Preferences and Perceptions on Coaching Behaviors

in relation to Performance in University and CEGEP

Baseball Players Across Canada

Christopher Haddad

Master of Physical Education

School of Human Kinetics and Recreation

Memorial University of Newfoundland

August, 2021

Abstract

This cross-sectional survey study examined the congruence of player preferences and perceptions of leader behaviors on athletic performance among university and CEGEP baseball athletes across Canada. In accordance with the Multidimensional Model of Leadership, congruence between preferences and perceptions were hypothesized to positively relate to individual baseball performance. The Leadership Scale for Sport was used to measure athlete leadership preferences and perceptions of their coach's leader behaviors across five behavioral dimensions (e.g., training and instruction, democratic, autocratic, social support, positive feedback). Paired *t*-tests examined differences in athlete preferences and perceptions. Correlations were computed to evaluate the relationships between perceived coaching behavior and athlete performance. Participants ($n = 51$) were instructed to complete a self-administered survey. Athletes were divided into groups based on their designated baseball position (e.g., fielder or pitcher). Hierarchical regressions were used to examine the variance in performance relating to the interaction leader preferences and perceptions. The results found a significant interaction effect for social support on performance. Paired samples *t*-tests revealed differences in training and instruction behavior mean score. Perceptions of training and instruction and positive feedback behaviors significantly correlated with fielder and pitcher performance, respectively.

Keywords: leadership, athlete performance, coaching, sport psychology, leader preferences, leader perceptions, Multidimensional-Model of Leadership, Leadership Scale for Sport.

Table of Contents

Chapter 1: Introduction

1.1 Background of the Study

The primary role of an athletic coach is to prepare an individual physically and mentally for competition. Consequently, coaching leadership behaviors have been found to have significant effects on athlete motivation (e.g., Amorose & Horn, 2000; Hollembeak & Amorose, 2005; Mouratidis et al., 2008; Souza & Oslin 2008), self-esteem (e.g., Smoll et al., 1993), self-efficacy (e.g., Sullivan & Kent, 2003), sport satisfaction (e.g., Baker et al., 2000; Baker et al., 2003; Chelladurai, 1984; Chelladurai et al., 1988; Mouratidis et al., 2008; Riemer & Chelladurai 1995; Riemier & Toon, 2001; Schliesman, 1987), assertiveness (e.g., Sari et al., 2014) and team cohesion (e.g., Gardiner et al., 1996; Jowett & Chaundy, 2004). It is imperative to recognize coaching leadership as a multifaceted construct based on optimizing athlete satisfaction and performance. Coaching in team sport combines managing interpersonal relationships, connecting to various member learning styles, and identifying different skill sets. A coach's primary concern is to prime an athlete's mindset for peak performance and learning. The dynamics of team sport truly encompasses the necessary obstacles and challenges that coaches may encounter as team leaders. Developing a working knowledge of the dynamic and multifaceted coaching construct is first made possible by defining the terms leader, coach, and coaching leadership.

1.1.1 Definitions of a Leader and Coach

Research in coach leadership helps provide coaches with the necessary information to increase athlete performance and satisfaction. Defining the responsibilities of a leader is a necessary step to clearly identify the coaches role in athlete development and training. A leader's responsibilities stem from molding the group to work cohesively to set specific and achievable group goals. In a study comparing behaviors of coach and peer athlete leaders, Loughead and

Hardy (2005) identified leadership as a complex structure built upon a variety of elements. Leadership is an interactive process in which the leader and the followers influence each other. The concept of leadership does not entail a unidirectional relationship that designates responsibility to a sole individual (Loughead & Hardy, 2005). Encouraging individuals to participate in the decision-making process promotes personal accountability and ownership (Souza & Oslin, 2008). Athletes that assume responsibility for their actions and decisions can positively contribute to the team and personal performance. A successful leader's role is to create an environment that optimizes performance and ensures a high level of satisfaction among the group.

In addition to recognizing leadership as an interactive process, it is also imperative for a leader to set achievable goals. The purpose of a goal is to provide an individual or team with an objective, in which their efforts are guided to attain a specific outcome. Goal setting is one of the most common types of performance enhancement techniques in sport and other disciplines (Horn, 2008). This psychological tool attempts to enhance participant satisfaction and performance. Additionally, implementing realistic goals is a beneficial strategy to maintain a positive attitude, prevent and manage stress, and remain optimistic in facing adversity and failure (Horn, 2008). Goal setting is an instrumental tool used to increase self-confidence, techniques and strategies, team cohesion, and mental concentration (Horn, 2008). Although the benefits of goal setting are quite clear, it is the leader's responsibility to set goals that are challenging yet attainable. Setting goals that are unrealistic is discouraging for motivation, which effectively undermines performance and satisfaction. A particular leadership strategy to counteract this is to create a variety of smaller, attainable goals that eventually lead to the main objective. The application of this strategy enables the leader to motivate their followers and help them achieve

the desired outcome. Outlining a successful leader's responsibilities is a critical step in creating the link between leadership and coaching.

The interactive process and implementation of goal setting are integral components that reflect the responsibilities of a leader. However, these elements of leadership are also highly relatable to that of a coach. In particular, a coach implements goal-setting strategies to optimize an athlete's physical and mental development in the sport. The interactive nature of leadership is evident in coaching, whereby the responsibilities are shared among the members within the group (Loughead & Hardy, 2005). However, the application of this is not always implemented appropriately, as some coaches still perceive themselves as the sole authoritative model of leadership in sport settings (Souza & Oslin, 2008). Altering the existing coach-centered approach to a player-centered one is advantageous for sport and provides numerous benefits for athletes. A more modern view regarding a coach's responsibilities is to create an environment that optimizes athlete performance and satisfaction by emphasizing decision-making and autonomy skills (Souza & Oslin, 2008). This concept does not shed the coach of their responsibility for leadership but involves them as a guide in constructing a profound understanding of the athletes' sport.

A coach that emphasizes a player-centered approach focuses on creating an environment for athletes to take ownership for individual and team performance and guide them in problem-solving situations (Souza & Oslin, 2008). Promoting autonomy and responsibility enables the athletes to attribute the outcome of a competition due to internal rather than external factors. It is favorable for an athlete to realize that an individual's effort and motivation to train effectively correlates with their team's outcome. The coach's role is to instill these values into their athletes by increasing player engagement, communication, competence, and motivation (Souza & Oslin,

2008). Souza and Oslin (2008) indicate that the benefits of the player-centered approach positively increase in relation to the amount of athlete choice and control in competition and practice.

Developing an integrative, cohesive, and focused definition of coaching effectiveness is an additional step towards understanding the components contributing to athlete development. Côté and Gilbert (2009) provide a definition of coaching effectiveness that addresses athlete development, positive psychology, teaching, and coaching behaviors in sport. Coaching effectiveness is guided by three distinct interacting components: coach's knowledge, athlete outcomes, and coaching contexts (Côté & Gilbert, 2009). Coach's knowledge is not a unidimensional construct, as it requires more than a high level of expertise in sport-specific skills. More specifically, Côté and Gilbert (2009) defined coaching effectiveness as an interaction of a coach's personal, interpersonal, and intrapersonal knowledge used throughout various coaching contexts. Furthermore, maximizing performance and learning requires coaches to adapt their feedback and teaching styles to the athletes' preferences (Vallée & Bloom, 2016). In a study examining coaching effectiveness, Vallée and Bloom (2016) summarized that successful coaches possess a multitude of personal characteristics that enable them to react appropriately to varying situations. Furthermore, corporate leaders (i.e., Chief Executive Officers) have evolved and taken on a similar role to that of a coach; both positions require similar responsibilities such as motivation, goal setting, public speaking, and producing results (Vallée & Bloom, 2016).

Clearly defining the roles of a coach and a leader allows for comparing the various similarities between these positions. Through the leader's own professional, interpersonal, and intrapersonal knowledge, they are capable of implementing a member-centered approach that

focuses on optimizing performance and satisfaction. This interest in performance and satisfaction has contributed to the cultivation of leadership theories. Sports leadership research has examined a multidimensional approach that emphasizes leadership as an interaction between coaches and athletes.

1.1.2 Multidimensional Model of Leadership

The Multidimensional Model of Leadership (MML) theory identifies that leadership is composed of three factors of leader behavior: (1) required leader behavior that is prescribed to a particular situation, (2) perceived leader behavior as viewed by the athletes, and (3) preferred leader behavior of the athletes (Andrew, 2004; Andrew, 2009; Chelladurai, 1984; Schliemann, 1987). This theory's distinguishing argument posits that athlete performance and satisfaction are positively related to the congruence of these three factors (Chelladurai, 1984). Furthermore, antecedents of leader behavior are ultimately comprised of (1) situational/organizational characteristics, (2) leader characteristics, and (3) member characteristics (Chelladurai, 1984). Situational characteristics (e.g., organizational goals, social norms, formal structure, technology) and member characteristics influence the coach's required behaviors (Andrew, 2009). Andrew (2009) further indicated that preferred leadership behaviors are also influenced by situational characteristics and member characteristics, such as cognitive complexity, need for independence, authoritarian personality traits, and task-relevant ability. Consequently, actual leader behavior is shaped by a coach's own leader characteristics (e.g., personality, style, experience, ability), the requirements of the situation, and the athletes' leadership preference (Andrew 2009).

The Leadership Scale for Sport (LSS) measures dimensions of coaching behavior and was developed by Chelladurai and Saleh (1980). It remains a widely used measurement tool in leadership research. The scale measures five specific coaching leadership styles and was

developed to assess these qualities in sporting environments (Chelladurai, 1984). The five

dimensions are democratic, autocratic, training and instruction, social support behaviors, and

positive feedback. The LSS was adapted into three versions specific to (1) athlete leadership

preference, (2) athlete perceived behavior of a coach, and (3) coach's perception of their own

behavior (Chelladurai & Saleh, 1980). The three versions of the LSS provide researchers with

the flexibility to quantitatively assess various aspects of coaching leadership. Neil and Kirby

(1985) suggested that the original intent of the LSS was to factor the desired leadership styles of

university students in physical education majors. However, the leadership model developed by

Chelladurai and Saleh (1980) evolved into a measurement tool to examine leadership across

different constructs, such as athlete motivation, self-esteem, and self-sacrifice.

Democratic leadership behaviors encourage athletes to participate in decisions regarding

tactics, strategy, and setting goals. This characteristic is a contributing factor to performance, as

it allows athletes to voice their opinion and ultimately feel more involved in the developmental

process. Democratic leadership empowers athletes to set reasonable and challenging objectives,

which can positively affect an individual's training and performance (Gastil, 1994). These

leadership behaviors increase the athlete's role from passive and obedient to autonomous and

engaged. Souza and Oslin (2008) indicate that establishing this type of environment allows

athletes to take responsibility for both team and individual performance.

Autocratic coaching behaviors deter athlete engagement and eliminate decision making,

as the coach is viewed as the sole individual of the group that takes on all responsibility.

Autocratic leaders determine a member's role without requesting input from others and take it

upon themselves to do whatever is necessary for the team's common good (Van Vugt et al.,

2004). In a study examining leader self-sacrifice, De Cremer (2006) noted that this form of

behavior negatively affects member happiness, environment, effectiveness, and stability. Consequently, followers tend to experience negative arousal in participation, as autocratic behaviors decrease willingness to remain loyal and dedicated (De Cremer, 2006). This form of leadership is detrimental to athletic performance, as it decreases an individual's satisfaction and hinders their intrinsic desire to participate. In comparison, training and instruction behaviors focus on improving the athlete's physical performance by instructing them on the proper technique and tactics (Chelladurai & Saleh, 1980). Facilitating and emphasizing strenuous training regimens to improve sports performance while maintaining clear communication is essential in coaching (Chelladurai, 1989). Training and instruction leadership behaviors directly focus on optimizing performance through instruction and repetitive practice.

Social support leader behaviors aim to promote a positive group atmosphere, interpersonal relationships with team members, and a concern for athlete's welfare (Riemer & Chelladurai, 1995; Chelladurai, 1989). A socially supportive coach attempts to maximize athletic performance by satisfying the psychological needs of the athlete. In essence, an environment that promotes trust conducive to optimizing performance. Training coaches to exhibit more social support behaviors can positively affect an athlete's self-esteem and increase their potential for optimal development (Smoll et al., 1993). Positive feedback leadership consists of coaching behaviors that reinforce an athlete through recognizing and rewarding positive behavior (Riemer & Chelladurai, 1995; Chelladurai, 1989). This form of leadership is found to increase an athlete's perception of intrinsic motivation and competence (Mouratidis et al., 2008).

1.2 Purpose Statement

The purpose of this study is to examine the congruence between preferred and perceived leader behaviors in relation to individual performance in university/college baseball athletes.

Specifically, it examines coaching behavior in relation to individual athlete performance. The aim is to provide empirical evidence highlighting the coach-athlete relationship with regard to the athlete's perspective. A coach's behaviors should aim to optimize each athlete's own personal satisfaction and performance to achieve success. Although their interest is to achieve group success, accomplishing this task requires that each athlete performs at their optimal level. A coach who demonstrates behaviors that align with the athletes' preferences is contributing to the development of an effective sports environment. Congruency of athlete perceptions of their coach and preferences to leader behaviors should effectively translate to individual performance.

According to the Long-Term Athlete Development framework developed by Balyi et al. (2005), athletes start to focus on competition and performance around the age of 16 years which is labelled the "Train to Compete" stage. Youth sport athletes focus more on learning and development compared to university/college athletes. In contrast, young adult athletes train to perfect their specific positional tasks and game strategies. The Train to Compete stage is then followed by the "Train to Win" stage, whereby the main objective is to train athletes to perform at major competitions (Balyi et al., 2005). The university/college environment reflects the Train to Win stage, and the coach-athlete relationship is thus different compared to youth sports.

The sport of baseball is an optimal area for research on athletic outcomes, as various performance statistical categories are recorded and objectively quantify individual performance. University/college leagues are required to update and maintain statistical accounts of each athlete's performance for their records, which is not the case in youth baseball. The sport of baseball provides a platform to observe athlete accomplishment through these performance statistics.

This research study aims to provide empirical evidence supporting athlete competence outlined by Côté and Gilbert's (2009) review on athlete outcomes. Although the MML posits that congruence between perceived and preferred leader behavior positively relates to group performance, the current study focused on individual performance. It reflects an attempt to transpose the postulations of the MML to study congruency in relation to individual performance, specifically. Therefore, it is hypothesized that a congruency between athlete preferences and perceptions in leadership behaviors will significantly relate to individual baseball performance.

H1: Congruency between athlete preferences and perceptions will significantly relate to

individual baseball performance.

It is assumed that effective coaches optimize athletic competence by aligning their coaching expertise according to the athlete's needs. Congruency between perceptions and preference of leadership behaviors will ultimately increase performance and satisfaction. However, this study aimed to identify whether coaches are implementing this concept into their practice. Athlete preferences and perceptions were examined to determine whether the coaches exhibit leader behaviors that mirror the preferences of their athletes. Coaches that implement MML theories into practice are demonstrating an attempt to understand and address the needs of their athletes. Therefore, each leadership dimension's mean scores should be statistically similar between preference and perception versions of the LSS; this would indicate that coaches are displaying leadership behaviors that are preferred by their athletes.

H2: The statistical differences between athlete preference and perception mean scores

will be insignificant.

Lastly, this study aims to provide further empirical evidence identifying which leadership dimensions correlate with performance. The purpose is to determine the relationship between athlete's perceptions of leader behaviors in relation to their on-field performance. For instance, this information will provide coaches with an understanding of the behaviors that correlate positively or negatively with athlete performance.

H3: Athlete perceptions of coaching leadership dimensions will significantly relate to individual baseball performance outcomes.

Coaches can use this information as an educational tool to understand their own actions in relation to athlete performance. However, it is cautioned that coaches understand the limitations of a correlational analysis in that it does not assume a cause-effect relationship.

1.3 Significance of the Study

Côté and Gilbert (2009) identified competence as one of the 4 C's (i.e., competence, confidence, connection, character) of athlete outcomes. To increase athlete competence, effective coaching would likely increase sport-specific tactical, technical, and performance skills. Effective coaching assumes that coaches align their leader behaviors and strategies with their athletes' needs, resulting in increased performance. This research will expand on athlete competence in the realm of the congruency hypothesis and effective coaching in the context of university/college baseball. Examining the congruency of athlete preferences and perceptions aims to strengthen the MML literature on coaching efficacy.

Furthermore, this research contributes to coaching knowledge to help understand the leadership dimensions that effectively contribute to optimizing athlete performance. Previous research indicates that positively altering the traditional coach-centered mindset contributes to an athlete's overall satisfaction (Souza & Oslin, 2008). Shifting a coach's behaviors to an athlete-

centered approach is beneficial to their development. This study aims to provide empirical

evidence for coaches to align their leader behaviors with the athlete's preferences. This

knowledge can be applied in practice, as coaches can then strategize to align their behaviors with

the athlete's needs to increase both athlete satisfaction and performance outcomes.

Chapter 2: Literature Review

A variety of studies has been conducted about the MML and the congruence hypothesis. The MML proposes that athlete satisfaction and performance are positively related to the congruence of their leadership preferences and perceptions of coaching behavior. However, it is important to provide a strong background of the existing coaching literature to examine the coach-athlete relationship in detail. This literature review is focused on 1) defining coaching effectiveness, 2) summarizing the contingency, situational and transformational leadership research that led to the development of the MML, 3) examining the theory of congruence within the MML framework, as well as 4) detailing recent athlete satisfaction and performance research within sport leadership.

2.1 Coaching Effectiveness

The primary purpose of this research is to examine the coaching leadership in relation to athletic performance in baseball. It is first necessary to outline a detailed definition of coaching effectiveness before examining it in relation to performance. Côté and Gilbert's (2009) review on coaching effectiveness presents a unique and integrative definition based on concepts in teaching, psychology, athlete development, and coaching literature. The authors emphasized that previous definitions lacked in precision and failed to relate to coaching literature. Consequently, Côté and Gilbert (2009) provided a consistent and integrative definition to examine coaching effectiveness, which integrates three distinct factors of coaching. They detailed 1) coaching knowledge, 2) athlete outcomes, and 3) coaching contexts as significant factors to be evaluated when considering a coach's effectiveness. The review of this definition provides a base to support this research in that it discusses in detail athlete performance outcomes with coaching contexts and knowledge.

2.1.1 Coach's knowledge

Côté and Gilbert (2009) compare effective teachers and coaches throughout this section in that both require a high-level of knowledge. They further identified 1) professional, 2) interpersonal, and 3) intrapersonal knowledge as three distinct facets of coaching knowledge. Professional knowledge is a critical component of coaching effectiveness and requires that a coach be well-versed in sport-specific knowledge. However, applying this knowledge without proper context minimizes its relevance and the interactional nature of coaching. For example, applying an elite strategy to recreation athletes is out of context and likely counterproductive. Côté and Gilbert (2009) highlighted that applying professional knowledge depends on the context of the situation and relevance of the material.

A second form of knowledge reflects the various individual and group interpersonal interactions that occur as an intricate facet of coaching. Côté and Gilbert (2009) indicated that successful coaches continually interact with athletes, parents, assistant coaches, and other professionals. Interpersonal knowledge reflects the constant complex, multi-dimensional set of social interactions required in formulating and developing relationships in sport. Côté and Gilbert (2009) highlighted that constant development of these social skills and interpersonal knowledge base is necessary to communicate openly and effectively with people.

Intrapersonal knowledge refers to the coach's capacity for introspection and reflection and their ability to understand themselves. Intrapersonal knowledge concerns a coach's ability to reflect on their own teaching methods, behaviors, practical experiences, mental and emotional processes. The ability to translate their experiences into a learning component for athletes is an integral part of coaching knowledge. Côté and Gilbert (2009) draw parallels from coaching to teaching. They emphasized that effective teachers are more capable of critically examining their

work and aim to improve their techniques and recognize their own faults regularly. It is the

continual strive for improvement that is truly beneficial for athlete development. A coach's

ability to review their methodology and reflect on their behaviors leads to self-improvement and

advancement in their sport. In conjunction with professional and interpersonal knowledge, this

development of intrapersonal knowledge exemplifies a coach's ability to optimize athlete

performance.

2.1.2 Athlete Outcomes

A second critical component in defining coaching effectiveness is to determine a coach's

influence on athlete outcomes. Côté and Gilbert (2009) further highlighted the definition

provided by Horn (2008) on coaching effectiveness based on athlete performance outcomes.

Horn's definition incorporates performance outcomes and psychological responses derived from

coaching effectiveness. It exemplifies that athlete outcomes are measured through mental state

and physical performance. However, this is a macro-level definition of athlete outcomes in that

there exist various measurable indicators that contribute to this definition. Côté and Gilbert

(2009) propose a more specific definition of performance outcomes that outlines athlete

Competence, Confidence, Connection, and Character/Caring (the 4 C's). Defining four relatable

athlete outcomes helps provide a more accurate and detailed description of a coach's influence

on athletes.

Athletes' competence refers to the impact of coaching behavior directly on performance.

It is the most straightforward of the outcome components in that athlete performance is viewed

as an indicator to determine the effectiveness of certain coaching behaviors. Côté and Gilbert

(2009) further mentioned the significance of the LSS as a widely used tool for measuring

coaching leadership behaviors in relation to athlete performance. The LSS is a widely

implemented measurement tool that has been applied in sport-specific scenarios to assess coaching behaviors with athlete satisfaction and performance quantitatively. Côté and Gilbert (2009) mention the leadership research that has extended into the realm of athlete connectedness related to coaching knowledge and behaviors. They added that a crucial role for a coach is to ensure that athletes feel supported through an environment that promotes autonomous decisions, connectedness to peers, and competence development. Coaches that support their athletes' basic need to belong to a social group provide an optimal learning environment.

Athlete confidence-building is another critical factor of the coach-athlete relationship, especially for coaches aiming to hone their athletes' sport-specific skillset. Côté and Gilbert (2009) emphasized the coach-athlete relationship as a major contributing factor to athlete confidence and future sport participation. It is this influencing role of a coach on athlete confidence that is essential in optimizing their development. Lastly, Côté and Gilbert (2009) identified sport as a medium for character development in that coaches play a crucial role in nourishing an individual's social values and moral reasoning. Sport should be viewed as a reflection of real-life experiences where citizenship qualities (e.g., caring for team members) are learned. The values and lessons nurtured through sport experience inevitably translate to an athlete's overall character development.

The 4 C's summarized by Côté and Gilbert (2009) provide a comprehensive understanding of athlete outcomes in sport. More precisely, a coach that positively contributes to the development of an athlete's confidence, competence, character, and connection also provides them with an environment optimal for development. Although some research has been collected surrounding competence and confidence, Côté and Gilbert (2009) indicated that future research should aim to measure all four athlete outcomes in sport research

2.1.3. Coaching Contexts

In conjunction with athlete outcomes and coaching knowledge, the unique coaching context is a third factor contributing to coaching efficacy. More specifically, developing an appreciation of the sport settings is crucial for understanding coaching effectiveness. Côté and Gilbert (2009) stated that Lyle's (2002) coaching research divided coaching into two distinct contexts: participation coaching and performance coaching. The focus of participation centers on short-term goals, enjoyment, and providing health-related activities, whereby participants are less intensively engaged in their sport. In comparison, performance coaching emphasizes rigorous preparation for competition programs and focuses on improving athlete performance. Côté and Gilbert (2009) further emphasized that coaches recognize the age-specific needs of their athletes throughout their development in sport. More specifically, they referenced the Developmental Model of Sport Participation (DMSP) that ultimately divides sports involvement into recreational participation and elite performance (Côté, 1999). The DMSP outlines that the ages of 6 and 12 are considered the sampling years, in which recreational participation and elite performance have similar training and activity. Following the sampling years, athletes decide to remain in sport at the recreation level or focus on specializing and investing in their performance. Although these are two distinct pathways, Côté and Gilbert (2009) emphasized that effective coaching should yield similar results for athlete outcomes.

The integration of these coaching contexts is summarized by Côté and Gilbert (2009) in a model proposed by Côté et al. (2007). The model combines participation, performance, and age-sensitive factors to form four different developmentally appropriate coaching contexts: (1) participation coaches for children, (2) participation coaches for adults and adolescents, (3) performance coaches for children, and (4) performance coaches for adolescents and adults. These

four categories help define the different developmental needs and goals dependent on the

athlete's age and level of dedication to the sport. Côté and Gilbert (2009) promoted that this

model is a foundation for coaches to build their programs and help athletes achieve their goals

defined in the appropriate sport context.

2.1.4 Integrated Definition of Coaching Effectiveness

The purpose of Côté and Gilbert's (2009) review was to provide an integrated definition

that clearly identifies the factors that contribute to coaching effectiveness. Côté and Gilbert

(2009) define coaching effectiveness as the:

> consistent application of integrated professional, interpersonal, and intrapersonal
>
> knowledge to improve athletes' competence, confidence, connection and character in
>
> specific coaching contexts. (p. 316)

This definition distinguishes coaching effectiveness from coaching expertise, as effective

coaching and expert coaching are typically perceived as similar terms. Coaching expertise

concerns the specific knowledge that is required of coaches in certain settings. Effective

coaching refers to a coach's ability to align their knowledge or expertise to optimize athlete

development, whereby expert coaches can apply this process over an extended period. Côté and

Gilbert (2009) ultimately build their definition of coaching effectiveness to include these three

significant concepts. It acts as a reference to ensure that coaches and athletes perceive coaching

effectiveness as a multidimensional construct.

2.2 Leadership Theories

Coaching leadership centers on a desire to achieve the highest level of performance for

athletes, which is often measured through their victories in organized competitions (Chelladurai,

2007). This pursuit of excellence ignited the curiosity to generate a clear understanding of the

various coaching behaviors that positively contribute to athlete development. Leadership

research has spanned more than three decades in an attempt to categorize and describe the

behaviors that leaders exhibit.

2.2.1 Contingency Theory

A study by Saha (1979) reviewed the most notable contingency leadership theories. The

contingency model of leadership developed by Fiedler (1967, as cited by Saha,1979)

fundamentally posits that appropriate leader behavior is reliant on the context of behavior that is

elicited in the given environmental situation (Saha, 1979; Vidal et al., 2017). More specifically,

Saha (1979) details Fiedler's (1967) contingency model as an between three situational variables.

Situational variability is measured through 1) position power, 2) leader-member relations, and 3)

task structure (Saha, 1979). The quality of the leader-member relationship is determined by the

leader's influence on the members (Andrew, 2009). A leader's interaction style is further

determined through task and interpersonal orientation (Chelladurai, 1984). For example, a

leader's relationship with a team member who is deemed strong is likely to have more influence

than one whom is weak. The task structure refers to the clarity of the methods and goals

instructed by the leader (Andrew, 2004). Leader influence positively relates to the clarity of the

established task or goal. Similarly, the leader's influence positively relates to the proportion of

positional power the leader holds. Positional power refers to the leader's support from the

organization, control over authority, and control over the rewards and sanctions (Andrew, 2004).

According to Fielder's (1967) Contingency Leadership theory, group performance is highly

dependent on the leader's personality and situational favorableness, as cited in previous research

(Andrew, 2004; Chelladurai, 1984; Saha, 1979).

Saha (1979) further summarized the Path-Goal theory of leadership developed by House (1971) and the Adaptive-Reactive theory by Osborn (1975). The Path-Goal theory centers on the group member's personal goals, work goals, and goal attainment (Saha, 1979). The leader's role is considered supplemental, as their purpose is to coach, guide, and support their members when necessary (Andrew, 2004; Chelladurai, 1984). Chelladurai (1984) highlighted that group performance and satisfaction directly relate to the congruency of the member preferences and leader's behaviors. Osborn's (1975) Adaptive-Reactive leadership theory identifies variables such as organizational size, external environment, technology, and organizational structure that shaped leader behavior (Saha, 1979). A leader's ability to adapt to the situational requirements of the organization is considered adaptive behaviors (Andrew, 2004). In comparison, reactive behaviors are the leader's responses to member needs, desires, and pressures (Andrew, 2004; Chelladurai, 1984). The Adaptive-Reaction theory identifies that leader behaviors are reactive to the member's preferences and situational constraints.

2.2.2 Situational Leadership Theory

Similar to contingency theories, the Situational Leadership theory posits that a leader is required to match their leadership styles to the level of maturity of the group members (Høigaard et al.2008; Lerstrom, 2008). As cited by Lerstrom (2008), Situational Leadership theory was introduced by Hershey and Blanchard (1969) and was inspired by the various behaviors exhibited by parents in relation to child-rearing. More specifically, parents exhibited different behaviors as their children grew throughout infancy, adolescence, and adulthood. Lerstrom (2008) identified that effective contingency and situational leadership styles are dependent on the balance of task and relationship behaviors. Task behaviors are described as a directive or instructional communication in which the purpose is to help the member achieve their goal

(Lerstrom, 2008). Relational behaviors refer to the two-way communications between the leader and the member including supportive, facilitating, and listening behaviors (Lersrtom, 2008). Concerning sports performance, Høigaard et al. (2008) compared situational and contingency leadership to sport by noting that coaches must adapt their leadership behaviors to the required situation to be effective. Period of failure and poor performance are often perceived as lack of coaching efficacy and may reflect a coach's inability to optimize their team's performance (Høigaard et al., 2008). Høigaard et al. (2008) also indicated that increased levels of preferred task and relational behaviors of group members may improve opportunities for future success.

2.2.3 Transformational and Transactional Leadership

The fundamental concepts of contingency and situational leadership reflect the principles of transformational leadership. In an article analyzing leadership behaviors in the business environment, Bass (1990) outlined that a transformational leader can elevate employee performance through the acceptance of group goals and interests. Bass (1990) further identified that this concept is achieved by stimulating their members intellectually, charismatically inspiring them, and meeting the emotional needs of each member. Bass and Steidlmeier (2006) found that transformational leaders are perceived more as role models to which the group can align their aspirations and goals. Research conducted by Afsar et al. (2017) reinforced that transformational leadership empowers, motivates, and inspires group members.

Rowold (2006) indicated that transactional leadership behaviors aim to communicate the goals clearly and the performance required to achieve tasks. Completion of these tasks results in the form of material or psychological compensation (Rowold, 2006). The main distinction is that this form of leadership is transactional. The leader's role is to clearly provide instructions, monitor member performance, and reward the member when the assignment is completed.

Transformational leaders aim to inspire and stimulate their members, propelling them to exceed their expectations (Rowold, 2006).

Parallels drawn from transformational leadership to contingency and situational leadership indicate that an effective leader focuses on balancing relational and task-oriented tasks to achieve group performance. Rowold (2006) highlighted that effective sport leaders ensure a high level of satisfaction, meet the organizational requirements, train athletes based on their needs, and continuously develop their athletes' physical and mental capacities. Loughead (2017) contributed to the effective leadership domain in an article reviewing leadership research. Increasing team productivity, enhancing members' communication, increasing team cohesion, defining clear roles and responsibilities, and setting team norms are examples of different strategies that reflect effective leadership (Loughead, 2017).

Contingency Leadership theory postulates that leader effectiveness is an interaction between situational favorableness and the coach's leadership style (Saha, 1977). Situational favorableness is a combination of factors such as power position, task structure, and coach-athlete relationships. Leadership incorporates both task and interpersonal orientation (Chelladurai, 1984). Andrew (2004) indicates that the research surrounding contingency and situational theories has yet to be deemed conclusive in sport. The literature suggests that a multiple factor approach to leadership in sport is better suited to fit the environment (Andrew, 2004). The Multidimensional Model of Leadership (MML) theory is a synthesis of the previous leadership theories and provides a framework for researching leadership in sport (Chelladruai, 1984). The MML has been implemented in a multitude of leadership research studies (e.g Chelladurai & Carron, 1983; Chelladurai, 1984; Chelladurai et al., 1989; Chelladurai et al., 1988; Gardiner et al., 1996; Høigaard et al., 2008; Hollembeak & Amorose, 2005; Neil & Kirby, 1985;

Riemer & Chelladurai, 1995; Riemer & Toon, 2001; Schliesman, 1987; Sherman et al., 2000; Terry & Howe, 1984). The MML provides researchers with a theoretical framework that helps propagate and evolve the literature regarding athlete performance and satisfaction.

2.3 Multidimensional Model of Leadership

Optimizing athletic ability is a critical concept that rests at the forefront of athlete development. It is the coach's responsibility to provide an environment that nourishes an athlete's intrinsic desire to participate in sport. Coaching leadership behaviors that are congruent with the athlete's preferences positively affects group performance and member satisfaction (Riemer & Chelladurai, 1995). Côté and Gilbert (2009) appropriately summarized this as coaching effectiveness, whereby a coach's role is to consistently apply their knowledge to improve athlete performance in specific contexts. However, the importance lies in the application of coaching knowledge to optimize performance. The MML provides a framework to study coaching leadership in sport and postulates that congruency between athlete preferences and perceptions should increase member performance and satisfaction (Chelladurai, 1984).

Chelladurai (1984) indicated that the MML focuses on actual, preferred, and required leader behavior as three distinct facets of leader behavior (see *Figure 1*). The model's premise assumes that the congruence between these three aspects of leader behavior positively relates to group performance and satisfaction (Chelladurai, 1984). Leader behaviors are influenced by the situational, leader, and member characteristics. Andrew (2009) highlighted that team goals, social norms, organizational structure, and the nature of the group all contribute to the situational context.

Leadership and Satisfaction

Antecedents   Leader Behavior   Consequences

Figure 1 – Multidimensional Model of Leadership (Chelladurai, 1984)
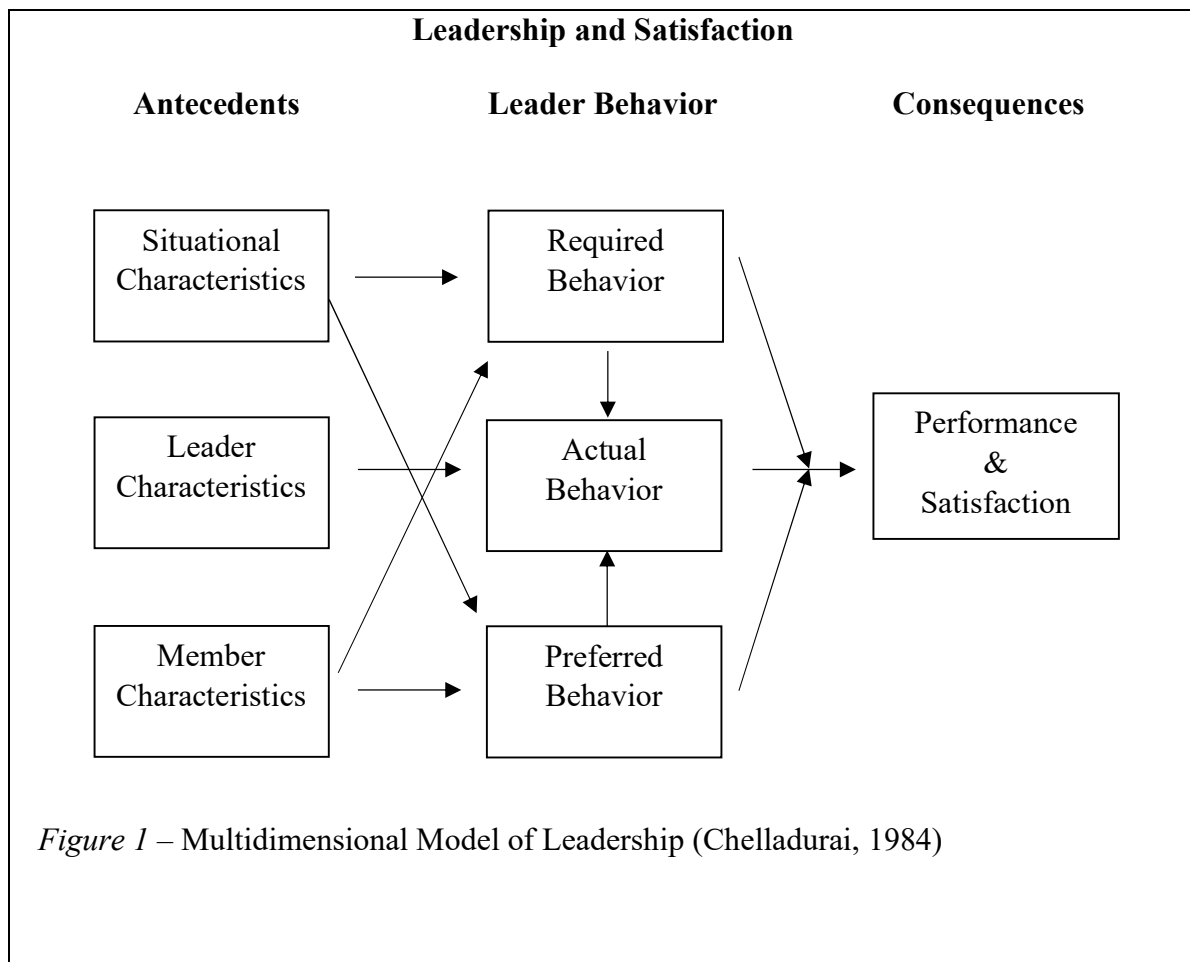
However, the MML was revised to include member characteristics as an influencing factor of required behavior in situations where athletes lack the qualities (e.g., ability, personality, or experience) to make the necessary decisions (Andrew, 2009). Member and situational characteristics also influence the preferred behavior of the leader. Andrew (2009) identified that a member's need for independence, cognitive complexity, attitude toward authority, personality traits, and task-relevant ability contribute to the leader's preferences. Lastly, perceived leader behavior is partially affected by required and preferred leader behavior, as well as leader characteristics such as their experience, ability, personality, and style (Andrew,

2009). Consequently, the leader can alter their behaviors based on the requirements of the situation and characteristics of the athletes.

The premise of the MML stipulates that congruency between actual, preferred, and perceived leader behaviors positively relate to group performance and member satisfaction. More specifically, Andrew (2009) indicated that performance and satisfaction increase when the requirements of the situation are similar to the behaviors preferred and perceived by the members. Performance and satisfaction decrease when the leader behaviors elicited are not congruent with the preferences or perceptions of the members. To measure leader behaviors, Chelladurai and Saleh (1980) developed the Leadership Scale for Sport. This survey is a widely implemented tool in sport leadership research and has three distinct versions aimed to examine a coach's perception of their own behavior, athlete preferences to leader behavior, and athlete perceptions of their coach's behaviors. Each version of the scale measures five specific leadership dimensions.

2.3.1 Leadership Scale for Sport

The Leadership Style for Sport (LSS) developed by Chelladurai and Saleh (1980) is a survey that measures leadership based on five different behavioral dimensions. The five specific leadership dimensions are: 1) training and instruction, 2) democratic behavior, 3) autocratic behavior, 4) social support, and 5) positive feedback (see Table 1). Developing a working knowledge of these dimensions helps detail the influence of different coaching behaviors on athlete outcomes.

Table 1 *Summary of the five dimensions Leadership Scale for Sport (Chelladurai and Saleh, 1980)*

Leadership Subscale	Description
Training and Instruction	Business-like mindset; increase performance through instruction of technique and tactics
Democratic	Include the athletes in the decision-making process
Autocratic	Eliminates athlete decision-making; leader is fully responsible in these situations and strictly demands compliance
Social Support	Development of a positive training environment by satisfying the interpersonal needs
Positive Feedback	Complimenting and appreciating an athlete's maximum effort

Training and Instruction Leadership. The training and instruction leadership style focuses on improving the physical performance of the athlete by instructing them on the proper technique and tactics of their sport (Chelladurai & Saleh, 1980). Facilitating and emphasizing strenuous training regimens aimed at improving sport performance and maintaining clear relationships among group members is essential (Chelladurai, 1989). In addition, the training and instruction leadership style aims to provide athletes with a well-structured and coordinated environment (Chelladurai, 1989). Research suggests that greater satisfaction in sport participation is partially related to increased perceptions of training and instruction behaviours exhibited by coaches (Chelladurai, 1984). In a research article studying coaching perceptions, Sari et al. (2014) identified training and instruction behaviors as the strongest positive

contributor to athlete assertiveness. Sair et al. (2014) cite Uğur (1996) to define athlete assertiveness as an individual's ability to express their emotions, thoughts or desires without experiencing anxiety or guilt and neglecting the rights of others. In addition, athlete assertiveness is also positively correlated with democratic, social support, and positive feedback behaviors (Sarı et al., 2014).

Further research indicates that this form of leadership is preferred in athletes participating in both individual and team sports (Riemer & Chelladurai, 1995). However, there could be cultural differences in these findings. For instance, Chelladurai et al. (1988) demonstrated that Japanese athletes preferred autocratic and social support leadership more than Canadian athletes, who favor training and instruction. Aristotelis et al. (2013) also reported that Greek soccer coaches perceived themselves highly in democratic behavior.

Democratic Leadership. Democratic leadership behaviors enable athletes to participate in decisions regarding strategies and tactics, practice regimens, and group goals (Riemer & Chelladurai, 1995; Chelladurai, 1989). This leadership style proves beneficial to athlete development, as research indicates multiple benefits. Athletes that exhibit decision-making skills are empowered to take ownership of their performance (Souza & Oslin, 2008). The coach's role is to establish an environment that encourages accountability and responsibility for both team and individual performance (Souza & Oslin, 2008). Coaches that implement this player-centered approach tend to produce athletes with increased player engagement, communication, competence, and motivation (Souza & Oslin, 2008). Similar to training and instruction leadership, increased democratic leadership positively correlates with greater satisfaction and assertiveness in athletes (Riemer & Chelladurai, 1995; Sari et al., 2014). Research indicates that permitting athletes to participate in decision-making is a method of maintaining group solidarity

(Loughead & Hardy, 2005). Democratic leadership styles contribute to developing ethical principles in athletes, such as decision making, personal development, and self-determination (Gastil, 1994).

Sari and Bayazıt (2017) concluded that coaches should implement more democratic behaviors rather than autocratic behaviors by allowing athletes to participate in the decision-making process. In studying leader behaviors with social responsibility, Lee et al. (2017) suggested that democratic behaviors foster a supportive and warm family-like environment that promotes respect and positive bonds. The researchers further suggested that coaches should implement more democratic behaviors into practice and avoid autocratic behaviors. Aristotelis et al. (2013) identified that aging coaches perceived themselves as more democratic leaders than the younger coaches. This may signify a form of self-evaluation, whereby coaches learn to realize the value of their athletes' opinions over time. The significance of democratic leadership should not be under valued, as benefits may include increased athletic performance and personal development, and positive group interaction.

Autocratic Leadership. Autocratic leadership behaviors stress personal behavior authority and emphasizes independent decision-making (Riemer & Chelladurai, 1995; Chelladurai, 1989). Autocratic leaders determine a member's role without requesting input from others and take it upon themselves to do whatever necessary for the common good of the team (Van Vugt et al., 2004). In a study examining the effects of leadership styles on small groups, Van Vugt et al. (2004) demonstrated that more individuals exited their group when their leader was autocratic. Empirical evidence indicates that these behaviors negatively affect team happiness, environment, effectiveness, and stability (De Cremer, 2006). Consequently, De Cremer (2006) identified that members tend to experience increased arousal and stress during

participation, as autocratic leadership decreases willingness to remain loyal and dedicated. A study conducted by de Sousa Fortes et al. (2017) of female volleyball players demonstrated that higher social support levels and decreased amounts of autocratic leadership helped minimize risks for eating disorders. In particular, the authors suggested that the rigidity of autocratic leadership may indirectly influence psychological concerns in athletes.

Sherman et al. (2000) confirmed that athletes are not drawn to an autocratic leadership style and prefer the freedom of a less strict environment. This finding confirmed previous research by Terry and Howe (1984), who studied gender differences in leadership preference to different sports. Terry and Howe (1984) and Terry (1984) reported lower mean autocratic behavior scores in comparison to the other four dimensions. Autocratic leadership is often viewed as controlling and dominant, whereby these behaviors limit group member control and decision-making (De Cremer, 2006). The evidence provided by these research studies reinforces that autocratic behaviors are least preferred in most athletes.

Although research highlights that this form of leadership is not a preferred style of athletes, the evidence may not be reflected across other cultures. Chelladurai et al. (1988) identified significant differences were found in studies comparing the preferences in Japanese and Canadian athletes. The Canadian athlete's results reflected previous research indicating a preference in training and instruction leadership (Chelladurai et al., 1988). However, Japanese athletes reported a preference for autocratic and social supportive leadership (Chelladurai et al., 1988). It is imperative to note that further research is required to detail the influence of autocratic leader behaviors on athletes or group members. Other cultures may view autocratic leadership differently, whereby it is optimal for them to implement this coaching style in athlete development.

Social Support Leadership. The social support behaviors aim to promote a positive group atmosphere, interpersonal relationships with team members, and a concern for each athlete's welfare (Chelladurai, 1989; Riemer & Chelladurai, 1995). Research indicates that social support behaviors are critical in maintaining the motivational attitudes of team members (Loughead & Hardy, 2005). A study conducted by Chelladurai (1984) demonstrated that athlete preferences in social support behaviors are positively associated with satisfaction of sport experience (Chelladurai, 1984). Rees et al. (2010) expanded on social support behaviors to athletes that have suffered sport injuries. The authors reported that social support behavior effectively reduces devastation and dispiritedness in athletes following an injury. This study exemplified the importance of social support and sport injury, demonstrating the positive relationship between this form of leadership and rehabilitation (Rees et al., 2010). In a study examining leadership behaviors among peers, Loughead and Hardy (2005) determined that peer leaders exemplified more social support behaviors than coaches. This may reflect the preferences in athletes to which coaches should consider increasing social support behaviors throughout the length of the season. Smoll et al. (1993) identified the benefits for coaches to exhibit social support behaviors throughout a season, as it significantly increased athletes' self-esteem. Therefore, training coaches to exhibit more social behaviors can positively affect an athlete's self-esteem, motivation and increase their potential for optimal development.

Positive Feedback Leadership. Positive feedback leadership reinforces an athlete through recognizing and rewarding positive behavior (Riemer & Chelladurai, 1995; Chelladurai, 1989). This is found to increase an athlete's perception of intrinsic motivation and competence (Mouratidis et al., 2008). In addition, there is a relationship with positive feedback in predicting an individual's enjoyment and interest in a sport (Mouratidis et al., 2008). Research in positive

feedback leadership replicates these findings regarding intrinsic motivation. Studies demonstrate an increase in intrinsic motivation with positive leadership compared to groups without (Mouratidis et al., 2008). Maintaining an athlete's motivation in sport is essential in optimizing athletic ability, as it encourages autonomous and self-endorsed engagement (Chelladurai & Saleh, 1980; Mouratidis et al., 2008). Furthermore, increased levels of autonomy, competence, and relatedness contribute to fostering high-quality athlete motivation (Mouratidis et al., 2008). This reinforces the finding that positive feedback, as well as training and instruction leadership styles, are more preferred in athletes than democratic, social support and autocratic coaching behaviours (Riemer & Chelladurai, 1995).

2.4 Congruence Hypothesis

The MML enables coaches to comprehend the various behaviors that enhance athlete motivation, which effectively leads to increased performance and satisfaction. According to Chelladurai and Saleh (1980), this theory is centered on the congruence between the preferred leadership style of the athlete and the behaviors exhibited by the coach. More specifically, the congruence hypothesis posits that the alignment of coaching behaviors to athlete's preferences positively affects member satisfaction and group performance (Riemer & Chelladurai, 1995).

2.4.1 Satisfaction

Riemer and Chelladurai (1995) tested the congruence hypothesis in a study that examined leadership and satisfaction in football athletes. The authors investigated differences in 1) athlete preferences, perceptions and satisfaction with leadership in relation to offensive and defensive personnel of football teams and 2) the congruence hypothesis referring to athlete preference and perception of leadership in relation to satisfaction. NCAA Division 1 football players ($n = 201$) from three separate universities participated in the study. Athlete age ($M = 20.09$) ranged from

17 to 25, consisting of 2 kickers, 89 defensive team athletes, and 110 offensive team athletes. The kickers, however, were eliminated from the analysis. Copies of the questionnaires were mailed to the contact person for each university, in which participation was mandatory for two of the three programs. The LSS (Chelladurai & Saleh, 1980) was used to measure the five dimensions of preferred and perceived leadership from the team's primary coach, as football teams tend to have various coaches who specialize in different areas of the team's performance. A Cronbach's α internal consistency results identified a range from .45 (autocratic behavior) to .83 (training and instruction behavior) in the preference version and .79 (autocratic version) to .93 (training and instruction) for the perception version. Participants further completed a 7-point Likert scale (7 = extremely satisfied; 1 = extremely dissatisfied) measuring the athlete's satisfaction within their coach's unit.

A MANOVA was administered to evaluate the differences between offensive and defensive athlete satisfaction, perceived dimensions of leadership, and preferred dimensions of leadership. Bivariate correlations (Pearson r) were computed for athlete preference and perceptions for each leadership dimension in relation to satisfaction. A multiple regression analyses was implemented to evaluate the variance in leadership satisfaction as explained by the main effect of perception and preference. Two sets of multiple regressions were computed for each of the five leadership dimensions and their interactions. Athlete preference scores were entered first, followed by perceptions scores and the interaction terms for the first set of multiple regressions. The reverse followed in the second set, whereby perception scores were entered first and preference scores second followed by the interaction terms. This procedure identified the factors that contributed most to the variance of leadership satisfaction for athlete preference,

perception, and congruence. It further assisted in identifying which of the factors dominated in explaining satisfaction.

Groups were selected based upon the athlete's offensive or defensive position. Hierarchical regression was used to analyze the interaction effect of leadership preference and perceptions on athlete satisfaction. Caution was issued regarding the autocratic behavior dimension of the LSS, as the Cronbach's alpha did not surpass the acceptable threshold. Riemer and Chelladurai (1995) identified differences in the defensive and offensive units within a football team. More specifically, they noted that defensive players preferred more democratic and social support behaviors from their coach compared to the offensive players. The results confirmed that football teams consist of two separate dynamics, which partially confirmed results of a previous study conducted by Riemer (1991), as cited by Riemer and Chelladurai (1995).

Training and instruction and democratic scores were similar between defensive and offensive athletes. Democratic, autocratic, and social support scores were found to be significantly different between defensive and offensive players. Overall, athletes scored training and instruction and positive feedback significantly higher than the remaining three behavior dimensions. The two former behavior dimensions also correlated with satisfaction ($r > .34$) substantially in comparison to the latter three ($r < .21$). Concerning the congruency hypothesis, the results supported only the leadership dimension for social support.

Riemer and Chelladurai (1995) identified that satisfaction was highest when preferences and perceptions were highest, whereas satisfaction scores were low when perceptions deviated from preference. Although interaction effects were found for democratic and autocratic leader behavior, Riemer and Chelladurai (1995) applied rigorous alpha level thresholds to this study in

that only social support interaction was found to be significant. Interaction effects were not found for positive feedback or training and instruction leadership dimensions. This study determined that training and instruction, as well as positive feedback, substantially explained variance in athlete satisfaction ($R^2 > .17$) compared to the other three behavior dimensions ($R^2 < .09$). Riemer and Chelladurai (1995) noted that the defensive players perceived and preferred greater amounts of democratic, autocratic, and social support behavior. They highlighted that increased preferences towards a specific leadership behavior may alter their perceptions of that behavior elicited from their coach.

This research study concluded that coaches might benefit from emphasizing training and instruction and positive feedback leader behaviors related to task demands and member performance rather than member preference. Riemer and Chelladurai (1995) further indicated that coaches should attune themselves more to the athletes' social support, autocratic and democratic behavior demands. This study focused solely on satisfaction yet emphasized the importance for future studies to focus on athlete performance.

In a similar study, Riemer and Toon (2001) examined the congruence hypothesis in relation to athlete satisfaction in collegiate tennis athletes. The research examined athlete leadership preferences as a function of various member factors (age, gender, ability). Riemer and Toon (2001) contacted coaches from NCAA Division I and II tennis teams to obtain permission for their athletes to participate in the study. A total of 148 athletes (77 female) participated in the study. The LSS developed by Chelladurai and Saleh (1980) was used to measure the perceived and preferred leadership behaviors of the athletes. Riemer and Toon (2001) reported adequate internal consistency values for the autocratic leadership dimension. Cronbach's α internal consistency scores ranging from .67 (autocratic behavior) to .86 (training and instruction

behavior) for the preference version and .59 (autocratic behavior) to .88 (training and instruction behavior) for the perception version of the LSS.

The Athlete Satisfaction Questionnaire (Riemer & Chelladurai, 1998) was administered to measure athlete satisfaction across 4 of the 15 subscales (training and instruction, personal treatment, individual performance and team performance). Internal consistency scores ranged from .90 (training and instruction) to .93 (personal treatment), which were considered adequate. Bivariate correlations (Pearson's r), as well as multiple regressions analyses were used. Two sets of five multiple regressions were administered to examine the congruence hypothesis across the five dimensions of leadership in relation to each satisfaction subscale. In the first set of regression analyses, preference scores were entered first, followed by perception and the interaction scores. A multivariate multiple regressions were also used to examine athlete ability (NCAA Division) and gender on leadership preferences, in which the authors found no support to advance the congruence hypothesis derived from the MML.

Andrew (2009) conducted a study similar to Riemer and Toon (2001) that observed satisfaction in collegiate tennis athletes in relation to the congruence hypothesis proposed by the MML. The premise of this research was based on the notion that congruence of a leader's required behavior, preferred behavior of the athlete, and actual perceived leadership effectively increase group performance and member satisfaction (Chelladurai, 1978). The purpose of Andrew's study, similar to Riemer and Toon (2001), was to explore whether leadership satisfaction is predicated by the congruency of leadership preference and perception in NCAA Division I, II, III tennis athletes. Andrew (2009) reached out to NCAA coaches (n = 1107) via email, in which 82 of the emails were undeliverable. Coaches from 81 NCAA institutions proceeded to forward the participation email to their athletes (n = 541), to which the response

rate was 47.7% ($n = 245$). Participant age ranged from 18 to 24 with a mean age of 20.01 (SD =

1.38) and consisted of both male ($n = 78$) and female ($n = 167$).

The Revised Leadership Scale for Sport (RLSS) developed by Zhang et al. (1997) was

used to measure leadership preference and perception. Additional general demographic

information (age, gender, nationality, academic scholarship funding, athletic scholarship funding,

years of experience playing, years of collegiate experience, name of institution) was collected by

Andrew (2009). The Athlete Satisfaction Questionnaire was employed to measure athlete

satisfaction. Descriptive statistics for demographic variables were analyzed, and Cronbach's α

coefficients were calculated to evaluate the internal validity of each measurement scale.

Hierarchical regressions analyses were used to calculate the unique variance of each variable

behavior on athlete satisfaction. Similar to Riemer and Chelladurai (1995), Andrew (2009) input

the preference scores first into the regression, followed by the perception scores, and lastly, their

interaction term (preferred x perception) for each dimension of the RLSS. The input for the

second set of analyses was reversed in that perception scores were entered first, followed by the

preference scores and the interaction term. This method provided Andrew (2009) with insight

into the variance explained by each leadership variable. Further, the hierarchical regression

helped determine the dominance of these variables on athlete satisfaction as well. The

congruence hypothesis was only accepted if the interaction of preferred and perceived leadership

significantly increases the amount of variance.

The results of Andrew's (2009) research on collegiate tennis players found a significant

increase in personal treatment satisfaction for training and instruction coaching behavior. In

addition, congruency in autocratic coaching behavior resulted in a significant increase in 1) team

performance satisfaction, 2) individual performance satisfaction, 3) personal treatment

satisfaction, and 4) training and instruction satisfaction. The overall autocratic findings suggest that a coach providing the athlete with a desirable amount of autocratic leadership influences athlete satisfaction in these areas. Andrew (2009) aptly noted the low autocratic preference scores and perception scores. Further, Andrew (2009) compared this research study to Riemer and Toon's (2001) research that studied the congruency hypothesis using the MML among a sample of 148 collegiate tennis players. Remier and Toon (2001) did not provide statistical evidence supporting the congruence hypothesis, whereas Andrew (2009) identified statistical differences in athlete satisfaction concerning autocratic and training and instruction leadership styles. The significance of Andrew's (2009) research study provided evidence supporting the congruence hypothesis while highlighting the importance of a coach's leadership behaviors on athlete satisfaction.

2.4.2 Performance

Another study conducted by Jowett and Chaundry (2004) examined the congruence hypothesis in relation to group cohesion. Jowett and Chaundry (2004) examined the contributions of leadership behaviors and relationship variables to task and social cohesion. The authors recruited a total of 111 university athletes (86 men, 25 women) from various sports such as rugby, field hockey, soccer, basketball, netball, lacrosse, and football to participate in a cross-sectional survey study. Jowett and Chaundry (2004) administered the Group Environment Questionnaire developed by Carron et al. (1985) to measure both social and task cohesion, whereas the LSS measured the athlete's perceptions of the five coaching leadership styles. The researchers also administered the Coach-Athlete Relationship Questionnaire (Jowett, 2002, as cited by Jowett & Chaundry, 2004) to gain insight into the perceptions of the athlete's relationship with their coach. Two versions of the questionnaire were created to reflect an

athlete's direct/self of the closeness, commitment, and complementarity (3 C's) to the coach. The second version measured a meta version of the 3 C's from the perspective of the coach. The LSS was used to assess athletes' perception of coaching behavior across the five behavior dimensions. Cronbach α levels were deemed reliable and ranged from .78 to .86, except for the autocratic dimension (α = .56) that was omitted from the analysis.

Questionnaires were administered to the athletes before a training session to the athletes at the end of the competitive season. Hierarchical multiple regression analyses were conducted to measure athlete perceptions of coaching leadership, as well as their self and meta perceptions of the 3 C's to task and social cohesion. The interaction of the meta and self-perceptions was input into the regression analyses to analyze its contribution to cohesion. Jowett and Chaundry (2004) hypothesized that leadership variables and the 3 C's would predict task and social cohesion. Secondly, it was hypothesized that similarities in athlete perceptions would foster social connections. Leadership, relationship (3 C's), and the interaction accounted for more of the variance in task cohesion (R^2 = .26-.34) than for social cohesion (R^2 = .12-.14). Leadership dimensions ($F_{(4, 106)}$ = 10.74, p < .01) and self perceptions of the 3 C's ($F_{(7, 103)}$ = 5.24, p < .01) significantly predicted task cohesion. Leadership behaviors ($F_{(4, 106)}$ = 4.65, p < .01) and the interaction of meta and self perceptions ($F_{(13, 97)}$ = .15, p < .09) were significant predictors of social cohesion. The two hypotheses set by the researchers were accepted, as the results indicated that leadership and relationship variables positively predicted both task and social cohesion.

Coach leader behaviors accounted for 26% percent of the variance in task cohesion and 34% when direct perception variables were added to the regression. Jowett and Chaundry (2004) indicated the importance of considering leadership and relationship variables in conjunction with each other rather than insolation. The results for social cohesion indicated that leadership

accounted for 12% and 15% of the variance with the addition of relationship variables. Overall

analysis revealed that the coach-athlete relationship is a stronger predictor in task cohesion than

social cohesion. Jowett and Chaundry's (2004) results reflect that coaching leadership and

relationships relate better to task cohesion than social cohesion, as a competitive sport

environment reinforces that athletes work together to achieve a common goal or task.

The researchers suggested that coaches focus on task cohesion throughout a season.

Jowett and Chaundry (2004) indicated that future researchers should consider athletes at different

performance levels, analyze coach's perceptions and implement longitudinal methods in studies.

This study examined athletes' perceptions and group cohesion as an example of performance

research in coach leadership. However, the authors reiterate the significance of this research and

advocate for further studies that examine the coach-athlete relationship.

The buffering effects that the social support coaching leadership style on injured athletes

differing in performance level have also been studied. Rees et al. (2010) hypothesized that

stressors were associated with the negative psychological responses of injury and that social

support positively effects the psychological responses to sport injury. Furthermore, high levels of

social support buffered the negative psychological responses from injury more so than lower

social support groups, except for significantly minor stressors. Athlete information of which

sport they participated in was not included in the study. Participants were divided into high-

performance ($n = 147$) athletes that performed at the national and international level, as

compared to the low-performance ($n = 114$) athletes at the college, recreational and local

associations. Injured athletes who were receiving treatment were recruited for this cross-sectional

survey study from various physiotherapy clinics across the United Kingdom. Prior to their

clinical appointments, everyone was asked to report their performance level, and complete the

surveys measuring psychological response, stressors, and social support levels with ten

physiotherapists. Rees et al. (2010) used the Social Support Inventory for Injured Athletes

developed by Mitchell et al. (2005) to measure emotional, tangible, informational, and esteem

dimensions of social support. Level of stress was measured by evaluating biological responses,

subjective psychological appraisals, and environmental demands of stressors. The Psychological

Responses to Sport Injury Inventory developed by Evans et al. (1996) assessed the participant's

psychological appraisals of their sport-injury (as cited by Rees et al., 2010).

This study indicated a positive relationship between psychological response to sport

injury; however, this differs between high and low-performance athletes. A main effect with

high-performance athletes was detected, in which social support was negatively related to

devastation and dispiritedness. In comparison, low-performance athletes exhibited the same

results for high-stressors but not for low-stressors. No significant difference was found between

levels of social support when compared to low-stressors. Rees et al.'s (2010) study provides

insight into the effectiveness of the social support leadership style. Like Jowett and Chaundry

(2004), Rees et al. (2010) advocate that further research examining social support across various

performance levels is beneficial to coach leadership.

Another performance study conducted by Bum and Shin (2015) examined coaching

leadership behaviors in relation to performance and competitive state anxiety in Korean golfers.

The purpose of this study was to help develop coaching techniques and knowledge, as few

coaches had formal training with increasing player registration in Korea. Bum and Shin (2015)

recruited participants ($n = 232$) from the Korean Junior Golf Association between the ages of 12

and 18. However, 16 responses were omitted from the study due to inadequate responses. A

convenience sample was taken at a golf tournament, in which self-administered questionnaires

were administered to the athletes over three days before the first round. Males ($n = 127$) and

females ($n = 89$) golf experience ranged from approximately 2 to 6 years.

The LSS, Competitive State Anxiety Inventory-2 (CSAI-2), and the athlete's golf score

were used to assess leader behaviors, competitive state anxiety/confidence, and performance,

respectively. Cronbach's α was for the LSS ranged from autocratic behavior (α = .74) as the

lowest score to training and instruction behavior (α = .91) with the highest score. A correlation

analysis was used to examine the relationships between each variable. The correlation coefficient

for training and instruction ($r = -.38$) was significantly negatively related to golf performance,

whereas a positive correlation was found for autocratic behaviors ($r = .25$). It is important to note

that low golf scores represent higher performance. Higher training and instruction scores were

significantly related to greater golf performance (Bum & Shin, 2015). A multiple regression

analysis was conducted to analyze the contribution of coaching leadership behaviors on cognitive

state anxiety.

A preliminary analyses of the results indicated that leadership dimensions accounted for

19% of the variance of cognitive anxiety ($R^2 = .19$, $F_{(5, 210)} = 9.82$, $p < .001$). Bum and Shin

(2015) reported significant effects on cognitive anxiety for training and instruction ($\beta = -.23$, p <

.001), autocratic ($\beta = .16$, p < .01) and social support ($\beta = -.33$, p <.001) behaviors. Training and

instruction ($\beta = .26$, $p < .001$) and positive feedback ($\beta = .28$, $p < .001$) significantly contributed

to athlete's self-confidence. Another multiple regressions analysis was performed to determine

the effect of leadership behaviors on performance, in which Bum and Shin (2015) reported

significant effects for training and instruction ($\beta = -.38$, $p < .001$) and autocratic behavior (β

=.219, p<.01). Lastly, a multiple regressions analysis determined that cognitive anxiety ($\beta = .45$,

p < .001) and self-confidence (*β* = -.29, *p* < .001) were also significant predictors of golf

performance.

Bum and Shin (2015) determined that training and instruction and social support

behaviors decreased athlete's cognitive anxiety before their round, whereas autocratic behavior

increased anxiety. This result reinforced that autocratic leadership deters interactive

communication and reflects a coach's inability to positively influence their athlete's

psychological well-being. In comparison, self-confidence positively increased in relation to

training and instruction and positive feedback behaviors. Correlation coefficients identified that

training and instruction behavior was the only dimension that significantly and positively related

to golf performance. Bum and Shin (2015) highlighted that the guidance and training provided in

amateur golf contributed to an athlete's acquisition of the required skills. In comparison,

autocratic behaviors were found to be significantly and negatively related to golf performance.

A negative, significant relationship was also found for performance and cognitive

anxiety. Bum and Shin (2015) detailed that increased anxiety levels may result in greater muscle

tension, translating to difficulty maintaining swing tempo and rhythm. A positive correlation

between self-confidence and golf performance was found to be significant. Bum and Shin (2015)

highlighted that self-confidence contributes to various factors (e.g., positive self-talk,

concentration, goal achievement) that are highly related to performance. This study empirically

demonstrated the relationship between leadership behaviors, cognitive anxiety, and golf

performance.

The research conducted by Bum and Shin (2015), Rees et al. (2010), and Jowett and

Chaundry (2004) provide empirical evidence with relation to athlete performance within the field

of sport and coaching leadership. However, these studies indicated that further research is

required to examine performance among athletes in various settings. Future research should aim

to expand on the athlete outcomes detailed by Côté and Gilbert (2009). The MML posits that

group satisfaction and performance increase in relation to athlete's preferences and perceptions

of coaching behavior. The present study aims to provide insight into the congruency hypothesis

and individual performance (athlete outcomes), which Côté and Gilbert (2009) describe as a

central component of coaching efficacy. As Rowold (2006) identified, effective sport leaders

ensure a high level of satisfaction, meet the organizational requirements, train athletes based on

their needs, and continuously develop their athletes' physical and mental capacities. This study

aims to contribute to this breadth of knowledge through the comparison of athlete preferences

and perceptions. Effective leaders need to be able to transform their leadership to reflect the

needs of the athlete.

Chapter 3: Methodology

The following chapter describes the sample, research design, recruitment method, variables and measures, as well as data analyses used in this research study. The study was approved by the Interdisciplinary Committee on Ethics and Human Research in compliance with Memorial University's ethics policy (#20182012; see Appendix C). Athletes were recruited from different baseball university and college leagues across Canada. The performance variables were measured using the athlete's individual on-base plus slugging percentage and earned run average. Leadership behaviors were measured using the Athlete Preference and Athlete Perception of Coach's Behaviour. The survey data was collected from September 2017 to January 2018. In addition, player performance statistics were retrieved from the respective league websites from the previous fall season of 2017.

3.1 Sampling and Data Collection

A purposeful convenient sampling method was used to recruit participants. Although a convenient sampling method is not generalizable to other samples, Nolan and Heinzen (2010) state that it allows researchers to actively choose a specific target population that is readily available. The target population for this specific study aimed to examine baseball athletes in the "Train to Win" (Balyi et al., 2005) stage of their athletic development. Various varsity baseball teams in Canada were asked to participate in the study. The eligibility for participating in the study was that each athlete and coach be of the required age to give individual consent in their respective provinces (e.g., 18 years old). Coaches and players were aware that their involvement in the study was completely voluntary.

The general manager for each team was contacted through email, informed about the study, and obtained permission for their team athletes to participate in the survey study. Athletes

were recruited from the Canadian Collegiate Baseball Association (CCBA), Ontario University

Athletics (OUA), and Canadian College Baseball Conference (CCBC) for the study. In addition,

baseball athletes were recruited from a Collège d'Enseignement Général et Professionnel

(CEGEP, which is a 2-year pre-university or 3-year career program institution as part of the

Quebec post-secondary school system). This team participates in the Réseau du Sport Étudiant

(RSEQ; formerly known as the Quebec Student Sport Federation). The roster size for each

university team was twenty-five, whereas the college's maximum roster size was twenty. A total

of 20 general managers were contacted via email, to which seven responded, confirming their

desire to participate in the study. The sample size consisted of 51 (30 fielders, 21 pitchers)

athletes recruited from 6 universities across the country and 1 CEGEP in Quebec. The response

rate among the seven teams who agreed to participate was 29%, as 51 of a possible 178 athletes

responded to the online survey.

To calculate the minimum required sample size for the study, an online calculator (Dhand

& Khatkar, 2014) was used where the probability level was set at 0.05 with a power of 80%.

Although the aim was to recruit approximately 100 participants, the estimated minimum sample

size was set to be 34 participants (Sober, 2021) for paired samples t-tests. Player's statistics (e.g.,

on-base plus slugging percentage and earned run average) were collected to obtain an objective

measurement of performance. This consent did not replace the informed consent of each

individual athlete. Participants were required to complete a self-administered, cross-sectional

survey. Data collection occurred from September 2017 to January 2018.

Following the reception of permission from each team, an informational email was

distributed to the team's general manager, which contained a link to the online informed consent

and self-administered survey in Google Forms. Google Forms is a web-based survey site and

tool that employs multiple layers of security to make sure that the account and data remain private and secure. Google Forms collects and stores the data in their four data centers located in Europe. The general manager of the team then emailed the athletes to complete the survey. Athletes completed the Preference and Perception of Coach's Behaviour versions of the Leadership Scale for Sport. Performance statistics are typically recorded and maintained on a league or team website. Player statistics were retrieved from their respective website following completion of the LSS. Sports teams participating in the survey study were provided the opportunity to know the collective results.

3.2 Variables and Measures

Variables in the present study included 1) athlete performance, 2) athlete's preferred leadership style, and 3) athlete's perceptions of their coach's leadership style.

3.2.1 Performance Variables

Athlete performance was measured through each person's on-base plus slugging percentage and earned run average. These variables are an objective representation of an athlete's performance and are collected throughout the CCBA, CCBC, OUA, and RSEQ baseball seasons. Batting average is measured by dividing the number of hits that the player achieves throughout the season by the number of at-bats (AB). A hit is judged by the scorekeeper of each game, in which they could bias the player's batting average. However, this effect is non-significant, and the amount of AB that each player receives minimizes the bias. On-base percentage is derived through a formula that divides the sum of hits, walks (BB), and hit by pitch (HBP) by the total amount of plate appearances (PA). This statistic measures the player's ability to reach base safely in a variety of ways. Lastly, the on-base plus slugging (OPS) percentage is a recently designed statistic that is quite robust in baseball as it measures two significant offense

abilities. Slugging (SLG) percentage is determined through the total amount of bases the athlete successfully achieves on a hit divided by the amount of ABs. Therefore, OPS is the sum of OBP and SLG and quantifies their ability to reach base and hit for power during a season; higher numbers indicate better performance. OPS is a common analytical measure that demonstrates a baseball player's overall offensive performance by accounting for their ability to reach base safely without error and hit for power.

Incorporating pitching statistics as a performance variable was necessary, as it is common for university and CEGEP baseball teams to have position players and pitchers. Playing time for a pitcher varies depending on their role for the team, whereby starting pitchers tend to receive a greater number of innings compared to relief pitchers. Starting pitchers are expected to pitch the majority of the game and naturally have more strikeouts, innings pitched, walks, wins and losses. The role of a relief pitcher ranges depending on their specialty, which may involve facing only one batter in a critical moment of the game or throwing multiple innings if the starter is removed from the game. It is imperative to consider statistics that appropriately measure pitching performance, regardless of their pitching role. Earned run average (ERA) is calculated by dividing the total amount of earned runs allowed by the number of innings pitched. The result is then multiplied by the number of innings in a game, in which a lower ERA is indicative of a better performance. This measurement quantifies a pitcher's effectiveness in their role to minimize the number of runs they allow in a game. Each league has differing rules for recording these statistics, and the defensive statistics for many teams in this study were not recorded. Therefore, defense statistics were not used in this study. Pitchers and fielders were examined separately, as their statistics measure different facets of baseball performance and could not be compared together.

3.2.2 Preference and Perception Measures of Leader Behavior

Participants were required to complete a self-administered, cross-sectional survey. Participants reported the name of their school, jersey number, and total years of experience. The Athlete Preference and Athlete Perception of Coach's Behavior of the Leadership Scale for Sport (LSS) were used to measure the preferred and perceived leadership styles athletes. Athletes completed the Athletes Perception of Coach's Behaviour, in which they rated the leadership behaviors of their own coach. Athlete Preference of Coach's Behavior was implemented for athletes to rate leadership behaviors that they preferred. The LSS scale consists of 40 statements that relate to a specific behavior that a coach may exhibit. Participants were asked to rate each statement on a 5-point Likert scale (1 = "Never" 5 = "Always") (Chelladurai, 2007). Chelladurai (2007) does not alter the statements for each version of the LSS but provides a different stem phrase. For example, the preference version commences with "I prefer my coach to" to measure which behaviors are preferred by the athlete, as opposed to the Athlete's Perception of Coach's Behavior (e.g., "My coach"). The five leadership dimensions that are measured consist of training and instruction (n = 13; e.g., "See to it that athletes work to capacity"), democratic (n = 9; e.g., "Ask for the opinion of the athletes on strategies for specific competitions"), autocratic (n = 5; e.g., "Plan relatively independent of the athletes"), social support (n = 8; e.g., "Help athletes with their personal problems"), and positive feedback (n = 5; e.g., "Compliment an athlete for good performance in front of others") statements. A mean score was computed by calculating the sum of the scores in a leadership dimension and dividing that total by the number of items of that particular subscale (e.g., sum of democratic responses / 9 democratic items = democratic mean score; Chelladurai, 2007). A mean score was computed by calculating the sum of the scores in a leadership dimension and dividing that total by the number of items of that particular subscale

(e.g., sum of democratic responses / 9 democratic items = democratic mean score; Chelladurai, 2007).

Previous studies measure internal consistency (Cronbach's alpha) of the LSS athlete version using a test-retest measure for reliability, which ranges from an α level of .45 (autocratic) to .83 (training and instruction) (Chelladurai, 1984; Chelladurai & Carron, 1983; Gardiner, 1996; Hollembeak & Amorose, 2005; Riemer & Chelladurai, 1995; Sullivan & Kent, 2003). Internal consistency scores for the autocratic behavior subscale are significantly lower compared to the other dimensions (Chelladurai, 1984; Chelladurai & Carron, 1983; Gardiner et al., 1996; Hollembeak & Amorose, 2005; Riemer & Chelladurai, 1995; Sarı, & Bayazıt, 2017; Sullivan & Kent, 2003). In addition, a study conducted by Høigaard et al. (2008) reported an internal validity score of social support and autocratic behavior that was below the statistically acceptable level. However, more current research studies report a Cronbach's α for the autocratic leadership dimension ranging from .66 to .84 (Bum & Shin, 2015; Chia et al., 2015; de Sousa Fortes et al., 2017; Kao et al., 2015; Lee et al., 2017; Moen et al., 2014). Therefore, the results of this survey study regarding the autocratic subscale should be taken into caution. Further research is required to validate this finding, as the majority of the research is consistent in regard to the reliability and validity of the LSS.

3.3 Data Analysis

Results were analyzed using the SPSS Statistics package (version 24). Descriptive statistics were analyzed for the training and instruction and positive feedback subscales for athlete's preferred leadership style and athlete's perceptions of their coach's leadership style versions of the LSS. Mean scores were compiled for each subscale to compare means to previous research. Cronbach's α was conducted to measure the reliability of the LSS, as was similarly

conducted in previous research (e.g., Chelladurai & Saleh, 1980; Riemer & Chelladurai, 1995; Riemer & Toon, 2001). Field (2013) suggested that acceptable Cronbach's α is typically .7. Riemer and Chelladuari (1995) and Chelladurai and Saleh (1980) reported .7 as the threshold for acceptable reliability and emphasized that values less than .7 be examined with caution.

3.3.1 Athlete Preferences and Perceptions in relation to Performance

A descriptive statistics table was also formulated for baseball performance variables to compare the means and standard deviations for fielders and pitchers. A Kolmogorov-Smirnov test was administered to determine the normality of the data set for the performance variables for athletes. Variance was analyzed to ensure that the assumption was met for non-zero variance. Durbin-Watson values, histograms and P-P plots were created to evaluate the assumption of independent errors, normality and variance of the data, respectively. Standardized VIF values for the interaction variables were generated to determine whether the assumption of multicollinearity was met.

Hierarchical multiple regressions analyses were performed to determine the main effect of athlete preference and perception on performance and the standardized interaction effect (preference*perception). This method was implemented by Riemer and Chelladurai (1995) to determine if the interaction between preference and perception scores can significantly predict athlete satisfaction. Field (2013) identified that the hierarchical regression assesses the contribution of a new variable when it is introduced into the regression equation. As Riemer and Chelladurai (1995) indicated in their study, support of the congruence hypothesis is found if the change in between the interaction of perception and preference scores (ΔR^2) is significant. The current study employed the same method to examine the interaction of preference and perception scores on athlete performance.

The purpose of this study was to determine whether the congruency or interaction of preference and perception scores significantly explained performance. Hierarchical regressions were conducted for the fielders' OPS and pitchers' ERA performance variables, creating two sets for each of the five leader dimensions. The initial input into the hierarchical regression analysis consisted of preference scores, followed by perception and interaction scores. The order was reversed in the second set of regressions in that perception scores were entered first, followed by preference and interaction scores. Independent errors, homoscedasticity, multicollinearity, non-zero variance, and linearity were examined to determine whether assumptions were met for the linear regression.

Field (2013) indicated that a Durbin-Watson value between 1 and 3 has less cause for concern of independent errors. Histograms and P-P plots were produced to determine homoscedasticity and linearity of the regression. Variances of each predictor variable helped establish whether the non-zero variance assumption was satisfied. Additionally, standardized residuals were produced to examine possible outliers within the data set. Field (2013) further indicated that minimum and maximum standardized residual values should range between -3.29 and 3.29, as scores exceeding these set values are cause for concern. The interaction values of perception*preference were standardized to help control for inflated multicollinearity values. Field (2013) highlighted that VIF scores greater than 10 or substantially greater than 1 are cause for concern regarding multicollinearity within the regression and may indicate bias. Congruence of athlete perception and presence scores were examined to determine whether significant statistical differences existed.

3.3.2 Differences in Mean Preference and Perception Scores

Burdette (2008) examined preferred coaching behaviors in relation to athlete race, gender, and playing time. Burdette (2008) used *t*-tests to determine the congruency between self-reported coaching behaviors and athlete preferences. Significant statistical differences between mean scores indicate incongruency between athletes and coaches. The same method was applied to this research to examine athlete perception and preference. Paired *t*-tests were conducted to determine congruency between mean scores, whereby insignificant results would confirm the hypothesis. The leadership dimensions for athlete preference were paired against the perception dimensions for a total of five *t*-tests. For example, training and instruction preference mean score was paired with the training and instruction perception score. Field (2013) identified that Cohen's *d* is a common calculation to determine the effect size of a *t*-test, in which 0.2, 0.5, and 0.8 constitutes a small, medium, and large effect, respectively.

3.3.3 Athlete Perception Scores in Relation to Performance

Correlations were conducted to examine the relationship of athlete perception mean scores and the performance variables. Riemer and Chelladurai (1995) implemented Pearson *r* bivariate correlation analyses to examine the relationship of perception and preference scores, as well as leadership behavior and athlete satisfaction. However, the current research aimed to investigate the relationship of each leadership dimension with performance. Similar to Riemer and Chelladurai (1995), Pearson *r* correlations helped identify significant relationships between athlete perception scores and their performance. This analysis would help confirm previous findings (e.g., Mouratidis et al., 2008, Riemer and Chelladurai, 1995) that reported positive feedback and training and instruction leader behaviors as highly scored by athletes. It was

expected that higher performing athletes in this study would report greater scores on these two

dimensions.

Chapter 4: Results

The following chapter examines the results of this study. First, the descriptive statistics were analyzed. Second, hierarchical regressions were conducted to determine the relationship of athlete preference and perception of their coach's leadership style on-baseball performance. Third, paired *t*-tests were performed to analyze the congruency between mean scores of the preference and perception version of the LSS. Lastly, correlations were conducted to examine athlete performance and the perception of their coach's leadership.

4.1 Descriptive Analyses

4.1.1 Response rate and missing data

A total of 51 athletes (30 fielders, 21 pitchers) participated in the study. The online survey was distributed to the 7 teams (6 university and 1 college) that agreed to participate in the study totaling 178 athletes. The results were screened for missing data. The descriptive statistics of the athlete's responses identified 6 missing values of the 2,040 (0.3%) for the Athlete Preference version of the LSS. Similarly, only 3 (0.15%) cases were reported as missing for the Athlete Perceptions version of the LSS. Missing cases were excluded from the mean calculations for each leadership subscale.

4.1.2 Sample description

4.1.2.2 Athlete LSS Preference and Perception Statistics. Athletes reported their years of experience playing baseball. Baseball athlete experience ranged from 3 to 18 years ($M = 12.78$; $SD = 3.39$; $SE = .48$), which is quite large gap in terms of experience for athletes playing at the university or collegiate level (see Table 2). Pitchers ($M = 12.91$; $SD = 2.69$; $SE = .59$) had slightly higher mean years of experience compared to fielder's ($M = 12.40$; $SD = 3.80$; $SE = .69$). Mean scores for the preference and perception versions of the LSS were examined (see Table 2).

In terms of preferred leadership dimensions, training and instruction ($M = 4.11$; $SD = .35$; $SE = .05$) and positive feedback ($M = 4.08$; $SD = .63$; $SE = .09$) were most preferred by athletes. Social support ($M = 3.03$; $SD = .53$; $SE = .07$), democratic ($M = 3.2$; $SD = .50$; $SE = .07$) and autocratic ($M = 2.5$; $SD = .55$; $SE = .08$) behaviors had lower mean scores for the preference dimension of the LSS. Mean scores for athlete perceptions were highest for training and instruction ($M = 3.7$; $SD = .66$; $SE = .09$) and positive feedback ($M = 4.0$; $SD = .63$; $SE = .09$). Perception of social support ($M = 3.2$; $SD = .50$; $SE = .07$) and democratic ($M = 3.2$; $SD = .50$; $SE = .07$) sub-scale means were less than the previous two leadership styles, respectively. Similar to the preference version, the autocratic mean score ($M = 2.60$; $SD = .64$; $SE = .09$) was the lowest of the five leadership dimensions.

Cronbach's α was calculated for each dimension of the LSS to determine the reliability of the scale, whereby .7 was designated as the threshold for acceptability (see Table 2). This level of acceptability is suggested by Field (2013) and used in similar studies (Chelladurai & Saleh 1980; Riemer & Chelladuari, 1995). Democratic ($α = .71$) and social support ($α = .83$) preference scores were the only two that passed the minimum acceptable level. Training and instruction ($α = .64$), autocratic ($α = .65$) and positive feedback ($α = .55$) behaviors all had calculated scores lower than .7. Consequently, interpretation of these results should be analyzed with caution due to the low reliability scores. Perception scores of the LSS for training and instruction ($α = .91$), democratic ($α = .84$), autocratic ($α = .74$), social support ($α = .83$) and positive feedback ($α = .85$) behaviors were greater than the minimum acceptable reliability level.

4.1.2.3 Performance statistics. Performance variables were collected from the leagues websites following the completion of the team's latest regular season. The respondents were divided into groups based on playing position, which was either a pitcher or a fielder. Athletes at the university/college level typically specialize in pitching or fielding, which was stated on their website profile. Statistics were collected depending on the athlete's position for their team (see Table 2). The mean for fielders on-base plus slugging percentage (M = .751; SD = .380; SE = .069) was rounded to the nearest thousandth which is accepted value for these statistics in baseball. Whereas the earned run average (M = 5.79; SD = 5.96; SE = 1.22) values for pitchers were rounded to the nearest hundredth.

4.2 Assumptions for Hierarchical Regression

Independent errors, homoscedasticity, multicollinearity and non-zero variance were examined to satisfy the assumptions of a hierarchical regression (see Table 3). Standardized residuals were further examined to highlight possible outliers that existed within the data set. An analysis of the standardized residuals was performed and did not identify outliers that surpassed a minimum of -3.29 and maximum of 3.29 (*Std. Residual Min.* = -1.89, *Std. Residual Max.* = 3.29). Durbin-Watson values ranged from 1.58 for autocratic interaction of fielders to 2.49 for training and instruction interaction of fielders, which satisfied the assumption of independent errors. VIF values were produced from the standardized interaction of perception and preference scores to determine multicollinearity within the data. The assumption of collinearity was satisfied, as VIF scores ranged from a minimum of 1.09 for social support interaction of pitchers to a maximum of 2.00 for training and instruction interaction of pitchers. In addition, the assumption for non-zero variance was satisfied, as the minimal reported variance (preferences for TI, *Variance* = .12) was greater than zero (see Table 3).

Histograms with normal distribution curves and P-P plots were produced to examine the distribution of the standardized residuals. The P-P plots displayed points that were either on or slightly adjacent to the comparison line and indicated normal distribution. The histograms of the standardized residuals confirmed a normal distribution of the errors for each interaction. Scatterplots were generated to examine the homogeneity of variance and linearity of the standardized predicted values, whereby the data confirmed these assumptions.

4.3 Hierarchical Regressions

The hierarchical regression analyses conducted aimed to determine whether interactions between athlete preference and perception of leader behavior contribute to the variance in performance. Hierarchical regressions were conducted on fielder's OPS and pitcher's ERA to examine the relationship between preference and perception congruency on performance. Total explained variance for fielder's OPS ranged from a minimum of 9.8% in positive feedback to a maximum of 23.4% in training and instruction leader behavior (see Table 4). A main effect for athlete perceptions of training and instruction behaviors ($p < .05$) significantly explained the variance of fielder's performance by 21.6% in the initial order and 19% in the reverse order. However, the change in fielder OPS variance (ΔR^2) resulting from the entry of the interaction of leadership preference and perception variables was not statistically significant ($p > .05$) for any of the leadership domains: training and instruction ($F_{(3, 29)} = 2.65$), democratic ($F_{(3, 29)} = 1.55$), autocratic ($F_{(3, 29)} = 1.94$), social support ($F_{(3, 29)} = 1.11$) and positive feedback ($F_{(3, 29)} = .94$).

The second set of hierarchical regression analyses observed the relationship of preference and perception scores to pitcher ERA (see Table 5). Total variance ranged from a minimum of 6.8% in autocratic behavior to a maximum of 71.8% in social support behavior. Social support and positive feedback were the two dimensions that explained the most amount of variance in

pitcher performance (71.8% and 43.3%, respectively). Positive feedback perceptions were found to have a significant main effect ($p < .05$) on pitcher performance when it was entered into the hierarchical regression in the initial and reverse order. A main effect for positive feedback perceptions significantly explained the variance in pitcher performance by 38.3% in the initial order and 37.8% in the reverse order. However, the change in pitcher ERA variance ($\Delta R^2 = .05$) resulting from the entry of the interaction of leadership preference and perception variables was not statistically significant for positive feedback ($b = 1.96$, $t_{(21)} = 1.23$, $p < .05$). Change in pitcher ERA variance (ΔR^2) resulting from the entry of the interaction of leadership preference and perception variables was not statistically significant ($p > .05$) for training and instruction ($F_{(3, 18)} = 2.96$), democratic ($F_{(3, 18)} = 1.25$), or autocratic ($F_{(3, 18)} = 0.42$).

A main effect for social support perceptions significantly explained the variance in pitcher performance by 52.3% in the initial order, but not the reverse order. Another main effect was found for social support preferences, as it explained 24.9% of pitcher performance in the initial order and 52.3% in the reverse order. An interaction effect between social support leadership preference and perception ($F_{(3, 20)} = 14.01$, $p < .001$) scores was found to be significant when inputted into the model. Change in pitcher ERA variance ($\Delta R^2 = .19$) resulting from the entry of the interaction of leadership preference and perception variables was statistically significant ($p < .01$) for social support. The results (see Table 6) indicated that social support interaction was a statistically significant predictor of pitcher performance ($b = 1.85$, $t_{(21)} = 3.42$, $p < .01$).

4.4 Paired *t*-tests

Paired *t*-tests were conducted to identify statistical differences in athlete perceptions and preferences for leader behavior. Mean scores for leadership preference and perceptions

dimensions were compared to determine statistically significant differences (see Table 7).

Significant statistical differences mean scores would indicate an incongruency in athlete

preference and perception. Paired t-tests were conducted for each leadership dimension using a

Bonferroni adjusted alpha levels of .01 per test (α/n = .05/5 = .01). Mean score differences were

not significant for democratic ($t_{(51)}$= 2.14, p = .04), autocratic ($t_{(51)}$= -1.82, p = .08), social

support ($t_{(51)}$= -1.68, p = .10) or positive feedback ($t_{(51)}$= -.48, p = .63) preferences and

perceptions. Although the differences were not found to be significant, democratic (d = .30),

autocratic (d = .23) and social support (d = .25) did represent a small effect. Mean differences

between training and instruction preference (M = 4.11, SD = .35, SE = .05) and perception (M =

3.70, SD = .66, SE = .09) was found to be statistically significant ($t_{(51)}$= 4.47, p < .001) and

represented a medium to large effect (d = .63). The paired t-tests conducted on athlete's

preference and perception mean scores for each dimension of the LSS helped identify

congruency between the leader behavior athletes perceived versus what they preferred.

4.5 Correlations

A correlation matrix was performed to analyze a relationship between athlete

performance and perceptions of their coach's behavior (see Table 8). Fielder's training and

instruction (r = -.44), democratic (r = -.28), autocratic (r = -.13), social support (r = -.32) and

positive feedback (r = -.28) scores on perceived leader dimensions all correlated negatively with

their hitting performance. The training and instruction (p < .05) dimension of leader behavior

was significantly correlated with fielder OPS, which represented a medium-large effect. LSS

perception mean scores in training and instruction (r = .40), democratic (r = .01), autocratic (r = -

.14), social support (r = -.10) and positive feedback (r = .61) were correlated with pitcher

performance. Training instruction dimension mean scores represented a non-significant medium-

large effect on performance, whereas positive feedback was significantly ($p < .01$) correlated

with pitcher ERA and represented a medium-large effect. This correlation matrix underlined the

relationship between athlete perceptions of leader behavior on their performance.

Table 2. *Descriptive Statistics for Preference and Perception versions of LSS*

| | Preference | | | | | Perception | | | | |
	M	SD	SE	V	Cronbach's α	M	SD	SE	V	Cronbach's α
TI	4.11	.35	.05	.12	.64	3.70	.66	.09	.44	.91
Fielder	4.11	.36	.07	.13		3.74	.74	.14	.55	
Pitcher	4.10	.33	.07	.11		3.64	.55	.12	.30	
DB	3.24	.50	.07	.25	.71	3.07	.67	.09	.45	.84
Fielder	3.37	.52	.09	.27		3.13	.69	.13	.48	
Pitcher	3.06	.44	.10	.19		3.00	.65	.14	.42	
AB	2.50	.55	.08	.30	.65	2.65	.64	.09	.41	.74
Fielder	2.55	.62	.11	.38		2.66	.72	.13	.52	
Pitcher	2.42	.44	.10	.20		2.63	.53	.12	.28	
SS	3.26	.53	.08	.28	.83	3.15	.72	.10	.52	.83
Fielder	3.31	.49	.09	.24		3.21	.70	.13	.48	
Pitcher	3.19	.59	.13	.34		3.05	.76	.17	.58	
PF	4.08	.63	.09	.40	.55	4.04	.63	.09	.40	.85
Fielder	4.13	.66	.12	.43		4.11	.67	.12	.45	
Pitcher	4.02	.59	.13	.35		3.94	.57	.12	.33	

TI = Training and Instruction; DB = Democratic; AB = Autocratic; SS = Social Support; PF = Positive Feedback
Fielders *n* = 30
Pitchers *n* = 21

Table 3. *Hierarchical Regression Assumptions for Fielder OPS and Pitcher ERA*

	DW[c]	VIF	Std. Residuals Min.	Std. Residuals Max.
TI[a] Interaction	2.49	1.18	-1.89	2.17
TI[b] Interaction	2.29	2.00	-1.43	2.75
DB[a] Interaction	1.91	1.47	-1.57	3.29
DB[b] Interaction	2.19	1.13	-.96	2.68
AB[a] Interaction	1.58	1.55	-1.37	3.01
AB[b] Interaction	1.70	1.36	-1.08	2.58
SS[a] Interaction	1.86	1.38	-1.58	2.76
SS[b] Interaction	1.56	1.09	-1.83	2.06
PF[a] Interaction	2.21	1.15	-1.63	3.08
PF[b] Interaction	1.81	1.13	-1.836	2.10

[a]Fielder OPS
[b]Pitcher ERA
[c]Durbin-Watson
TI = Training and Instruction; DB = Democratic; AB = Autocratic; SS = Social Support; PF = Positive Feedback

Table 4. *Variance in Fielder OPS Performance Attributable to Leadership Preference and Perception by Order of Entry*

| | | **Initial Order** | | | **Reverse Order** | | | |
	Variable	R^2	ΔR^2	**Variable**	R^2	ΔR^2	**F**
TI	Preference	.001	.001	Perception	.190*	.190*	
	Perception	.216*	.215*	Preference	.216*	.026	
	Interaction	.234	.018	Interaction	.234	.018	2.65
DB	Preference	.003	.003	Perception	.079	.079	
	Perception	.111	.108	Preference	.111	.032	
	Interaction	.152	.041	Interaction	.152	.041	1.55
AB	Preference	.097	.097	Perception	.017	.017	
	Perception	.106	.009	Preference	.106	.089	
	Interaction	.183	.077	Interaction	.183	.077	1.94
SS	Preference	.080	.080	Perception	.103	.103	
	Perception	.113	.033	Preference	.113	.010	
	Interaction	.113	.000	Interaction	.113	.000	1.11
PF	Preference	.018	.018	Perception	.080	.080	
	Perception	.081	.062	Preference	.081	.001	
	Interaction	.098	.017	Interaction	.098	.017	.94

* $p < .05$
** $p < .01$
*** $p < .001$

TI = Training and Instruction; DB = Democratic; AB = Autocratic; SS = Social Support; PF = Positive Feedback
Fielders $n = 30$

Table 5. *Variance in Pitcher ERA Performance Attributable to Leadership Preference and Perception by Order of Entry*

		Initial Order			Reverse Order		
	Variable	R^2	ΔR^2	Variable	R^2	ΔR^2	F
TI	Preference	.065	.065	Perception	.159	.159	
	Perception	.215	.150	Preference	.215	.055	
	Interaction	.343	.129	Interaction	.343	.129	2.96
DB	Preference	.070	.070	Perception	.008	.008	
	Perception	.118	.048	Preference	.118	.110	
	Interaction	.181	.063	Interaction	.181	.063	1.25
AB	Preference	.016	.016	Perception	.021	.021	
	Perception	.040	.023	Preference	.040	.019	
	Interaction	.068	.029	Interaction	.068	.029	0.42
SS	Preference	.249*	.249*	Perception	.009	.009	
	Perception	.523**	.274**	Preference	.523***	.514***	
	Interaction	.718**	.194**	Interaction	.718**	.194**	14.01***
PF	Preference	.016	.016	Perception	.378**	.378**	
	Perception	.383*	.367**	Preference	.383*	.005	
	Interaction	.433*	.050	Interaction	.433*	.050	4.34*

* $p < .05$
** $p < .01$
*** $p < .001$
TI = Training and Instruction; DB = Democratic; AB = Autocratic; SS = Social Support; PF = Positive Feedback
Pitchers $n = 21$

Table 6. *Hierarchical Model of Standardized Interaction Predictors on Performance*

	b	**SE B**	*β*	*t*	*p*
TI[a] Interaction	.05	.06	.15	.78	.44
TI[b] Interaction	-2.98	1.64	-.51	-1.82	.09
DB[a] Interaction	-.06	.05	-.25	-1.12	.27
DB[b] Interaction	1.52	1.33	.27	1.15	.27
AB[a] Interaction	-.06	.04	-.35	-1.57	.13
AB[b] Interaction	1.53	2.11	.20	.72	.48
SS[a] Interaction	.01	.06	.03	.12	.91
SS[b] Interaction	1.85	.54	.46	3.42	.00
PF[a] Interaction	.05	.07	.14	.71	.49
PF[b] Interaction	1.96	1.59	.24	1.23	.24

[a]Fielder OPS
[b]Pitcher ERA
TI = Training and Instruction; DB = Democratic; AB = Autocratic; SS = Social Support; PF = Positive Feedback

Table 7. *Paired t-tests and Effect Sizes of LSS dimensions*

	Mean	SD	t	p	Cohen's d
TI[a] – TI[b]	.41	.65	4.47	.001**	.63
DB[a] – DB[b]	.17	.56	2.14	.04	.30
AB[a] – AB[b]	-.15	.60	-1.82	.08	.25
SS[a] – SS[b]	-.11	.50	-1.68	.10	.23
PF[a] – PF[b]	-.04	.64	-.48	.63	.07

[a] Preference
[b] Perception
* $p < .01$
** $p < .001$
TI = Training and Instruction; DB = Democratic; AB = Autocratic; SS = Social Support; PF = Positive Feedback

Table 8. *Correlation Matrix of Perception and Performance Variables*

	TI	DB	AB	SS	PF	OPS	ERA
TI	1.00						
DB	.29*	1.00					
AB	-.05	-.12	1.00				
SS	.32*	.64**	-.01	1.00			
PF	.46**	.39**	-.04	.23	1.00		
OPS	-.44*	-.28	-.13	-.32	-.28	1.00	[a]
ERA	.40	.01	-.14	-.10	.61**	[a]	1.00

[a]Not computed, variables are not constant
* $p < .05$
** $p < .01$
*** $p < .001$
TI = Training and Instruction; DB = Democratic; AB = Autocratic; SS = Social Support; PF = Positive Feedback

Chapter 5: Discussion

This study aimed to examine athlete perception and preferences of leader behavior in relation to their performance. This chapter will examine the congruence between preferred and perceived leader behaviors in relation to individual performance in university/college baseball athletes. In addition, correlations were also conducted to evaluate the relationship between athlete perceptions of coaching behavior on their performance. This research study further examined the leader behaviors that correlate positively or negatively to performance. Cronbach's α for each leader dimension of the perception version were all greater than the recommended level. However, it is imperative to note that the Cronbach's α level for training and instruction, autocratic behavior and positive feedback for the preference version was less than the set level of .70 and the results must be interpreted with caution. Caution should also be considered based on the small sample size of this research.

5.1 Interaction of Leadership Preferences and Perceptions on Athlete Performance (H1)

Based on the MML theory, it was hypothesized that congruent preferences and perceptions among athletes would positively contribute to individual performance Congruency between athlete preferences and perceptions will significantly relate to individual baseball performance. According to the MML developed by Chelladurai and Saleh (1980), congruence between athlete preferences in leader behavior and perceptions of their coach's behavior would positively contribute to group performance and satisfaction. Consequently, this study hypothesized that congruence of athlete perceptions and preferences of leadership behavior would significantly contribute to individual athlete performance. However, the results indicated that this notion was not stable across the surveyed athletes based on position. Fielder's OPS did not significantly increase in relation to the interaction of athlete perceptions and preferences.

This is finding opposes MML theory, as the results indicated that the interaction effect on performance for each leader dimension was statistically non-significant. Change in R^2 was minimal, ranging from no change for social support to 7.7% for autocratic behavior. In essence, performance in hitting did not increase with increased athlete perception and preferences leader scores.

Although significant interaction effects were not identified for fielders, this was not the case for pitchers. A social support interaction effect significantly explained the variance in pitcher's performance. More specifically, a pitcher's ERA increased as athlete perception and preference scores increased. The interaction of social support preference and perception scores explained 19.4% of the variance in ERA. This finding of a social support interaction with performance is consistent with Riemer and Chelladurai's (1995) study on athlete satisfaction, which found that athlete satisfaction was highest when their preferences in social support behavior aligned with their perceptions. The authors suggested that coaches can help maximize athlete satisfaction by matching their behaviors with their athlete's preferences for social support.

The current study identified an interaction effect that explained a significant amount of the variance in pitcher performance. The interaction effect that was found is what remains consistent with Riemer and Chelladurai's (1995) findings. However, a greater ERA represents lower performance for pitchers, which requires a more detailed explanation regarding the significant interaction effect. One explanation is that perhaps lower-performing pitchers at the university level tend to perceive greater amounts of social support behaviors from their coach, which in turn appropriately reflects their leadership preferences on that dimension. The pitchers that perform statistically better in their season may not require the amount of social support

compared to those that do not. Coaches may not see these athletes as needing of more social support and therefore direct more of their behaviors towards pitchers that need more support. This could explain the social support interaction effect that accounted for a significant amount of pitcher performance.

More research is required to determine the interaction of athlete leadership preferences and perceptions in relation to performance. The interaction effect found in the current study was significant yet did not indicate an increase in performance. More specifically, a pitcher's role is to minimize the number of runs allowed in a game. As ERA identifies the average amount of earned runs allowed by the pitcher, an increased ERA would essentially translate to more runs and lower performance. The interaction of preference and perception scores on pitcher performance was not statistically significant for the other leadership domains ($\Delta R2$ ranged from 2.9% to 12.9%). While the congruence hypothesis was not supported for training and instruction, the interaction of preference and perception scores did explain 12.9% variance in ERA. This could be considered a meaningful effect within sport (Drinkwater, 2008).

The current study did not find support for the congruence hypothesis, but this should not be considered a deterrent, and coaches should still aim to incorporate social support behavior into their routines. For instance, a study conducted by Kao et al. (2015) found an increase in athlete satisfaction when participant's preferences in training and instruction, democratic, social support and positive feedback behaviors were similar to that of the athletic directors. Andrew (2009) also provided support for a significant training and instruction interaction effect on personal treatment satisfaction, as well as autocratic interaction effect on four dimensions of satisfaction. Riemer and Chelladurai's (1995) also observed that an increase in athlete preferences and perceptions of social support behavior from their coach significantly predicted

COACHING LEADERSHIP AND ATHLETIC PERFORMANCE74

higher satisfaction. However, Riemer and Toon (2001) found no support for the interaction of leadership preferences or perception in relation to athlete satisfaction for either of the 5 dimensions. The findings in the current study found a similar interaction effect for the congruency of athlete preferences and perceptions. However, the results did not reflect an increase in performance as a result of the congruency.

5.2 Congruency of Athlete Perceptions and Preferences (H2)

The MML highlights the significance of the coach-athlete relationship, whereby optimizing athletic performance is related to a coach's leader behavior and athlete preferences in leader behavior. The Leadership Scale for Sport (LSS) measured five dimensions of leader behavior, in which preference and perception versions were used. Consequently, mean dimension scores for each version were compared using paired samples *t*-tests to examine the differences. Burdette (2008) administered independent *t*-tests to examine the reported leadership dimension mean scores of athletes compared to the coach. The purpose of this method helped detail whether coaches adjust their leadership behavior to match the athlete's preferences. The current study compared athlete perceptions to athlete preferences rather than coach's self-reported behaviors. A similar paired samples t-test analysis was applied to athlete preference and perception mean scores to identify the differences, whereby non-significant differences indicate similar mean scores. A coach sensitive to their athlete's preferences in leadership would demonstrate similar behaviors in a practice or game situation. Therefore, it was hypothesized that athlete perception of coach's behavior scores of the LSS would be statistically similar to their preference scores.

The results indicated that the mean scores for four out of the five leader behavior dimensions did not differ significantly between perception and preference versions of the LSS.

However, training and instruction behavior was found to have significantly different mean scores, which indicated that athlete perceptions of coaching behavior did not match their preferred leader behavior. Athlete preferences in training and instruction behavior were higher than how they perceived their coach; and this effect was medium to large. Although the athletes highly rated training and instruction leadership behavior, they did not perceive a similar amount of that behavior from their coach.

Athlete perception scores of democratic, autocratic, social support, and positive feedback were not statistically different than their relative preference scores. Small to medium effect sizes were further found for democratic, autocratic and social support. These leader dimensions were found to have statistically similar means for athlete preference and perception of leader behavior. This may be reflective of their coach's ability to align their behaviors to their athletes' preferences to help optimize their performance on the field. Côté and Gilbert (2009) emphasized the coach-athlete relationship as a major contributing factor to athlete confidence and future sport participation. It is important that athletes feel supported through an environment that promotes autonomous decisions, connectedness to peers, and competence development (Côté & Gilbert, 2009). Côté and Gilbert (2009) outlined that confidence, connection and character/caring are all related to athlete competence and that reinforcing this relationship can provide a learning environment that encourages growth.

Burdette (2008) reported that the mean scores between athletes and coaches substantially differed for democratic behavior, in which a significantly large effect of 1.29 was found (the type of effect size was not reported but can be assumed it was Cohen's d as it can be greater than 1). Student-athletes in Burdette's (2008) study reported greater preference scores in democratic behavior in comparison to their coach's self-reported behavior. This difference in mean scores

for these two leadership dimensions highlights an important aspect of the coach-athlete

relationship. In effect, athletes appear to expect greater democratic behaviors from their coach.

An increase in democratic leader behavior would encourage decision-making, responsibility,

accountability, satisfaction and assertiveness according to Souza and Oslin (2008). Burdette

(2008) further noted that mean scores between coaches and athletes were not statistically

different for training and instruction, autocratic, social support, and positive feedback

dimensions.

The results of the current study further identified a disparity in training and instruction

scores. Athletes scored highly in preferences for training and instruction behavior yet did not

perceive their coaches as exhibiting the same amount. Chelladurai (1989) emphasized for

coaches to employ a greater amount of training and instruction behavior by implementing more

rigorous training regiments and practices to improve performance. Training and instruction

behaviors help maintain a clear, coordinated, and well-structured environment directed at

optimizing athletic performance and satisfaction (Chelladurai, 1989). The participants in this

study did not perceive their coaches to exhibit enough training and instruction leader behavior.

However, this may represent a change in coaching leadership. In their study, Riemer and Toon

(2001) noted that mean preference scores were much higher than perception scores 20 years prior

to this study. The current findings may reflect the change or evolution of coaching to lessen the

gap between athlete leader preferences and perceptions. Further research would prove beneficial

for coach development and could be implemented in teaching leadership strategies in sport

organizations.

5.3 Leadership Behaviors Correlated with Performance (H3)

A correlations analysis was used to identify the relationships that exist between athlete perceptions of leader behavior and their performance. Medium to large negative correlations were found for training and instruction, democratic behavior, social support and positive feedback perceptions on fielder's OPS. This identified that fielder's performance decreased as player perceptions of their coach's leader behavior increased in these four dimensions. Training and instruction leader behavior was the only dimension to have a significant negative correlation. This finding is particularly interesting considering that training and instruction mean scores, as well as positive feedback, were highest in athlete's preferences for leader behavior. Previous research regarding training and instruction behaviors from coaches has highlighted a positive relationship with satisfaction. Previous research identified that positive feedback behavior helps foster autonomy, competence, and relatedness (Mouratidis et al., 2008). Riemer and Chelladurai (1995) reinforced this finding, as the mean scores for these two leader dimensions were higher than the democratic, autocratic, and social support mean scores.

Similar results were identified for pitcher performance in relation to leader behavior. In this case, a lower ERA for a pitcher indicated greater performance than a higher ERA in that it measures the number of runs recorded on average. Positive feedback and training and instruction leader behaviors both positively correlated with pitcher performance. Riemer and Toon (2001) noted that players of a lesser ability preferred that their coach exhibit more positive feedback than compared to other athletes. The current study found that positive feedback significantly correlated with performance and identified a large effect, whereas training and instruction indicated a medium to large effect.

These findings do not reflect the results of previous research by Riemer and Chelladurai (1995) as they found that these two leader dimensions positively correlated with satisfaction. Pitchers that perceived high levels of positive feedback from their coaches had greater ERA's, which effectively relates to lower performance. However, the correlation analysis could be interpreted differently, in which higher-performing athletes may not require more training and instruction or positive feedback behavior.

Coaches likely focus more instruction and feedback towards lower performing members with the intention of improving the athlete's skill. This may provide insight into why lower performing athletes were found to perceive higher amounts of these leader behaviors in this study. In addition, the higher performing athletes may have received less training and instruction or positive feedback behaviors from their coach. This is likely a reflection of coaches designating more feedback and instructional behaviors to the other team members that may benefit more from instruction and feedback.

5.4 Limitations and Future Research

5.4.1 Sample Size

Thoroughly examining the limitations of this research study provides insight into the unexpected results of this study. One noticeable limitation of this research is the number of participants that were recruited for the survey. The response rate was 29% of a potential 178 athletes from the 7 teams. A sample of 51 athletes is less than the typical sample size for an Athlete Preference survey that ranges from 80 to 300 participants (e.g. Baker et al., 2007; Chelladurai & Carron, 1983; Chelladurai et al., 1988; Chelladurai, 1984; Chelladurai et al., 1989; Gardiner et al., 1996; Høigaard et al., 2008; Hollembeak & Amorose, 2005; Neil & Kirby, 1985; Riemer & Chelladurai, 1995; Riemer & Toon, 2001; Schliesman, 1987; Sherman et al., 2000;

Terry and Howe, 1984). A small sample may have led to means that were not representative of normal athlete baseball performance; a larger sample size would have increased the statistical power of the analysis.

The current study utilized an online, self-administered survey. More specifically, athletes were sent a copy of the preference and perception versions Leadership Scale for Sport through a Google Form that collected the responses online. Moen et al. (2014) also surveyed participants using an online method and noted that a small sample size ($n = 168$) may have influenced their results. Although the online method was used to recruit teams across Canada, this recruitment method may have deterred athletes from responding to the survey. Athletes may have felt detached from the study or simply ignored the initial email from the organization to participate. Furthermore, the emails sent to the athletes may have been forgotten or placed inappropriately in their junk mail folder. However, this was the optimal method employed to retrieve data from teams in different leagues and locations around the country. With university teams located in Montreal, Ottawa, Toronto, and cities further west, face-to-face survey administration or hard copy mailed versions were not possible considering this was an unfunded research project. Future research is recommended to develop greater relationships with the sports administrative organization to increase manager and coach participation and administer surveys face-to-face by visiting each team in person.

5.4.2 Group Division

The sport of baseball is an excellent source to study factors affecting performance simply because it is standard practice to update various statistical records throughout the season. However, baseball athletes at this level specialize in either a fielding or pitching position, in which fielders do not share the same statistical categories as pitchers. However, this led to a

limitation that was unforeseen at the start of data collection and recognized after analysis in that the subdivisions of the groups were too small. This subdivision did not affect the paired samples *t*-tests but was a factor for the regression and correlation analysis. Although this step was necessary, the unanticipated division of the 51 athletes led to 2 smaller groups. Two solutions can be implemented to correct this error if the study is replicated: 1) recruiting a larger sample size to ensure a minimum of 80 participants per position or 2) surveying either fielders or pitchers only to focus on one position rather than two. Simply increasing each subdivision to a minimum of 30 participants would provide a sufficient sample size and be more representative of the university and CEGEP athlete population.

The nesting of the data (players – coaches – teams – divisions) was not considered in the current study. Thus, the fact that players on the same team would likely report more similar scores was not addressed in the analysis, which violates the assumption of independence. Future research should use hierarchical linear modelling in order to account for players on the same team sharing variance according to their common coach.

5.4.3 Length of Season

The typical length of the CCBA or RSEQ fall league requires teams to play 10 to 16 league games, and any playoff games are for teams that qualify. The data collected was based solely on seasonal performance to ensure that each team was equal across the standing for games played. However, this schedule is not representative of a summer league, where teams usually play a minimum of 24 games at the recreational level and upwards of 40 games at the competitive level. These approximations exclude added tournaments and playoff games, elevating a team's potential games played between 30 and 60. These athletes would have played more games with their summer teams in comparison to their university/CEGEP team. A

limitation of the CCBA and RSEQ league is that the season is much shorter and that the

performance statistics recorded are potentially not reflective of an athlete's true capabilities.

5.4.4 Different Sports, Season Length and Competition Level

The season length of the CCBA and RSEQ is quite small (10 to 20 games) and takes

place in the fall, where the number of games is restricted due to weather. The fall season does not

adequately reflect the average season length of a baseball athlete in that they typically play

throughout the summer league. Summer seasons are much longer, and the number of games

typically range from 30 to 60 seasonal games depending on the athlete's level. This also does not

include pre-season, tournament or playoff games that elevate an athlete's total games. Future

research should evaluate an athlete's performance throughout an entire summer season rather

than a shortened fall season. Lastly, Terry (1984) studied differences in leader preferences in

relation to competition level. Differences were found in democratic and social support behavior

in that elite athletes scored higher on these dimensions. Terry (1984) suggested that preferences

in these two specific dimensions may be attributable to the level of commitment in elite sport.

Athletes tend to sacrifice their social life and commit themselves fully to their sport, whereby the

coach is perceived as a figure to fulfill that lack of social support. Future research should aim to

confirm this finding and outline the benefits of full-time commitments to sport.

5.4.5 Motivation as a factor of Performance

The current research study analyzed performance in relation to the congruency among

coaches and athletes in baseball. Future research in sport should consider motivation as a

contributing factor to athletic performance. Each dimension of leader behavior may prove to

motivate athletes differently, in which identifying the more popular coaching behaviors that

increase performance. Motivation is a major factor in sport and detailing how coach's leader

behaviors affect athlete performance will help contribute to the existing literature. For example, research conducted by Amorose and Horn (2000) hypothesized that athletes on scholarship would score lower for intrinsic motivation compared to non-scholarship individuals. However, the opposite effect was demonstrated in that scholarships may effectively increase intrinsic motivation, as it conveyed higher levels of perceived competence. Amorose and Horn (2000) further identified that coaches could facilitate the development of intrinsic motivation in athletes when they avoid autocratic behaviors while exhibiting a high frequency of positive, encouraging and informational feedback.

Similar to Amorose and Horn (2000), Hollembeak and Amorose (2005) specifically analyzed the level of intrinsic motivation in relation to perceptions of their coach's behaviors. Results of their research demonstrated a relationship between intrinsic motivation and coaching behaviors. In addition, Hollembeak and Amorose (2005) confirmed that democratic behaviors positively impact athlete autonomy, and autocratic behaviors negatively influence autonomy. Further analyses of the results indicated that the autocratic leadership style had a negative relationship with athlete relatedness, as individuals are likely to feel less connected to these types of coaches (Hollembeak & Amorose, 2005).

Lastly, Mouratidis et al. (2008) conducted an experimental study with physical education students on a performance task and a correlational analysis that examined positive competence feedback on students' well-being, performance, and intention to participate. The first study indicated that feedback positively predicted competence satisfaction, as well as intentions to participate, vitality and autonomous motivation. The second study demonstrated a positive relationship between autonomous motivation and competence satisfaction. Mouratidis et al. (2008) noted that teachers and coaches who praise group members for accomplishing a task had

increased perceptions of self-competence, which may lead to more volitional and autonomous actions that help them feel less demotivated and helpless. Promoting these motivational behaviors can further lead to increased athletic or academic performance, and further investing in this relationship is essential for sport. The evidence supporting the relationship between leader behaviors and motivation should be considered for future research. As the current study focused specifically on coaching behaviors and athlete performance, future research should continue to detail this relationship while highlighting motivation as an additional factor. The purpose is to educate coaches on the leader behaviors that facilitate the development of intrinsic motivation, which can positively contribute to athlete's self-esteem, self-confidence, and intentions to participate.

5.5 Conclusion

This research study examined the congruence of athlete preference and perceptions of leader behavior in relation to their baseball performance. The findings exemplified that congruency of leader behaviors did not necessarily contribute to an increase of individual performance, except in the case of social support in pitcher performance. A comparison of preference and perception scores also determined that athletes did not necessarily perceive their coaches to exhibit behaviors that aligned with their preferences for each leader dimension. Furthermore, the correlation analysis indicated that leader behavior perceptions decreased in relation to an increase in performance. The results of this study confirm the intricacy of the coach-athlete relationship and the need for future research to continue examining this construct. Further research is required to validate the theoretical concept of the congruence hypothesis, as the MML is a critical component in sport leadership literature. It was expected that individual

performance would increase in relation to coach-athlete congruence, yet the results were inconsistent to other studies.

Future studies should also aim to explain differences in preferences and perceptions of leader behavior. More specifically, athletes preferred a higher amount of leader behavior in two specific dimensions that were statistically different from their coaches. Coaches must recognize athlete preferences in leader behaviors and aim to align their behaviors in a similar fashion. Accomplishing this may positively contribute to the development, satisfaction and performance of their athletes. The long-term goal of this research study is to enhance the resources available to coaches and identify the potential factors that optimize athletic performance.

References

Amorose, A. J., & Horn, T. S. (2000). Pre-to post-season changes in the intrinsic motivation of first year college athletes: Relationships with coaching behaviour and scholarship status. *Journal of Applied Sport Psychology*, *13*(4), 355-373.

Andrew, D. P. S. (2004). *Effect of congruence of leadership behaviors on motivation, commitment, and satisfaction of college tennis players* (Unpublished doctoral dissertation). Florida State University, Florida, United States.

Andrew, D. P. (2009). The impact of leadership behavior on satisfaction of college tennis players: A test of the leadership behavior congruency hypothesis of the Multidimensional Model of Leadership. *Journal of Sport Behavior*, *32*(3), 261-277.

Aristotelis, G., Kaloyan, K., & Evangelos, B. (2013). Leadership style of Greek soccer coaches. *Journal of Physical Education and Sport*, *13*(3), 348.

Afsar, B., Badir, Y. F., Saeed, B. B., & Hafeez, S. (2017). Transformational and transactional leadership and employee's entrepreneurial behavior in knowledge–intensive industries. *The International Journal of Human Resource Management*, *28*(2), 307-332.

Baker, J., Côté, J., & Hawes, R. (2000). The relationship between coaching behaviours and sport anxiety in athletes. *Journal of Science and Medicine in Sport*, *3*(2), 110-119.

Baker, J., Yardley, J. & Côté, J. (2003). Coach behaviours and athlete satisfaction in team and individual sports. *International Journal of Sport Psychology*, *341*, 226-239.

Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational dynamics*, *18*(3), 19-31.

Bass, B. M., & Steidlmeier, P. (2006). Ethics, character, and authentic transformational leadership. *Ethics*, *12*(42), 1-24.

Balyi, I., Way, R., Norris, S., Cardinal, C., & Higgs, C. (2005). Canadian sport for life: Long-term athlete development resource paper. *Vancouver, BC: Canadian Sport Centres*.

Bum, C. H., & Shin, S. H. (2015). The relationships between coaches' leadership styles, Competitive State Anxiety, and Golf Performance in Korean Junior Golfers. *Sport Science Review*, *24*(5-6), 371-386.

Burdette, G. P. (2008). *Examination of preferred coaching behaviors as predicted by athlete gender, race, and playing time*. [Electronic Theses and Dissertations, Georgia Southern University]. Digital Commons.

Chelladurai P. & Carron A. (1983). Athletic maturity and preferred leadership. *Journal of Sport Psychology*, 5, 371–380.

Chelladurai, P. (1984). Discrepancy between preferences and perceptions of leadership behaviour and satisfaction of athletes in varying sports. *Journal of Sport Psychology*, *6*(1), 27-41.

Chelladurai, P. (1989). Manual for the leadership scale for sports. *Unpublished manuscript. The University of Western Ontario*.

Chelladurai, P. (2007). Leadership in sports. *Handbook of Sport Psychology, Third Edition*, 111-135.

Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behaviour in sports: Development of a leadership scale. *Journal of Sport Psychology*, *2*(1), 34-45.

Chelladurai, P., Imamura, H., Yamaguchi, Y., Oinuma, Y., & Miyauchi, T. (1988). Sport leadership in a cross-national setting: The case of Japanese and Canadian university athletes. *Journal of Sport and Exercise Psychology*, *10*(4), 374-389.

Chia, J. S., Pyun, D. Y., & Kwon, H. H. (2015). The impact of congruence between perceived and preferred leadership on satisfaction among college student-athletes in Singapore. *Asia Pacific Journal of Education*, *35*(4), 498-513.

Côté, J. (1999). The influence of the family in the development of talent in sport. *The sport psychologist*, *13*(4), 395-417.

Côté, J., & Gilbert, W. (2009). An integrative definition of coaching effectiveness and expertise. *International journal of sports science & coaching*, *4*(3), 307-323.

Côté, J., & Sedgwick, W. A. (2003). Effective behaviours of expert rowing coaches: A qualitative investigation of Canadian athletes and coaches. *International Sports Journal*, *7*(1), 62-77.

Dhand, N. K., & Khatkar, M. S. (2014). *Sample size calculator for comparing two paired means.* Statulator: An online statistical calculator. https://statulator.com/SampleSize/ss2PM.html

De Cremer, D. (2006). Affective and motivational consequences of leader self-sacrifice: The moderating effect of Autocratic leadership. *The Leadership Quarterly*, *17*(1), 79-93.

de Sousa Fortes, L., de Vasconcelos, G. C., dos Santos Silva, D. M., dos Santos Oliveira, G. J., & Ferreira, M. E. C. (2017). Disordered eating behaviors in young volleyball players: can be the coach's leadership style an intervenient factor? *Brazilian Journal of Kinanthropometry and Human Performance*, *19*(1), 84-95.

Dixon, M., Turner, M. J., & Gillman, J. (2017). Examining the relationships between challenge and threat cognitive appraisals and coaching behaviours in football coaches. *Journal of Sports Sciences*, *35*(24), 2446-2452.

Drinkwater, E. (2008). Applications of confidence limits and effect sizes in sport research. *The Open Sports Sciences Journal*, *1*(1) 3-4.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Sage Publications.

Gardner, D. E., Shields, D. L. L., Bredemeier, B. J. L., & Bostrom, A. (1996). The relationship between perceived coaching behaviours and team cohesion among baseball and softball players. *The Sport Psychologist*, *10*(4), 367-381.

Gastil, J. (1994). A definition and illustration of Democratic leadership. *Human Relations*, *47*(8), 953-975.

Høigaard, R., Jones, G. W., & Peters, D. M. (2008). Preferred coach leadership behaviour in elite soccer in relation to success and failure. *International Journal of Sports Science & Coaching*, *3*(2), 241-250.

Hollembeak, J., & Amorose, A. J. (2005). Perceived coaching behaviours and college athletes' intrinsic motivation: A test of self-determination theory. *Journal of Applied Sport Psychology*, *17*(1), 20-36.

Horn, T. S. (2008). Coaching effectiveness in the sport domain. In T. S. Horn (Ed.), *Advances in sport psychology* (pp. 239–267,455–459). Human Kinetics.

Jowett, S., & Chaundy, V. (2004). An investigation into the impact of coach leadership and coach-athlete relationship on group cohesion. *Group Dynamics: Theory, Research, and Practice*, *8*(4), 302-311.

Kao, S. F., Chen, Y. F., Watson, J. C., & Halbrook, M. (2015). Relationships between the congruence of required and perceived leadership behavior and satisfaction in athletes. *Psychological reports*, *117*(2), 391-405.

Lee, Y. H., Hwang, S., & Choi, Y. (2017). Relationship between coaching leadership style and young athletes' social responsibility. *Social Behavior and Personality: An International Journal*, *45*(8), 1385-1396.

Lerstrom, A. (2008). Advising Jay: A case study using a situational leadership approach. *NACADA Journal, 28*(2), 21-27.

Loughead, T. M. (2017). Athlete leadership: A review of the theoretical, measurement, and empirical literature. *Current Opinion in Psychology*, 16, 58–61.

Loughead, T. M., & Hardy, J. (2005). An examination of coach and peer leader behaviours in sport. *Psychology of Sport and Exercise*, *6*(3), 303-312.

Moen, F., Høigaard, R., & Peters, D. M. (2014). Performance progress and leadership behavior. *International Journal of Coaching Science*, *8*(1), 69-81.

Mouratidis, A., Vansteenkiste, M., Lens, W., & Sideridis, G. (2008). The motivating role of Positive Feedback in sport and physical education: Evidence for a motivational model. *Journal of Sport and Exercise Psychology*, *30*(2), 240-268.

Neil, G. I., & Kirby, S. L. (1985). Coaching styles and preferred leadership among rowers and paddlers. *Journal of Sport Behavior*, *8*(1), 3-17.

Nolan, S. A., & Heinzen, T. (2010). *Essentials of statistics for the behavioral sciences*. Macmillan Learning Worth.

Rees, T., Mitchell, I., Evans, L., & Hardy, L. (2010). Stressors, Social Support and psychological responses to sport injury in high-and low-performance standard participants. *Psychology of Sport and Exercise*, *11*(6), 505-512.

Riemer, H. A., & Chelladurai, P. (1995). Leadership and satisfaction in athletics. *Journal of Sport and Exercise Psychology*, *17*(3), 276-293.

Riemer, H. A., & Chelladurai, P. (1998). Development of the Athlete Satisfaction Questionnaire (ASQ). *Journal of Sport & Exercise Psychology*, *20*(2), 127–156.

Riemer, H. A., & Toon, K. (2001). Leadership and satisfaction in tennis: Examination of congruence, gender, and ability. *Research Quarterly for Exercise and Sport*, *72*(3), 243-256.

Rowold, J. (2006). Transformational and transactional leadership in martial arts. *Journal of Applied Sport Psychology, 18*(4), 312-325.

Saha, S. K. (1979). Contingency theories of leadership: A study. *Human Relations*, *32*(4), 313-322.

Sarı, İ., & Bayazıt, B. (2017). The relationship between perceived coaching behaviours, motivation and self-efficacy in wrestlers. *Journal of Human Kinetics*, *57*(1), 239-251.

Sarı, İ., Soyer, F., & Gülle, M. (2014). The role of perceived leadership behaviours as predictor of assertiveness levels in individual sport athletes. *Procedia-Social and Behavioural Sciences*, *152*, 446-450.

Schliesman, E. S. (1987). Relationship between the congruence of preferred and actual leader behaviour and subordinate satisfaction with leadership. *Journal of Sport Behaviour*, *10*(3), 157.

Sherman, C., Fuller, R., & Speed, H. (2000). Gender comparisons of preferred coaching behaviours in Australian sports. *Journal of Sport Behaviour*, *23*(4), 389.

Smoll, F. L., Smith, R. E., Barnett, N. P., & Everett, J. J. (1993). Enhancement of children's self-esteem through Social Support training for youth sport coaches. *Journal of applied psychology*, *78*(4), 602-610.

Soper, D.S. (2021). A-priori Sample Size Calculator for Multiple Regression [Software]. Available from https://www.danielsoper.com/statcalc/

Souza, A. D., & Oslin, J. (2008). A player-centered approach to coaching. *Journal of Physical Education, Recreation & Dance*, *79*(6), 24-30.

Sullivan, P. J., & Kent, A. (2003). Coaching efficacy as a predictor of leadership style in intercollegiate athletics. *Journal of Applied Sport Psychology*, *15*(1), 1-11.

Terry, P. C. (1984). The coaching preferences of elite athletes competing at Universiade'83. *Canadian Journal of Applied Sport Sciences*, *9*(4), 201-208.

Terry, P. C., & Howe, B. L. (1984). Coaching preferences of athletes. *Canadian Journal of Applied Sport Sciences*, *9*(4), 188-193.

Vallée, C. N., & Bloom, G. A. (2016). Four keys to building a championship

culture. *International Sport Coaching Journal*, *3*(2), 170-177.

Van Vugt, M., Jepson, S. F., Hart, C. M., & De Cremer, D. (2004). Autocratic leadership in

social dilemmas: A threat to group stability. *Journal of experimental social psychology*,

40(1), 1-13.

Vidal, G. G., Campdesuñer, R. P., Rodríguez, A. S., & Vivar, R. M. (2017). Contingency theory

to study leadership styles of small businesses owner-managers at Santo Domingo,

Ecuador. *International Journal of Engineering Business Management*, *9*, 1-11.

Zhang, J., Jensen, B. E., & Mann, B. L. (1997). Modification and revision of the leadership scale

for sport. *Journal of Sport Behaviour*, *20*(1), 105-122.

Appendix A: Survey

Background Information

1)   Please indicate the name of your school: _____

2)   Please indicate your jersey number for the Fall 2017 season: _____

3)   What is the total amount of experience playing baseball (in years) _____

Leadership Scale for Sport

Athlete Preference Version

Each of the following statements describe a specific behaviour that a coach may exhibit. For each statement there are five alternatives:

1. NEVER 2. SELDOM (about 25% of the time); 3. **OCCASIONALLY** (50% of the time); 4. **OFTEN** (about 75% of the time); 5. **ALWAYS**

Please indicate your preference by placing an "X" in the appropriate space. You are free to skip questions if you do not wish to answer. Please note that this is <u>not an evaluation</u> of your present coach or any other coach. It is your own personal preference that is required. There are no right or wrong answers. Your spontaneous and honest response is important for the success of the study.

I prefer my coach to:

1. See to it that athletes work to capacity.   ___ ___ ___ ___

2. Ask for the opinion of the athletes on strategies for specific competitions.   ___ ___ ___ ___

3. Help athletes with their personal problems.   ___ ___ ___ ___

4. Compliment an athlete for good performance in front of others.   ___ ___ ___ ___

5. Explain to each athlete the techniques and tactics of the sport.   ___ ___ ___ ___

6. Plan relatively independent of the athletes.   ___ ___ ___ ___

7. Help members of the group settle their conflicts.   ___ ___ ___ ___

8. Pay special attention to correcting athletes' mistakes.   ___ ___ ___ ___

9. Get group approval on important matters before going ahead. ___ ___ ___ ___

10. Tell an athlete when the athlete does a particularly good job. ___ ___ ___ ___

11. Make sure that the coach's function in the team is understood by all athletes. ___ ___ ___

12. Not explain his/her actions. ___ ___ ___ ___

13. Look out for the personal welfare of the athletes. ___ ___ ___ ___

14. Instruct every athlete individually in the skills of the sport. ___ ___ ___ ___

15. Let the athletes share in decision making. ___ ___ ___ ___

16. See that an athlete is rewarded for a good performance. ___ ___ ___ ___

17. Figure ahead on what should be done. ___ ___ ___ ___

I prefer my coach to:

18. Encourage athletes to make suggestions for ways to conduct practices. ___ ___ ___ ___

19. Do personal favours for the athletes. ___ ___ ___ ___

20. Explain to every athlete what should be done and what should not be done. ___ ___ ___

21. Let the athletes set their own goals. ___ ___ ___ ___

22. Express any affection felt for the athletes. ___ ___ ___ ___

23. Expect every athlete to carry out one's assignment to the last detail. ___ ___ ___ ___

24. Let the athletes try their own way even if they make mistakes. ___ ___ ___ ___

25. Encourage the athlete to confide in the coach. ___ ___ ___ ___

26. Point out each athlete's strengths and weaknesses. ___ ___ ___ ___

27. Refuse to compromise on a point. ___ ___ ___ ___

28. Express appreciation when an athlete performs well. ___ ___ ___ ___

29. Give specific instructions to each athlete on what should be done in

every situation. ___ ___ ___ ___

30. Ask for the opinion of the athletes on important coaching matters. ___ ___ ___ ___

31. Encourage close and informal relations with athletes. ___ ___ ___ ___

32. See to it that the athletes' efforts are coordinated. ___ ___ ___ ___

33. Let the athletes work at their own speed. ___ ___ ___ ___

34. Keep aloof from the athletes. ___ ___ ___ ___

35. Explain how each athlete's contribution fits into the total picture. ___ ___ ___ ___

36. Invite the athletes home. ___ ___ ___ ___

37. Give credit when it is due.   ___ ___ ___ ___

38. Specify in detail what is expected of athletes.   ___ ___ ___ ___

39. Let the athletes decide on plays to be used in a game.   ___ ___ ___ ___

40. Speak in a manner which discourages questions.   ___ ___ ___ ___

Athlete's Perception of Coach's Behaviour

Each of the following statements describe a specific behaviour that a coach may exhibit. For each statement there are five alternatives:

1. NEVER 2. SELDOM (about 25% of the time); 3. **OCCASIONALLY** (50% of the time); 4. **OFTEN** (about 75% of the time); 5. **ALWAYS**

Please indicate your preference by placing an "X" in the appropriate space. You are free to skip questions if you do not wish to answer. Please note that this is <u>not an evaluation</u> of your present coach or any other coach. It is your own personal preference that is required. There are no right or wrong answers. Your spontaneous and honest response is important for the success of the study.

My coach:

1. Sees to it that athletes work to capacity. ___ ___ ___ ___

2. Asks for the opinion of the athletes on strategies for specific competitions. ___ ___ ___ ___

3. Helps athletes with their personal problems. ___ ___ ___ ___

4. Compliments an athlete for good performance in front of others. ___ ___ ___ ___

5. Explains to each athlete the techniques and tactics of the sport. ___ ___ ___ ___

6. Plans relatively independent of the athletes. ___ ___ ___ ___

7. Helps members of the group settle their conflicts. ___ ___ ___ ___

8. Pays special attention to correcting athletes' mistakes. ___ ___ ___ ___

9. Gets group approval on important matters before going ahead. ___ ___ ___ ___

10. Tells an athlete when the athlete does a particularly good job. ___ ___ ___ ___

11. Makes sure that the coach's function in the team is understood by all athletes. ___ ___ ___

12. Does Not explain his/her actions. ___ ___ ___ ___

13. Looks out for the personal welfare of the athletes. ___ ___ ___ ___

14. Instructs every athlete individually in the skills of the sport. ___ ___ ___ ___

15. Lets the athletes share in decision making. ___ ___ ___ ___

16. Sees that an athlete is rewarded for a good performance. ___ ___ ___ ___

17. Figures ahead on what should be done. ___ ___ ___ ___

   I prefer my coach to:

18. Encourages athletes to make suggestions for ways to conduct practices. ___ ___ ___ ___

19. Does personal favours for the athletes. ___ ___ ___ ___

20. Explains to every athlete what should be done and what should not be done. ___ ___ ___

21. Lets the athletes set their own goals. ___ ___ ___ ___

22. Expresses any affection felt for the athletes. ___ ___ ___ ___

23. Expects every athlete to carry out one's assignment to the last detail. ___ ___ ___ ___

24. Lets the athletes try their own way even if they make mistakes. ___ ___ ___ ___

25. Encourages the athlete to confide in the coach. ___ ___ ___ ___

26. Points out each athlete's strengths and weaknesses. ___ ___ ___ ___

27. Refuses to compromise on a point. ___ ___ ___ ___

28. Expresses appreciation when an athlete performs well. ___ ___ ___ ___

29. Gives specific instructions to each athlete on what should be done in

   every situation. ___ ___ ___ ___

30. Asks for the opinion of the athletes on important coaching matters. ___ ___ ___ ___

31. Encourages close and informal relations with athletes. ___ ___ ___ ___

32. Sees to it that the athletes' efforts are coordinated. ___ ___ ___ ___

33. Lets the athletes work at their own speed. ___ ___ ___ ___

34. Keeps aloof from the athletes. ___ ___ ___ ___

35. Explain how each athlete's contribution fits into the total picture. ___ ___ ___ ___

36. Invites the athletes home. ___ ___ ___ ___

37. Gives credit when it is due. ___ ___ ___ ___

38. Specifies in detail what is expected of athletes. ___ ___ ___ ___

39. Lets the athletes decide on plays to be used in a game. ___ ___ ___ ___

40. Speaks in a manner which discourages questions. ___ ___ ___ ___

LSS Scoring Grid

Scoring

The items under each dimension of leader behavior are as follows:

Training and Instruction Behavior)	Democratic Behavior	Autocratic Behavior	Social Support	Positive Feedback (Rewarding
1	2	6	3	4
5	9	12	7	10
8	15	27	13	16
11	18	34	19	28
14	21	40	22	37
17	24		25	
20	30		31	
23	33		36	
26	39			
29				
32				
35				
38				

The scoring of each of the items is as follows:

Always	= 5
Often	= 4
Occasionally	= 3
Seldom	= 2
Never	= 1

The sum of the scores on the items in a dimension is divided by the number of items in that dimension to derive the dimension score for a subject. It is advisable to carry these scores to at least four decimals in statistical analyses.

Appendix B: Organizational Recruitment Email

MEMORIAL
UNIVERSITY

St. John's, NL, Canada A1C 5S7.

Dear _____,

My name is Christopher Haddad, and I am a student in the School of Human Kinetics and Recreation at Memorial University of Newfoundland. I am conducting a research project called "Association of Coaching Leadership Behaviours and Player Preference in Elite Athletic Performance in University and Cegep Baseball Across Canada" for my master's degree under the supervision of Angela Loucks-Atkinson. The purpose of this study is to explore the similarities between a coach's leadership style and an athlete's preference in relation to performance in elite baseball players.

I am contacting you to invite your baseball team to participate in an online survey in which you will be asked to answer questions regarding perceptions of coaching leadership in sport and it relation to athletes. Participation will require 10 to 20 minutes of your time.

If your organization is interested in participating in this study, please forward this email to the head coach and respective athletes of your baseball team. To complete the survey simply click on the link provided below.

If you are a **HEAD COACH**, please click this link:

https://docs.google.com/forms/u/1/d/12o-w5f09r8Q8Io1e80KNmowoOIZqKLQUbDNncisfWDI/edit?usp=drive_web

If you are an **ATHLETE**, please click this link:

https://docs.google.com/forms/u/1/d/12o-w5f09r8Q8Io1e80KNmowoOIZqKLQUbDNncisfWDI/edit?usp=drive_

If you have any questions about me or my project, please contact me by email at chaddad@mun.ca or by phone at (514) 708-3884.

Thank-you in advance for considering my request,

Christopher Haddad

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as your rights as a participant, you may contact the Chairperson of the ICEHR at icehr.chair@mun.ca or by telephone at 709-864-2861.

Informed Consent (Athlete)

MEMORIAL
UNIVERSITY

Title: Association of Coaching Leadership Behaviours and Player Preference in Elite Athletic Performance in University and Cegep Baseball across Canada

Researcher(s): Christopher Haddad, Master of Physical Education Candidate, chaddad@mun.ca, (514)7083884

Supervisor(s): Dr. Angela Loucks-Atkinson, Associate Professor, School of Human Kinetics and Recreation, Memorial University, aloucksa@mun.ca

You are invited to take part in a research project entitled *"Association of Coaching Leadership Behaviours and Player Preference in Elite Athletic Performance in University and Cegep Baseball across Canada"*

This form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. It also describes your right to withdraw from the study. In order to decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Take time to read this carefully and to understand the information given to you. Please contact the researcher, Christopher Haddad, if you have any questions about the study or would like more information before you consent.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

Introduction:
My name is Christopher Haddad and I am a Master's of Physical Education student in the Human Kinetics and Recreation department of Memorial University. As part of my Master's thesis, I am conducting research under the supervision of Dr. Angela Loucks-Atkinson

Purpose of Study:
Thank you for your interest in my study "Association of Coaching Leadership Behaviours and Player Preference in Elite Athletic Performance in University and Cegep Baseball Across Canada". The purpose of the study is to understand the association of coaching leadership styles and athlete preference in leadership in relation to performance in baseball. .

What You Will Do in this Study:
This is a survey based study, in which if you agree to participate in this study I would like you to answer the questions in the survey. Through these questions, I am interested in knowing what particular coaching behaviors you prefer as an athlete from your coach. Furthermore, I would like to know how you perceive your coach's leadership. I would also like to know about your background in baseball and the factors that contribute to your leadership perceptions and

preferences. I will also collect your baseball statistics for the fall 2017 season. The goal and purpose of this study is to connect and compare athlete and coach survey responses to performance data. Participation is not a requirement of the team or school, will not be reported to anyone, and coaches will not know who does or does not participate. Furthermore, coaches will not have access to the data. In order to ensure this, all athletes will be emailed separately to participate in this research study. In addition, all results are recorded directly to the google forms spreadsheet, of which I am the only one with access.

Length of Time:
The total amount of time required will take approximately 10 to 20 minutes to complete the survey.
.
Withdrawal from the Study:
Your participation in this study is voluntary, and <u>you can refuse to answer any questions</u> without giving any reason and without ramifications.
- You can stop and/or end their participation at any time during the data collection by closing survey. The data will not be calculated in the data analysis and can asked to be removed entirely from the study.
- Participation in this study is voluntary, and you can refuse to answer any questions without giving any reason and without ramifications. You are free to withdraw from participating in the study by closing their browser window or navigating away from the page, without having to give a reason and that doing so will not affect them now or in the future. You will be allowed to withdraw from the study up until June 10th, 2018.
- There is no consequence of withdrawal from the study. Any sensitive information from the participant will be kept confidential.
- The responses cannot be withdrawn after the survey is submitted.
- You can withdraw from the study at any point from the study up until June 10th, 2018. Following the June 10th, 2018 deadline, the data analysis process will commence and the the withdrawal period will come to an end.

Possible Benefits:
a) This survey study proves beneficial to sporting organizations, coaches and athletes. Coaches will be able to adjust their coaching styles to address the needs of their athletes and provide a fun learning environment, as well as optimize athletic performance. According to the congruence hypothesis, coaching leadership behaviors that are congruent with athlete preference will increase performance. The results of the study will enable sport organizations to educate coaches on significance of employing leadership styles that are congruent with athlete preferences. Sport organizations can create coaching clinics to teach coaches how to recognize the needs of the athletes, implement proper motivation techniques and understand which behaviours appropriately optimize athletic performance.

b) Examining the effects of varying coaching leadership styles is necessary to comprehend which factors best contribute towards athlete development. Previous research indicates that altering the traditional coach-centered mindset positively contributes their overall satisfaction. This study aims to address the gap in the research regarding coaching leadership styles and athletic performance. In particular, the purpose of this research is to delineate between the leadership styles that promote and deter performance, as well as

reinforce the verity of the congruence hypothesis in sport leadership. This is significant due to the scarcity of data that exists in the field of sport leadership and provides empirical evidence to reinforce these theoretical concepts.

Possible Risks:

There are minimal risks associated with this study such as you might feel overwhelmed while answering the survey, and it will take only approximately 10 to 20 minutes to complete the full survey. The purpose of this study is not to be critical of or evaluate you as a person. Coaches may feel ashamed that their leadership behaviours may have contributed to the team performance, or lack thereof. They could view this survey study as detrimental to their reputation and may not be willing to participate or answer in a biased fashion. However, this will be mitigated by the fact that all personal information and responses will be kept confidential. Information will be coded to maintain confidentiality for coaches and athletes in the study, in order to not directly mention which coaches positively or negatively affected their team's performance.

Furthermore, the dissemination of results will not include any names of coaches, athletes or university in order to maintain privacy. In order to maintain privacy, each member will be coded individually through the initial of their school name and jersey number. Thus, to reduce these risks, it will be stressed to athletes that only aggregate data will be published their specific opinions or data will not be shared with anyone.

Confidentiality:

The ethical duty of confidentiality includes safeguarding your identity, personal information, and data from unauthorized access, use, or disclosure.

This survey study will collect information on socio-demographics including the name of your school, jersey number and total years of experience. Your name will not be required for this survey study. Your results will be coded to protect privacy of personal information. There will not be any personal information concerning the coach or athlete disseminated in the results. It is difficult to completely achieve anonymity for this study, as the baseball statistics with each player's names, school and jersey numbers are available online for the CCBA. However, all sensitive information will be kept confidential.

A code for you will be generated based upon your school name and jersey number. Your code is formed by pairing the first letter of your school name and jersey number of the team. This information is a linking variable to your statistics for data analysis. However, it is possible that this information be linked to your identity and any personal information posted on the league website. Therefore, in order to mediate this concern, the personal information regarding your jersey number and school name will be kept confidential. Your information will be collected or entered into the database and data will only be reported in aggregate form (for entire sample), with no individual results available.

.

Anonymity:

Anonymity refers to protecting your identifying characteristics, such as name or description of physical appearance.

The participant's names will not be required for this survey study. Each participant will be coded to protect privacy of personal information. There will not be any personal information concerning

the coach or athlete disseminated in the results. The data will remain confidential and there will be no identifying values linking any of the information to the participant.

It is difficult to completely achieve anonymity for this study, as the baseball statistics with each player's names, school and jersey numbers are available online. Furthermore, as the primary researcher and alumni of the league, I may know some of the athletes or coaches that are current members of the Canadian Collegiate Baseball Association and RSEQ. Consequently, it is difficult to achieve a level of full anonymity due to these constraints. However, all sensitive information will be kept confidential to mitigate the limits of anonymity.

Recording of Data:
Coaches will be asked to provide the individual statistics of the fall 2017 season for their team to measure athlete performance. Survey data will not be recorded if the browser is closed without submitting the responses. Permission from the athlete is required for the usage of their performance data in the survey study.

Use, Access, Ownership, and Storage of Data:
The project team leader will have access to and ownership of the raw data in an excel file for all of the data obtained using Google Forms. The data will be transcribed into SPSS to be used for data analysis. All information about you provide on the survey will be kept confidential and limited to Dr. Angela Loucks-Atkinson. This information will not be shared with any other persons.
Data will be stored electronically on a password-protected and encrypted computer and access to the data will only be given to the research team and supervisor (Dr. Loucks-Atkinson).
Data will be kept for a minimum of five years, as required by Memorial University's policy on Integrity in Scholarly Research
Memorial University of Newfoundland policy does not require the destruction of data following the publication of the research.
Third-Party Data Collection and/or Storage:
Data collected from you as part of your participation in this project will be hosted and/or stored electronically by Google Forms and is subject to their privacy policy, and to any relevant laws of the country in which their servers are located. Therefore, anonymity and confidentiality of data may not be guaranteed in the rare instance, for example, that government agencies obtain a court order compelling the provider to grant access to specific data stored on their servers. If you have questions or concerns about how your data will be collected or stored, please contact the researcher and/or visit the provider's website for more information before participating. The privacy and security policy of the third-party hosting data collection and/or storing data can be found at: *https://www.google.com/policies/privacy/*.

Reporting of Results:
The data will be published as a thesis and possibly in journal articles.

A report of the final aggregate results (i.e., specific player, team, or coach data will not be shared with anyone) will be sent to the coaches to through email to share with their team.

Upon completion, my thesis will be available at Memorial University's Queen Elizabeth II library, and can be accessed online at: http://collections.mun.ca/cdm/search/collection/theses.

Sharing of Results with Participants:
A report of the final aggregate results (i.e., specific player, team, or coach data will not be shared with anyone) will be sent to the coaches to through email, which they will be able to share the results with their team. However, there will be no project website to where the information can be accessed. The study results will also be shared with the coaching and research communities as a conference presentation and journal manuscript.

Questions:
You are welcome to ask questions before, during, or after your participation in this research. If you would like more information about this study, please contact:
- Christopher Haddad, Master of Physical Education Candidate, chaddad@mun.ca, (514)7083884

or
- Dr. Angela Loucks-Atkinson, Associate Professor, School of Human Kinetics and Recreation, Memorial University, aloucksa@mun.ca

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Consent:
By completing this survey you agree that:
- You have read the information about the research.
- You have been advised that you may ask questions about this study and receive answers prior to continuing.
- You are satisfied that any questions you had have been addressed.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw participation from the study by closing your browser window or navigating away from this page, without having to give a reason and that doing so will not affect you now or in the future.

Regarding withdrawal <u>after</u> data collection:

- You understand that if you choose to withdraw, you may request that your data be removed from the study by contacting the researcher before June 10th, 2018

By consenting to this online survey, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Please retain a copy of this consent information for your records.

Clicking **NEXT** below and submitting this survey constitutes consent and implies your agreement to the above statements.

Consent for baseball statistics of fall 2017

Do you consent to the use of your fall 2017 baseball statistics for the purpose of this research?

      o Yes
      o No

Appendix C: Ethics Approval Letter

MEMORIAL UNIVERSITY

Interdisciplinary Committee on
Ethics in Human Research (ICEHR)

St. John's, NL Canada A1C 5S7
Tel: 709 864-2561 icehr@mun.ca
www.mun.ca/research/ethics/humans/icehr

ICEHR Number:	20182012-HK
Approval Period:	May 24, 2018 – May 31, 2019
Funding Source:	Not Funded
Responsible Faculty:	Dr. Angela Loucks-Atkinson
School of Human Kinetics and Recreation
Title of Project:	*Association of Coaching Leadership Behaviours and Player Preference Regarding Elite Athletic Performance in University and Cegep Baseball Across Canada*

May 24, 2018

Mr. Christopher Haddad
School of Human Kinetics and Recreation
Memorial University of Newfoundland

Dear Mr. Haddad:

Thank you for your correspondence of April 17, May 8 & 24, 2018 addressing the issues raised by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) concerning the above-named research project.

ICEHR has re-examined the proposal with the clarification and revisions submitted, and is satisfied that the concerns raised by the Committee have been adequately addressed. In accordance with the *Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS2)*, the project has been granted *full ethics clearance* to May 31, 2019. ICEHR approval applies to the ethical acceptability of the research, as per Article 6.3 of the *TCPS2*. Researchers are responsible for adherence to any other relevant University policies and/or funded or non-funded agreements that may be associated with the project.

If you need to make changes during the project, which may raise ethical concerns, please submit an amendment request with a description of these changes for the Committee's consideration. In addition, the *TCPS2* requires that you submit an annual update to ICEHR before May 31, 2019. If you plan to continue the project, you need to request renewal of your ethics clearance, and include a brief summary on the progress of your research. When the project no longer involves contact with human participants, is completed and/or terminated, you are required to provide the annual update with a final brief summary, and your file will be closed.

Annual updates and amendment requests can be submitted from your Researcher Portal account by clicking the *Applications: Post-Review* link on your Portal homepage.

We wish you success with your research.

Yours sincerely,

Kelly Blidook, Ph.D.
Vice-Chair, Interdisciplinary Committee on
Ethics in Human Research

KB/lw

cc: Supervisor – Dr. Angela Loucks-Atkinson, School of Human Kinetics and Recreation