



Prosocial and Antisocial Behaviour in Ice Hockey: The Role of the Team Climate, Motivation  
and Moral Disengagement

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### **Abstract**

“Understanding why athletes play sport might help to explain how they play it” (Ntoumanis & Standage, 2009, p. 367). According to Deci and Ryan’s Self Determination Theory (SDT; 2000, 2008; Ryan & Deci, 2002) individuals are motivated to engage in activities that will satisfy their basic psychological needs; relatedness (a feeling of connectedness and belonging with others), autonomy (feeling in control of your choices and experiencing the freedom of choice) and competence (belief about your ability in a certain setting). Basic needs satisfaction in turn, influences an athlete’s motivation (autonomous & controlled). Research has shown that an athlete’s motivation is associated with behavioural outcomes, including prosocial and antisocial variables (Hodge & Lonsdale, 2011; Ntoumanis & Standage, 2009). The purpose of this research project was to examine the team climate and the association it had with an athlete’s basic needs satisfaction (autonomy, competence and relatedness). In turn, this study explored what association these three basic psychological needs had with motivation and prosocial/antisocial behaviour in ice hockey players and whether the relationship between motivation and antisocial behaviour was mediated by moral disengagement.

New Zealand (39.7%) and Australian (11%) participants (n = 73, 52% female, M = 29.25 years) participants completed a questionnaire that assessed coach and teammate controlling and autonomy-supportive behaviours, satisfaction of basic psychological needs (autonomy, competence, relatedness), motivation, moral disengagement and prosocial/antisocial behaviour in sport. The data were analysed using multiple regression, canonical correlation and mediation analysis. Results indicated that greater levels of teammate and coach autonomy-support were positively associated with relatedness, autonomy and competence. For a controlling climate, teammate, but not coach controlling behaviours were negatively associated with relatedness, autonomy and competence. Basic needs satisfaction was positively associated with autonomous, but not controlled motivation. Baron and Kenny’s (1986) mediation analysis and bootstrap confidence intervals confirmed moral disengagement

as a mediator of the relationship between controlled motivation and antisocial behaviour. The current research project contributes to previous research by including teammates as an additional social agent and builds on previous work that has examined behavioural outcomes and their association with SDT variables. Future directions and practical recommendations are discussed in light of the current findings.

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## **Chapter One**

### **Introduction**

“Hockey culture is infused with long-established notions of how the game ought to be played...and since belligerence and aggressiveness are considered essential to the game and illegitimate tactics and deviant skills are included among the necessary criteria for player evaluation and selection, infraction of the rules and violence are unavoidable” (Vaz, cited in Pascall, 2000, p. 28).

High contact sports provide athletes with the opportunity to engage in a variety of prosocial and antisocial behaviours (Vallerand & Losier, 1994). Antisocial behaviour is an intentional act that disadvantages an opponent or teammate (e.g., intentionally injuring an opponent; intentionally breaking the rules of the game) (Sage, Kavussanu & Duda, 2006). Whereas, prosocial behaviour is an intentional act that advantages an opponent or teammate (Eisenberg & Fabes, 1998; Kavussanu & Boardley, 2009) (e.g., helping an opponent or teammate off the ground). Given that ice hockey is a collision-based sport (Bolan, 2010), and therefore generally aggressive which can cause injury (Pascall, 2000), it is important to understand why athletes may (or may not) choose to engage in antisocial behaviours.

Moral behaviour concerns behaviours that are good (i.e., prosocial behaviours) and bad (i.e., antisocial behaviours), and in sport morality is a topic that attracts attention from scholars (e.g. Ntoumanis & Standage, 2009) as well as mainstream media (e.g. Paul, 2009; Singer, 2010; Walter, 2009) because behaviour has consequences regardless of intentions (Shields & Bredemeier, 1995; Kavussanu, 2008). There are two aspects of morality; proactive and inhibitive (Boardley & Kavussanu, 2009). Proactive morality refers to the power to behave humanely; this is associated with prosocial behaviour. Conversely, the inhibitive aspect of morality is defined as the power to refrain from inhumane behaviour; which is associated with antisocial behaviour.

Prosocial and antisocial behaviour are two independent dimensions of morality (Kavussanu, 2006). That is, the absence of one does not necessarily assume the presence of

the other. For example, if an athlete exhibits high levels of prosocial behaviour, it does not mean they automatically present low levels of antisocial behaviour. Therefore, to exhibit high levels of morality, an individual must engage in prosocial behaviours (proactive morality) and avoid engaging in antisocial behaviours (inhibitive morality) (Kavussanu, Stamp, Slade, & Ring, 2009).

One theory that allows for the investigation of why individuals engage in certain actions, in this case, prosocial and/or antisocial behaviour, is Self Determination Theory (SDT; Deci & Ryan, 1985, 2000, 2008; Ryan & Deci, 2002). According to Deci and Ryan's (1985, 2000, 2008; Ryan & Deci, 2002) SDT, individuals whose motives are self-determined are more likely to act in a prosocial manner as more often than not, acting in an antisocial manner will prevent the satisfaction of basic psychological needs.

According to Deci and Ryan's SDT (1985, 2000, 2008; Ryan & Deci, 2002), individuals seek out situations that will satisfy their basic psychological needs of; autonomy (feeling in control of your choices and experiencing the freedom of choice), competence (belief about your ability in a certain setting), and relatedness (a feeling of connectedness and belonging with others in the social environment). Deci and Ryan (2002) suggest that when an environment supports an individual's basic needs for autonomy, competence and relatedness, an individual is said to be autonomously motivated. The outcomes of autonomous motivation allow for growth, general well-being and healthy functioning. Autonomous motivation is also positively associated with prosocial behaviour and negatively associated with antisocial behaviour in sport (Hodge & Lonsdale, 2011). However, when an environment prevents needs satisfaction, the result is controlled motivation and negative outcomes. For example, controlled motivation has been positively associated with antisocial behaviour and negatively associated with prosocial behaviour in sport (Hodge & Lonsdale, 2011).

Recently, Sheldon and Niemic (2006) proposed the concept of balanced basic psychological needs having a greater effect on outcome variables above the additive effect of satisfaction of the three individual basic needs. That is, individuals with balanced levels of autonomy, competence and relatedness reported greater levels of psychological well-being than individuals with unbalanced psychological needs (Sheldon & Niemic, 2006).

Another important personal factor influencing behaviour is the internal standards that individuals develop about what is right and wrong. This, in turn guides their moral actions (Bandura, 2002). Individuals often avoid behaviours that violate these moral standards because these behaviours have negative consequences (e.g., emotions such as guilt and shame or condemnation from those around us). Whether or not athletes choose to act in a moral way is a combination of cognitive, affective and social influences (Bandura, 2002). Individuals must combine relevant situational information with their internal standards when deciding whether their behaviour is morally appropriate. While our self-sanctions keep our moral actions in check, certain situations arise where we actively disengage our internal moral standards (Bandura, 1991); that is, 'moral disengagement'.

When an individual acts in a manner that conflicts with their internal moral standards, moral disengagement strategies can be used to reduce negative affect (Bandura, 1991). This process of actively disengaging from moral standards allows people to engage in behaviours that would otherwise result in guilt and self-condemnation. Bandura (1991, 2002, 2006) proposed eight psychological mechanisms that allow individuals to sanction their undesirable behaviour, and include: moral justification, euphemistic labelling, advantageous comparison, displacement of responsibility, diffusion of responsibility, distortion of consequences, dehumanisation, and, attribution of blame. Research has shown that moral disengagement is linked with motivation and the structure of the environment (Boardley & Kavussanu, 2009; Hodge & Lonsdale, 2011).

An athlete's behaviour is not determined solely by individual factors (i.e., autonomous vs controlled motivation), but by a combination of individual and situational factors. In the sporting context, these situational factors include an athlete's coach(es) and teammates. Generally, the coach structures the sporting environment that, in turn, will either support or hinder an athlete's needs satisfaction. This led Mageau and Vallerand (2003) to conclude that, "the coach-athlete relationship is one of the most important influences on athletes' motivation and subsequent performance" (p. 884).

A coach can structure an environment to be either autonomy-supportive or controlling (Mageau & Vallerand, 2003). An autonomy-supportive coaching climate is one in which the athlete is provided with choice and a rationale for tasks, their feelings are acknowledged, opportunities to show initiative and independent work are provided, athletes are given non-controlling competence feedback and the use of guilt inducing criticism and overt control is avoided (Mageau & Vallerand, 2003). In contrast, a controlling coach climate places pressure on the athlete to think, feel and behave in a certain way (Mageau & Vallerand, 2003).

When coaches provide an autonomy-supportive environment, needs satisfaction is high, which, in turn, predicts positive outcomes (Mageau & Vallerand, 2003). Furthermore, when coaches emphasised fair play and respect (aspects of an autonomy-supportive climate), athletes were less likely to morally disengage (Boardley & Kavussanu, 2009). Conversely, Hodge and Lonsdale (2011) found that individuals who were part of a controlling climate predicted the use of moral disengagement mechanisms because they were more exposed to behaviours (e.g., win at all costs) that required them to morally disengage.

While the coach is a salient source of information, teammates can also influence an athlete's perceptions of the environment by providing sources of competence information (Ntoumanis, Vazou & Duda, 2007). Therefore, it is important to examine teammates as well as the coach, when examining situational factors that influence an individual's motivation.

Considering the role of teammates from a SDT perspective is understudied; research has shown teammates influence various outcomes such as the likelihood for an athlete to engage in aggressive behaviours (Guivernau & Duda, 2002). Therefore, it is important to include teammates when studying prosocial and antisocial behaviour.

### **Purpose, Research Questions & Hypotheses**

The purpose of this research project was to examine how the team climate (generated by the coach and teammates) was related to athletes' basic needs satisfaction and in turn, athlete motivation. Furthermore, the link between athlete motivation and prosocial/antisocial behaviour (towards teammates and opponents) was examined as well as the role of moral disengagement as a mediator of the motivation - antisocial behaviour relationship.

The current research project aimed to answer four research questions:

1. Is an *autonomy-supportive* climate (generated by the coach and teammates) associated with an athlete's basic needs satisfaction, and in turn, athlete motivation?
2. Is a *controlling* climate (generated by the coach and teammates) associated with an athlete's basic needs satisfaction and in turn, athlete motivation?
3. What is the relationship between athlete motivation (controlled & autonomous) and prosocial/antisocial behaviour (towards teammates & opponents) and is it mediated by moral disengagement?
4. Does a balance across the basic needs of autonomy, competence, and relatedness have a stronger relationship with athlete motivation than these constructs do individually?

Based on previous research (e.g., Hodge & Lonsdale, 2011), the following hypotheses were tested:

1. An autonomy-supportive team climate (coach and teammate climate) will be positively associated with basic needs satisfaction and in turn, autonomous motivation.
2. A controlling team climate (coach and teammate climate) will be negatively associated with basic needs satisfaction and in turn, positively associated with controlled motivation.
3. Autonomous motivation will be positively associated with prosocial behaviour and negatively associated with antisocial behaviour
4. Controlled motivation will be positively associated with antisocial behaviour and negatively associated with prosocial behaviour.
5. The relationship between controlled motivation and antisocial behaviour will be mediated by moral disengagement.
6. Balanced psychological needs satisfaction will be positively associated with autonomous motivation beyond the individual basic needs of autonomy, competence and relatedness. Conversely, balanced psychological needs will be negatively associated with controlled motivation beyond the individual basic needs of autonomy, competence and relatedness.

## **Chapter Two**

### **Review of Literature**

While Chapter One introduced the central themes for this current research project, this chapter will examine each theme in greater depth and provide a review of previous literature. Prosocial and antisocial behaviour in sport will be discussed followed by a more in-depth discussion of Self-Determination Theory (SDT; Deci & Ryan, 1985, 2000, 2008; Ryan & Deci, 2002) and the role of the coach and teammate climate on an athlete's motivation. Research on moral disengagement will be considered and previous research examining prosocial and antisocial behaviour in sport from a SDT perspective will be examined.

#### **Sport and Moral Behaviour**

Sport is often thought of as a vehicle for building character (e.g., Sage, 1998), social interaction (e.g., Allender, Cowburn & Foster, 2006) and a way of learning life skills (e.g., Danish, 2002). While this is often the case, participating in sport also has negative consequences such as athlete burnout (e.g., Lonsdale, Hodge & Rose, 2009) and increased alcohol consumption (Leichliter, Meilman, Presley & Cashin, 1998). Prosocial and antisocial behaviours are both potential positive and negative outcomes of sport participation. Prosocial and antisocial behaviours in sport are intentional behaviours that advantage or disadvantage a teammate or opponent respectively, and result from a combination of both individual and situational factors.

According to Bandura (2002), it is the interaction between situational influences and individual factors that guides moral behaviour. Blasi (1980) argues that "morality ultimately lies in action" (p. 1) as our actions/behaviours have consequences for others. For example, injuring an opponent has a direct effect on that individual, whereas, intending to injure an opponent has no direct consequences (Kavussanu, 2008). Moral behaviour concerns behaviours that are good/help people (i.e., prosocial behaviours) and bad/disadvantage people



(i.e., antisocial behaviour). In sport, the coach plays a significant role in guiding an athlete's moral judgment by communicating what he or she believes is appropriate or inappropriate behaviour (Kavussanu, Roberts, & Ntoumanis, 2002).

Rutten et al. (2007) examined the contribution of organized sport on adolescent athletes' general (rather than sport-specific) prosocial and antisocial behaviour. Results indicated that contextual effects (e.g., the coach-athlete relationship) were important in determining athletes' prosocial/antisocial behaviour. Furthermore, Rutten et al. (2008) extended their previous work by examining the role of team membership on antisocial/prosocial behaviour both on- and off-field. Their results indicated that team membership accounted for 8% of the variance in on-field antisocial behaviour and 14% of the variance in on-field prosocial behaviour. However, 21% of the variance in off-field antisocial behaviour was accounted for by team membership. Rutten et al. (2008) explained the difference in on- and off-field antisocial behaviour by reasoning that on-field behaviour is regulated and monitored by formal (and informal) rules, whereas, off-field behaviour is often more varied and less restricted.

Recently, Rutten et al. (2011) examined the contribution of individual athletes and team characteristics on athletes' prosocial and antisocial behaviour in sport. Results indicated that a supportive coach-athlete relationship was associated with increased levels of prosocial behaviour and decreased levels of antisocial behaviour. Moral atmosphere (which is the degree to which moral norms are created and shared) was positively associated with prosocial behaviour (Rutten et al., 2011).

While people within a sporting environment have the ability to influence an individual's moral judgement, the structure and nature of the sport itself also plays a role. It has been reported that competition and high contact sports, such as American football and ice hockey promote antisocial (Kohn, 1986) and unsportsmanlike behaviours (Shields, LaVoi,

Bredemeier, & Power, 2007). Furthermore, the high speed, intensity and confined physical space of ice hockey makes it susceptible to both legitimate (body checking) and illegitimate (tripping, interference) physical play (Bloom & Vanier, 2004). For example, the nature of the ice rink determines the corners are an area of high impact and often danger as players frequently turn their backs to the center of the ice and contact against the boards is permitted at certain levels (i.e., senior men's competitions). The context of the women's game differs in that body checking is not allowed; however, given that the skill and speed of the women's game is increasing and a degree of body contact is still allowed, there is still an opportunity for physical, aggressive play.

Sport is a unique setting in which moral judgement is often suspended momentarily. Bredemeier and Shields (1986a) refer to this idea as 'bracketed morality'. That is, during a sporting fixture, an athlete (or coach) can, for the duration of the game/match, put aside their obligation to act in a socially acceptable manner in order to position themselves more advantageously in the game. Pascall (2000) highlighted this concept in relation to ice hockey and the naturalisation of such behaviour: "Hockey has created a culture where certain violent acts that are punishable if they occurred on the streets are 'part of the game' when occurring on the ice" (p. 4).

Research has shown that moral reasoning for sport dilemmas is lower than reasoning for everyday life events (Bredemeier & Shields, 1984). Similarly, Gardner and Janelle (2002) argue that aggressive and assertive behaviour is viewed by both athletes and non-athletes as more acceptable in athletic scenarios compared to non-athletic scenarios. In their study, males were also more accepting of aggressive and assertive acts in both athletic and non-athletic scenarios than females and moral reasoning decreased for athletes who participated in higher levels of competition (Gardner & Janelle, 2002). Furthermore, research has shown that males have a greater acceptance of athletic aggression (Kaye & Ward, 2010) and higher levels of

self-reported unsportsmanship behaviours (Shields et al., 2007) than female athletes. While this research illustrates the influence the sporting environment can have on moral reasoning, it does not identify reasons why athletes are more or less likely to engage in this type of behaviour.

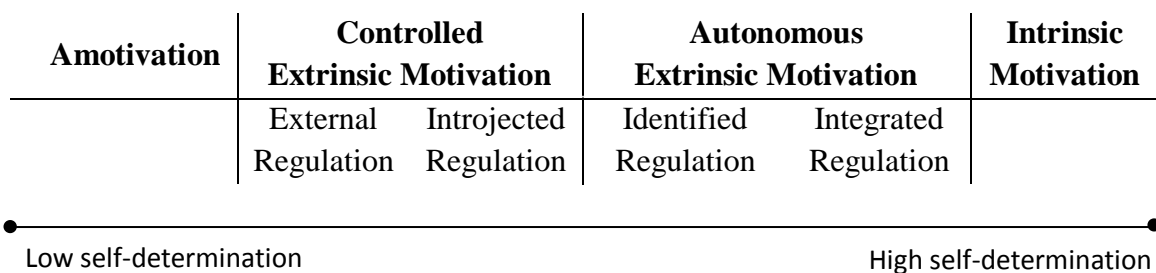
By examining an athlete's reasons for participating in sport, Ntoumanis and Standage (2009) suggested that researchers were able to explain how an athlete behaves in their sporting context. Deci and Ryan's (1985, 2000, 2008; Ryan & Deci, 2002) SDT allows for the study of motivation and subsequent behaviour (in this context, prosocial and antisocial behaviour in sport) as it examines the reasons behind an individual's behaviour.

**Self-Determination Theory (SDT; Deci & Ryan, 1985, 2000, 2008; Ryan & Deci, 2002)**

SDT (Deci & Ryan, 1985, 2000, 2008; Ryan & Deci, 2002) explains that it is the satisfaction of three basic psychological needs (autonomy, competence and relatedness), or lack thereof, that directs our behaviour. For the context of the current research project, SDT offers a framework to understand the motivational underpinnings of prosocial and antisocial behaviour in sport. That is, SDT can be employed as an effective theoretical lens to examine why athletes engage in prosocial and/or antisocial behaviours (Hodge & Lonsdale, 2011; Ntoumanis & Standage, 2009).

As humans, we seek out situations that enable us to satisfy these three psychological needs (Deci & Ryan 1985, 2000, 2008; Ryan & Deci, 2002). Autonomy reflects feeling in control of your choices and experiencing the freedom of choice, competence is defined as a belief about your ability in a certain setting, and relatedness refers to a feeling of connectedness and belonging with others in the social environment. Moreover, SDT proposes that satisfying these psychological needs results in self-determined/autonomous motivation which leads to positive affective, cognitive and behavioural outcomes.

According to Deci and Ryan (2000), the nature of an individual's motivation is associated with their perceived level of self-determination (see Figure 1). On this self-determination continuum, amotivation (or no motivation at all) is placed at one end and reflects low self-determination while intrinsic motivation is at the other end and contains high self-determination. In between these two is extrinsic motivation (EM), which is sub-divided into controlled and autonomous extrinsic motivation. Within these categories of extrinsic motivation there are four regulations that vary in their degree of self-determination/autonomy.



*Figure 1.* The self-determination continuum.

External regulation is the traditional view of extrinsic motivation where individuals are motivated to receive tangible rewards or avoid punishment. Thus, motivation is based on external pressures and is therefore considered non-self-determined or controlled. For example, an athlete participating in sport to receive money from his/her parents. The other form of non-self-determined (controlled) extrinsic motivation is introjected regulation, where individuals engage in an activity to gain approval or avoid social disapproval and feelings of shame and guilt. Individuals who engage in activities for ego-enhancing reasons are also motivated by introjected regulation (Ryan & Deci, 2002). For example, an athlete who plays sport to please her parents and to avoid feeling guilty if she did not is motivated by introjected regulation. While introjected regulation deals with internal pressures, it is not self-determined as reasons for participation are not accepted as one's own (Deci, Vallerand, Pelletier, & Ryan, 1991).

Identified and integrated regulations are self-determined (i.e., autonomous) forms of extrinsic motivation. This is the case because the reasons for action have to some degree been internalised (Deci & Ryan, 2000). As Vallerand and Losier (1999) stated, an individual motivated by identified regulation participates in an activity because the outcomes are of personal importance; however, the activity itself is not inherently interesting. In the sporting context, for example, an athlete who participates in intense physical training, an activity they consider unpleasant, does so because they want to improve their fitness, an outcome they value. When an athlete's involvement in an activity is seen as being part of their identity, they are motivated by integrated regulation. For example, an athlete who attends training because they view it as necessary to improve in their sport but they also believe that the commitment required for training is important in order to succeed in other facets of life (Mallet & Hanrahan, 2004).

Depending on an individual's degree of self-determined motivation, the outcomes will vary. Behaviours that are driven by autonomous regulations (i.e., integrated regulation, identified regulation, intrinsic motivation) typically result in positive affective, behavioural and cognitive outcomes (Deci & Ryan, 2000). For example, being more physically active (Almagro, Saenz-Lopez, & Moreno, 2010); greater effort and persistence (Ferrer-Caja & Weiss, 2000) and positive well-being (Amorose, Anderson-Butcher, & Cooper, 2009).

While individuals seek out situations that satisfy their basic psychological needs; the social settings they are in may not always facilitate such satisfaction. When individuals are in a situation where their feelings of autonomy, competence and relatedness are not satisfied, Deci and Ryan (2000) contend that they will be motivated by controlled regulations (i.e., external or introjected regulation). Controlled forms of motivation have resulted in decreased commitment to sport (Zahariadis, Tsorbatzoudis, & Alexandris, 2006), and extrinsic

motivation has been associated with negative sportspersonship orientations and subsequent use of performance enhancing substances (Donahue et al., 2006).

Lonsdale et al. (2009) examined the influence of behavioural regulations on burnout in elite athletes. They found that controlled forms of extrinsic motivation (i.e., external regulation and introjected regulation) had a positive relationship with athlete burnout. Whereas, autonomous forms of extrinsic motivation (i.e., identified regulation and integrated regulation) were negatively correlated with athlete burnout (Lonsdale et al., 2009). Gagné, Ryan and Bargmann (2003) examined behavioural regulations and the well-being of young gymnasts ( $M = 13.00$  years). Results showed that controlled regulations were associated with negative affect, whereas autonomous regulations were positively associated with positive affect and practice attendance (Gagné et al., 2003).

Recently, Bartholomew, Ntoumanis, Ryan and Thøgersen-Ntoumani (2011) suggested that needs thwarting was not the same as being low in one or more of the basic psychological needs. Merely, having low levels of autonomy, competence or relatedness suggested that an individual was dissatisfied with the extent to which their needs were being met in a given situation. Rather, for an individual to experience needs thwarting, someone within the situation (e.g., the coach) must be actively preventing their needs from being satisfied.

**Balanced Needs Satisfaction.** As previously stated, psychological needs satisfaction positively predicts autonomous motivation, which, in turn, has positive outcomes such as increased levels of sportspersonship (Ntoumanis & Standage, 2009), greater levels of concentration (Kowal & Fortier, 1999) and attendance at practice (Gagné et al., 2003). However, this previous research has examined the independent effect of basic needs satisfaction on motivated behaviour, which Sheldon and Niemic (2006) have termed the ‘additive’ model. According to Sheldon and Niemiec, it may be more important to examine the balance across the three needs, which “represents the equilibrium in the satisfaction of the

need for autonomy, competence and relatedness” (Perreault, Gaudreau, Lapointe, & Lacroix, 2007, p. 446) rather than simply studying the additive effects. For example, an athlete who feels they take part in the decision making process and are pursuing their own goals, therefore score a six out of seven for autonomy (seven being the highest possible score indicating high feelings of autonomy, competence or relatedness; one being the lowest possible score indicating low levels of autonomy, competence or relatedness). Moreover, they feel competent in their ability and have high satisfaction of the need for competence (e.g., 6). However, the same athlete is in a team with people who do not get along and has low satisfaction for relatedness (e.g., 3). Conversely, another athlete may have relatively high levels of autonomy (e.g., 5), competence (e.g. 5) and relatedness (e.g., 5). Both athletes have a sum of basic needs satisfaction totalling 15. According to Sheldon and Niemic, an imbalance in psychological needs (as seen in the first athlete) “reflects inappropriate allocation of resources...which may induce stress and conflict” (p. 332).

Individuals who have balanced needs satisfaction experience greater levels of psychological well-being than individuals with similar total levels of autonomy, competence and relatedness (Sheldon & Niemiec, 2006). Similar results were found by Perreault et al. (2007) in their investigation of athlete burnout. Their research revealed that individuals who experienced greater needs satisfaction reported lower levels of athlete burnout and the balance of the three psychological needs significantly negatively predicted athlete burnout beyond additive effect of autonomy, competence and relatedness (Perreault et al., 2007).

While studies by Sheldon and Niemic (2006) and Perreault et al. (2007) reported balanced needs satisfaction as having a significant contribution to well-being and burnout, respectively, only a small amount of additional variance was explained by balanced needs. Recently, Mack et al. (2011) examined the role of balanced needs satisfaction on well-being in male and female collegiate volleyball players ( $M = 20.03$  years). Results indicated that

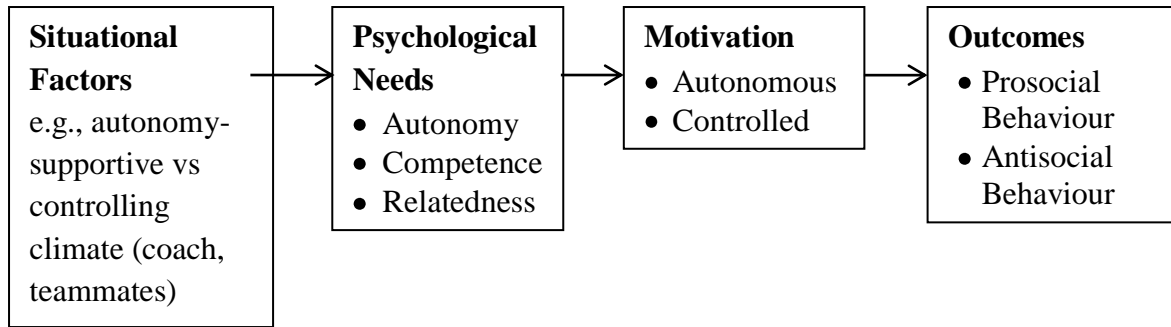
while balanced psychological needs were correlated with well-being, the effect was minimal. Although previous research by Mack et al. showed a minimal effect of balanced needs, and Sheldon and Niemiec and Perreault et al. reported significant but only a small change in variance, it still follows the trend that the role of balanced needs satisfaction is worth examining.

Needs satisfaction determines whether an athlete is motivated by autonomous or controlled means. Specifically, when the needs for autonomy, competence and relatedness are satisfied, autonomous or self-determined motivation results. Whereas when an individual's needs for autonomy, competence and relatedness are not satisfied, the outcome is controlled or non-self-determined motivation (Deci & Ryan, 2000). While athletes may initially be attracted to a task or sport as a way to satisfy their need for autonomy, competence and relatedness; the structure and motivational climate within the sporting environment will play an integral role in the development of their motivation (Vallerand & Losier, 1999).

### **Team Climate: The Coach**

According to Deci and Ryan's (1985, 2000, 2008; Ryan & Deci, 2002) SDT, social agents, such as the coach do not directly influence an athlete's motivation. Rather, as Mageau and Vallerand (2003) argue, a coach – through how they structure the sporting environment – has the ability to influence an athlete's satisfaction of autonomy, competence, and relatedness, which ultimately affects motivation (see Figure 2). Such as the degree of choice an athlete has, competence-related feedback and the structure of feedback and rewards (Amorose & Anderson-Butcher, 2007).





*Figure 2.* Summary of situational factors, SDT and prosocial/antisocial behaviour.

Mageau and Vallerand (2003) asserted that the relationship between the athlete and their coach has a crucial influence on the athlete's motivation and subsequent outcomes. Amorose and Anderson-Butcher's (2007) findings supported this relationship, demonstrating that athletes who perceived their coach as being autonomy-supportive, reported greater needs satisfaction which in turn predicted autonomous motivation. Gagné et al. (2003) examined autonomy-support of coaches on young gymnasts' well-being. Results indicated that coach autonomy-support was positively associated with well-being and gymnasts' needs satisfaction and identified regulation.

When coaches are seen to adopt controlling behaviours (i.e., tangible rewards, controlling feedback, excessive personal control, intimidation behaviour, promoting ego-involvement, conditional regard), the outcomes are less positive. Pelletier, Fortier, Vallerand, and Brière (2001) examined the role of autonomy-supportive and controlling coach behaviours on persistence amongst Canadian swimmers. Specifically, a controlling coach context positively predicted introjected regulation, external regulation and amotivation and negatively predicted intrinsic motivation and identified regulation. External regulation positively predicted athlete dropout 22 months later while introjected regulation, identified regulation and intrinsic motivation positively predicted persistence 10 months later. In short, the higher an athlete's level of controlled motivation, the greater the risk of dropping out of

sport. On the other hand, when athletes were high in autonomous motivation, the more likely they were to continue to participate in their sport. The degree of autonomous versus controlled motivation is strongly influenced by the coach and how he/she constructs the sporting environment (Mageau & Vallerand, 2003).

While research on autonomy-supportive coaching styles is well documented (e.g., Amorose & Anderson-Butcher, 2007; Gagné et al., 2003; Gillet, Vallerand, Amoura, & Baldes, 2010), research on controlling interpersonal styles has been largely overlooked (Bartholomew, Ntoumanis, & Thørgesen-Ntoumani, 2010). Recent research by Bartholomew, Ntoumanis, Ryan, Bosch and Thørgesen-Ntoumani (2011) indicated that need thwarting was better predicted by coach control than by athletes' low perceptions of autonomy-support. Therefore, it is important not to ignore the negative side of coaching and the possibility that when a coach adopts a controlling interpersonal style, disadvantageous outcomes may result.

### **Team Climate: Teammates**

Smith (2003) highlighted the importance of examining the influence of peers (e.g., teammates) in sport settings stating, "It is puzzling the degree to which research on peers has paled in comparison given the relevance of these social agents." (p. 26). Previous research on peers and teammates in sport has examined friendship (Weiss & Smith, 2002), social acceptance (Daniels & Leaper, 2006) and peers'/teammates' influence on an athlete's perception of the motivational climate (Vazou, Ntoumanis & Duda, 2004). Achievement Goal Theory (AGT; Nicholls, 1984) has been used to examine the role of teammates and peers and their influence on an athlete's perception of the motivational climate. The motivational climate involves athletes' perceptions of situational cues and structure of the sporting environment that provide an athlete with different definitions of competence and success (Ntoumanis et al., 2007). Although it is the coach that is primarily responsible for structuring the motivational climate, peer relationships also provide athletes with a source of competence

information (Ntoumanis, et al., 2007). Similar to the coach-created motivational climate, the peer-created motivational climate can be ego-involving whereby normative ability and social comparison is emphasised; or task-involving where the emphasis is placed on personal improvement and task mastery (Ames, 1992). Vazou, Ntoumanis and Duda (2005) identified 11 dimensions of the peer climate including; improvement, equal treatment, relatedness support, cooperation, effort, intrateam competition, intrateam conflict, normative ability, autonomy support, mistakes and evaluation of competence.

Previous research that has examined the influence of peers on motivation from an AGT (Nicholls, 1984) perspective has shown that peers influenced an athlete's motivational climate through their competitive/collaborative behaviours, communication and social relationships (Keegan, Harwood, Spray & Lavalley, 2009). Vazou, Ntoumanis and Duda (2006) examined the role of a peer motivational climate and outcomes experienced, and found that perceptions of a peer task-involving motivational climate were positively associated with enjoyment. Peer climate has also been linked with persistence (Jõesaar, Hein & Hagger, 2011) and physical self-esteem (Vazou, Ntoumanis & Duda, 2006). Results indicated that a task-oriented peer motivational climate was a significant predictor of intrinsic motivation and sport persistence among young athletes ( $M = 13.19$  years) (Jõesaar et al., 2011) as well as physical self-worth (Vazou et al., 2006).

Research has shown there are several links between the motivational climate and basic needs satisfaction (Ntoumanis, 2001). Specifically, those individuals who are primarily task-involved experience greater needs satisfaction than individuals who are ego-involved. This is the case because a task-involving climate fosters athlete input and decision making (autonomy), self-referenced criteria for success which allows for greater control over

perceived ability (competence) and less intra-team competition and rivalry which allows the establishment of social relationships (relatedness) (Vazou et al., 2004).

Research examining the influence of peers on an individual's motivation has predominantly examined adolescent ( $M = 14.3$  years) populations (e.g., Vazou et al., 2004). However, Moreno, Roman, Galindo, Alonso and Gonzalez-Cutre (2008) conducted a study examining peer motivational climate and its influence on basic needs satisfaction amongst adult exercisers ( $M = 21.64$  years). Results showed that individuals who perceived a task-involving motivational climate experienced greater need satisfaction and in turn, higher levels of self-determined motivation. This result supported findings in adolescent research. However, there was no significant link between ego-involving peer motivational climate and basic needs satisfaction.

Nicholls' (1984) AGT is a useful theoretical lens to examine the influence of peers on an individual's motivation, however it does not directly consider the roles of autonomy and relatedness. Therefore, it is important to extend the literature on peers and examine their role from a SDT perspective, thereby taking into account autonomy and relatedness as well as competence. To date, there has been little research conducted establishing the link between teammates (from an SDT perspective), motivation and behavioural outcomes such as prosocial and antisocial behaviour.

### **Self-Determination Theory and Morality in Sport**

“Understanding why athletes play sport might help to explain how they play it” (Ntoumanis & Standage, 2009, p. 367). Deci and Ryan's (1985, 2000, 2008; Ryan & Deci, 2002) SDT allows researchers to examine why individuals participate in sport. These reasons in turn provide an explanation of how individuals interact within their sporting environment.

Research has shown that autonomous motivation has a positive relationship with prosocial attitudes; conversely, controlled motivation was a positive predictor of antisocial

attitudes for British athletes ( $M = 19.67$  years) from various team and individual sports (Ntoumanis & Standage, 2009). Specifically, autonomy-support positively predicted basic needs satisfaction and in turn, autonomous motivation. Autonomous motivation was then positively associated with sportpersonship. Vallerand and Losier (1994) conducted a study on sportsmanship (later termed sportpersonship) and self-determined motivation among elite male adolescent ( $M = 15.8$  years) ice hockey players. They collected data at the beginning and end of the season. Results showed that the relationship between self-reported sportpersonship and self-determined motivation was bi-directional. However, the relationship was stronger when examining the influence of motivation on sportpersonship when compared to the influence of sportpersonship on motivation. This suggests that our reasons for participating in sport have a greater influence on how we play the game. Interestingly, Vallerand and Losier also reported that both motivation and self-reported sportpersonship decreased throughout the season.

Chantal, Robin, Vernat and Bernache-Assollant (2005) examined the role of sportpersonship orientations as a mediator for the relationship between self-determined sport motivation and aggression (reactive & instrumental aggression were both examined) in male physical activity students ( $M = 20.7$  years & 24.1 years for study 1 & 2, respectively). Results indicated that self-determined motives for participating in sport were positively associated with sportpersonship orientations and therefore these students had greater respect and concern for the rules, officials and opponents as well as greater levels of commitment (Chantal et al., 2005). Results also showed that sportpersonship orientations influenced reactive and instrumental aggression in different ways. Greater levels of sportpersonship orientations led to decreased reactive aggression but also fostered incidents of instrumental aggression, that is, aggressive acts that were aimed at hindering the opposition's performance but were not considered malicious in their intent.

Hodge and Lonsdale (2011) examined prosocial and antisocial behaviour in young adult ( $M = 19.53$  years) competitive athletes from a SDT perspective. Their results showed support for previous work on SDT and prosocial and antisocial variables. Specifically, an autonomy-supportive coaching style was positively associated with autonomous motivation which, in turn, was positively associated with prosocial behaviour towards teammates. Conversely, controlled motivation was positively associated with antisocial behaviour towards teammates and opponents. This relationship was mediated by moral disengagement. Therefore, athletes who engaged in moral disengagement strategies were linked with higher levels of antisocial behaviour.

### **Moral Disengagement**

“People suffer from the wrongs done to them regardless of how perpetrators justify their inhumane actions” (Bandura, 2002, p. 101). Moral disengagement is a cognitive mechanism that allows individuals to reduce feelings of guilt/shame after they have committed immoral acts (Bandura, 1991, 2002). In order to reduce negative feelings, such as guilt and shame, individuals use moral disengagement strategies to override normative self-sanctions and thus disengage from regular moral standards (Corrion, Long, Smith, & d’Arripe-Longueville, 2009). Moral disengagement has been shown to have consequences for future behaviour as the emotions or feelings experienced after committing such an act help regulate future behaviour of a similar nature (Boardley & Kavussanu, 2008). According to Bandura (2002), individuals who engage in reprehensible behaviour do not differ from those individuals who refrain from such behaviour, rather they are “better able to ‘switch off’ their moral standards” (Wood, Moir & James, 2009, p. 572).

Bandura (1991) proposed eight psychological mechanisms that allow individuals to sanction their undesirable behaviours. 1) Moral justification refers to immoral conduct being justified as acceptable because it serves a higher moral or social purpose. For example, when

an athlete strategically hurts an opponent because it benefits their own team. 2) According to Bandura (1991), “language shapes people’s thought patterns on which they base many of their actions” (p. 79). Euphemistic labelling involves the use of language to downplay an immoral act, such as an athlete who labels an aggressive act as merely “letting off steam” (Boardley & Kavussanu, 2008). 3) Advantageous comparison occurs when immoral acts are compared to other behaviours that are seen as more immoral, therefore making the current behaviour justifiable (Bandura, 1991). For example, an athlete who uses verbal abuse because they view it as less harmful than physical abuse (Boardley & Kavussanu, 2008). 4) Displacement of responsibility refers to an individual attributing their behaviour to social forces, thus reducing their role. For instance, an athlete who commits an immoral act and attributes it to their coach’s request.

5) Diffusion of responsibility occurs when group decisions are made as it provides an individual with anonymity (Bandura, 1991). Processes such as the division of labour, group decision making and collective action all remove responsibility and accountability from a given individual allowing the effects of any actions to be attributed to the behaviour of the group rather than the individual (Bandura, 1991). For example, an athlete who claims they are not to blame for an immoral act because their teammates were also involved. 6) Distortion of consequences involves ignoring or downplaying the consequences of one’s immoral act. Individuals are especially likely to employ this strategy when acting alone as they cannot avoid responsibility. For example, downplaying the consequences of an action as the individual was not injured as a result. 7) Dehumanisation refers to perceiving an individual as not possessing humanistic qualities such as empathy (Bandura, 2002). Processes that involve ingroups and outgroups produce a distance between the groups that may encourage dehumanisation (e.g., different sporting teams). By dehumanising an individual, people are viewed as subordinates not possessing human qualities. For example, referring to the

opposition players as animals. 8) Finally, attribution of blame places blame on a victim or opponent (i.e., they brought it on themselves).

Previous research has considered the role of moral disengagement in gambling and alcohol consumption in youth (Barnes, Welte, Hoffman, & Dintcheff, 1999) and academic dishonesty (Shu, Gino & Bazerman, 2011). Results showed that moral disengagement was a significant predictor of alcohol consumption and gambling (Barnes et al., 1999) and moral disengagement was more likely when involving one's own dishonest behaviour than the dishonest behaviour of a fellow student (Shu et al., 2011). Wood et al. (2009) examined the role of moral disengagement in prisoners' gang-related activity. They found that prisoners who were involved in gang-related behaviour were more likely to engage in bullying and have higher levels of moral disengagement in comparison to prisoners who were not part of a gang (Wood et al., 2009).

Recently, moral disengagement has also received increased attention in sport (e.g., Lucidi et al., 2008; Corrion et al., 2009). Lucidi and colleagues examined the effects of social-cognitive mechanisms on Italian high school students' ( $M = 16.87$  years) self-reported use of supplements and doping substances. Results indicated that moral disengagement had a significant effect on students' later use of doping substances. That is, students who reported higher levels of moral disengagement were more likely to use doping substances three months later. In their qualitative research, Corrion et al. examined which moral disengagement strategies were most common among elite athletes from taekwondo and basketball. Results showed that euphemistic labelling, minimising/ignoring consequences, displacement and diffusion of responsibility, and the attribution of blame were the most common strategies employed by these elite athletes.

The social context can inform our decisions about what is morally right and wrong (Bandura, 2002) and in a sporting situation, the coach is a powerful source of information in



the social context for any athlete (Mageau & Vallerand, 2003). Moral disengagement has been found to mediate the relationship between perceived character building coach competencies and prosocial and antisocial behaviour in sport (Boardley & Kavussanu, 2009). Specifically, athletes who perceived their coach as fostering an environment of respect and fair play (elements of autonomy-support and prosocial behaviour) were less likely to morally disengage, and in turn, less likely to behave in an antisocial manner. Conversely, when a coach adopts a controlling interpersonal style, athletes were more exposed to behaviours that promote moral disengagement (Hodge & Lonsdale, 2011). In addition, ego orientation (a dimension of controlling interpersonal coaching style) has been found to positively predict moral disengagement in high school athletes (Gaines & Smith, 2010).

Traclet, Romand, Moret and Kavussanu (2011) examined moral disengagement mechanisms used when soccer players engaged in antisocial behaviour. Results indicated that players often used the referee to justify their antisocial behaviours, attributing their antisocial acts to poor refereeing. Teammates and coaches also had a role to play; specifically, displacement and diffusion of responsibility was strongly linked to antisocial behaviours. That is, athletes attributed their behaviour to their teammates or coach.

Research on moral disengagement has also considered differences between males and females. McAlister (2001) examined the differences in moral disengagement with respect to university students' views on military action. Results showed that males were more likely to morally disengage than females. Similar results were found in sport by Boardley and Kavussanu (2007) who reported that male athletes were more likely to morally disengage in the sporting context than female athletes.

### **Overcoming Limitations**

Previous SDT and morality research has examined the influence of self-determined motivation on reactive and instrumental aggression (Chantal et al., 2005), the influence of the

coach on prosocial and antisocial attitudes (Ntoumanis & Standage, 2009) and prosocial and antisocial behaviour (Hodge & Lonsdale, 2011). However, wider research has shown that teammates also have a significant influence on the moral decision making process (e.g., Guivernau & Duda, 2002; Kavussanu, et al., 2002). Guivernau and Duda found that among male and female adolescent ( $M = 15.4$  years) soccer players, perceptions about whether a teammate was likely to commit an aggressive act was the main determinant of self-described likelihood to aggress.

This is not to say that the role of the coach is not important; however, it may be important to also consider other social agents when investigating prosocial and antisocial behaviour in sport. Kavussanu et al. (2002) examined the role that athletes and coaches had on moral decision making. They concluded that the “roots of unsportspersonlike conduct encountered in the sport context may reside within one’s own athletic team” (p. 362). In this case, the legitimisation by the coach of unsportspersonlike (antisocial) behaviour and social norms created by the team resulted in the reinforcement of unsportspersonlike behaviour. Similarly, Stephens (2001) reported that both novice ( $M = 12.49$  years) and experienced ( $M = 15.41$  years) female basketball players were more likely to commit an aggressive act if they believed their teammates were likely to do the same. More specifically, experienced players viewed their coach’s expectations to injure as more important than their teammates. However, novice players perceived teammates’ judgements of injurious acts as more important than the coach’s expectations.

Another limitation of previous literature rests with the definition of autonomy. Autonomy has generally been defined as perceived choice (Deci & Ryan, 1985, 2000, 2008; Ryan & Deci, 2002). However, Reeve, Nix and Hamm (2003) offer a three dimensional definition of autonomy, one that encompasses perceived choice, internal perceived locus of causality (IPLOC), and volition. Perceived choice, also called decisional choice, is a belief

that one's actions within an activity are freely chosen. An example of this is a coach who gives athletes a choice of different physical activities in a physical conditioning program. IPLOC is a feeling that the individual has initiated and can regulate their actions. Volition, also known as action choice, refers to being able to choose whether we take action or not. "Volition centres on how free versus forced people feel while doing what they want to do...and how free versus forced people feel while refraining from what they do not want to do" (Reeve et al., 2003, p. 376). For example, a training session that is optional to players. Reeve et al. discovered that while all three dimensions contribute to autonomy, volition and IPLOC had a more central role. Previous research has employed scales to assess autonomy that may not accurately reflect the three dimensions identified by Reeve et al. (e.g., McDonough & Crocker, 2007). Therefore, the current research project utilised the Basic Needs Satisfaction Scale in Sport (Ng, Lonsdale & Hodge, 2011) to provide a multi-dimensional account of autonomy.

The balance across autonomy, relatedness and competence has been examined with respect to athlete burnout (Perreault et al., 2007), well-being (Sheldon & Niemiec, 2006) and need satisfaction at school, home, with friends and in part-time work (Milyavskaya et al., 2009). The current research project aims to add to the literature on balanced needs satisfaction by examining its relationship with prosocial and antisocial behaviour in sport.

A coach can adopt either a controlling or autonomy-supportive motivational style. However, research has primarily focused on the positive aspects of coaching and an autonomy-supportive motivational style while a controlling motivational style has been largely ignored. In this light, the present research aims to not only add to the existing literature on autonomy-supportive coach behaviours, but also help fill a gap in the literature on controlling coach behaviours by examining both autonomy-supportive and controlling coaching climates.

According to Smith (2003), coaches are not the only important social agents when examining the quality of sport participation and the influence of peers (e.g., teammates) should also be examined. Previous research has examined the influence of peers on perceptions of the motivational climate from an AGT (Nicholls, 1984) perspective (e.g., Vazou, et al., 2006). By doing so, autonomy and relatedness characteristics of the motivational climate are excluded. Whereas, adopting a SDT (Deci & Ryan, 1985, 2000, 2008; Ryan & Deci, 2002) approach, by examining autonomy-supportive and controlling characteristics of the environment rather than task- and ego-involving characteristics allows for the inclusion of not only competence, but autonomy and relatedness (Allen & Hodge, 2006). A further limitation with research on the influence of teammates and peers in the sport and exercise setting is the application of an adolescent/child perspective. In this regard, the current research project aimed to extend previous research on peer influence by examining autonomy-supportive and controlling behaviours of teammates with an adult population.

### **Summary**

The current research project aimed to examine the relationships between coach and teammate behaviours, basic needs satisfaction, motivation and prosocial/antisocial behaviour. Specifically, it investigated the extent to which an autonomy-supportive and controlling climate (created by both the coach and teammates) was related to an athlete's basic needs satisfaction; the association between needs satisfaction and motivation (autonomous and controlled) and, in turn, the role that motivation played in prosocial and antisocial behaviour. Moral disengagement was investigated as a mediator of the relationship between motivation and antisocial behaviour. The current research project also aimed to add to the literature on balanced needs satisfaction and whether or not balanced needs had a relationship with motivation above the additive effects of basic psychological needs.

## Chapter Three

### Method

The purpose of the current research project was to examine the relationships between the team climate created by the coach and teammates and athletes' basic needs satisfaction; and, in turn, athletes' motivation. Furthermore, the association between motivation and prosocial/antisocial (towards teammates and opponents) behaviour in ice hockey was examined and whether moral disengagement mediated the relationship between motivation and behaviour. Ethical approval was obtained from the School of Physical Education, University of Otago Ethics Committee prior to the administration of the research project.

### Participants

Participants were 73 ice hockey players (male  $n = 34$ , female  $n = 38$ , one participant did not specify their gender) from across New Zealand and Australia. Participants ranged in age from 18 to 59 years with a mean age of 29.25 years ( $SD = 9.36$ ). Ice hockey experience ranged from one year to 42 years, mean experience was 11.35 years ( $SD = 8.05$ ). The majority of participants identified themselves as New Zealand European (39.7%). Whereas, 11% identified themselves as Australian, 1.4% as New Zealand Maori, 17.4% reported their ethnicity as other and 30.5% did not complete the question.

Participants were asked to record the level of their most recent competitive season; 27.4% were part of the New Zealand Ice Hockey Federation (NZIHF) Women's Nationals, 23.3% were part of a regional or state non-checking league, 20.5% were part of New Zealand Ice Hockey League (NZIHL; New Zealand's premier ice hockey competition), 12.7% were part of a regional (NZ) or state (Australia) checking league, 8.2% were part of the Australian Women's Ice Hockey League, 2.7% participated in regional (NZ) or state (Australia) women's leagues, 0.4% were part of the Australian Ice Hockey League (AIHL; Australia's premier ice hockey competition). Participants were asked to identify which stage of the

season they were currently in; 41.1% were in the off-season, 35.6% reported being in their pre-season, 8.2% were mid-season, 8.2% were in the late stages of their season and 4.1% were in the early stages of their season.

## **Procedure**

Contact was made with the Presidents of the New Zealand Ice Hockey Federation (NZIHF) and Ice Hockey Australia (IHA) in September 2010 gauging their interest in participating in the current research project (see Appendix C - E). This email contained the research objectives, participant information (see Appendix A) and a copy of the questionnaire (see Appendix H – P). Both the NZIHF and IHA agreed to take part and support the research in any way they could. A follow-up email was sent to both NZIHF and IHA to distribute to players containing information for participants and a link to the online questionnaire (see Appendix F). This method of recruiting participants was employed to comply with privacy conditions outlined by the NZIHF and IHA. Survey Monkey ([www.surveymonkey.com](http://www.surveymonkey.com)) was used to create the online questionnaire (identical to appendix I – P). Participants were advised that by clicking on the link to the online questionnaire, they were agreeing to participate in the research project voluntarily and anonymously (i.e., informed consent). One month after the initial email was sent to the NZIHF and IHA for distribution to their players, a follow up email was sent to both federations asking them to email a reminder to their registered players (see Appendix G). It was estimated that the pool of players the initial data collection request went to was in excess of 500 players. However, non-response and problems with the distribution of the email by the federation/association itself meant the player pool may have been much smaller than anticipated.

## **Measures**

**Role of team climate – the coach.** A modified version of the Health Care Climate Questionnaire (HCCQ; Williams, Cox, Kouides & Deci, 1999) was used to measure

autonomy-supportive coach behaviours (see Appendix K). Participants responded to the stem: “This questionnaire contains items that are related to your experience with your coach. Coaches have different styles in dealing with athletes/players, and we would like to know more about how you have felt about your encounters with your coach.” This questionnaire was initially developed as a measure to identify autonomy-support in the health care sector. Participants were required to answer 14 questions regarding their encounters with their coach (e.g., “I feel understood by my coach”). Answers were given on a 7-point Likert scale (1 = “strongly disagree”, 7 = “strongly agree”). The reliability and validity of the modified version of the HCCQ has been reported in sports specific studies (Cronbach’s alpha = .95, Hodge & Lonsdale, 2011, & 0.91, Ntoumanis & Standage, 2009).

The Controlling Coach Behaviours Scale (CCBS; Bartholomew et al., 2010) was used to assess the controlling dimension of coaching style (see Appendix L). Participants responded to the stem: “This questionnaire contains items that are related to your experience with your coach. Coaches have different styles in dealing with athletes/players, and we would like to know more about how you have felt about your encounters with your coach.” CCBS is a 15-item questionnaire, where participants respond to items using a 7-point Likert scale (1 = “strongly disagree”, 7 = “strongly agree”). There are four subscales of controlling interpersonal styles that have been identified; controlling use of rewards (e.g., “My coach only rewards/praises me to make me train harder”), negative conditional regard (e.g., “My coach is less supportive of me when I am not training and competing well”), intimidation (e.g., “My coach shouts at me in front of others to make me do certain things”) and excessive personal control (e.g., “My coach tries to control what I do during my free time”). Initial research suggests good validity and internal consistency (composite reliability coefficient ranged from .74 to .84; Bartholomew et al., 2010).

**Role of team climate – teammates.** A modified version of the Health Care Climate Questionnaire (HCCQ; Williams et al., 1999) was used to measure autonomy-supportive teammate behaviours (see Appendix M). Participants responded to the following stem: “This questionnaire contains items that are related to your experience with your teammates. Teams have different interaction styles, and we would like to know more about how you have felt about your encounters with your teammates.” Participants were required to answer 14 questions regarding their interactions with their teammates (e.g., “I feel a lot of trust in my teammates”). Participants responded to items using a 7-point Likert scale (1 = “strongly disagree”, 7 = “strongly agree”). The reliability and validity of the adapted HCCQ has been reported when used as an autonomy-supportive measure for coaches (Cronbach’s alpha .95, Hodge & Lonsdale, 2011, & .91, Ntoumanis & Standage, 2009). However, the modified version of the HCCQ is yet to be employed to assess teammate autonomy-support. The current research project reported an alpha coefficient .93 for the modified HCCQ when used to measure teammate autonomy-support.

A modified version of the Controlling Coach Behaviours Scale (CCBS; Bartholomew et al., 2010) was modified to assess controlling behaviours of teammates (see Appendix N). Participants responded to the following stem: “This questionnaire contains items that are related to your experience with your teammates. Teams have different interaction styles, and we would like to know more about how you have felt about your encounters with your teammates.” CCBS is a 15-item questionnaire, where participants respond to items using a 7-point Likert scale (1 = “strongly disagree”, 7 = “strongly agree”). There are four subscales of controlling interpersonal styles that have been identified; controlling use of rewards (e.g., “My teammates try to motivate me by promising to reward me if I do well”), negative conditional regard (e.g., “My teammates pay less attention to me if I have displeased them”), intimidation (e.g., “My teammates embarrass me in front of others if I do not do the things



they want me to do”) and excessive personal control (e.g., “My teammates expect my whole life to centre on my sport participation”). Initial research suggests good validity and internal consistency when measuring controlling coach behaviours (composite reliability coefficient ranged from .74 to .84; Bartholomew et al., 2010). However, the CCBS has yet to be employed to assess controlling behaviours of teammates. The current research project reported an alpha coefficient of .91 when the CCBS was modified to assess teammate controlling behaviours.

**Psychological needs.** Autonomy, competence and relatedness were assessed using the Basic Needs Satisfaction in Sport Scale (Ng et al., 2011) (see Appendix I). Participants responded to the stem: “Below are some sentences that describe personal feelings or experiences athletes might have regarding their sport. Please circle the number that indicates how true each of the phrases are to you.” This 20-item measure was developed as a sport-specific assessment of basic psychological needs. The competence and relatedness subscales contain five items each. Autonomy is divided into three subscales, namely, internal locus of causality (IPLOC), perceived choice, and volition. Example items include “I am skilled at my sport” (competence), “There are people in my sport who care about me” (relatedness), “In my sport, I have a say in how things are done” (autonomy – choice), “In my sport, I really have a sense of wanting to be there” (autonomy – IPLOC), and “I feel I participate in my sport willingly” (autonomy – volition). Questions were answered on a 7-point Likert scale (1 = “Not true at all”, 7 = “Very true”). Initial research has supported the reliability and validity of the BNSSS (Cronbach’s alpha = .61 – .82; Ng et al., 2011). The BNSSS is a sport-specific scale that assessed basic needs satisfaction; it also provided a three dimensional view of autonomy. While this was the case, for the purpose of the current research, only a global autonomy score was utilised in data analysis.

A balance score for autonomy, relatedness and competence was calculated by employing the method used by Sheldon and Niemiec (2006). The balance of autonomy, competence and relatedness was assessed by the total divergence among the three individual measures. The difference in absolute scores between each pair of needs was calculated and the sum of the differences across the needs represented the total divergence. Answers were given on a 7-point Likert scale, therefore, balance can range from 0 (equal satisfaction amongst basic needs) to 12 (maximum imbalance between needs). The total divergence score is then subtracted from the highest observed total divergence score which gives the balance score.

For example, an athlete who scores 4, 6 and 3 for autonomy, relatedness and competence, respectively would have a sum of basic needs of 13 and a total divergence (TD) score of 2 ( $TD = \Sigma[\text{autonomy} - \text{relatedness}][\text{autonomy} - \text{competence}][\text{relatedness} - \text{competence}]$ ). The highest total divergence score for the current research project was 3.6. Therefore, the athlete in the example above had a balanced needs score of 1.6 ( $3.6 - 2$ ), indicating the athlete had low balance (higher scores indicated greater balance among the three psychological needs). Conversely, an athlete who scored 5 for autonomy, competence and relatedness would have a sum of basic needs of 15, a TD score of 0 and a balanced needs score of 3.6 indicating greater levels of balance.

**Motivation.** To determine athletes' level of autonomous or controlled motivation, the Behavioural Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge, & Rose, 2008) was used (see Appendix J). Participants responded to the following stem: "Below are some reasons why people participate in sport. Using the scale provided, please indicate how true each of the following statements are for you." The BRSQ is a 24-item sport-specific measure of behavioural regulations identified in SDT (Deci & Ryan 1985, 2000, 2002, 2008; Ryan & Deci, 2002). Questions are answered on a 7-point Likert scale (1 = "Not at all true", 7 = "Very true"). The behavioural regulations measure included, amotivation (e.g., "but I wonder

what's the point"), external regulation (e.g., "because people push me to play"), introjected regulation (e.g., "because I would feel guilty if I quit"), identified regulation (e.g., "because I value the benefits of my sport"), integrated regulation (e.g., "because it's a part of who I am") and intrinsic motivation (e.g., "because it's fun"). Cronbach's alpha coefficient ranged from .71 to .91 demonstrating good reliability of the subscales. Scores for autonomous (identified regulation [ID], integrated regulation [IG] & intrinsic motivation [IM]), and controlled motivation (introjected regulation [IJ] & external regulation [EX]) were calculated using the following formula: Autonomous motivation = 2 x IM + IG + ID; Controlled motivation = 2 x IJ + 2 x EX (see Lonsdale et al., 2009).

**Moral disengagement.** The Moral Disengagement in Sport Scale – Short (MDSS-S; Boardley & Kavussanu, 2008) is an eight-item measure of the mechanisms of moral disengagement (see Appendix P). Participants responded to the stem: "Please respond to each of the following statements by indicating how much you agree with each statement. Please keep ice hockey in mind as you answer each question." Participants responded to statements on a 7-point Likert scale (1 = "strongly disagree", 7 = "strongly agree"). Each of the eight mechanisms of moral disengagement are addressed; moral justification (e.g., "It is okay for players to lie to officials if it helps their team"), euphemistic labelling (e.g., "Bending the rules is a way of evening things up"), advantageous comparison (e.g., "Shouting at an opponent is okay as long as it does not end in violent conduct"), displacement of responsibility (e.g., "A player should not be blamed for injuring an opponent if the coach reinforces such behaviour"), diffusion of responsibility (e.g., "It is unfair to blame players who only play a small part in unsportsmanlike tactics used by their teams"), distortion of consequences (e.g., "Insults among players do not really hurt anyone"), dehumanisation (e.g., "It is okay to treat badly an opponent who behaves like an animal") and attribution of blame (e.g., "Players who are mistreated have usually done something to deserve it"). Good internal

consistency (alpha coefficients of .80 and .85) and construct validity were shown by Boardley and Kavussanu. Further research by Hodge and Lonsdale (2011) has supported the psychometric properties of MDSS-S (alpha coefficient .83).

**Prosocial and antisocial behaviour.** The Prosocial and Antisocial Behaviour in Sport Scale (PABSS; Kavussanu & Boardley, 2009) was used to assess how often athletes report having been engaged in prosocial and antisocial behaviour over the course of the current competitive season (see Appendix O). Participants were asked to: “Please respond to each of the following statements by indicating how often you have engaged in each behaviour during the current competitive season; if you are not currently participating in a competitive season, please consider your experiences during your most recent competitive season.” The PABSS consists of 20 items and participants respond on a 5-point Likert scale (1 = “never”, 5 = “often”). The PABSS measures behaviour directed towards teammates and opponents and consisted of four subscales; prosocial behaviour towards teammates (e.g., “Encouraged a teammate”); prosocial behaviour towards opponents (e.g., “Helped an injured opponent”); antisocial behaviour towards teammates (e.g., “Argued with a teammate”); antisocial behaviour towards opponents (e.g., “Retaliated after a bad foul”). Boardley and Kavussanu (2009) reported alpha coefficients ranging from .76 to .79 for the four subscales.

### **Data Analysis**

**Descriptive statistics and internal consistency of measures.** The pattern of missing data was examined. Mean and standard deviation of responses to the questionnaire were calculated. Cronbach’s (1951) alpha coefficients were generated for all measures to determine measurement reliability. The level of internal consistency was set at .70 according to Nunnally’s (1978) criterion. Normality of the data distribution was also assessed. Skewness and kurtosis as well as the multicollinearity between variables was examined.

**Balance of Basic Psychological Needs.** The balance across needs satisfaction was created by calculating a total divergence among the three individual needs to create a total divergence score. This score was then subtracted from the highest score to give a score of balanced needs. Hierarchical regression analysis was then used to examine the relationships between balanced psychological needs and motivation. According to Sheldon and Niemiec (2006) the dependent variable (in this instance either controlled or autonomous motivation) was regressed onto the three basic needs with the balance needs score entered in step two.

**Structural Equation Modelling (SEM).** If the sample size permitted, structural equation modelling was to be used to test the theoretical connections in Figure 3. According to Tabachnick and Fidell (2007), the number of participants needs to be in excess of 200 in order for structural equation modelling to be utilised.

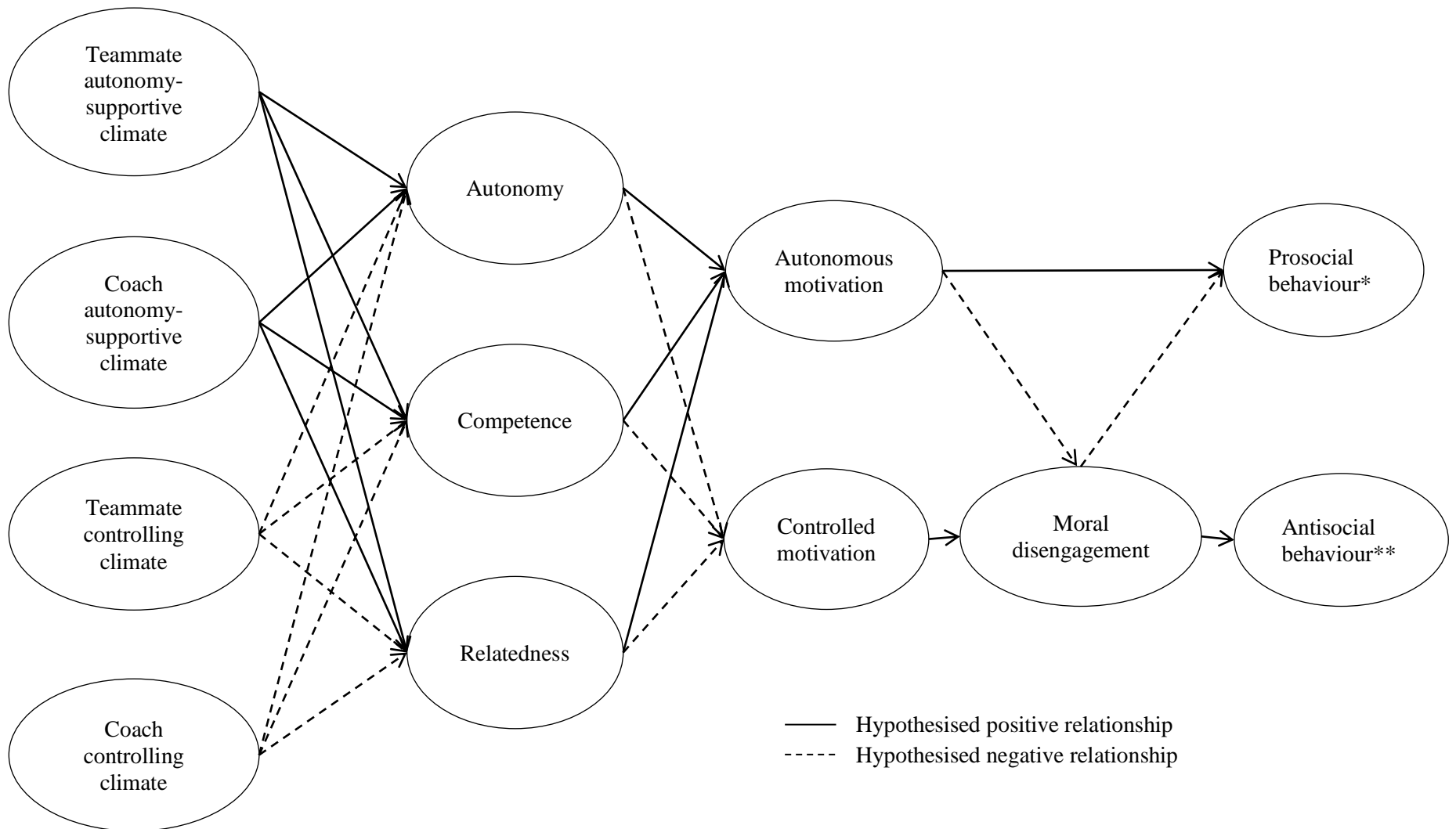


Figure 3. Hypothesised Theoretical Structural Model of the Team Environment, Basic Need Satisfaction, Motivation, Moral Disengagement and Prosocial/Antisocial Behaviour.

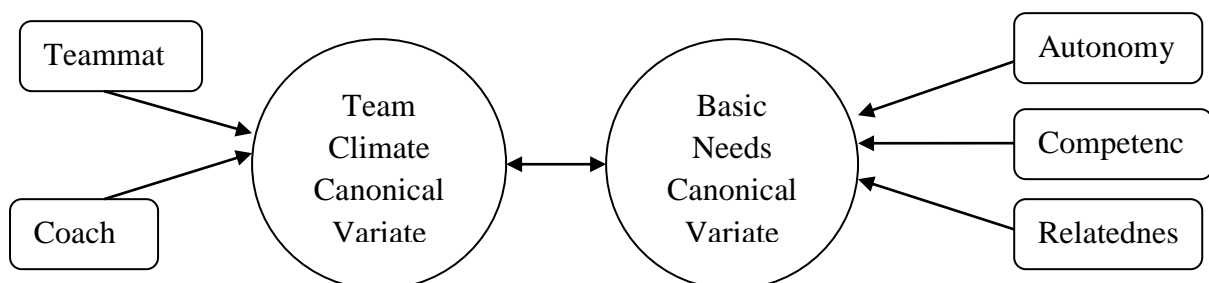
Note: \*Prosocial behaviour = prosocial behaviour towards teammates and opponents

\*\*Antisocial behaviour = antisocial behaviour towards teammates and opponents

### Alternative Data Analysis

Due to a smaller than anticipated sample size, multiple regression, canonical correlation and mediation analysis were used to test the hypothesized relationships in Figure 3. Specifically, canonical correlation analysis was employed to assess the relationship between an autonomy-supportive/controlling climate and basic needs. Multiple regression analysis was utilised to examine the relationship between basic needs and motivation as well as the relationship between motivation and prosocial/antisocial behaviour. Mediation analysis (Baron & Kenny, 1986) was conducted to determine if moral disengagement mediated the relationship between controlled motivation and antisocial behaviour.

**Canonical correlation.** Canonical correlation analysis is the process of examining the relationship between two sets of variables (Tabachnick & Fidell, 2007). Where multiple regression analysis analyses the effect of multiple independent variables on one dependent variable, canonical correlation utilises multiple dependent and independent variables to assess the linear relationships between two sets of multiple variables (Tabachnick & Fidell, 2007). Canonical correlation analysis does not directly examine the relationships between dependent and independent variables, rather it creates canonical variates which are combinations of the dependent or independent variables (see Figure 4).



*Figure 4.* Illustration of canonical correlation analysis (adapted from Tabachnick & Fidell, 2007).

A canonical variate is a linear combination of variables and there is often more than one way of combining pairs of canonical variates (Tabachnick & Fidell, 2007). A pair of canonical variates (e.g., climate canonical variate and needs canonical variate) are known as a

canonical function. The maximum number of canonical functions that are generated in canonical correlation analysis is equal to the number of variables in the smallest set (Hair, Anderson, Tatham & Black, 1998). In this case, a maximum of two functions could be generated (teammate & coach autonomy-support/control). The first canonical function explains the maximum amount of variance between the variates, whereas the second function explains the amount of variance not explained by the first function (Hair, et al., 1998). Therefore, the first function always explains the most variance in the relationship.

The similarity between multiple regression and canonical correlation analysis is that both analyses quantify the strength of the relationship between the independent and dependent variable(s) (Hair et al., 1998). In the current research, canonical correlation analysis was utilised to provide information regarding the relative contribution of each variable to the overall relationship (Amorose & Horn, 2001).

In order to determine which canonical function(s) to interpret, several criteria need to be met; 1) the level of significance and according to Tabachnick and Fidell (2007), canonical correlations greater than .30 that have a *p* value less than .05 are considered significant. 2) The variance explained by the canonical function, known as the squared canonical correlation (Hair et al., 1998). This should explain 9% or more of the variance between a pair of canonical variates to be considered significant (Tabachnick & Fidell, 2007). 3) The redundancy index which is the amount of variance a canonical variate extracts from the variables on the opposite side (Tabachnick & Fidell, 2007). For example, the redundancy index of interest in the present research was the amount of variance the climate canonical variate extracted from the basic needs satisfaction variate.

Once it has been determined that a canonical function warrants interpretation, the correlations (or lack of) between specific variables can be assessed. Canonical cross-loadings were used to interpret the results as they are considered less inflated than within-set loadings, therefore providing a more accurate interpretation (Kuylen & Verhallen, 1981). A canonical



cross-loading is the correlation between a dependent/independent variable and the opposite variate (e.g., the correlation between teammate autonomy-supportive and the basic needs satisfaction variate) (Hair et al., 1998). Given that canonical cross-loadings can be interpreted like factor loadings (Hair et al., 1998), the following criteria were used to interpret the strength of the loadings; .71, excellent; .55, good; .32, poor (Comrey & Lee, 1992).

## Chapter Four Results

### Preliminary Analyses

Cronbach's alphas were calculated for each of the questionnaire subscales (see Table 1). Results showed that the values for all subscales were above Nunnally's (1978) accepted cut-off of 0.70, ranging from 0.75 to 0.96. The data set was assessed for patterns of missing scores. Participants who had large amounts of missing data were deleted. According to Tabachnick and Fidell (2007), there are no set guidelines for how much missing data can be tolerated. For the purpose of the present data set, participants who did not complete the questionnaire and had obviously given up completing it part way through were deleted from further data analysis ( $n = 12$ ). Those participants who had completed the questionnaire, but had random missing data were included and the missing data were replaced using an expectation maximisation algorithm. Excluding these explained absences in the data, 0.15% of data were missing.

The distribution of the data was examined and skewness and kurtosis as well as multicollinearity were assessed. Several variables showed minor evidence of skewness and kurtosis, these variables were re-examined against their standardized residuals as another check of normality. All variables in question were normal based on this assessment.

### Descriptive Results

Descriptive statistics were calculated for the sample of 73 male ( $n = 34$ ) and female ( $n = 38$ ) ice hockey players (one participant did not report gender). Means, standard deviations and ranges are shown in Table 1. Pearson correlations were interpreted using Cohen's (1988) guidelines: strong = .50, moderate = .30, and weak = .10.

Table 1

*Descriptive statistics and Pearson correlations*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Aut-supp Climate – Teammate	.93													
2. Aut-supp Climate - Coach	.25*	.96												
3. Cont Climate - Teammate	-.54**	-.28*	.91											
4. Cont Climate – Coach	-.08	-.57**	.56**	.96										
5. Relatedness	.72**	.24*	-.36**	.03	.84									
6. Competence	.50**	.20	-.19	.09	.49**	.75								
7. Autonomy	.56**	.43**	-.36**	-.18	.56**	.61**	.80							
8. Autonomous Motivation	.50**	.32**	-.20	-.2	.44**	.67**	.58**	.79						
9. Controlled Motivation	-.01	-.15	.43**	.43**	.12	.04	-.20	-.20	.83					
10. Moral Disengagement	-.07	.08	.28*	.28*	-.02	.04	-.04	.00	.53**	.82				
11. Prosocial behaviours – Teammates	.17	.09	.14	.14	.31**	.40**	.23	.27*	-.80	-.00	.84			
12. Prosocial behaviours – Opponents	.14	.02	.00	.13	.31**	.05	.06	.04	.22	10.	.28*	.81		
13. Antisocial behaviours – Teammates	.15	-.14	.21	.40**	.17	.04	.08	.11	.29*	.41**	.06	.46	.80	
14. Antisocial behaviours – Opponents	.21	.08	.02	.17	.23	.01	.00	-.06	.34**	.55**	.22	.16	.51**	.90
Mean	5.35	5.21	2.14	2.46	5.78	5.46	5.80	24.22	7.99	2.56	4.35	2.90	1.90	2.04
SD	1.22	1.21	.96	1.1	1.01	.98	.77	2.3	3.98	1.04	.57	1.03	0.65	0.79
Range	1.00-7.00	1.36-7.00	1.00-4.40	1.00-4.87	1.60-7.00	3.00-7.00	3.70-7.00	18.00-28.00	4.00-19.50	1.00-5.50	3.00-5.00	1.00-5.00	1.00-4.00	1.00-4.63

\* Indicates correlation is significant at the .05 level \*\* Indicates correlation is significant at the .01 level.

Alpha coefficients are listed in italics on the diagonal.

**Team climate – the coach.** The mean score for autonomy-supportive coaching behaviours was 5.21 ( $SD = 1.12$ ). This indicated that participants had high perceptions of their coach acting in an autonomy-supportive manner. The overall mean score for controlling coaching behaviours was 2.46 ( $SD = 1.13$ ), indicating the participants viewed their coaches as being low in controlling behaviours.

**Team climate – teammates.** The mean score for autonomy-supportive teammate behaviours was 5.35 ( $SD = 1.22$ ), indicating that individuals viewed their teammates as high in autonomy-supportive behaviours. Whereas, the mean controlling teammate behaviours score was 2.14 ( $SD = 0.96$ ), signifying that as with coach controlling behaviours, participants also viewed their teammates as low in controlling behaviours. This was the first time these measures had been employed to assess teammate autonomy-supportive and controlling climates, alpha coefficients for the subscales were .93 and .91, respectively.

**Basic needs satisfaction.** The mean scores for autonomy, relatedness and competence were 5.80 ( $SD = 0.77$ ), 5.78 ( $SD = 1.00$ ) and 5.46 ( $SD = 0.98$ ), respectively, indicating participants reported high levels of each of the three basic psychological needs.

**Balanced needs satisfaction.** Total divergence of basic needs satisfaction was calculated by summing the difference between the three basic needs (i.e., autonomy - competence, autonomy – relatedness, competence - relatedness). A total divergence score of 0 represented perfect balance between the needs, whereas 12 represented the maximum divergence of the three needs. The total divergence score was then subtracted from the highest observed total divergence score to give the balanced needs score (Sheldon & Niemiec, 2006). The higher the balance score, the more balanced the needs. Balanced needs scores ranged from 0.0 to 8.46 with a mean of 4.30 ( $SD = 1.72$ ), indicating that participants in the current research had a moderate balance of basic psychological needs.

**Motivation.** The mean autonomous motivation score was 24.22 ( $SD = 2.30$ ) and controlled motivation score was 7.99 ( $SD = 3.98$ ). These results indicated that participants

reported high levels of autonomous motivation and relatively low levels of controlled motivation as the maximum possible score for both measures was 28.

**Prosocial and antisocial behaviour.** The mean scores for these subscales were; prosocial behaviour towards teammates, 4.35 ( $SD = 0.57$ ); prosocial behaviour towards opponents 2.90 ( $SD = 1.03$ ); antisocial behaviour towards teammates 1.90 ( $SD = 0.65$ ) and antisocial behaviour towards opponents 2.04 ( $SD = 0.79$ ). The range of scores possible was 0 to 5; therefore, these results indicated that participants reported high levels of prosocial behaviour towards teammates and moderate-low levels of prosocial behaviour towards opponents and antisocial behaviour towards both teammates and opponents.

**Moral disengagement in sport.** The mean score for moral disengagement was 2.56 ( $SD = 1.04$ ). The range of scores possible was 0 to 7, indicating participants reported low levels of moral disengagement.

**Gender differences.** Independent sample  $t$ -tests were performed to examine gender differences in levels of basic needs satisfaction and motivation. Results indicated there were no significant difference between males ( $M = 5.89$ ,  $SD = 0.87$ ) and females ( $M = 5.71$ ,  $SD = 1.12$ ) for relatedness,  $t(70) = 0.74$ ,  $p = .46$ ; competence (males,  $M = 5.66$ ,  $SD = 0.97$ ; females,  $M = 5.32$ ,  $SD = 0.94$ ),  $t(70) = 1.55$ ,  $p = .13$ , or autonomy (males,  $M = 5.94$ ,  $SD = 0.84$ ), females,  $M = 5.67$ ,  $SD = 0.69$ ),  $t(70) = 1.49$ ,  $p = .14$ . Similarly, there were no gender differences between males ( $M = 7.73$ ,  $SD = 3.79$ ) and females ( $M = 8.78$ ,  $SD = 4.20$ ), for controlled motivation,  $t(70) = 1.49$ ,  $p = .57$ ; or autonomous motivation,  $t(70) = -0.06$ ,  $p = .96$  (males,  $M = 24.25$ ,  $SD = 2.46$ ; females,  $M = 24.28$ ,  $SD = 2.16$ ).

Independent sample  $t$ -tests were conducted to examine if there were gender differences in levels of moral disengagement, prosocial behaviour and antisocial behaviour. Results indicated that there was no significant difference between males ( $M = 2.77$ ,  $SD = 1.10$ ) and females ( $M = 2.39$ ,  $SD = 0.97$ ) for moral disengagement,  $t(70) = 1.56$ ,  $p = .12$ ). Similarly, there were no significant differences between males ( $M = 4.41$ ,  $SD = 0.57$ ) and

females ( $M = 4.30$ ,  $SD = 0.58$ ) in levels of prosocial behaviour towards teammates,  $t(70) = 0.80$ ,  $p = .43$ ; or opponents (males,  $M = 2.90$ ,  $SD = .94$ ; females,  $M = 2.93$ ,  $SD = 1.11$ ),  $t(70) = -0.11$ ,  $p = .91$ . There was no significant difference between males ( $M = 2.21$ ,  $SD = 0.77$ ) and females ( $M = 1.88$ ,  $SD = 0.79$ ) in their levels of antisocial behaviour towards opponents  $t(70) = 1.08$ ,  $p = .08$ ). However, there was a significant difference between males ( $M = 2.06$ ,  $SD = 0.70$ ) and females ( $M = 1.76$ ,  $SD = 0.58$ ) in their levels of antisocial behaviour towards teammates,  $t(70) = 2.01$ ,  $p = .05$ ; indicating that males reported higher levels of antisocial behaviour towards opponents than females.

### **Main Results**

According to Hair et al. (1998), the minimum sample size necessary for multiple regression is five valid cases for each independent variable. However, the desired ratio is between 15-20 valid cases. For canonical correlation it is 10 valid cases for each independent variable (Hair et al., 1998). The number of variables assessed at one time for the canonical correlation analysis was five and for multiple regression, the maximum number of independent variables was four. Given that the sample size for the current research was 73, the minimum sample size criteria was met for all statistical tests.

**Autonomy-supportive/controlling climate and basic needs satisfaction.** Pearson correlations showed that autonomy-supportive teammate behaviours were strongly correlated with relatedness ( $r = .72$ ), autonomy ( $r = .56$ ) and competence ( $r = .50$ ) (see Table 1). Autonomy-supportive coach behaviours were significantly correlated at a low-moderate level with autonomy ( $r = .43$ ) and relatedness ( $r = .24$ ), but was not related with competence (see Table 1). Controlling teammate behaviours were negatively correlated at a low-moderate level with relatedness ( $r = -.36$ ) and autonomy ( $r = -.36$ ), but not competence. There were no significant correlations between perceived coach controlling climate and the three basic psychological needs.

*Autonomy-supportive climate and basic needs satisfaction.* Canonical correlation analysis was performed to examine the relationship between the coach and teammate autonomy-supportive climate and basic needs satisfaction. The climate set measured coach autonomy-support and teammate autonomy-support; the basic needs set measured autonomy, competence and relatedness. Overall, the autonomy-supportive climate/basic needs relationship was significant (Wilks'  $\lambda = 0.38$ ,  $F(6, 132) = 13.81$ ,  $p < 0.001$ ).

Independently, the analysis generated two significant functions with canonical correlation values of .76 ( $F(6, 132) = 13.81$ ,  $p < .001$ ) and .32 ( $F(2, 67) = 3.73$ ,  $p = .029$ ) (see Table 2). The amount of overlapping variance between the two variates was 58% for the first function and 10% for the second function. The redundancy index showed that the first autonomy-supportive climate canonical variate explained 38% of the variance in basic needs satisfaction and the second canonical variate explained 1.3%. Together, both functions explained 39.3% of the variance in basic needs satisfaction. Therefore, only the first function was interpreted, as the second function had a low squared canonical correlation and redundancy index. The results of the canonical correlation analysis showed that for the first canonical function, teammate autonomy-support (.75) and coach autonomy-support (.34) were positively associated with relatedness (.71), autonomy (.62) and competence (.51).

Table 2

*Summary of canonical loadings, standardized canonical coefficients and canonical correlations between an autonomy-supportive climate and basic needs variables*

	First Canonical Variate		Second Canonical Variate	
	Canonical Cross Loadings	Standardized Canonical Coefficient	Canonical Cross Loadings	Standardized Canonical Coefficient
Autonomy-support Climate set				
Teammate autonomy support	-0.75	-0.93	-0.01	-0.46
Coach autonomy support	-0.34	-0.21	0.28	1.01
Basic needs set				
Relatedness	-0.71	-0.68	-0.01	-0.74
Competence	-0.51	-0.10	-0.03	-0.63
Autonomy	-0.62	-0.37	0.17	1.34
Canonical correlation	0.76**		0.32*	

Note: \*\* Significant at  $p < 0.01$

\* Significant at  $p < 0.05$

A canonical correlation  $\geq .30$  is considered significant (Pedhazur, 1982)

Canonical cross-loadings were used as an indicator of the relationship between variables as they are considered more reliable for interpretation than canonical weights or canonical loadings (Hair et al., 1998).

Hypothesis one stated that an autonomy-supportive climate would be positively associated with basic needs satisfaction, which in turn would be positively associated with autonomous motivation. Canonical correlation analysis supported the first part of hypothesis one as an autonomy-supportive climate was positively associated with autonomy, competence and relatedness.

***Controlling climate and basic needs satisfaction.*** Canonical correlation analysis was also performed to establish the relationship between the coach and teammate controlling climate and basic needs satisfaction (see Table 3). The full model was statistically significant, Wilks'  $\lambda = 0.69$ ,  $(F6, 130) = 4.51$ ,  $p < 0.001$ , indicating that there was a relationship between coach and teammate controlling climate and basic needs satisfaction. Again, the analysis generated two significant functions with canonical correlations of .46 and .34, respectively



(see Table 3). The squared canonical correlations were 0.23 and 0.13 for each function, indicating that the shared variance between the canonical variates was 23% for the first function and 13% for the second function. The redundancy index for the first function indicated that the canonical variate explained 14% of the variance in basic needs satisfaction and the second canonical variate explained 1.4%. Together, both functions explained 15.4% of the variance in basic needs satisfaction.

Table 3

*Summary of canonical loadings, standardized canonical coefficients and canonical correlations between a controlling climate and basic needs variables*

	First Canonical Variate		Second Canonical Variate	
	Canonical Cross Loadings	Standardized Canonical Coefficient	Canonical Cross Loadings	Standardized Canonical Coefficient
Controlling Climate set				
Coach control	0.10	-0.50	0.34	1.10
Teammate control	0.43	1.19	0.14	-0.21
Basic needs set				
Relatedness	-0.44	-0.71	0.11	0.61
Competence	-0.25	0.13	0.13	0.94
Autonomy	-0.39	-0.50	-0.12	-1.30
Canonical correlation	0.46**		0.34*	

Note: \*\* Significant at  $p < 0.01$

\* Significant at  $p < 0.05$

A canonical correlation  $\geq .30$  is considered significant (Pedhazur, 1982)

Canonical cross-loadings were used as an indicator of the relationship between variables as they are considered more reliable for interpretation than canonical weights or canonical loadings (Hair et al., 1998).

The results of this canonical correlation analysis showed that for the first pair of canonical variables, teammate controlling behaviours (.43) were negatively associated with relatedness (-.44), autonomy (-.39) and competence (-.25). Similar to the second canonical function for an autonomy-supportive climate, the cross-loadings for the second canonical function for the controlling climate were poor and therefore were not interpreted. Hypothesis two proposed that a controlling team climate would be negatively associated with basic needs satisfaction, which, in turn would be positively associated with controlled motivation. Canonical

correlation analysis showed that teammate controlling behaviours were negatively associated with autonomy, competence and relatedness; however, the association between coach controlling behaviours and basic needs satisfaction was poor and therefore not interpreted.

**Basic needs satisfaction and motivation.** Results of the Pearson correlations showed autonomous motivation was significantly correlated at a moderate to high level with competence ( $r = .67$ ), autonomy ( $r = .58$ ) and relatedness ( $r = .44$ ) (see Table 1). There were no significant correlations between the basic needs and controlled motivation, therefore regression analysis was not conducted for basic needs satisfaction and controlled motivation (see Greenhalgh, 1997).

A standard multiple regression analysis was conducted with autonomous motivation as the dependent variable and autonomy, competence and relatedness as the predictor variables. Results are shown in Table 4. The overall analysis was significant,  $F(3, 68) = 23.32, p < 0.001$ . Competence ( $\beta = .49, t(69) = 4.52, p < .001$ ) and autonomy ( $\beta = .24, t(69) = 2.09, p = .04$ ) significantly predicted autonomous motivation, but relatedness did not,  $\beta = .07, t(69) = 0.68, p = .50$ . Together, autonomy and competence accounted for 48% of the variance in autonomous motivation. These results provided partial support for hypothesis one that basic needs satisfaction would predict autonomous motivation. However, hypothesis two was not supported as it proposed that basic needs satisfaction would be negatively associated with controlled motivation.

Table 4  
*Multiple regression analysis with basic needs satisfaction and autonomous motivation*

Dependent Variable (Independent Variable)	$R$	$R_{adj}^2$	$F$	$\beta$	$p$ value
Autonomous Motivation	.71	.48	23.32		<.001
Competence				.49	<.001
Autonomy				.24	.04
Relatedness				.07	.50

**Balanced needs satisfaction.** Hierarchical multiple regression analysis was used to examine the influence of balanced needs satisfaction on motivation, above the additive effect. Similar the analytical procedure employed by Sheldon and Niemic (2006), autonomy, competence and relatedness were entered in Step 1, and the balanced needs score was entered in Step 2. While both Step 1,  $F(69,3) = 23.32, p < .000$ ; and Step 2,  $F(68, 4) = 17.71, p < .000$  were statistically significant, balanced needs satisfaction was not a significant predictor of autonomous motivation,  $t(68) = -0.97, p = .36$  (see Table 5).

Table 5

*Hierarchical multiple regression analysis predicting additive/balanced needs on autonomous motivation.*

Step and predictor variable	$R^2$	$R_{adj}^2$	$\Delta R^2$	$F$	$\beta$	$p$ value
Step 1	.50	.48				
Competence					.49	<.000
Autonomy					.24	.04
Relatedness					.07	.50
Step 2	.51	.48	.01			
Competence					.42	.002
Autonomy					.25	.04
Balanced needs					.10	.34
Relatedness					.09	.40

This finding did not support hypothesis six as it was proposed that balanced needs would have a significant relationship with motivation beyond the effect individual needs satisfaction. The relationship between balanced needs and controlled motivation was not tested as there was no correlation.

**Motivation, moral disengagement and antisocial behaviour.** Pearson correlations revealed that there was a strong positive association between moral disengagement and controlled motivation ( $r = .53$ ), a moderate correlation between moral disengagement and antisocial behaviour towards teammates ( $r = .41$ ) and a strong correlation between moral disengagement and antisocial behaviour towards opponents ( $r = .55$ ). However, the correlations between moral disengagement and autonomous motivation ( $r = .00$ ); autonomous

motivation and antisocial behaviour towards teammates ( $r = .11$ ) and opposition ( $r = -.06$ ) were not significant.

In previous research, moral disengagement has been found to be a mediator between controlled motivation and antisocial behaviour (towards teammates & opponents) (e.g., Hodge & Lonsdale, 2011). To test for the mediation effect of moral disengagement on the relationship between controlled motivation and antisocial behaviour, Baron and Kenny's (1986) sequence of multiple regression analyses was used to examine moral disengagement as a mediator.

Four conditions need to be met in order to determine if mediation has occurred (Baron & Kenny, 1986). (1) The independent variable (controlled motivation) must predict the dependent variable (antisocial behaviour); (2) the independent variable (controlled motivation) must predict the mediator (moral disengagement). (3) The mediator (moral disengagement) must predict the dependent variable (antisocial behaviour). (4) The relationship between the independent variable (controlled motivation) and the dependent variable (antisocial behaviour) when controlling for the mediator (controlled motivation) must not be significant. These conditions were determined using multiple regression analysis and in the present research, all four criteria were met indicating that moral disengagement was a mediator of the controlled motivation/antisocial behaviour relationship (see Tables 6 and 7).

Table 6

*Multiple regression analysis of moral disengagement as a mediator of controlled motivation and antisocial behaviour towards teammates.*

Dependent Variable Predictor Variable	$R$	$R_{adj}^2$	$F$	$\beta$	$p$ value
Antisocial behaviour (teammates) Controlled motivation	.29	.07	6.70	.29	.01
Moral disengagement Controlled motivation	.53	.37	27.10	.53	<.001
Antisocial behaviour (teammates) Controlled motivation Moral disengagement	.42	.15	7.46	.11 .35	.001 .007

Table 7

*Multiple regression analysis of moral disengagement as a mediator of controlled motivation and antisocial behaviour towards opponents.*

Dependent Variable Predictor Variable	<i>R</i>	<i>R</i> <sub>adj</sub> <sup>2</sup>	<i>F</i>	$\beta$	<i>p</i> value
Antisocial behaviour (Opponents) Controlled motivation	.34	.11	9.55	.34	.003
Moral disengagement Controlled motivation	.53	.27	27.10	.53	<.001
Antisocial behaviour (Opponents) Controlled motivation	.57	.29	15.67	.08	.53
Moral disengagement				.51	<.001

(1) Controlled motivation significantly predicted antisocial behaviour towards teammates ( $F(71) = 6.70$   $\beta = .29$   $p = .01$ ) and opponents ( $F(71) = 9.55$   $\beta = .34$   $p = .003$ ). (2) Controlled motivation predicted moral disengagement ( $F(71) = 27.09$ ,  $\beta = .53$   $p < .001$ ). (3) Moral disengagement was a significant predictor of antisocial behaviour towards teammates ( $F(70) = 7.46$   $\beta = .35$ ,  $p = .007$ ) and opponents ( $F(70) = 15.67$   $\beta = .51$   $p < .001$ ). (4) The relationship between controlled motivation and antisocial behaviour towards teammates ( $F(70) = 7.46$   $\beta = .11$ ,  $p = .40$ ) and opponents ( $F(70) = 15.67$   $\beta = .08$   $p = .53$ ) was not significant when controlling for moral disengagement.

To confirm moral disengagement as a mediator, non-parametric bootstrap analysis was conducted. According to Preacher and Hayes (2004), bootstrapping is a more appropriate analysis than the alternative Sobel test which has previously been used to test indirect effects because the Sobel test assumes the sampling distribution of the indirect effect is normal which is often not the case (Preacher & Hayes, 2004), bootstrapping makes no such assumption. Another advantage to using the bootstrap method is that it can be applied to a smaller sample size with increased confidence (Preacher & Hayes, 2004) and according to Efron and Tibshirani (1993), the sample size required for bootstrapping can be as small as 20 valid cases. Polansky (1999) also stated that the statistical validity of the bootstrap method is best when the sample size is larger than 20.

Non-parametric bootstrap analysis was used to describe the confidence intervals of indirect effects. Bootstrap analysis is interpreted by examining the 95% confidence intervals; if zero is not included in the confidence interval, mediation is significant (Danaher, Smolkowski, Seeley & Severson, 2008). The confidence intervals for antisocial behaviour towards teammates and opponents were .01 to .058 and .02 to .10, respectively. Therefore moral disengagement mediated the relationship between controlled motivation and antisocial behaviour (towards teammates & opponents) relationship (see Table 8). However, given the lower limit for the confidence intervals were close to zero, these result should be interpreted with caution.

Table 8

*Bootstrap confidence intervals for moral disengagement as a mediator of controlled motivation and antisocial behaviour (towards teammates & opponents) (n = 73, 2000 bootstrap samples)*

	Bias-corrected 95% CI	
	Upper	Lower
Indirect effects (antisocial behaviour towards teammates)		
Moral disengagement	.01	.058
Indirect effects (antisocial behaviour towards opponents)		
Moral disengagement	.02	.10

Hypothesis four was partially supported as it was proposed that controlled motivation would be positively associated with moral disengagement and antisocial behaviour. However, controlled motivation was not negatively associated with prosocial behaviour as hypothesised. Hypothesis five was also supported as results indicated that moral disengagement mediated the relationship between controlled motivation and antisocial behaviour (towards teammates and opponents).

**Motivation, moral disengagement and prosocial behaviour.** Results of the Pearson correlations showed that only prosocial behaviour towards teammates was positively associated with autonomous motivation ( $r = .27$ ) at a small- moderate level. There was no correlation between prosocial behaviour towards opponents and autonomous motivation.

Moral disengagement and controlled motivation were not significantly correlated with prosocial behaviour (towards teammates or opponents). Regression analysis showed that autonomous motivation was a significant predictor of prosocial behaviour towards teammates,  $F(71) = 5.63$ ,  $\beta = .27$   $p = .02$ ) (see Table 9). Given that there were no other associations with autonomous motivation, moral disengagement and prosocial behaviour, there was no justification to run further regression analyses (Greenhalgh, 1997).

Table 9

*Linear regression analysis between autonomous motivation and prosocial behaviour towards teammates.*

Dependent Variable Predictor Variable	$R$	$R_{adj}^2$	$F$	$\beta$	$p$ value
Prosocial behaviour towards teammates	.27	.1	5.63		.02
Autonomous motivation				.27	.02

Similar to hypothesis four, hypothesis three was only partially supported. This was the case because while autonomous behaviour was positively associated with prosocial behaviour towards teammates, it was not associated with prosocial behaviour towards opponents or negatively associated with antisocial behaviour (towards teammates and opponents).

### Summary

**Hypothesis One.** Hypothesis one stated that an autonomy-supportive climate, generated by the coach and teammates, would be positively associated with basic needs satisfaction, which in turn, would be positively associated with autonomous motivation. Canonical correlation analysis was used to test the first part of this hypothesis (i.e., the association between an autonomy-supportive climate and basic needs satisfaction). Results indicated that both coach and teammate autonomy-supportive behaviours were positively associated with relatedness, autonomy and competence. Furthermore, multiple regression analysis showed that only competence and autonomy (not relatedness) were positively associated with autonomous motivation.

**Hypothesis Two.** Hypothesis two proposed that a controlling climate, generated by the coach and teammates, would be negatively associated with basic needs satisfaction, which in turn would be negatively associated with controlled motivation. Canonical correlation analysis indicated the relationship between a controlling climate and basic needs satisfaction was significant. On further inspection, teammate, but not coach, controlling behaviours were negatively associated with relatedness, autonomy and competence. Pearson correlations showed there was no correlation between basic needs satisfaction and controlled motivation, hence no multiple regression analysis was conducted. Therefore, hypothesis two was only partially supported as basic needs satisfaction was not negatively associated with controlled motivation.

**Hypothesis Three.** Hypothesis three stated that autonomous motivation would be positively associated with prosocial behaviour and negatively associated with antisocial behaviour. Hypothesis three was only partially supported as Pearson correlations showed that only autonomous motivation and prosocial behaviour towards teammates were positively associated. There was no negative association between autonomous motivation and antisocial behaviour (towards teammates or opponents). Linear regression analysis confirmed autonomous motivation as a predictor of prosocial behaviour towards teammates.

**Hypothesis Four.** Hypothesis four stated that controlled motivation would be positively associated with antisocial behaviour but negatively associated with prosocial behaviour. This was partially supported as controlled motivation was positively associated with antisocial behaviour (towards teammates and opponents). However, there was no negative association between controlled motivation and prosocial behaviour.

**Hypothesis Five.** Hypothesis five proposed that moral disengagement would mediate the relationship between controlled motivation and antisocial behaviour (towards teammates and opponents). Baron and Kenny's (1986) mediation analysis and non-parametric bootstrap



confidence intervals showed that moral disengagement was a mediator of the controlled motivation/antisocial behaviour (towards teammates and opponents) relationship.

**Hypothesis Six.** Hypothesis six stated that balanced needs satisfaction would be positively associated with autonomous motivation beyond the role of autonomy, competence and relatedness individually. Hypothesis six was not supported; following Sheldon and Niemic's (2006) procedure for assessing the role of balanced needs, hierarchical multiple regression analysis showed that balanced needs were not a significant predictor of autonomous motivation. Furthermore, the relationship between balanced needs and controlled motivation was not assessed as there was no correlation between need satisfaction and controlled motivation.

## Chapter Five

### Discussion

The purpose of this research project was to examine how the team climate created by the coach and teammates was related to athletes' basic needs satisfaction, and athlete motivation. Furthermore, the link between motivation and prosocial/antisocial behaviour (towards teammates and opponents) was examined as well as the role of moral disengagement as a mediator of the controlled motivation/antisocial behaviour relationship.

#### Team Climate and Basic Needs

Canonical correlation analysis indicated that teammate and coach autonomy-supportive behaviours were positively associated with basic needs satisfaction. This finding provided support for hypothesis one and the tenets of SDT (Deci & Ryan, 2000). Athletes who perceive the social agents within their climate as providing choice, non-controlling feedback, acknowledging their feelings and setting appropriate tasks, experience satisfaction of autonomy, relatedness and competence (Mageau & Vallerand, 2003). This finding also supported previous research which has shown an autonomy-supportive coach is positively associated with basic needs satisfaction (e.g., Amorose & Anderson-Butcher, 2007; Adie, Duda & Ntoumanis, 2011). A task-involving peer motivational climate (similar to teammate autonomy-supportive behaviours) has also been positively linked with needs satisfaction (e.g., Jõesaar et al., 2011).

Canonical correlation analysis also revealed that teammate autonomy-supportive behaviours had a stronger positive association with basic needs satisfaction than coach autonomy-supportive behaviours. This finding supports research by Vazou et al. (2004) who found that perceptions of a task-involving coach and peer motivational climate (similar to coach and teammate autonomy-supportive climate) positively predicted enjoyment and commitment, however, the effects were stronger for the peer motivational climate. Correlation analysis indicated that teammate autonomy-support had the strongest association with

relatedness. It could be that because coaches are an authority figure, whereas teammates are more often viewed as peers, athletes in the current study may have felt more connected/had more meaningful relationships with their teammates. On the other hand, coach autonomy-support had the strongest correlation with autonomy. Theoretically, this makes sense as the coach is the one who designs training/tasks and sets limits which influence an athlete's perceptions of autonomy.

Research has shown that relatedness is an important factor when considering teammates and motivation (e.g., Keegan, Spray, Harwood & Lavalley, 2010; Vazou et al., 2005). Vazou et al. (2006) found a task-involving peer motivational climate (similar to a teammate autonomy-supportive climate) was the only significant predictor of physical self-worth in adolescent athletes. According to Harter (1988), physical self-worth is closely connected to social support from an individual's peer group. Vazou et al. (2005) also found that relatedness support, including having a sense of unity, caring and trust in teammates, was also an important aspect of the peer motivational climate in youth sport. In addition, Keegan et al. (2010) identified several peer-specific themes that influence athlete motivation in youth sport. In particular, these themes were peer relationships, social interactions, and peer collaboration. These peer-specific themes should logically have strong links with relatedness as they are concerned with a sense of connectedness and belonging with others in the climate. The current findings also support work by Moreno et al. (2008) who found that amongst adult exercisers, a peer task-involving motivational climate (similar to an autonomy-supportive climate) had the strongest association with relatedness, followed by competence and autonomy. It seems to be the case that where a peer or teammate climate is concerned, important outcomes are characterised by relatedness, social support and social affiliations. This assertion is supported by Keegan et al.'s (2010) statement that for peer specific themes, peer relationships appear to be a key determinant for motivation.

The results from the current study also indicated that teammate controlling behaviours had a stronger negative association with basic needs satisfaction than coach controlling behaviours which were also negatively associated. This was shown by stronger cross-loadings for teammates (.43) compared to the coach (.10) on the basic needs canonical variate. These findings provided support for hypothesis two as perceptions of teammate and coach controlling behaviours were negatively associated with athletes' perceptions of relatedness, autonomy and competence.. No prediction was made about the relative strength of teammate versus coach controlling behaviours.

These results support the tenets of SDT, where athletes in a controlling climate are forced to think and act in a certain way which undermines athletes' freedom to make their own decisions, their belief about their ability and the connectedness and belonging with others within their environment (Deci & Ryan, 1985). Blanchard, Amiot, Perreault, Vallerand and Provencher (2009) found that a coach controlling style negatively predicted perceptions of autonomy, but not competence and relatedness. Blanchard et al. suggested that there are potential moderators to the coaching style/basic needs relationship. Specifically, age, maturity and global levels of motivation may buffer the influence of a controlling style of coaching. That is, some individuals may have the necessary psychological tools to block certain controlling information and feedback that does not align with their sense of self; consequently controlling coaching information does not influence their basic needs satisfaction (Blanchard et al., 2009).

Cox and Ullrich-French (2010) investigated peer and teacher relationship profiles in physical education classes and their influence on self-determined motivation as well as physical and psychological outcomes (e.g., enjoyment, effort, levels of physical activity). Their results indicated that strong peer relationships may protect against potentially negative outcomes for students who had decreased levels of teacher support. This could be applied to the current research as having autonomy-supportive teammates was strongly positively

associated with levels of autonomy ( $r = .56$ ), competence ( $r = .50$ ) and relatedness ( $r = .72$ ). However, the association between coach controlling behaviours and basic needs satisfaction was poor. While this result was not expected, it aligns with Cox and Ullrich-French's reasoning, given that teammates' use of autonomy-supportive behaviours (which had a stronger relationship with basic needs satisfaction than coach controlling behaviours), may have been perceived by the athletes as enough of a buffer to regulate the negative affect of coach controlling behaviours.

Interestingly, correlation analysis showed that controlling and autonomy-supportive coach behaviours ( $r = -.57$ ) as well as controlling and autonomy-supportive teammate behaviours ( $r = -.54$ ) were negatively correlated. The current findings support the work of Silk, Morris, Kanaya and Steinberg (2003) who found that parental control and autonomy-support were negatively correlated, but distinct constructs. Similarly, Bartholomew, Ntoumanis, Bosch and Thøgersen-Ntoumani (2011) replicated this finding in an athlete population, where reported low levels of autonomy-support did not mean behaviour was perceived as controlling (and vice versa). Given that autonomy-support and controlling behaviours are independent (rather than opposite ends of a continuum), it is possible they can occur simultaneously. For example, a coach or teammate who uses conditional regard to encourage a behaviour, but provide a reason for doing so (Bartholomew, Ntoumanis, Bosch, et al., 2011). This highlights the importance of examining autonomy-supportive and controlling behaviours independently.

### **Basic Needs Satisfaction and Motivation**

Results from the current study showed that basic needs satisfaction was positively correlated with autonomous motivation. Multiple regression analysis revealed that autonomy and competence, but not relatedness, had significant positive relationships with autonomous motivation. This provided partial support for hypothesis one. These findings could indicate that these athletes' reasons for participating were primarily centred around demonstrating

their competence and experiencing the freedom to make their own decisions, rather than feeling a sense of belonging with people within the environment. These findings support previous research that has shown basic needs satisfaction is positively associated with autonomous motivation (Amorose & Anderson-Butcher, 2007; Adie, Duda & Ntoumanis, 2008). It is important to note that levels of relatedness, autonomy and competence were all relatively high among participants; ranging from 5.0 to 5.8 on a seven-point scale. Additionally, the mean for autonomous motivation was 24.2 (out of a total of 28); indicating that these participants reported high levels of autonomous motivation.

According to Amorose and Anderson-Butcher (2007), the relative strength of the basic psychological needs in determining an athlete's motivation has been inconsistent and depending on the setting, different needs may be more important than others. For example, Blanchard et al. (2009) identified that in individual sports, autonomy and competence may be more important than relatedness, whereas in team sports relatedness may be more important. Jõesaar et al. (2011) found amongst youth team sport athletes, that competence and relatedness were more predictive of intrinsic motivation than autonomy.

According to Vallerand (1997), basic needs satisfaction is dependent on the conditions in which the activity is performed as well as the nature of the activity itself. While ice hockey is a team sport, the importance of relatedness in determining motivation in the current research project was not evident. Therefore, individuals did not view being connected with others as an important part of their self-determined motivation. Although as previously mentioned, levels of relatedness were high ( $M = 5.78$ ).

The lack of association between relatedness and autonomous motivation could be due to autonomy and competence being more central to autonomous motivation (Frederick-Recascino, 2002). This concept is not new, Ryan and Deci (2002) queried how the need for relatedness was connected with intrinsic motivation, suggesting that it may be more distal than the need for autonomy or competence. They went on to say that while intrinsic

motivation was possible when “there were not proximal supports for relatedness, we have never found instances of people sustaining a high level of intrinsic motivation when they do not experience competence and autonomy” (Ryan & Deci, 2000, p. 334). Moreover, Koestner and Losier (2002) suggested that for intrinsic motivation, relatedness may not be necessary as, “intrinsic motivation involves being spontaneously drawn toward activities that provide optimal challenge, opportunities for unencumbered action, and the possibility of testing one’s skills with a reasonable chance of success” (p. 106). Therefore, perhaps the ice hockey players in the current study did not require relatedness to feel autonomously motivated; feeling in control of their choices/having the freedom of choice and feeling competent within the ice hockey environment was sufficient.

While basic needs satisfaction was positively associated with autonomous motivation, there was no correlation between basic needs satisfaction and controlled motivation. This result does not support hypothesis two or the assertions of SDT which suggest that need satisfaction should be negatively associated with controlled motivation, as controlled motivation involves reasons for action that are concerned with feelings of pressure or guilt and external regulations (Ryan & Deci, 2000). Therefore “controlled behaviours are carried out but lack personal endorsement” (Bartholomew, Ntoumanis & Thørgersen-Ntoumani, 2009, p. 221). When this is the case, individuals’ actions are not autonomous; therefore, their psychological needs for autonomy, competence and relatedness are not satisfied. As mentioned earlier, Blanchard et al. (2009) proposed various potential moderators when athletes are exposed to controlling situations. Therefore, the lack of association between basic needs satisfaction and controlled motivation could be due to potential moderators such as age or global levels of motivation.

On the other hand, the lack of association between basic needs satisfaction and controlled motivation could be linked to Bartholomew and colleagues’ research (e.g., Bartholomew, Ntoumanis, Bosch, et al., 2011; Bartholomew, Ntoumanis, Ryan, et al., 2011)

on need thwarting versus needs satisfaction. That is, an individual having their needs actively frustrated rather than merely having low levels of needs satisfaction. According to Deci and Ryan (2000), when an individual remains in an environment where their psychological needs are consistently thwarted, significant psychological and emotional costs result. Bartholomew, Ntoumanis, Ryan, et al. (2011) indicated that need satisfaction and need thwarting are independent constructs therefore warrant independent examination.

While previous research has shown that basic needs satisfaction leads to positive affective, behavioural and cognitive outcomes (e.g., Blanchard et al., 2009), the link between basic needs satisfaction and negative outcomes is less clear (Adie et al., 2008; Bartholomew, Ntoumanis, Bosch, et al., 2011). Research has indicated that needs thwarting, but not lack of needs satisfaction, was a predictor of negative outcomes such as disordered eating, burnout (Bartholomew, Ntoumanis, Bosch, et al., 2011) and exhaustion (Bartholomew, Ntoumanis, Ryan, et al., 2011); whereas, needs satisfaction was a stronger predictor than needs thwarting of positive outcomes. Based on these findings, it is perhaps not surprising that the current research reported no association between basic needs satisfaction and controlled motivation (a negative outcome) and therefore provides further support to the assertion that psychological needs satisfaction may be more relevant in understanding the presence of well-being rather than explaining the absence of ill-being (Adie et al., 2008; Sheldon & Bettencourt, 2002).

**Balanced Needs Satisfaction.** The current research also examined the relationship of balanced needs satisfaction and motivation. Results indicated that balanced needs satisfaction did not predict motivation beyond the additive effect of individual needs satisfaction. These findings did not support hypothesis six and were contrary to previous research that found that balanced needs satisfaction influenced burnout (Perreault et al., 2007) and psychological well-being (Mack et al., 2011) beyond the influence of the additive effect of basic psychological needs.



While the current results did not support previous research, this was not entirely unexpected. Previous research has reported significant findings when examining balanced needs; however, the amount of additional variance explained by balanced needs was small (Mack et al., 2011; Perreault et al., 2007). Perreault et al. also noted that an individual with low needs satisfaction is just as likely to have balanced needs as an individual with high balanced needs satisfaction (e.g., an athlete could score 2 out of 7 on scales assessing competence, autonomy and relatedness and have the same balance score as an athlete who scores 6 on all three scales). Therefore Perreault et al. suggested it may be more important to examine balanced needs in conjunction with absolute levels of psychological needs when considering their relationship with motivation and outcomes.

### **Motivation and Moral Disengagement**

In this study, there was a strong positive correlation between controlled motivation and moral disengagement ( $r = .53$ ); however, there was no correlation between autonomous motivation and moral disengagement. These correlation results were supplemented by multiple regression analysis, showing that controlled motivation explained 28% of the variance in moral disengagement. It would appear that athletes who had higher levels of controlled motivation were more likely to morally disengage. These findings support research by Hodge and Lonsdale (2011) who found that controlled motivation had a moderate positive relationship with moral disengagement and that the relationship between autonomous motivation and moral disengagement was not significant. Moreover, the mean for moral disengagement in the current study was relatively low (2.56 on a 7 point Likert scale), suggesting that overall these participants reported that they largely disagreed with the use of moral disengagement mechanisms.

### **Motivation, Moral Disengagement and Prosocial/Antisocial Behaviour**

The results for the current research revealed that autonomous motivation was positively correlated with prosocial behaviour towards teammates, but not opponents. There was no association between autonomous motivation and antisocial behaviour. These findings partially support hypothesis three. Furthermore, controlled motivation was positively associated with moral disengagement and antisocial behaviour (towards teammates and opponents). There was no correlation between controlled motivation and prosocial behaviour (towards teammates and opponents). These findings partially support hypothesis four and support hypothesis five. According to Kavussanu (2008), sport provides athletes (and coaches) with an opportunity to engage in both prosocial and antisocial behaviours and the context in which sports are performed plays a key role in determining whether these behaviours are exhibited.

**Prosocial behaviour.** The current findings indicated that there was a low-moderate correlation ( $r = .27$ ) between autonomous motivation and prosocial behaviour towards teammates and regression analysis confirmed autonomous motivation as a significant predictor of prosocial behaviour towards teammates. However, there was no correlation between autonomous motivation and prosocial behaviour towards opponents. Hodge and Lonsdale (2011) reported similar findings using structural equation modelling, whereby autonomous motivation had a moderate positive relationship with prosocial behaviour towards teammates, but no relationship with prosocial behaviour towards opponents. In line with Hodge and Lonsdale's interpretation, perhaps the ice hockey players in the present study, were more inclined to behave in a prosocial manner towards people with whom they had a personal connection (e.g., teammates) as opposed to their opponents. Previous research by Ntoumanis and Standage (2009) indicated that autonomous motivation was a strong predictor of sportpersonship attitudes; however, sportpersonship attitudes towards teammates were not examined. According to Ntoumanis and Standage, the reason why autonomous motivation

was related to sportspersonship attitudes (similar to prosocial behaviour) was because athletes who were autonomously motivated were more likely to enjoy the game more if they played within the rules and in a way that showed respect to everyone involved. The current research partially supports this claim as autonomous motivation was only associated with prosocial behaviour towards teammates.

There was no correlation between controlled motivation and prosocial behaviour (towards teammates and opponents). However, it was hypothesised that this relationship would be mediated by moral disengagement so this finding (or lack thereof) was not entirely unexpected. There was also no correlation between moral disengagement and prosocial behaviour (towards teammates & opponents). The current results are in line with previous research as Hodge and Lonsdale (2011) reported non-significant relationships between moral disengagement and prosocial behaviour towards teammates and opponents.

**Antisocial behaviour.** Correlation analysis revealed there was a moderate positive relationship between controlled motivation and antisocial behaviour (towards teammates,  $r = .29$ ; and opponents,  $r = .34$ ). Moral disengagement also had a moderate positive relationship ( $r = .41$ ) with antisocial behaviour towards teammates and a strong positive relationship ( $r = .55$ ) with antisocial behaviour towards opponents. Baron and Kenny's (1986) mediation analysis and non-parametric bootstrap analysis revealed that moral disengagement was a mediator of the controlled motivation/antisocial behaviour relationship. These findings support previous research by Hodge and Lonsdale (2011) who found that controlled motivation had a moderate positive relationship with moral disengagement and moral disengagement had a strong positive relationship with antisocial behaviour (towards teammates and opponents). Hodge and Lonsdale's explanation for the mediating effect of moral disengagement stemmed from the environment the athletes were part of. Specifically, if athletes perceived a controlling environment, they may be more exposed to behaviours that promoted compliance (e.g., obedience, conditional regard) or a win-at-all costs mentality

which may cause them to engage in antisocial behaviours. Athletes who engage in antisocial behaviours and don't experience negative affect as a result (because they have employed moral disengagement mechanisms) may be more likely to engage continued antisocial behaviour.

Research by Lucidi, Grano, Leone, Lombardo and Pesce (2004) has also linked moral disengagement with another form of antisocial behaviour, the intention to take doping substances. In addition, Boardley and Kavussanu (2010) found that moral disengagement mediated the relationship between ego-orientation and antisocial behaviour towards teammates in soccer. Their reasoning for this finding was that athletes with high levels of ego-orientation (similar to controlled motivation), may be less concerned with fair play as they have a win-at-all costs mentality, meaning they may be more likely to adopt antisocial/unsportsmanlike behaviours.

The current results showed there was no association between autonomous motivation and antisocial behaviour (towards teammates or opponents). Boardley and Kavussanu (2010) found that task orientation was not associated with antisocial behaviour towards teammates. They concluded that a task-oriented athlete did not necessarily have low levels of antisocial behaviour towards teammates. According to Bandura (1999), proactive and inhibitive morality are two independent dimensions of morality, that is, the absence of one does not assume the presence of the other. Therefore, since athletes in the current study were autonomously motivated (which was positively correlated with prosocial behaviour towards teammates), it did not indicate they had low levels of antisocial behaviour (towards teammates or opponents). As Boardley and Kavussanu (2010) assert, this highlights the importance of considering positive and negative motivation when examining behaviour.

## **Conclusion**

Prosocial and antisocial behaviours are actions that intentionally advantage or disadvantage another person. In general, sport allows numerous opportunities for the

enactment of prosocial behaviours (Vallerand & Losier, 1994); however, ice hockey is a sport that also provides athletes with an opportunity to engage in antisocial behaviour, due to the nature of the sport with its high level of physical contact between players (Bredemeier & Shields, 1986b). Additionally, an athlete's motives underlying their sport involvement can influence how they play the game (Vallerand & Losier, 1994). With this in mind, the purpose of the current research project was to examine the relationships between the team climate (generated by the coach and teammates) and basic needs satisfaction in ice hockey players. Furthermore, this study explored how needs satisfaction influenced motivation which, in turn, influenced prosocial and antisocial behaviour.

The results of this study indicated that teammate and coach autonomy-supportive behaviours were positively associated with basic needs satisfaction. Whereas only teammate controlling behaviours were negatively associated with relatedness, autonomy and competence. The addition of teammates to the analysis makes these findings unique, as previous research has not studied the influence of teammates from a SDT perspective.

Basic needs satisfaction was positively related with autonomous motivation. These findings support SDT as Deci and Ryan (2000) suggest that basic needs satisfaction is essential for healthy (autonomous) motivation. Previous research has also shown that needs satisfaction was positively associated with autonomous motivation (e.g., Amorose & Anderson-Butcher, 2007; Gagné, 2003). However, there was no association between needs satisfaction and controlled motivation. Adie et al. (2008) claim that needs satisfaction is more important when considering the presence of well-being rather than explaining the absence of ill-being. Moral disengagement was found to mediate the relationship between controlled motivation and antisocial behaviour (towards teammates and opponents). Autonomous motivation was positively correlated with prosocial behaviour towards teammates, but not opponents. This suggests that athletes may be more inclined to act in a prosocial manner towards people they have a personal connection with - that is, teammates (Hodge & Lonsdale,

2011). There was no association between autonomous motivation and antisocial behaviour or controlled motivation and prosocial behaviour. These findings support previous research where being autonomously motivated predicted prosocial behaviours, but did not negatively predict antisocial behaviours (and vice versa) as they are independent dimensions of morality (i.e., being high in one does not automatically assume that an athlete is low in the other) (e.g., Boardley & Kavussanu, 2010).

### **Limitations**

It is important to acknowledge the limitations of the current research project. Most importantly, the final sample size was smaller than expected. Consequently, the hypothesised model (see Figure 3) could not be tested with structural equation modelling. Instead, the model was divided into smaller analyses with canonical correlation, multiple regression and mediation analysis utilised. Further statistical limitations included canonical correlation analysis which is often difficult to interpret (Tabachnick & Fidell, 2007) and the data collected were cross-sectional and relied on self-report measures therefore no causal inferences could be made.

This study was also limited as it examined only one sport, ice hockey. Therefore the ability to generalise the findings to other sports (and potentially even the wider ice hockey population) is limited. Ice hockey in New Zealand and Australia is a minority sport, and may be viewed differently in a country where it is a mainstream sport (e.g., Canada). Therefore, the generalisation of the results of this study to the wider ice hockey population must be done with caution. Furthermore, in some countries, the very nature of the sport of ice hockey inherently provides opportunities for antisocial behaviour (e.g., through overt fighting) (Grossman & Hines, 1996). Therefore, it is important to examine other sporting codes where this may not be the case.

Additionally, the current research project utilised a data collection period where the majority of participants were in their off-season. Future research should consider data

collection when athletes are in-season and have had a chance to develop a team climate, and the time to recall is minimal.

### **Future Research Directions**

Future research should consider using longitudinal (e.g., athletes' basic needs satisfaction and perceptions of teammate and coach created climate across the course of a season) and/or qualitative research designs to gain a deeper understanding of the relationships tested. With respect to self-report measures, the utilisation of observational techniques and/or coach ratings may be necessary to obtain supplemental measures of behaviour. This may be especially important when researching prosocial and antisocial behaviours as participants may respond to self-report measures in a socially desirable manner rather than in a way that accurately reflects their behaviour. It may also be important to measure the length of time an athlete has been part of a team as this may influence their perceptions of the teammate and coach created climate.

While the current research project indicated that teammates were a social agent related to basic needs satisfaction and therefore warranted inclusion in analysis, given the above limitations, further research is needed to comprehensively understand their role from a SDT perspective. Recently, Rutten et al. (2011) used multi-level analysis to examine within-team variables and their influence on prosocial and antisocial behaviour. Future research should adopt a similar approach where the characteristics of specific teams are assessed to help explain behaviour. Furthermore, consideration of multiple sports (both team and individual) is also warranted given the lack of generalizability of the current findings.

In terms of basic needs satisfaction and controlled motivation, the current research reported no association. Given that this finding supported work by Bartholomew, Ntoumanis, Bosch, et al. (2011) and Bartholomew, Ntoumanis, Ryan, et al. (2011), future research should examine the concept of needs thwarting as well as needs satisfaction. Bartholomew et al. indicated that needs satisfaction and needs thwarting are independent constructs; therefore, a

low needs satisfaction score does not imply that an athlete's needs are being thwarted. Hence, when examining negative outcomes such as controlled motivation, it may be more important to examine needs thwarting rather than needs satisfaction.

Continued research on the concept of balanced needs satisfaction and the relationship with motivation is also needed given that previous research has found mixed results. The current research found that balanced needs satisfaction did not significantly explain any additional variance in athlete motivation. This finding did not align with previous research that has found significant yet minimal changes in variance due to balanced needs (e.g., Mack et al., 2011; Perreault et al., 2007). Therefore research on the role of balanced needs satisfaction warrants further exploration.

Future research should also explore the notion of whether autonomy-supportive coaches, instead of promoting positive/prosocial behaviour are autonomously promoting antisocial behaviours and moral disengagement. This may be the case for a sport such as ice hockey where teams have players who are known as enforcers; an identity that is often (but not always) endorsed and encouraged by the coach and teammates (Samuel, 2011).

With regards to coaching style, Hodge and Lonsdale (2011) have shown that coaching style is strongly related to athlete motivation and prosocial/antisocial behaviour. The current research found that an autonomy-supportive climate was positively associated with all three basic needs and a controlling climate was negatively associated with relatedness, autonomy and competence. According to Stebbings, Taylor and Spray (2011), it may be important to also consider coaches' basic needs satisfaction as this has been shown to influence the coaches' well-being and, in turn, predict perceived autonomy-support for their athletes. Therefore, if coaches feel the environment satisfies their own basic psychological needs, it may lead to a more autonomy-supportive climate for their athletes. This line of research could provide an understanding of why coaches are autonomy-supportive (or not) and warrants further exploration.



The current research revealed moral disengagement was a mediator of the controlled motivation/antisocial behaviour relationship. Recently, Tractlet et al. (2011) indicated that as well as coaches and teammates influencing an athlete's motivation, the referee was also a social agent that athletes used to justify their antisocial behaviour. Future research should consider various social agents including coaches, teammates, referees and parents when examining the role of moral disengagement and behaviour.

### **Practical Recommendations**

The current research indicated that teammate and coach behaviours were associated with basic needs satisfaction. Therefore, in order to provide an autonomy-supportive climate - one that will enhance an athlete's needs satisfaction - it may be important to also consider the role that teammates play as well as the coach. According to Mageau and Vallerand (2003), autonomy-supportive behaviours result in an increase in all three basic psychological needs. Therefore, implementing autonomy-supportive strategies will increase autonomy, competence and relatedness.

Mageau and Vallerand (2003) recommended that a coach can provide an autonomy-supportive environment by: (i) providing athletes with choice within limits, (ii) providing rationale to the athletes for tasks, limits and activities that are set, (iii) providing athletes with opportunities to show initiative and work independently, (iv) acknowledging athletes' feelings and (v) avoiding controlling feedback and behaviours. While Mageau and Vallerand's article was targeted at coaching behaviours, the current research indicated that athletes perceived their teammates to act in an autonomy-supportive manner as well (which contributes to basic needs satisfaction). Therefore, it is important for teammates to adopt autonomy-supportive behaviours such as acknowledging teammates' feelings and avoid controlling behaviours. When teammates as well as coaches adopt autonomy-supportive behaviours, the team climate will be positively associated with athletes' need satisfaction, which in turn will be positively associated with autonomous motivation.

Similar to Mageau and Vallerand (2003), Bartholomew et al. (2010) identified controlling strategies that a coach can adopt which has a detrimental effect of athletes' motivation. Given the current research indicated that teammates' controlling behaviours were had a stronger negative association with athletes' needs satisfaction, it is important for teammates to also avoid controlling behaviours such as conditional regard, tangible rewards, intimidation behaviours, excessive personal control and controlling feedback. The current research indicated that autonomous motivation was positively associated with prosocial behaviour towards teammates; whereas, controlled motivation was positively associated with antisocial behaviour (towards teammates and opponents). Therefore, in order to promote prosocial behaviour towards teammates, autonomous motivation would appear to be especially beneficial. Previous research has shown that autonomous motivation is the result of an autonomy-supportive environment and subsequent needs satisfaction (Amorose & Anderson-Butcher, 2007). From this, it can be asserted that the promotion of behaviours such as providing a rationale for tasks and limits and providing non-controlling feedback are important for promoting prosocial behaviour. Conversely, to reduce levels of antisocial behaviour (towards teammates and opponents) it is important to discourage controlled motivation by using non-controlling feedback, promoting self-referenced success over intra-team comparison and the use of non-tangible rewards.

Given that moral disengagement was positively linked with antisocial behaviour (towards teammates and opponents), it is important to reduce the use of moral disengagement mechanisms. Corrion et al. (2009) suggest that developing self-regulation skills that help athletes ignore or avoid social pressures and acknowledging personal responsibilities (i.e., putting the 'I' back in team) may reduce athletes' use of moral disengagement mechanisms, which, in turn may reduce antisocial behaviour. Moreover, employing previously mentioned strategies to decrease controlled motivation would also be important for reducing the use of moral disengagement mechanisms.

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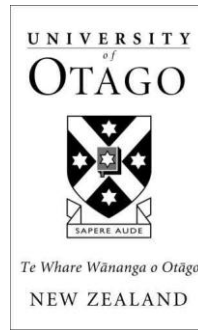
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## Motivation in Ice Hockey

### INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you of any kind and we thank you for considering our request.

#### **What is the Aim of the Project?**

The aim of this research project is to examine how teammates and coaches influence an athlete's motivation in ice hockey.

This research project is being undertaken to fulfil requirements for a Masters in Physical Education.

#### **What Type of Participants are being sought?**

Ice hockey players from senior contact and non-checking leagues across New Zealand will be considered for this research project.

#### **What will Participants be Asked to Do?**

Should you agree to take part in this project, you will be asked to complete a questionnaire related to the influence of your coach and teammates on motivation and sport behaviour.

The questionnaire will take approximately 15-20 minutes to complete

Please be aware that you may decide not to take part in the project without any disadvantage to yourself of any kind.

#### **What Data or Information will be Collected and What Use will be Made of it?**

Demographic information will be collected from participants including, age, ethnicity, ice hockey background and current training status.

Information will be gathered via written questionnaire regarding how individuals view their coach and teammates, motivation and sport behaviours.

The data collected will be securely stored in such a way that only those mentioned below will be able to gain access to it. At the end of the project any personal information will be

destroyed immediately except that, as required by the University's research policy, any raw data on which the results of the project depend will be retained in secure storage for five years, after which it will be destroyed.

The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve your anonymity. Upon completion of the current research project, a summary report will be made available to participants if requested. A summary of findings will be automatically forwarded to the New Zealand Ice Hockey Federation and participating local associations.

### **Can Participants Change their Mind and Withdraw from the Project?**

You may withdraw from participation in the project at any time and without any disadvantage to yourself of any kind.

### **What if Participants have any Questions?**

If you have any questions about our project, either now or in the future, please feel free to contact either:-

Megan Gilchrist

School of Physical Education

University Telephone Number:- 03 479 4957  
8945

or

Associate Professor Ken Hodge

School of Physical Education

University Telephone Number:-03 479

This study has been approved by the School of Physical Education, University of Otago.

*Appendix B: Consent Form*

**Motivation in Ice Hockey**  
*CONSENT FORM FOR PARTICIPANTS*

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I (please print name) \_\_\_\_\_ know that:

1. My participation in the project is entirely voluntary;
2. I am free to withdraw from the project at any time without any disadvantage;
3. The raw data on which the results of the project depend will be retained in secure storage for five years, after which it will be destroyed;
4. The results of the project may be published and available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve my anonymity.

I agree to take part in this project.

.....  
 (Signature of participant)

.....  
 (Date)

*Appendix C: Email to NZIHF to gauge interest in participating in study*

Subject: Motivational study of ice hockey players in New Zealand

To Whom it May Concern (email to be sent to Grant Hay (President NZIHF) and Jerome Raateland (Senior Vice President NZIHF),

Firstly, congratulations on the success of the recent NZIHL and NZJEL season. Having been involved in New Zealand ice hockey for over 10 years as a representative player of Canterbury, Southern, New Zealand and as a club coach in Dunedin, it's great to see ice hockey gaining strength and popularity in New Zealand.

As well as being immersed in the ice hockey scene in New Zealand I am also currently studying towards my Masters degree from the School of Physical Education at the University of Otago. My research project examines the motivation of ice hockey players and the effects it has on behaviour. I'm hoping to gain access to ice hockey players in senior checking and non-checking leagues around New Zealand as my participants.

I am emailing you in the hopes that you will be willing to assist me in this research project. All I require is your approval to contact regional associations and players. For your information, I obtained your contact details from the New Zealand Ice Hockey Federation website ([www.nzicehockey.co.nz](http://www.nzicehockey.co.nz)). Participation will be entirely voluntary and all that participants will be required to do is complete a questionnaire (see attached). All participants and their responses will be kept anonymous in any communication of the study's findings. Once the study is completed, I will supply the NZIHF with an overview of what was found. At this point I would be grateful if you could indicate your interest and willingness to assist me with this study by replying to this email.

I look forward to hearing from you.

Megan Gilchrist

*Appendix D: Follow up email to regional NZ associations*

Hi,

Following up on Grant Hay's email dated 9 September 2010, I am currently studying currently studying towards my Masters degree from the School of Physical Education at the University of Otago. My research project examines the motivation of ice hockey players and the effects it has on behaviour. I'm hoping to gain access to ice hockey players in senior checking and non-checking leagues around New Zealand as my participants.

I am emailing you in the hopes that you will be willing to assist me in this research project. All I require is your approval to contact players from your region. Grant Hay has already given this research project his support. Participation will be entirely voluntary and all participants will be required to do is complete a questionnaire (see attached). All participants and their responses will be kept anonymous in any communication of the study's findings. Once the study is completed, I will supply the NZIHF and participating local associations with an overview of what was found. At this point I would be grateful if you could indicate your interest and willingness to assist me with this study by replying to this email.

Please let me know if you have any questions.

Megan Gilchrist

*Appendix E: Email to Ice Hockey Australia*

To whom it may concern,

I have been lucky enough to be involved in ice hockey for over 15 years. During which time I have seen many different parts of the world, including Australia. I was billeted with the Padjen family when I came to Canberra as part of an age-group representative team and later as a member of the New Zealand Women's Ice Hockey Team. I have also played against the Australian National Women's Team and Australian Women's Development Team in New Zealand.

As well as being immersed in the ice hockey scene in New Zealand I am also currently studying towards my Masters degree from the School of Physical Education at the University of Otago. My research project examines the motivation of ice hockey players. I'm hoping to gain access to ice hockey players in senior checking and non-checking leagues across Australia as my participants.

I am emailing you in the hopes that you will be willing to assist me in this research project. At this time, all I require is your approval to contact state associations and players. For your information, I obtained your contact details from the Ice Hockey Australia website ([www.iha.org.au](http://www.iha.org.au)) Participation will be entirely voluntary and all participants will be required to do is complete an online questionnaire (see attached). This study has been approved by University of Otago, School of Physical Education ethics committee (I have attached the information and consent form for your information, this information will be provided to participants electronically should you wish to support this research project). All participants and their responses will be kept anonymous in any communication of the study's findings. Once the study is completed, I will supply Ice Hockey Australia with an overview of what was found. At this point I would be grateful if you could indicate your interest and willingness to assist me with this study by replying to this email.

Thank you

Megan Gilchrist

*Appendix F: Email to NZIHF and IHA for distribution to players*

(note: letter was addressed to appropriate country and the information sheet – see Appendix A -was included at the bottom of the email)

Hello,

You are receiving this email because you are a registered ice hockey player with Ice Hockey Australia/NZ Ice Hockey Federation. As an ice hockey player myself, it's fair to say that the sport has afforded me some fantastic opportunities, which include travelling to some incredible places around the world. As well as playing ice hockey, I am also currently a Master's degree candidate in the School of Physical Education at the University of Otago, New Zealand. My research examines motivation in ice hockey players across New Zealand and Australia. What I am hoping to gain from this research is an understanding of how coaches and teammates influence an athlete's motivation. As I'm sure we can all appreciate, ice hockey is a minority sport in NZ and Australia and I need all the help I can get with my research project.

Below is a link to a survey that will take approximately 15 minutes to complete. By clicking on the link you are agreeing to voluntarily participate in this anonymous survey. If you wish to read more about this research project and your rights as a participant, below is an information sheet. If you have any questions, please do not hesitate to contact me at [gilme671@studentmail.otago.ac.nz](mailto:gilme671@studentmail.otago.ac.nz).

**Online Survey Link (please note, you do not require a password to access the survey. Click on the link below or copy and paste it to the address bar and you will be taken directly to the survey)**

<http://www.surveymonkey.com/s/icehockeystudy>

Thank you in advance for your participation in this study.

Megan Gilchrist

*Appendix G:* Follow up email for distribution to players from NZIHF and IHA.  
(Note: the information sheet – see Appendix A – was included in the body of this email)

Hello,

About a month ago you received an email asking you to complete an online questionnaire about ice hockey. If you took time to complete it thank you very much for your participation. If not, I would greatly appreciate if you would take the time to do so.

Below is a link to a survey that will take approximately 15 minutes to complete. By clicking on the link you are agreeing to voluntarily participate in this anonymous survey. If you wish to read more about this research project and your rights as a participant, below is an information sheet. If you have any questions, please do not hesitate to contact me at [gilme671@studentmail.otago.ac.nz](mailto:gilme671@studentmail.otago.ac.nz)

Thank you

Megan Gilchrist

**Online Survey Link (please note, you do not require a password to access the survey. Click on the link below or copy and paste it to the address bar and you will be taken directly to the survey)**

<http://www.surveymonkey.com/s/icehockeystudy>



*Appendix H: Questionnaire demographic information*

Information about Yourself

Your age: \_\_\_\_\_ Gender (circle one): Male / Female

What ethnic group(s) do you belong to? (Please circle all that apply)

NZ European / NZ Maori / Australian / Pacific Islander / Asian

Other (please specify) \_\_\_\_\_

How long have you been playing ice hockey? \_\_\_\_\_ (years)

What is the highest level you have played at (please circle one only)?

Social / Regional/State Premiere League / Regional Representative (men's) /

National Representative (men's) / Regional Representative (women's) / National

Representative (women's)

How long have you played ice hockey at your highest level? \_\_\_\_\_ (years)

Please circle your most recent competitive season

NZIHL / AIHL / Regional/State Checking League / Regional/State Non-Checking

League / Regional/State Women's League / NZIHF Women's Ice Hockey Nationals

/ AWIHL

Other (please specify) \_\_\_\_\_

Based on your answer to the previous question, which stage of that competitive season are you currently in? (Please circle one only)

Pre-season / Early season / Mid season / Late season / Off-season

*Appendix I: Basic Need Satisfaction in Sport Scale (Ng et al., 2011)*

**Part 1: Feelings About Ice Hockey**

Below are some sentences that describe personal feelings or experiences athletes might have regarding their sport. Please circle the number that indicates how true each of the phrases are to you. There are no right or wrong answers, so do not spend too much time on any single question. You will only need to answer the questions honestly. Some items may appear similar but please respond to all the statements.

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

*Appendix J: Behaviour Regulations in Sport Questionnaire (Lonsdale et al., 2008)*

**Part 2: Why Do You Participate in Ice Hockey?**

Below are some reasons why people participate in sport. Using the scale provided, please indicate how true each of the following statements are for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you are participating in the current competitive season; if you are not currently participating in a competitive season, please consider your reasons for participating during your most recent competitive season. There are no right or wrong answers, so do not spend too much time on any one question and please answer as honestly as you can. Some items may appear similar, but please respond to all the statements.

<b><u>I participate in ice hockey...</u></b>	Not at all true		somewhat true			Very true	
1 because I enjoy it.	1	2	3	4	5	6	7
2 because it's a part of who I am.	1	2	3	4	5	6	7
3 because it's an opportunity to just be who I am.	1	2	3	4	5	6	7
4 because I would feel ashamed if I quit.	1	2	3	4	5	6	7
5 but the reasons why are not clear to me anymore.	1	2	3	4	5	6	7
6 because I would feel like a failure if I quite.	1	2	3	4	5	6	7
7 but I wonder what's the point.	1	2	3	4	5	6	7
8 because what I do in sport is an expression of who I am.	1	2	3	4	5	6	7
9 because the benefits of sport are important to me.	1	2	3	4	5	6	7
10 because I like it.	1	2	3	4	5	6	7
11 because I feel obligated to continue.	1	2	3	4	5	6	7
12 but I question why I continue.	1	2	3	4	5	6	7
13 because people push me to play.	1	2	3	4	5	6	7
14 because if I don't other people will not be pleased with me.	1	2	3	4	5	6	7
15 because it teaches me self-discipline.	1	2	3	4	5	6	7
16 because I would feel guilty if I quit.	1	2	3	4	5	6	7

<b><u>I participate in ice hockey...</u></b>		Not at all true		Somewhat true			Very true	
17	because I find it pleasurable.	1	2	3	4	5	6	7
18	but I question why I am putting myself through this.	1	2	3	4	5	6	7
19	because it is a good way to learn things which could be useful to me in my life	1	2	3	4	5	6	7
20	in order to satisfy people who want me to play	1	2	3	4	5	6	7
21	because it allows me to live in a way that is true to my values.	1	2	3	4	5	6	7
22	because I value the benefits of my sport.	1	2	3	4	5	6	7
23	because I feel pressure from other people to play.	1	2	3	4	5	6	7
24	because it's fun.	1	2	3	4	5	6	7

*Appendix K: Modified Health Care Climate Questionnaire about coaches (Williams et al., 1999)*

### Part 3a: Feelings About My Coach

The next two questionnaires contain items that are related to your experience with your coach. Coaches have different styles in dealing with athletes/players, and we would like to know more about how you have felt about your encounters with your coach. Your responses are confidential. Please be honest and candid.

	Strongly disagree			Neutr al			Strongly agree	
1	I feel that my coach provides me choices and options.	1	2	3	4	5	6	7
2	I feel understood by my coach.	1	2	3	4	5	6	7
3	I am able to be open with my coach while engaged in sport.	1	2	3	4	5	6	7
4	My coach encourages me to ask questions.	1	2	3	4	5	6	7
5	My coach listens to how I would like to do things.	1	2	3	4	5	6	7
6	My coach gives me confidence in my ability to do well in my sport.	1	2	3	4	5	6	7
7	I feel that my coach accepts me.	1	2	3	4	5	6	7
8	My coach makes sure I really understand the goals of my sport involvement and what I need to do.	1	2	3	4	5	6	7
9	I feel a lot of trust in my coach.	1	2	3	4	5	6	7
10	My coach answers my questions fully and carefully.	1	2	3	4	5	6	7
11	My coach handles people's emotions very well.	1	2	3	4	5	6	7
12	I feel that my coach cares about me as a person.	1	2	3	4	5	6	7
13	My coach tries to understand how I see things before suggesting a new way to do things.	1	2	3	4	5	6	7
14	I feel able to share my feelings with my coach.	1	2	3	4	5	6	7

*Appendix L: Controlling Coach Behaviours Scale (Bartholomew et al., 2010)*

**Part 3b: Feelings About My Coach**

		Strongly disagree			Neutral			Strongly agree		
1	My coach is less friendly with me if I don't make the effort to see things his/her way.	1	2	3	4	5	6	7		
2	My coach shouts at me in front of others to make me do certain things.	1	2	3	4	5	6	7		
3	My coach only uses rewards/praise so that I stay focused on tasks during training.	1	2	3	4	5	6	7		
4	My coach is less supportive of me when I am not training and competing well.	1	2	3	4	5	6	7		
5	My coach tries to control what I do during my free time.	1	2	3	4	5	6	7		
6	My coach threatens to punish me to keep me in line during training.	1	2	3	4	5	6	7		
7	My coach tries to motivate me by promising to reward me if I do well.	1	2	3	4	5	6	7		
8	My coach pays me less attention if I have displeased him/her.	1	2	3	4	5	6	7		
9	My coach intimidates me into doing the things that he/she wants me to do.	1	2	3	4	5	6	7		
10	My coach tries to interfere in aspects of my life outside of my sport.	1	2	3	4	5	6	7		
11	My coach only uses rewards/praise so that I complete all the tasks he/she sets during training.	1	2	3	4	5	6	7		
12	My coach is less accepting of me if I have disappointed him/her.	1	2	3	4	5	6	7		
13	My coach embarrasses me in front of others if I do not do the things he/she wants me to do.	1	2	3	4	5	6	7		
14	My coach only uses rewards/praise to make me train harder.	1	2	3	4	5	6	7		
15	My coach expects my whole life to centre on my sport participation.	1	2	3	4	5	6	7		

*Appendix M: Modified Health Care Climate Questionnaire about teammates (Williams et al., 1999)*

#### **Part 4a: Feelings About My Teammates**

The next two questionnaires contain items that are related to your experience with your teammates. Teams have different interaction styles, and we would like to know more about how you have felt about your encounters with your teammates. Your responses are confidential. Please be honest and candid.

		Strongly disagree		Neutral			Strongly agree	
1	I feel that my teammates provide me choices and options.	1	2	3	4	5	6	7
2	I feel understood by my teammates.	1	2	3	4	5	6	7
3	I am able to be open with my teammates while engaged in sport.	1	2	3	4	5	6	7
4	My teammates encourage me to ask questions.	1	2	3	4	5	6	7
5	My teammates listen to how I would like to do things.	1	2	3	4	5	6	7
6	My teammates give me confidence in my ability to do well in my sport.	1	2	3	4	5	6	7
7	I feel that my teammates accept me.	1	2	3	4	5	6	7
8	My teammates make sure I really understand the goals of my sport involvement and what I need to do.	1	2	3	4	5	6	7
9	I feel a lot of trust in my teammates.	1	2	3	4	5	6	7
10	My teammates answer my questions fully and carefully.	1	2	3	4	5	6	7
11	My teammates handle people's emotions very well.	1	2	3	4	5	6	7
12	I feel my teammates care about me as a person.	1	2	3	4	5	6	7
13	My teammates try to understand how I see things before suggesting a new way to do things.	1	2	3	4	5	6	7
14	I feel able to share my feelings with my teammates.	1	2	3	4	5	6	7

*Appendix N: Modified Controlling Coach Behaviours Scale for teammates (Bartholomew et al., 2010)*

**Part 4b: Feelings about my Teammates**

		Strongly disagree			Neutral			Strongly agree		
1	My teammates are less friendly with me if I don't make the effort to see things their way.	1	2	3	4	5	6	7		
2	My teammates shout at me in front of others to make me do certain things.	1	2	3	4	5	6	7		
3	My teammates only use rewards/praise so that I stay focused on tasks during training	1	2	3	4	5	6	7		
4	My teammates are less supportive of me when I am not training and competing well.	1	2	3	4	5	6	7		
5	My teammates try to control what I do during my free time.	1	2	3	4	5	6	7		
6	My teammates threaten to punish me to keep me in line during training.	1	2	3	4	5	6	7		
7	My teammates try to motivate me by promising to reward me if I do well.	1	2	3	4	5	6	7		
8	My teammates pay less attention if I have displeased them.	1	2	3	4	5	6	7		
9	My teammates intimidate me into doing the things that they want me to do.	1	2	3	4	5	6	7		
10	My teammates try to interfere in aspects of my life outside of my sport.	1	2	3	4	5	6	7		
11	My teammates only use rewards/praise so that I complete all the tasks set during training.	1	2	3	4	5	6	7		
12	My teammates are less accepting of me if I have disappointed them.	1	2	3	4	5	6	7		
13	My teammates embarrass me in front of others if I do not do the things they want me to do.	1	2	3	4	5	6	7		
14	My teammates only use rewards/praise to make me train harder.	1	2	3	4	5	6	7		
15	My teammates expect my whole life to centre on my sport participation.	1	2	3	4	5	6	7		



*Appendix O: Prosocial and Antisocial Behaviour in Sport Scale (Kavussanu & Boardley, 2009)*

### Part 5: Sport Behaviours

Please respond to each of the following statements by indicating how often you have engaged in each behaviour during the current competitive season; if you are not currently participating in a competitive season, please consider your experiences during your most recent competitive season.

	Never	Rarely	Sometimes	Often	Very often
1 Encouraged a teammate.	1	2	3	4	5
2 Congratulated a teammate for good play.	1	2	3	4	5
3 Gave positive feedback to a teammate.	1	2	3	4	5
4 Gave constructive feedback to a teammate	1	2	3	4	5
5 Helped an injured opponent.	1	2	3	4	5
6 Asked to stop play when an opponent was injured.	1	2	3	4	5
7 Helped an opponent up off the ice.	1	2	3	4	5
8 Verbally abused a teammate.	1	2	3	4	5
9 Swore at a teammate.	1	2	3	4	5
10 Argued with a teammate.	1	2	3	4	5
11 Criticized a teammate.	1	2	3	4	5
12 Showed frustration at a teammate's poor play.	1	2	3	4	5
13 Tried to injure an opponent.	1	2	3	4	5
14 Tried to wind up (taunt) an opponent.	1	2	3	4	5
15 Deliberately fouled an opponent.	1	2	3	4	5
16 Intentionally distracted an opponent.	1	2	3	4	5
17 Retaliated after a bad foul.	1	2	3	4	5
18 Intentionally broke the rules of the game.	1	2	3	4	5
19 Physically intimidated an opponent.	1	2	3	4	5
20 Criticized an opponent.	1	2	3	4	5

*Appendix P: Moral Disengagement in Sport Scale – Short (Boardley & Kavussanu, 2009)*

**Part 6: Sport Attitudes**

Please respond to each of the following statements by indicating how much you agree with each statement. Please keep ice hockey in mind as you answer each question.

		Strongly disagree					Strongly agree
1	It is okay for players to lie to officials if it helps their team.	1	2	3	4	5	6 7
2	Bending the rules is a way of evening things up.	1	2	3	4	5	6 7
3	Shouting at an opponent is okay as long as it does not end in violent conduct.	1	2	3	4	5	6 7
4	It is unfair to blame players who only play a small part in unsportsmanlike tactics used by their teams.	1	2	3	4	5	6 7
5	A player should not be blamed for injuring an opponent if the coach reinforces such behaviour.	1	2	3	4	5	6 7
6	Insults among players do not really hurt anyone.	1	2	3	4	5	6 7
7	It is okay to treat badly an opponent who behaves like an animal.	1	2	3	4	5	6 7
8	Players who are mistreated have usually done something to deserve it.	1	2	3	4	5	6 7

