30,* 1619–1629. doi: 10.1080/02640414.2012.731517

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Benson, A. J., Bruner, M. W., & Eys, M. A social identity approach to understanding the conditions associated with antisocial behaviors among teammates in female teams. *Sport, Exercise, and Performance Psychology, 6,* 129-142. doi: 10.1037/spy0000090

Berlin, K. S., Williams, N. A., & Parra, G. R. (2014). An introduction to latent variable mixture modeling (part I): Overview and cross-sectional latent class and latent profile analyses. *Journal of Pediatric Psychology, 39,* 174-187. doi: 10.1093/jpepsy/jst084

Berndt, T. J. (1992). Friendship and friends' influence in adolescence. *Current Directions in Psychological Science, 1,* 156-159.

Bianco, T., & Eklund, R. C. (2001). Conceptual considerations for social support research in sport and exercise settings: The case of sport injury. *Journal of Sport & Exercise Psychology, 23,* 85-107. doi: 10.1123/jsep.23.2.85

Black, J. M., & Smith, A. L. (2007). An examination of Coakley's perspective on identity, control, and burnout among adolescent athletes. *International Journal of Sport Psychology, 38,* 417-436.

Boren, J. P. (2014). The relationships between co-rumination, social support, stress, and burnout among working adults. *Management Communication Quarterly, 28,* 3-25. doi: 10.1177/0893318913509283

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). *Ucinet for Windows: Software for social network analysis*. Harvard, MA: Analytic Technologies.

Buck, R. (1984). *The communication of emotions*. New York, NY: Guilford Press.

Burgess, K. B., Ladd, G. W., Kochenderfer, B. J., Lambert, S. F., & Birch, S. H. (1999). Loneliness during early childhood: The role of interpersonal behaviors and relationships. In K. J. Rotenberg & S. Hymel (Eds.), *Loneliness in childhood and adolescence* (pp. 109–134). Cambridge: Cambridge University Press.

Byrd, B. (2017). *Psychosocial predictors of college student athlete burnout and engagement* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Global.

Camarena, P. M., Sarigiani, P. A., & Petersen, A. C. (1990). Gender-specific pathways to intimacy in early adolescence. *Journal of Youth and Adolescence, 19,* 19-32.

Cameron, J. E. (2004). A three-factor model of social identity. *Self and Identity, 3*, 239-262. doi: 10.1080/13576500444000047

Coakley, J. (1992). Burnout among adolescent athletes: A personal failure or social problem? *Sociology of Sport, 9*, 271-285.

Coakley, J. (2009). From the outside in: Burnout as an organizational issue. *Journal of Intercollegiate Sports, 2*, 35-41.

Cresswell, S. L. (2009). Possible early signs of athlete burnout: A prospective study. *Journal of Science and Medicine in Sport, 12*, 393–398. doi: 10.1016/j.jsams.2008.01.009

Cresswell, S. L., & Eklund, R. C. (2004). The athlete burnout syndrome: Possible early signs. *Journal of Science and Medicine in Sport, 7*, 481–487.

Cresswell, S. L., & Eklund, R. C. (2006a). The nature of player burnout in rugby: Key characteristics and attributions. *Journal of Applied Sport Psychology, 18*, 219-239. doi: 10.1080/10413200600830299

Cresswell, S. L., & Eklund, R. C. (2006b). The convergent and discriminant validity of burnout measures in sport: A multi-trait/multi-method analysis. *Journal of Sport Sciences, 24*, 209-220.

Cresswell, S. L., & Eklund, R. C. (2007). Athlete burnout and organizational culture: An English rugby replication. *International Journal of Sport Psychology, 38*, 365-387.

Cunningham, I. J., & Eys, M. A. (2007). Role ambiguity and intra-team communication in interdependent sport teams. *Journal of Applied Social Psychology, 37*, 2220-2237.

Curran, T., Hill, A. P., Hall, H. K., & Jowett, G. E. (2015). Relationships between coach-created motivational climate and athlete engagement in youth sport. *Journal of Sport & Exercise Psychology, 37*, 193-198. doi: 10.1123/jsep.2014-0203

Cutrona, C. E., & Russell, D. W. (1990). Type of social support and specific stress: Toward a theory of optimal matching. In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 319-366). New York, NY: Wiley.

Daniels-Beirness, T. (1989). Measuring peer status in boys and girls: A problem of apples and oranges? In B. H. Schneider, G. Attili, J. Nadel, & R. P. Weissberg (Eds.), *Social competence in developmental perspective* (pp. 107-120). Dordrecht, The Netherlands: Kluwer Academic Publishers.

Danneel, S., Maes, M., Vanhalst, J., Bijttebier, P., & Goossens, L. (2018). Developmental change in loneliness and attitudes toward aloneness in adolescence. *Journal of Youth Adolescence, 47*, 148-161.

Davidson, C. L., Grant, D. M., Byrd-Craven, J., Mills, A. C., Judah, M. R., & Lechner, W. V. (2014). Psychometric properties of the Co-Rumination Questionnaire. *Personality and Individual Differences, 70*, 171-175.

Deaux, K., Reid, A., Mizrahi, K., & Cotting, D. (1999). Connecting the person to the social: The functions of social identification. In T. R. Tyler, R. M., Kramer, & O. P. John (Eds.), *The psychology of the social self* (pp. 91-113). Mahway, NJ: Lawrence Erlbaum Associates.

DeFreese, J. D., & Mihalik, J. P. (2016). Work-based social interactions, perceived stress, and workload incongruence as antecedents of athletic trainer burnout. *Journal of Athletic Training, 51*, 28-34. doi: 10.4085/1062-6050-51.2.05

DeFreese, J. D., & Smith, A. L. (2013a). Areas of worklife and the athlete burnout-engagement relationship. *Journal of Applied Sport Psychology, 25*, 180–196. doi: 10.1080/10413200.2012.705414

DeFreese, J. D., & Smith, A. L. (2013b). Teammate social support, burnout, and self-determined motivation in collegiate athletes. *Psychology of Sport and Exercise, 14*, 258–265. doi: 10.1016/j.psychsport.2012.10.009

DeFreese, J. D., & Smith, A. L. (2014). Athlete social support, negative social interactions, and psychological health across a competitive sport season. *Journal of Sport & Exercise Psychology, 36*, 619–630. doi: 10.1123/jsep.2014-0040

Diberardinis, J., Barwind, J., Flaningam, R. R., & Jenkins, V. (1983). Enhanced interpersonal relation as predictor of athletic performance. *International Journal of Sport Psychology, 14*, 243-251.

Dodge, K. A., Lansford, J. E., Burks, V. S., Bates, J. E., Pettit, G. S., Fontaine, R., & Price, J. M. (2003). Peer rejection and social information-processing factors in the development of aggressive behavior problems in children. *Child Development, 74*, 374-393.

Donkers, J. L., Martin, L. J., Paradis, K. F., & Anderson, S. (2015). The social environment in children's sport. *International Journal of Sport Psychology, 46*, 275-294. doi: 10.7352/IJSP2015.46.275

Enders, C. K. (2013). Analyzing structural equation models with missing data. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 372-391). Charlotte, NC: Information Age Publishing Inc.

Eys, M., Loughead, T., Bray, S. R., & Carron, A. V. (2009). Development of a cohesion questionnaire for youth: The Youth Sport Environment Questionnaire. *Journal of Sport and Exercise Psychology, 31*, 390-408.

Finney, S. J., & DiStefano, C. (2013). Non-normal and categorical data in structural equation modeling. In G.R. Hancock and R.O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 439-492). Charlotte, NC: Information Age Publishing Inc.

Fraser-Thomas, J. L., Côté, J., & Deakin, J. (2005). Youth sport programs: An avenue to foster positive youth development. *Physical Education and Sport Psychology, 10,* 19-40.

Frank, K. A. (2009). Quasi-ties: Directing resources to members of a collective. *American Behavioral Scientist, 52,* 1613-1645.

Frank, K., & Xu, R. (2018). Causal inference of social network analysis. In J. Moody & R. Light (Eds.), *Handbook for social network analysis.* New York, NY: Oxford Press.

Fransen, K., Van Puyenbroeck, S., Loughead, T. M., Vanbeselaere, N., De Cuyper, B., Vande Broek, G., & Boen, F. (2015). The art of athlete leadership: Identifying high-quality athlete leadership at the individual and team level through social network analysis. *Journal of Sport & exercise Psychology, 37,* 274-290.

Friedkin, N. E., & Johnsen, E. C. (1990). Social influences and opinions. *Journal of Mathematical Sociology, 15,* 193-206.

Friedkin, N. E., & Johnsen, E. C. (1997). Social positions in influence networks. *Social Networks, 19,* 209-222.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48,* 150-170.

Goodger, K., Gorely, T., Lavallee, D., & Harwood, C. (2007). Burnout in sport: A systematic review. *The Sport Psychologist, 21,* 127-151.

Goosens, L., Lasgaard, M., Luyckx, K., Vanhalst, J., Mathias, S., & Masy, E. (2009). Loneliness and solitude in adolescence: A confirmatory factor analysis of alternative models. *Personality and Individual Differences, 47,* 890-894. doi: 10.1016/j.paid.2009.07.011

Goosens, L., & Marcoen, A. (1999). Adolescent loneliness, self-reflection, and identity: From individual differences to developmental processes. In K. J. Rotenberg, & S. Hymel (Eds.), *Loneliness in childhood and adolescence* (pp. 225-243). New York, NY: Cambridge University Press.

Gould, D. (1996). Personal motivation gone awry: Burnout in competitive athletes. *Quest, 48,* 275-289.

Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1996). Burnout in competitive junior tennis players: II. Qualitative analysis. *The Sport Psychologist, 10,* 341-366. doi: 10.1123/tsp.10.4.341

Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996). Burnout in competitive junior tennis players: I. A quantitative psychological assessment. *The Sport Psychologist, 10,* 322-340.

Gustafsson, H., Hassmén, P., Kenttä, G., & Johansson, M. (2008). A qualitative analysis of burnout in elite Swedish athletes. *Psychology of Sport and Exercise, 9,* 800-816. doi: 10.1016/j.psychsport.2007.11.004

Gustafsson, H., Kenttä, G., & Hassmén, P. (2011). Athlete burnout: An integrated model and future directions. *International Review of Sport and Exercise Psychology*, *4*, 3-24. doi: 10.1080/1750984X.2010.541927

Hanin, Y. L. (1992). Social psychology and sport: Communication processes in top performance teams. *Sport Science Review, 2,* 13-28.

Harter, S. (1978). Effectance motivation reconsidered. Toward a developmental model. *Human Development, 21,* 34-64.

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion*. New York, NY: Cambridge University Press.

Hawkley, L. C., Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine, 40,* 218-227.

Hodge, K., Lonsdale, C., Jackson, S. A. (2009). Athlete engagement in elite sport: An exploratory investigation of antecedents and consequences. *The Sport Psychologist, 23,* 186-202. doi: 10.1123/tsp.23.2.186

Holmstrom, A. J. (2009). Sex and gender similarities and differences in communication values in same-sex and cross-sex friendships. *Communication Quarterly, 57,* 224-238. doi: 10.1080/01463370902889455

Horn, T. S., & Newton, J. L. (2019). Developmentally based perspectives on motivated behavior in sport and physical activity contexts. In T. S. Horn & A. L. Smith (Eds.), *Advances in sport and exercise psychology* (4th ed., pp. 313-333). Champaign, IL: Human Kinetics.

Isoard-Gautheur, S., Guillet-Descas, E., Gaudreau, P., & Chanal, J. (2015). Development of burnout perceptions during adolescence among high-level athletes: A developmental and gendered perspective. *Journal of Sport & Exercise Psychology, 37,* 436–448. doi: 10.1123/jsep.2014-0251

Isoard-Gautheur, S., Guillet-Descas, E., & Lemyre, P.-N. (2012). A prospective study of the influence of perceived coaching style on burnout propensity in high level young athletes: Using a self-determination theory perspective. *The Sport Psychologist, 26,* 282–298. doi: 10.1123/tsp.26.2.282

Jackson, S. (1993). Social behavior in adolescence: The analysis of social interaction sequences.

In S. Jackson & H. Rodriguez-Tomé (Eds.), *Adolescence and its social worlds* (pp. 15-45). East Sussex, UK: Lawrence Erlbaum Associates.

Jiang, J., Zhang, Y., Ke, Y., Hawk, S. T., & Qui, H. (2015). Can't buy me friendship? Peer rejection and adolescent materialism: Implicit self-esteem as a mediator. *Journal of Experimental Social Psychology, 58,* 48-55. doi: 10.1016/j.jesp.2015.01.001

Kassing, J. W., Billings, A. C., Brown, R. S., Halone, K. K., Harrison, K., Krizek, B., …Turman, P. D. (2004). Communication in the community of sport: The process of enacting, (re)producing, consuming, and organizing sport. *Annals of the International Communication Association, 28,* 373-409. doi: 10.1080/23808985.2004.11679040

Kavussanu, M., & Boardley, I. D. (2009). The Prosocial and Antisocial Behavior in Sport Scale. *Journal of Sport & Exercise Psychology, 31,* 97-117.

Kim, S., Magnusen, M. J., & Andrew, D. P. S. (2016). Divided we fall: Examining the relationship between horizontal communication and team commitment via team cohesion. *International Journal of Sports Science & Coaching, 11,* 625-636. doi:10.1177/1747954116667099

Kirchler, E., Palmonari, A., & Pombeni, M. L. (1993). Developmental tasks and adolescents' relationships with their peers and their family. In S. Jackson & H. Rodriguez-Tomé (Eds.), *Adolescence and its social worlds* (pp. 145-167). East Sussex, UK: Lawrence Erlbaum Associates.

Klint, K. A., & Weiss, M. R. (1987). Perceived competence and motives for participating in youth sports: A test of Harter's competence in motivation theory. *Journal of Sport Psychology, 9,* 55-65.

Leaper, C. & Anderson, K. J. (1997). Gender development and heterosexual romantic relationships during adolescence. In S. Shulman & W. A. Collins (Eds.), *New directions for child development, No. 78. Romantic relationships in adolescence: Developmental perspectives* (pp. 85-103). San Francisco, CA: Jossey-Bass.

Levy, D. A., & Nail, P. R. (1993). Contagion: A theoretical and empirical review and reconceptualization. *Genetic, Social, and General Psychology Monographs, 119,* 233-284.

Littlejohn, S. W., & Foss, K. A. (2008). Theories of human communication. In S. W. Littlejohn & K. A. Foss (Eds,), *Communication theory and scholarship* (9th ed., pp. 2-13). Belmont, CA: Thomson Higher Education.

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,* 471-492.

Lonsdale, C., Hodge, K., & Raedeke, T. (2007). Athlete engagement: I. A qualitative investigation of relevance and dimensions. *International Journal of Sport Psychology, 38*, 451-470.

Lusher, D., Robins, G., & Kremer, P. (2010). The application of social network analysis to team sports. *Measurement in Physical Education and Exercise Science, 14*, 211-224.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*, 99-128. doi: 10.1207/s15327906mbr3901_4

Marcoen, A., & Goossens, L. (1993). Loneliness, attitude towards aloneness, and solitude: Age differences and developmental significance during adolescence. In S. Jackson & H. Rodriguez-Tomé (Eds.), *Adolescence and its social worlds* (pp. 197-227). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Marcoen, A., Goossens, L., & Caes, P. (1987). Loneliness in pre- through late adolescence: Exploring the contributions of a multidimensional approach. *Journal of Youth and Adolescence, 16,* 561-577.

Markovsky, B., & Chaffee, M. V. (1995). Social identification and solidarity A reformulation. *Advances in Group Processes, 12,* 249-270.

Martinent, G., Decret, J.-C., Guillet-Descas, E., & Isoard-Gautheur, S. (2014). A reciprocal effects model of the temporal ordering of motivation and burnout among youth table tennis players in intensive training settings. *Journal of Sports Sciences, 32*, 1648–1658. doi: 10.1080/02640414.2014.912757

Maslach, C., & Jackson, S. E. (1984). Burnout in organizational settings. In S. Oskamp (Ed.), *Applied social psychology annual: Applications in organizational settings* (Vol. 5, pp. 133-153). Beverly Hills, CA: Sage.

Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it.* San Francisco, CA: Jossey-Bass.

McIntosh, D. N., Druckman, D., & Zajonc, R. B. (1994). Socially induced affect. In D. Druckman & A. Robert (Eds.), *Learning, remembering, believing: Enhancing human performance* (pp. 251-376). Washington, D.C.: National Academy Press.

McLaren, C. D., & Spink, K. S. (2018). Team member communication and perceived cohesion in youth soccer. *Communication & Sport, 6,* 111-125. doi: 10.1177/2167479516679412

Miller, J. (1985). Locus of control, response style, and assertiveness. *Communication Research Reports, 2*, 97-102.

Moore, D., & Schultz, N. R. (1983). Loneliness in adolescence: Correlates, attributions, and coping. *Journal of Youth and Adolescence, 12,* 95-100.

Muthén, L. K., & Muthén, B. O. (1998-2015). *Mplus User's Guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Newcomb, A. F., & Bagwell, C. L. (1995). Children's friendship relations: A meta-analytic review. *Psychological Bulletin, 117,* 306-347.

Newsom, J. T., Rook, K. S., Nishishiba, M., Sorkin, D. H., & Mahan, T. L. (2005). Understanding the relative importance of positive and negative social exchanges: Examining specific domains and appraisals. *Journal of Gerontology, 60B,* 304-312.

Nicholls, J. K. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A monte carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal, 14,* 535-569. doi: 10.1080/10705510701575396

Ommundsen, Y., Roberts, G. C., Lemyre, P.-N., & Miller, B. W. (2005). Peer relationships in adolescent competitive soccer: Associations to perceived motivational climate, achievement goals and perfectionism. *Journal of Sports Sciences, 23,* 977-989. doi: 10.1080/02640410500127975

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.

Pacewicz, C. E., Vaughan, N., Smith, A. L., & Raedeke, T. D. (in preparation). Group cohesion and relatedness as predictors of self-determined motivation and burnout in adolescent female athletes.

Page, R. M., Frey, J., Talbert, R., & Falk, C. (1992). Children's feelings of loneliness and social dissatisfaction: Relationship to measures of physical fitness and activity. *Journal of Teaching in Physical Education, 11,* 211-219.

Parker, J. G., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology, 29,* 611-621.

Partridge, J. A., & Knapp, B. A. (2016). Mean girls: Adolescent female athletes and peer conflict in sport. *Journal of Applied Sport Psychology, 28,* 113-127. doi: 10.1080/10413200.2015.1076088

Pastor, D. A., & Gagné, P. (2013). Mean and covariance structure mixture models. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 343-393). Charlotte, NC: Information Age Publishing Inc.

Peplau, L. A., & Perlman, D. (1982). Perspectives on loneliness. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 1-18). New York, NY: Wiley.

Petitpas, A. J., Cornelius, A. E., Van Raalte, V., & Jones, T. (2005). A framework for planning youth sport programs that foster psychosocial development. *The Sport Psychologist, 19*, 63-80.

Raedeke, T. D. (1997). Is athlete burnout more than just stress? A sport commitment perspective. *Journal of Sport and Exercise Psychology, 19*, 396-417. doi: 10.1123/jsep.19.4.396

Raedeke, T. D., & Smith, A. L. (2001). Development and preliminary validation of an athlete burnout measure. *Journal of Sport & Exercise Psychology, 23*, 281-306. doi: 10.1123/jsep.23.4.281

Raedeke, T. D., & Smith, A. L. (2004). Coping resources and athlete burnout: An examination of stress mediated and moderation hypotheses. *Journal of Sport & Exercise Psychology, 26*, 525-541. doi: 10.1123/jsep.26.4.525

Raedeke, T. D., & Smith, A. L. (2009). *The Athlete Burnout Questionnaire manual*. Morgantown, WV: Fitness Information Technology.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Newbury Park, CA: Sage.

Ray, E. B., & Miller, K. I. (1991). The influence of communication structure and social support on job stress and burnout. *Management Communication Quarterly, 4*, 506-527.

Rees, T, & Hardy, L. (2000). An examination of the social support experiences of high sports performers. *The Sport Psychologist, 14*, 327-347. doi: 10.1123/tsp.14.4.327

Rees, T., Hardy, L., & Evans, L. (2007). Construct validity of the social support survey in sport. *Psychology of Sport and Exercise, 8*, 355-368. doi: 10.1016/j.psychsport.2006.06.005

Reimer, H. A., & Chelladurai, P. (1998). Development of the Athlete Satisfaction Questionnaire (ASQ). *Journal of Sport & Exercise Psychology, 20*, 127-156.

Richer, S., & Vallerand, R. J. (1998). Construction and validation of the perceived relatedness scale. *European Review of Applied Psychology, 48*, 129-137.

Richey, M. H., & Richey, H. W. (1980). The significance of best-friend relationships in adolescence. *Psychology in the Schools, 17*, 536-540.

Richman, J. M., Rosenfeld, L. B., & Hardy, C. J. (1993). The Social Support Survey: A validation of a clinical measure of the social support process. *Research on Social Work Practice, 3*, 288-311. doi: 10.1177/104973159300300304

Roberts, G. C. (2012). Motivation in sport and exercise from an achievement goal theory perspective: After 30 years, where are we?. G. C. Roberts & D. C. Treasure (Eds.), *Advances in motivation in sport and exercise* (3rd ed., pp. 5-58). Champaign, IL: Human Kinestics.

Rose, A. J. (2002). Co-rumination in the friendships of girls and boys. *Child Development, 73*, 1830-1842.

Rose, A. J., Carlson, W., & Waller, E. M. (2007). Prospective associations of co-rumination with friendship and emotional adjustment: Considering the socioemotional trade-offs of co-rumination. *Developmental Psychology, 43*, 1019-1031. doi: 10.1037/0012-1649.43.4.1019

Rose, A. J., Glick, G. C., Smith, R. L., Schwartz-Mette, R. A., & Borowski, S. K. (2017). Co-rumination exacerbates stress generation among adolescents with depressive symptoms. *Journal of Abnormal Child Psychology, 45*, 985-995. doi: 10.1007/s10802-016-0205-1

Rose, A. J., Schwartz-Mette, R. A., Glick, G. C., Smith, R. L., & Luebbe, A. M. (2014). An observational study of co-rumination in adolescent friendships. *Developmental Psychology, 50*, 2199-2209. doi: 10.1037/a0037465

Rountree, B. H. (1984). Psychological burnout in task groups: Examining the proposition that some task groups of workers have an affinity for burnout, while others do not. *Journal of Health and Human Resources Administration, 7*, 235-248.

Rubin, K. H., Bukowski, W., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In W. Damon, R. M. Lerner, & N. Eisenberg (Eds.), *Handbook of child psychology: Vol. 3, Social emotional, and personality development* (6th ed., pp. 571-645). New York, NY: Wiley.

Ryan, M. R., & Deci, E. L. (2002). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78. doi: 10.1037/0003-066X.55.1.68

Sandstrom, M. J., & Coie, J. D. (1999). A developmental perspective on peer rejection: Mechanisms of stability and change. *Child Development, 70*, 955-966. doi: 10.1111/1467-8624.00069

Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships, 4*, 497-510. doi: 10.1177/0265407587044007

Scanlan, T. K., Carpenter, P. J., Lobel, M., & Simons, J. P. (1993). Sources of enjoyment for youth sport athletes. *Pediatric Exercise Science*, *5*, 272-285.

Scanlan, T. K., Carpenter, P. J., Schmidt, G. W., Simons, J. P., & Keeler, B. (1993). An introduction to the sport commitment model. *Journal of Sport & Exercise Psychology, 15*, 1-15. doi: 10.1123/jsep.15.1.16

Schmidt, G. W., & Stein, G. L. (1991). Sport commitment: A model integrating enjoyment, dropout, and burnout. *Journal of Sport & Exercise Psychology*, *13*, 254-265.

Sharabany, R., Gershoni, R., & Hofman, J. E. (1981). Girlfriend, boyfriend: Age and sex differences in intimate friendship. *Developmental Psychology*, *17*, 800-808.

Silva, J. M., III (1990). An analysis of the training stress syndrome in competitive athletics. *Journal of Applied Sport Psychology*, *2*, 5-20.

Smith, R. E. (1986). Toward a cognitive-affective model of athletic burnout. *Journal of Sport Psychology*, *4*, 25-39.

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. doi: 10.1016/S1469-0292(02)00015-8

Smith, A. L. (2007). Youth peer relationships in sport. In S. Jowett & D. Lavallee. *Social psychology in sport* (pp, 41-54). Champaign, IL: Human Kinetics.

Smith, A. L., Dorsch, T. E., & Monsma, E. V. (2012). Developmentally informed measurement in sport and exercise psychology research. In G. Tenenbaum, R. C. Eklund, & A. Kamata (Eds.), *Measurement in sport and exercise psychology* (pp. 131-141). Champaign, IL: Human Kinetics.

Smith, A. L., Pacewicz, C. E., & Raedeke, T. (2019). Athlete burnout in sport and physical activity. In Horn, T. S., & Smith, A. L. (Eds.), *Advances in sport and exercise psychology* (4th ed., pp. 409-424). Champaign, IL: Human Kinetics.

Smith, A. L., Ullrich-French, S., Walker, E., II, & Hurley, K. S. (2006). Peer relationship profiles and motivation in youth sport. *Journal of Sport & Exercise Psychology*, *28*, 362-382.

Smith, A. L., Dorsch, T. E., & Monsma, E. V. (2012). Developmentally informed measurement in sport and exercise psychology research. In G. Tenenbaum, R. C. Eklund, & A. Kamata (Eds)., *Measurement in sport and exercise psychology* (pp. 131-141). Champaign, IL: Human Kinetics.

Smith, A. L., Gustafsson, H., Hassmén, P. (2010). Peer motivational climate and burnout perceptions of adolescent athletes. *Psychology of Sport and Exercise*, *11*, 453-406. doi: 10.1016/j.psychsport.2010.05.007

Standage, M., Duda, J. L., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology, 95*, 97-110. doi: 10.1037/0022-0663.95.1.97

Stets, J. E., & Burke, P. J. (2000). Identity theory and social identity theory. *Social Psychology Quarterly, 63*, 224-237.

Storch, E. A., & Masia-Warner, C. (2004). The relationship of peer victimization to social anxiety and loneliness in adolescent females. *Journal of Adolescence, 27*, 351-361. doi: 10.1016/j.adolescence.2004.03.003

Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. New York, NY: Norton.

Sullivan, P. (2004). Communication differences between male and female team sport athletes. *Communication Reports, 17*, 121-128. doi: 10.1080/08934210409389381

Sullivan, P., & Feltz, D. L. (2003). The preliminary development of the Scale for Effective Communication in Team Sports (SECTS). *Journal of Applied Social Psychology, 33*, 1693-1715.

Sullivan, P. J., & Gee, C. J. (2007). The relationship between athletic satisfaction and intrateam communication. *Group Dynamics: Theory, Research, and Practice, 11*, 107-116.

Sullivan, P., & Short, S. (2011). Further operationalization of intra-team communication in sports: An updated version of the Scale of Effective Communication in Team Sports (SECTS-2). *Journal of Applied Social Psychology, 41*, 471-487.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson/Allyn and Bacon.

Taliaferro, L. A., Rienzo, B. A., Miller, M. D., Pigg, R. M., & Dodd, V. J. (2010). Potential mediating pathways through which sports participation relates to reduced risk of suicidal ideation. *Research Quarterly for Exercise and Sport, 81*, 328-339.

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude-behavior relationship: A role of group identification. *Personality and Social Psychology Bulletin, 22*, 776-793. doi: 10.1177/0146167296228002

Totterdell, P. (2000). Catching moods and hitting runs: Mood linkage and subjective performance in professional sport team. *Journal of Applied Psychology, 85*, 848-859.

Vazou, S., Ntoumanis, N., & Duda, J. L. (2005). Peer motivational climate in youth sport: A qualitative inquiry. *Psychology of Sport and Exercise, 6*, 497-516. doi: 10.1016/j.psychsport.2004.03.005

Udry, E., Gould, D., Bridges, D., & Tuffey, S. (1997). People helping people? Examining the social ties of athletes coping with burnout and injury stress. *Journal of Sport & Exercise Psychology, 19*, 368-395. doi: 10.1123/jsep.19.4.368

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*, 193-214. doi: 10.1016/j.psychsport.2005.08.006

Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth sport participation. *Psychology of Sport and Exercise, 10*, 87-95.

Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications.* Cambridge, UK: Cambridge University Press.

Weiss, M. R. (2008). "Field of dreams:" Sport as a context for youth development. *Research Quarterly for Exercise and Sport, 79*, 434-449. doi: 10.1080/02701367.2008.10599510

Weiss, M. R. (2013). Back to the future: Research trends in youth motivation and physical activity. *Pediatric Exercise Science, 25*, 561-572.

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*, 145-166. doi: 10.1123/jsep.21.2.145

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*, 420-437. doi: 10.1123/jsep.24.4.420

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*, 347-379. doi: 10.1123/jsep.18.4.347

Weiss, W. M., Weiss, M. R., & Amorose, A. J. (2010). Sport commitment among competitive female athletes: Test of an expanded model. *Journal of Sports Sciences, 28*, 423-434.

Woodhouse, S. S., Dykas, M. J., & Cassidy, J. (2012). Loneliness and peer relations in adolescence. *Social Development, 21*, 273-293. doi: 10.1111/j.1467-9507.2011.00611.x

Yildiz, S. M. (2015). The relationship between bulling and burnout. *Sport, Business and Management: An International Journal, 5*, 6-20.