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INVESTIGATING THE PSYCHOLOGICAL FUNCTIONING OF ATHLETES: THE INTEGRATION OF ATTACHMENT THEORY AND SELF-DETERMINATION THEORY

by

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Dedication. Determination. Perfection.

(Ayrton Senna 1960-1994)
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Abstract

This thesis is presented as a collection of four studies in which the associations between athlete attachment styles, perceptions of basic psychological needs, and experiences of well/ill-being are examined.

The first study of this thesis examined the mediating role of basic psychological need satisfaction, within the coach and parent relational contexts, in the associations between athletes’ \( N = 430 \) global attachment styles and their experiences of well-being. Results demonstrated that satisfaction of the athletes basic psychological needs did mediate the associations between attachment styles and well-being. In particular the mediating role of basic psychological needs satisfaction within the parent context appeared to exert greater effect than within the coach context. These findings provided initial evidence for the integration of attachment theory and basic needs theory for promoting an understanding of athlete well-being.

The findings presented in Study 1 were then further examined from a longitudinal perspective in Study 2. Specifically, Study 2 aimed to examine; a) whether mean differences (i.e., the between-person level) and changes (i.e., the within-person level), in athletes’ \( N = 110 \) attachment styles were predictive of basic psychological need satisfaction within the coach and parent relational contexts, and also whether mean differences and changes in athletes’ attachment styles were predictive of experiences of well-being, and b) whether mean difference and changes in basic need satisfaction within these relational contexts also predicted well-being. Avoidant attachment was shown to predict need satisfaction within the parent relational context at both the between- and within-person levels and also need satisfaction within the coach relational context at only the between-person level. Similarly, insecure attachment (anxious and avoidant) predicted well-being outcomes at the both the between- and within-person levels. Finally, need satisfaction within both relational contexts predicted various well-being outcomes at only the between-person level, whilst need satisfaction within the parent relational context predicted vitality only at the within-person level. These findings further support the findings of Study 1 in identifying the importance of individual differences in attachment styles in athletes’ perceptions of need satisfaction and well-being. The added importance of Study 2 was
that these associations were demonstrated within a longitudinal design, suggesting that changes over time in these variables have an important impact on athlete well-being.

Whilst Studies 1 and 2 demonstrated the importance of athlete attachment styles and basic psychological need satisfaction in the experience of well-being, Study 3 aimed to examine the possible social mechanisms that affect insecure athletes’ \((N = 215)\) perceptions of basic need satisfaction. The social factors investigated as possible mediators were social support, interpersonal conflict, autonomy supportive behaviours, and controlling behaviours, each examined within both the coach and parent relational contexts. Firstly, findings showed that associations between the avoidant attachment style and basic needs satisfaction within the coach relational context were mediated by social support and autonomy-supportive behaviours from the coach. Similarly, associations between the avoidant attachment style and basic needs satisfaction within the parent relational contexts were mediated by all social factors investigated. Secondly, the associations between the anxious attachment style and basic needs satisfaction within the parent relational context were mediated by conflict and controlling behaviours from the parent. The findings of Study 3 highlighted that social factors have an important role in explaining the associations between athletes’ insecure attachment styles and their perceptions of basic psychological need satisfaction within two important relationships. Along with basic need satisfaction in Studies 1 and 2, these social factors could be targeted by interventions aimed at helping insecure athletes improve their experiences of well/ill-being by targeting key behaviours that significant others could employ to ensure perceptions of need satisfaction can be improved.

The final study presented in this thesis aimed to focus on how thwarting of athletes’ basic psychological needs impacted upon athletes experiences of both well- and ill-being. Study 4 also measured athletes’ \((N = 241)\) attachment styles to the coach specifically. As with Study 1 the mediating role of basic psychological need thwarting in the associations between athlete attachment styles and well/ill-being were examined, however within Study 4 need thwarting was assessed within the coach relational and sport environmental contexts. Findings revealed that when athletes’ perceptions of their basic psychological needs were actively thwarted, within both aforementioned contexts, athletes’ insecure attachment to the coach impacted upon experiences of well- and ill-being. The findings of Study 4 highlighted that an examination of need thwarting, may help us obtain a greater understanding of athletes’ psychological functioning.
Overall, the findings of the current research have supplied new knowledge and understanding concerning athletes’ psychological functioning through the employment of established theoretical frameworks.
List of Publications Arising from this Thesis

Peer Reviewed Papers:


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Introduction
Attachment Theory, Self-Determination Theory, and Well-Being: Background and Associations

“...definitely there have been times when it’s been hard and it’s not been easy to keep a positive frame of mind. But it is about your surroundings. It's about the people that you have. Your family. It’s about the balance of the people that surround you and support you...” (Lewis Hamilton, 2011)

Participation in sport is widely viewed as a valuable endeavour that can promote positive experiences through the enhancement of self-confidence and self-esteem, as well as the development of well-being and physical health (Coakley, 2007; Gould & Carson, 2008; Slutzky & Simpkins, 2009). However, as highlighted by the above quote from 2008 Formula One World Champion Lewis Hamilton, even elite athletes competing at the highest level of their sport can find it difficult to maintain a positive psychological state. This can be attributable to elite athletes competing under physically and psychosocially stressful conditions, brought about through the inherent competitive, stressful environment of sport (Lundqvist, 2011). Therefore, participation in sport may put athletes at as much risk of suffering a harmful influence on their well-being as to experiencing benefits to their well-being. As a result it is important to develop an understanding of the interpersonal and intrapersonal factors that can influence athletes’ psychological health. The current thesis applies key concepts from attachment theory (Bowlby, 1969/83) and self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2002) in order to develop an understanding of how relationships, and the social environment, influence an athlete’s well-being.

1.1. The Concept of Well-Being

The concept of well-being has been viewed as synonymous with optimal psychological functioning and experience (Ryan & Deci, 2001). In its simplest form well-being can be viewed in everyday conversations with the simple question “How are you?” However, when viewed from a scientific perspective it has been identified as a
complex and multifaceted construct (Lundqvist, 2011). The interest in well-being progressed in the 1960s when researchers began to shift away from exploring the negative aspects of the human experience and started to explore growth and well-being (e.g., Deci, 1975; Diener, 1984). The number of empirical studies researching well-being has also increased in recent years in line with the positive psychology movement (e.g., Diener, 2009; Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000). The collective research into well-being has yielded two distinct perspectives/philosophies known as hedonism (Kahnmann, Diener, & Schwarz, 1999) and eudaimonism (Waterman, 1993). These perspectives have differing definitions and approaches to studying well-being. Whilst hedonism applies a subjective approach to well-being, eudaimonism utilises a psychological approach to well-being. These perspectives and research approaches will be discussed in greater detail in the following paragraphs.

1.1.1. Hedonism and Subjective Well-Being

The hedonic perspective views happiness and the experience of pleasure as the primary goals for attaining well-being (Ryan & Deci, 2001; Ryan, Huta, & Deci, 2008). In order to assess happiness and pleasure, research from a hedonic perspective has employed assessments of subjective well-being (SWB; Diener, 1984, 1994). In terms of SWB, happiness concerns experiences of affect such that experiences of positive affect and the absence of negative affect are desirable. In contrast, pleasure within the SWB approach is often viewed in terms of life satisfaction, characterised by variations in an individual’s perception of their actual life and their desired life conditions (Lundqvist, 2011; Ryan & Deci, 2001).

1.1.2. Eudaimonism and Psychological Well-Being

In contrast to the hedonic perspective on well-being, the eudaimonic perspective views well-being not merely as the pursuit of pleasure but as the pursuit of living a complete life and realising ones potential (e.g., Ryff & Singer, 1998; Ryan et al., 2008). Subsequently, unlike hedonism which is measured through the SWB approach, eudaimonism is measured through a psychological well-being perspective (PWB; Ryff & Singer, 1998). PWB focuses on measuring well-being in terms of aspects of human actualization such as, personal growth, self-acceptance, and mastery (Ryan & Deci, 2001).
1.1.3. Combined Perspective on Well-Being

Whilst it is important to highlight the differences between the two perspectives and approaches to well-being, it is also worth noting the associated links between them. It has been suggested in previous research that an individual who engages in activities to support their eudaimonic well-being, is also likely to experience hedonic well-being (i.e., happiness and pleasure) as a direct result (e.g., Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001; Ryan et al., 2008). However, research also highlights that experiences of hedonic well-being can also be attained through greed or exploiting others, which are against the concept of eudaimonic living (Ryan et al., 2008). Research has also shown that SWB and PWB can be positively correlated whilst still being distinct constructs, thus suggesting that SWB and PWB may exert influence on each other (e.g., Keyes et al., 2002). Therefore, in order to attain a thorough understanding of athletes’ well-being a consideration of both the hedonic and eudaimonic perspectives is viewed as important and was therefore considered within this research.

1.1.4. Other Well-Being Considerations

Whilst it is important to understand the explanation for athletes’ experiences of well-being, it is of equal import to recognise that the presence of well-being does not infer the absence of ill-being (Ryan & Deci, 2001). Therefore, in order to achieve greater understanding of athletes’ psychological functioning, indexes of ill-being (e.g., negative affect, depression) should also be examined. Similarly, the interpersonal and intrapersonal factors that are proposed to influence well-being may exert different influences on factors underpinning ill-being, as highlighted in previous research (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011a; Quested & Duda, 2010). Interpersonal and intrapersonal factors that have been utilised in well-being research, and those chosen to be examined in the current research, include attachment styles and perceptions of basic psychological needs.

1.2. Attachment Theory

Attachment theory was founded by John Bowlby (1969/1982, 1973, 1979) as a framework to explore and understand the emotional bonds that are formed in close relationships. Specifically, attachment theory (Bowlby, 1969/1982) was developed following Bowlby’s observations of the behaviours exhibited by infants in the
interactions with their primary caregivers (also referred to as attachment figures), for example the infant’s mother. The foundations for attachment theory were developed when Bowlby was asked to produce a World Health Organisation (WHO) report in 1951, in which he investigated the fate of homeless children in post-war Europe. In producing this report Bowlby observed associations between maternal separation and children demonstrating dysfunctional behaviour. It was Bowlby’s research into the literature exploring maternal separation and the effects on children that led him to believe a solid theory was needed that could provide concise explanations for the effects of separation. In developing attachment theory, Bowlby was influenced by the ethological approach and evolutionary work, in particular Lorenz’s (1952) work on imprinting. The concept of imprinting was highlighted by Lorenz’s (1952) work with geese in which he observed the tendency for newly hatched geese to gain behavioural characteristics from, and form bonds to, the first moving stimuli they encountered. Bowlby was drawn to this imprinting process as it focussed on the formation of social bonds without being linked to the concept of feeding, as put forward by psychoanalytic and classic conditioning theorists including Freud and Pavlov. Further to this, Bowlby was also influenced by the work of Harlow (1959) who demonstrated that, within the animal kingdom, ties between infants and the mother were based upon an innate desire to seek comfort and proximity in order to improve security, and not only linked to feeding.

Bowlby’s (1969/1982) first formal statement of attachment theory was presented to the British Psychoanalytic Society in London 1957 and drew heavily on the ethological concepts of Lorenz’s (1952) work and presented attachment theory in terms of a “behavioural system”. Through his trilogy of books conceptualising attachment theory, Bowlby (1969/1982, 1973, 1980) proposed that the attachment behaviours, observed when an infant encounters threats, are due to an innate attachment behavioural system which governs the choice, activation, and termination of behaviours aimed at attaining a goal, (e.g., proximity to a primary attachment figure). For infants attempting to gain proximity to an attachment figure for security these behaviours could include, crying, smiling, and visually searching. In terms of activating these attachment behaviours, Bowlby (1982) discussed specific triggers that could activate the behavioural system. These triggers are environmental threats to safety and survival and can include physiological factors such as pain, hunger, and illness, as well as
psychological factors such as fear of separation from attachment figures, and uncertainty around attachment figures location. The attachment behavioural system can also be activated by natural clues of danger, stimuli that are not dangerous in themselves but that increase the likelihood of danger (Mikulincer & Shaver, 2007), such as darkness or loud noises. In Bowlby’s view, the highest level of attachment behavioural system activation would occur when a combination of environmental threat and lack of access to an attachment figure are evident. Once the attachment behavioural system has been activated the individual will seek to maintain, or gain proximity from their primary attachment figure in order to attain comfort and security, thus allowing the attachment system to deactivate. Bowlby (1969/1982) believed that proximity seeking behaviour is the natural and primary strategy of the attachment behavioural system; however he also recognized that not all infants and children behave the same way when responding to threats in the environment. In order to gain a greater understanding of individual differences in attachment system behaviours, Bowlby turned to his colleague Mary Ainsworth.

The work of Mary Ainsworth and her colleagues (Ainsworth, Blehar, Waters, & Wall, 1978) provided the first empirical evidence that supported attachment theory. Ainsworth and colleagues (Ainsworth et al., 1978), developed the ‘Strange Situation’ procedure in which observations are made of an infant’s behaviour when in the presence and absence of their mother and in the presence of a stranger. The infant’s exploration behaviours (with mother, with mother and stranger, with only stranger, without mother or stranger), reactions to mother separation, and reactions to mother reunion are recorded. Observations of the infants’ behaviour within the “strange situation” resulted in the primary attachment figure, in this case the child’s mother, being described as a ‘safe haven’ from which the infant feels able to explore the environment from, whilst also acting as a ‘secure base’ for the infant to return to if necessary. Furthermore, Ainsworth et al. (1978) also recorded differences in infants’ behavioural responses during the “strange situation” procedure. These differences in behaviour were then categorised into three distinct “attachment styles”: secure, anxious-ambivalent, and avoidant.

1.2.1. Attachment Styles and Internal Working Models
Infants categorised as displaying **secure** attachment were observed to be happy when their mother was present, and felt comfortable to explore the environment (Ainsworth et al., 1978). Upon separation from the mother the infants became distressed, for example crying and searching for the mother, and also stopped exploring the environment and playing with toys. When the infants were alone with the stranger they avoided the stranger, however when the mother and stranger were both present the infants were friendly toward the stranger and continued to explore and play. When the infants were reunited with their mother they sought comfort and once settled they continued to explore and play. In terms of underlying principles, the secure attachment style is developed through the presence of consistent supportive behaviours from the attachment figure. This allows the infant to perceive their attachment figure as someone they can depend on for comfort and support, thus allowing them to feel safe and continue exploring the environment (Ainsworth et al, 1978).

Infants classified into the **anxious-ambivalent** attachment category were observed to be overly clingy towards the mother when she was present, and would consistently seek support even under non-stressful conditions. During separation from the mother the infants would become highly distressed and display severe anxiety, whilst also ceasing to play. When the stranger was introduced to the situation, both alone and with the mother, the infants would avoid the stranger and display fear of them. When the mother was reintroduced to the situation the infants displaying anxious-ambivalent attachment would seek excessive comfort, becoming increasingly clingy, and would not return to exploring the environment and playing. Ainsworth and colleagues (1978) reported that the behaviours displayed by infants categorised as anxious-ambivalent was due to inconsistency in the interactions with their primary attachment figure. Due to inconsistent responsive exchanges with the attachment figure, the infants develop the perception that they may not always receive support and comfort in times of need, thus causing them to not achieve feelings of safety that results in reducing their explorative behaviour.

Finally, observations of infants placed in the **avoidant** attachment category showed that when the mother was present the infants avoided contact with her and played independently. These infants also displayed little to no signs of distress upon separation from the mother, and when presented with the stranger they would continue to play normally and showed no negative reaction to the stranger’s presence. When
reunited with their mother the infants would continue to avoid contact and would focus instead on playing (Ainsworth et al., 1978). The behaviours displayed by infants within the avoidant attachment style category were suggested to be influenced by interactions with the primary caregiver that were punctuated by neglect and rejection. Ultimately these interactions caused the infants to perceive their attachment figure as unavailable for support in times of need, and thus seeking such support is futile (Ainsworth et al., 1978).

The behaviours outlined in the above attachment style descriptions are underpinned by what Bowlby (1973) referred to as “internal working models” (IWMs). Bowlby (1973) stated that during infancy, once the attachment system has been used repeatedly in interaction with the primary caregiver, the infant internalises representations of the attachment figures responses to their needs, and also representations of their own efficacy and value. These representations form two complementary IWMs that are held in relation to the attachment figure; the IWM of self and the IWM of other (Bowlby, 1973). The IWM of self refers to how worthy one feels of receiving support, whereas the IWM of other presents how one expects responsive and supportive behaviour from the attachment figure in times of need. Relating these IWMs to the attachment styles, secure attachment is underpinned by positive IWMs of the self and other; highlighted by feeling worthy of support and also by expectations of the attachment figure as supportive and responsive in times of need. In contrast, anxious-ambivalent attachment is typified by a negative IWM of self as being unworthy of responsive, supportive behaviour, and a negative IWM of other as being unresponsive and unsupportive. In contrast, the avoidant attachment style is representative of a negative IWM of other, similar to the anxious-ambivalent attachment style, and a falsified positive IWM of self as being self-reliant, not in need of support, and yet worthy of support nonetheless. Bowlby (1969/1982) proposed that these IWMs of self and other, developed in infancy, provide information for cognition, affect, and behaviour in relationships through childhood and adolescence to adulthood.

1.2.2. Continuity and Stability of Attachment from Infancy through to Adulthood

While attachment theory was primarily developed and observed within research targeting infants and children (Bowlby, 1969/1982, 1988; Ainsworth et al., 1978), it was also expected to provide an explanation for relationship behaviours across
adolescence and adulthood. This is highlighted by Bowlby who stated that, in terms of
relationships, attachment theory could provide insight into “human behaviour from the
cradle to the grave” (Bowlby, 1979, p. 129). This statement has been supported in the
literature in which research has reported the continuity of attachment behaviours from
infancy into adulthood (see Mikulincer & Shaver, 2007 for a comprehensive review).

A principle reason for this continuity is the idea that the IWMs of attachment
individuals develop in infancy are relatively stable through adolescence and into
adulthood. However, whilst an individual’s internal working models, and by association
attachment style, are proposed to remain stable over time, Bowlby (1973) suggested
that they are not completely resistant to change and can be dependent on the care giving
environment. If an individual were to enter into relationships that support and reinforce
their IWMs then they would be expected to remain stable, as would their attachment
style. For example, if an individual displaying the anxious-ambivalent attachment style
within the relationship with their mother enters into a relationship with a romantic
partner who supports their IWMs, the individuals IWMs will be reinforced further and
they will remain anxious-ambivalent in the relationship. However, if an individual
develops a relationship with an attachment figure that substantially changes their
perception of the care giving environment, they may begin to re-evaluate their IWMs.
For instance, an individual who typically displays avoidant attachment towards
attachment figures could alter their IWMs if they encounter an attachment figure whose
behaviour is consistently supportive and responsive to their needs. The consistent
exposure to behaviours that contradict the individuals IWMs can, over a period of time,
alter their IWM perceptions and possibly even the attachment style they display in that
specific relationship (e.g., Davila, Burge, & Hammen, 1997; Fraley, Vicary,
This process is displayed visually in Figure 1 which highlights how the IWMs
developed in infancy, past attachment experiences, and current attachment experiences
all impact upon the attachment of individuals in adulthood.
As individuals advance through infancy and childhood into adolescence and adulthood, they are likely to develop a wider range of attachment relationships to various attachment figures, for example, siblings, close friends, and romantic partners. It is important to note that attachment figures need not only be close, important relationship partners, but can also be individuals to whom a person turns when protection and support are needed. These individuals can be considered attachment figures if they serve three distinct purposes; 1) they are a target for proximity seeking in times of need, 2) they serve as a safe haven when needed, and 3) that they act as a secure base for the individual (Ainsworth, 1989). This network of attachment figures form what Bowlby (1969/1982) described as the individuals “hierarchy of attachment figures”. The hierarchy of attachment figures relates to how individuals classify their attachment figures in order of preference when they feel the need for support. During infancy and early childhood an individual will have a small hierarchy of attachment figures consisting predominately of the mother, father, and possibly grandparents. However, as previously highlighted, as an individual develops through adolescence and adulthood their hierarchy expands and the primary attachment figure may shift from a parental figure to a romantic partner or a close friend. This shift of emphasis towards other attachment figures in times of distress does not however infer that the parental
attachment figures are no longer a part of the hierarchy, rather their position has simply altered (Bowlby, 1969/1982).

Along with the IWMs of attachment, the attachment behavioural system has shown continuity from infancy into adulthood. More specifically, research has shown that during adulthood the attachment system is active, just as it is within infancy (Mikulincer, Gillath, Halevy, Avihou, Avidan, & Eshkoli, 2001; Mikulincer & Shaver, 2007). Therefore, during periods of perceived threat the attachment system is activated and the individual will begin to appraise the availability of their preferred attachment figure and will pursue behaviours aimed at gaining proximity to the attachment figure. If the preferred figure is not available to provide support then proximity to the next figure within the individual’s hierarchy will be targeted. As with attachment system activation in infancy, once proximity to the desired attachment figure has been achieved the system will return to a state of equilibrium based upon the degree to which the individual feels their need for a safe haven and secure base are satisfied. Alternatively, if the individual does not receive complete satisfaction for their desires, the attachment system will remain active and may result in “hyperactivation”. Hyperactivation involves the individual becoming clingy toward the attachment figure and over-dependent on them for protection; this is common in individuals who display the anxious-ambivalent attachment style. Finally, an individual may also engage in “deactivation” strategies if they do not receive the desired support. These strategies involved the individual seeking distance from others in order to avoid intimacy and other attachment based needs. Deactivation strategies are associated more with the avoidant attachment style.

Initial research conducted in which the attachment system was proposed to be the same within adulthood as within infancy, focussed on adult romantic relationships (Hazan & Shaver, 1987; Shaver & Hazan, 1988; Shaver, Hazan, & Bradshaw, 1988). The following section contains a brief overview of studies that have applied attachment theory principles within adolescents and adults, with special consideration towards studies exploring the role attachment plays in well-being.

1.2.3. Attachment Theory and Adult Relationship Research

The first study to apply the three attachment styles that emerged from Ainsworth and colleagues (1978) research as a framework for understanding adult
relationships was conducted by Hazan and Shaver (1987). In their seminal research, Hazan and Shaver (1987) conceptualised romantic relationships between adults as an attachment process that follows the basic tenets of attachment as seen between infants and their mothers. More specifically, they hypothesised that the three attachment styles identified in infant research would also be present in adults and that the frequency of the attachment styles would be similar. In addition, the behavioural differences observed for the attachment styles in infant-parent relationships would be similar in adult romantic relationships. Finally, they hypothesised that differences in relationship behaviour would be representations of the individuals IWMs. The research conducted by Hazan and Shaver (1987) supported these hypotheses. Specifically, they found that the three attachment styles were present in adults and with similar frequencies to infant research. For example, approximately 56% of adults were reported as having secure attachment, 20% reported having an anxious attachment style, and 24% reported an avoidant attachment style. These findings compared well to previous values of 62% secure, 15% anxious, and 23% avoidant reported for infants (Campos, Barrett, Lamb, Goldsmith, and Steinberg; 1983) and have also been replicated in further adult attachment research (Mickelson, Kessler, & Shaver, 1997). The findings also showed that the three attachment styles shown to characterise attachments in infancy and childhood, also explained differences in behaviour within the adults romantic relationships. Therefore, adults reporting a secure attachment style would happily depend on other people for support and felt comfortable in getting close to other people. In comparison, adults reporting an anxious attachment style had strong needs for closeness within their relationships, but did not feel that their relationship partner was willing to gain closeness to them. Finally, adults categorised as having avoidant attachment were uncomfortable with getting close to others, and also had reservations regarding their willingness to trust and depend on their romantic partner. These findings also helped to support Hazan and Shaver’s (1987) prediction that the attachment styles would represent differences in the adults IWMs with regards to their perceptions of self and expectations of others. In particular, secure individuals perceived themselves as worthy of their partner’s love, whilst also harbouring positive expectations of their partner’s availability and responsiveness to their needs.

As Hazan and Shaver’s (1987) research was the first to conceptualise adult romantic relationships in terms of attachment, they identified some limitations for
future research to address. A principle concern was the measure of attachment employed within the research. The adults’ attachment style was measured using a single item measure, such that the adults read descriptions of the three attachment styles and selected the description that was most appropriate to their behaviour and experiences in relationships. As such Hazan and Shaver (1987) suggested the use of multi-item scales to more reliably measure adult attachment. Following this initial research and the suggestions made, research has continued to provide evidence that adult romantic relationships are attachments ruled by the same attachment system identified in relationship between infants and their primary caregiver/attachment figure (e.g., Collins & Read, 1990; Mikulincer, Florian, Cowan, & Cowan, 2002; Simpson, 1990).

The early studies into adult attachment within romantic relationships (e.g., Hazan & Shaver, 1987, Collins & Read, 1990) brought together the infant attachment theory and adult relationship research and provided a foundation for further research to build upon. Research has subsequently utilised the attachment theory framework to explore factors such as conflict (e.g., Domingue & Mollen, 2009; Simpson, Rholes, & Phillips, 1996), and relationship stability/maintenance (e.g., Kirkpatrick & Davis, 1994; Tran & Simpson, 2009) in adult romantic relationships, as well as adults perceptions of social support (e.g., Florian, Mikulincer, & Bucholtz, 1995; Moreira, Silva, Moleiro, Aguiar, Andrez, Bernardes, & Afonso, 2003; Priel & Shamai, 1995). Collectively the findings of this research have shown that individuals with secure attachment report more positive outcomes (e.g., less conflict, stable relationships, more social support) than individuals who display anxious or avoidant attachment. Similarly, adult attachment research has also applied Hazan and Shaver’s (1987) research in other adult relationships, including relationships with therapists (e.g., Farber, Lippert, & Nevas, 1995; Parish & Eagle, 2003), leader-follower relationships (e.g., Mayseless, 2010; Popper & Mayseless, 2003), and group processes (e.g., Rom & Mikulincer, 2003; Smith, Murphy, & Coats, 1999). With regards to relationships with therapists and those between leaders and followers, findings have shown that individuals viewed their therapist or leader as a “stronger and wiser” figure who created a safe haven by being available and responsive when needed, whilst also acting as a secure base by providing the individual with advice (Mayseless, 2010; Parish & Eagle, 2003). Therefore, in terms of the attachment system, during times of distress therapists and leaders are
viewed by adults as attachment figures who they can seek proximity to in order to satisfy their need for a safe haven and secure base.

Finally, studies conducted by Smith et al. (1999) and Rom and Mikulincer (2003) reported that individuals can also view associations with groups, that they identify with, as attachment bonds in such a way that they seek proximity to the group, use the group as a safe haven during times of distress, and as a secure base for exploration. In a similar way to IWMs within individual relationships, Smith et al. (1999) proposed that individuals develop internal models of themselves with regards the group, for example viewing themselves as an important group member and viewing the group as supportive and accepting. The research has also reported that individuals’ attachment to the group is categorised in terms of anxious, avoidant, and secure attachment (Rom & Mikulincer, 2003; Smith et al., 1999). The combined findings from these studies showed that anxious and avoidant attachment towards the group resulted in negative outcomes such as low perceptions of social support, self-efficacy, and group cohesion, compared to positive associations relating to secure attachment.

The collective findings of the research mentioned above concerning adult relationships, either with individuals or groups, provides a brief overview of how attachment theory has been adopted from the infant literature and expanded upon. The previous research has also demonstrated how attachment theory principles, such as attachment styles, IWMs, and the attachment behavioural system, are still present throughout an individual’s life and can have an impact on how they develop and behave in relationships. Although this research has been important for the development of adult attachment literature, the current thesis as a whole, and the individual studies contained within it, aimed to focus on how attachment theory have been employed in the study of psychological functioning and in particular well/ill-being.

1.2.4. Attachment Theory and Well/Ill-being

Individual differences in attachment styles have been shown to influence a range of well/ill-being factors including self-esteem (e.g., Bylsma, Cozzarelli, & Sumer, 1997; Laible, Carlo, & Roesch, 2004), positive and negative affect (Simpson, 1990; Torquati & Raffaelli, 2004; Van Buren & Cooley, 2002), vitality (La Guardia, Ryan, Couchman, & Deci, 2000), depression (Irons & Gilbert, 2005; Muris, Meesters, van Melick, Zwambag, 2001), and life satisfaction (Deniz & Işık, 2010; Wright &
Perrone, 2010). For example, Bylsma and colleagues (1997) explored the associations between adult attachment styles and global self-esteem in a sample of 571 undergraduate students. The results of their analyses revealed that secure individuals reported higher levels of self-esteem than did anxious and avoidant individuals. Similarly, Laible et al. (2004) showed that college students’ (N = 246) attachment to their parents was directly related to their experiences of self-esteem. Specifically, individuals with a secure attachment style in their parental relationship reported greater experiences of self-esteem, whilst those individuals with an anxious or avoidant attachment style reported less self-esteem.

The adult attachment research has also demonstrated associations between attachment styles and other positive factors such as vitality and life satisfaction (e.g., La Guardia et al., 2000; Deniz & Işık, 2010). In their multiple study research, La Guardia et al. (2000) reported positive associations between secure attachment and vitality. They also showed that anxious and avoidant attachment styles were negative associated with vitality. Therefore, feeling secure in ones attachment to important attachment figures, and maintaining positive IWMs, allows individuals to experience greater vitality. An important limitation of this study however is that vitality was included within a composite well-being variable, therefore research employing vitality as a distinct factor would allow greater inferences to be made regarding its association with attachment styles. Deniz and Işik (2010) conducted a study into the associations between attachment styles and life satisfaction within a sample of 421 students. The results of their analysis showed strong positive associations between individuals with a secure attachment style and perceptions of life satisfaction. Conversely, negative associations were revealed for the anxious and avoidant attachment styles and perceptions of life satisfaction (Deniz & Işık, 2010).

In terms of positive and negative affect, the attachment literature has again shown the positive influence of secure attachment and the negative impact of anxious and avoidant attachment (e.g., Simpson, 1990; Torquati & Raffaelli, 2004). Simpson (1990) examined the effects of attachment styles on the romantic relationships of 144 couples. The relationship factors assessed included, commitment, trust, satisfaction, and experiences of positive and negative emotions. Overall the findings concerning positive and negative emotions showed that secure attachment within the relationship resulted in more frequent experiences of positive emotions and less frequent experiences of
negative emotions. In contrast, anxious and avoidant attachment was associated with greater experiences of negative emotions and fewer experiences of positive emotions (Simpson, 1990). Torquati and Raffaelli (2004) reported similar findings in their investigation of daily emotional experiences in a sample of 215 undergraduate students. On the whole they showed that individuals with secure attachment reported experiencing more positive emotions, (e.g., happiness, excited), than individuals with anxious or avoidant attachment. In contrast, those individuals who manifested anxious or avoidant attachment reported experiencing more negative emotions, (e.g., loneliness, worried), than the secure individuals.

Comparable to the research into attachment style associations with positive and negative affect, research has also explored the associations between attachment styles and depression. Muris et al. (2001) investigated the associations between attachment and depression in a sample of early adolescents \(N = 155\). Overall, findings revealed that securely attached individuals reported significantly lower scores on a measure of depression than individuals who were anxiously or avoidantly attached. These findings were supported by Irons and Gilbert (2005) who examined similar associations in a sample of 140 adolescent students. Irons and Gilbert (2005) reported negative associations between secure attachment and depression, whilst also observing positive associations between anxious and avoidant attachment and depression. It would appear that, based on this small cross-section of the literature, secure attachment is associated with greater experiences of positive emotions/affect and fewer experiences of negative emotions/affect (including depression), whereas the reverse is true for anxious and avoidant attachment.

In sum, findings from a range of attachment and well/ill-being studies have shown that the secure attachment style is associated with greater and more frequent experiences of well-being and reduced experiences of ill-being (e.g., negative affect, depression). In contrast, anxious and avoidant attachment styles have been frequently shown to be more strongly associated with experiences of ill-being than well-being. The studies within this section have all provided evidence for the importance of attachment theory for examining individual differences in attachment formed in important relationships, such as parent-child, peer relationships, and romantic relationships. They have also provided important information concerning the role that attachment styles have in individuals’ experiences of well/ill-being within these
relational contexts. However, there is currently limited research that has used attachment theory as a framework to examine relationships and well-being within sport. Specifically, there has been no research to date that has examined how an athlete’s attachment style, both globally and within specific relationships, may impact upon specific measures of their psychological well/ill-being. The following section will highlight current research within sport psychology that has employed attachment theory.

1.3. Attachment Theory and Sport

This section will focus specifically on the research within the domain of sport psychology that has utilised the attachment theory framework to explore various factors such as peer relationships (e.g., Carr, 2009a), relationship quality (Davis & Jowett, 2010), attention (Forrest, 2008), and eating psychopathology (Shanmugam, Jowett, & Meyer, 2012).

Conceptual research conducted by Forrest (2008) proposed that the conditions present in competitive sport, such as unexpected conditions and fear of failure, are likely to “activate attachment-related attentional processes of athletes and differentially influence attentional flexibility under competitive stress” (p. 242). Forrest suggests an attachment based approach to sport performance problems in which attentional processes are included, for example anxiety and choking. She postulates that as the attachment system is used in times of distress to focus an individual’s attention toward alleviating stress, for example through seeking proximity with an attachment figure, then it could be used to assess how athletes cope with stressful events during sport competition. Forrest highlights that there are several stimuli in the competitive sporting environment that are likely to activate an athlete’s attachment-related processes, for example, the degree of unfamiliarity with the situation, the presence or absence of others, and the athlete’s own condition (e.g., fatigued, hungry, cold, pain).

In terms of the attachment styles, it is suggested that a secure athlete would be able to react positively to anxiety within competition by committing attention to it, as they posses positive IWMs that inform them that support from an attachment figure will be available should they suffer performance problems. In contrast, an avoidant athlete may focus their attention away from sources of competitive anxiety as their IWMs dictate that they will receive no support from attachment figures should they encounter
difficulties. Finally, an anxious athlete would likely focus attention on competitive anxiety in a debilitating manner, as their IWMs inform them that they would not deserve support from an attachment figure should they come across performance problems. Forrest (2008) suggested that future research be conducted in order to explore the influence of individual differences in attachment styles on the competitive stress responses of athletes.

Despite the large amount of attachment research in the social and personality literature, Carr (2009a) noted that sport and physical activity, as a domain, “has been slow to recognise the potential of attachment theory to enhance understanding of contemporary research issues” (p. 97). Therefore, Carr (2009a) aimed to demonstrate attachment theory’s potential to promote a deeper understanding of achievement goal and peer-relationship models in sport, suggesting that these conceptual frameworks could be conceptually linked to attachment theory. Following a review of peer relationships in sport by Smith (2003), in which it was highlighted that the majority of the sporting research focused on the quality of friendships, Carr decided to focus on sport friendship quality. Carr discussed that due to sport friendship quality being significantly linked to important motivational outcomes (Weiss & Smith, 1999, 2002), it is important for researchers to examine the possible antecedents of friendship quality.

Attachment theory has consistently been identified to provide a framework suitable for the exploration of friendship quality and researchers (e.g., Bowlby, 1973; Weimer, Kerns, & Oldenburg, 2004) have suggested a number of conceptual predictions that link attachment theory to friendship quality in childhood and adolescence. One such prediction is that the working models of self and others (Bowlby, 1973) present children and adolescents with expectations of what relationships are like and these expectations act as a guide for cognition, affect, and behaviour in relationships, such as peer friendships in sport (Weimer et al., 2004). Another perspective is that the attachment relationship a child has with a primary caregiver could influence the style of interaction the child has with others. For example, Weimer et al (2004) proposed that a child whose mother is rejecting and does not provide support and affection may come to respond towards their friends in a similar way.
Carr (2009a) also suggested that several dimensions of friendship quality, e.g., loyalty, intimacy, emotional support, forwarded by Weiss and Smith (1999, 2002), can be conceptually linked to attachment styles. For example, an insecurely attached child (i.e., categorised into either the anxious or avoidant attachment style) may not develop friendships in sporting contexts that have intimacy and emotional support as fundamental factors, whereas a securely attached child would be expected to develop friendships more easily in this environment. Carr recommended further research into sport friendship quality to further test these ideas.

The area of research into the quality of youth sport friendships was then further examined by Carr (2009b) in which he explored the link between adolescent-parent attachment relationships and the quality of friendships that children experience in team sports. Carr aimed to examine how adolescent-parent attachment characteristics related to the ease with which adolescents felt they interacted with teammates. Carr’s first hypothesis was that adolescents with insecure attachment relationships with their parents would demonstrate poorer relationships with their peers. Secondly, Carr hypothesised that the most positive friendship qualities (e.g., loyalty, companionship, things in common) would be evident between friends who were both securely attached, and the most negative friendships would be between friends who were both displayed insecure attachment. For this study the Adolescent Attachment Questionnaire (AAQ; West, Rose, Spreng, Sheldon-Keller, & Adam, 1998) and the Sport Friendship Quality Scale (SFQS; Weiss and Smith 1999) were administered to 96 male adolescents who competed in team sports.

Results of the study provided evidence to support the first hypothesis, thus showing that attachment characteristics reflecting a secure model of attachment resulted in more positive friendship characteristics (Carr, 2009b). The results also supported the second study hypothesis, showing that when an adolescent and his best friend were both securely attached, according to the AAQ, they were more likely to experience a positive friendship. This was in comparison to adolescent friendships involving two insecurely attached individuals and friendships involving one secure and one insecure individual (Carr, 2009b). It is reasonable to deduce that two insecurely attached individuals, with negative working models of self and others, are likely to have greater difficulty with intimacy and forming close peer bonds. The results support this idea and also suggest that sporting friendships between two individuals who have developed
secure attachments with their parents are likely to be experienced more positively. The implications of this finding could relate to how adolescents perform in sporting contexts, for example a more intimate friendship between two secure adolescents could help act as a stress buffer in the sporting environment (Carr, 2009b; Weimer et al., 2004). Overall, the results of the study provided preliminary evidence showing how the investigation of adolescent attachment characteristics is important for the development of the youth sport friendship literature.

Whilst Carr (2009b) provided initial evidence that the quality of friendships between two individuals who report secure attachment are more likely to be positive, the research findings are still limited. In order to provide more evidence in support of the initial research Carr and Fitzpatrick (2011) conducted further research. Their research aimed to address some limitations of the previous research (Carr, 2009b) by including a larger sample and also exploring their hypotheses from an interpersonal (i.e., how perception of friendship quality may depend on ones attachment characteristics and those of their friend) as well as intrapersonal approach (i.e., perception of friendship quality based solely on own attachment characteristics). Carr and Fitzpatrick (2011) aimed to overcome these limitations by employing the Actor-Partner Interdependence Model (APIM; Cook & Kenny, 2005; Kashy & Kenny, 2000) approach in their analysis of 193 male adolescents. The first aim of the research was to corroborate the findings of Carr (2009b) by examining adolescents’ attachment styles with regards a parental figure, and their perceptions of friendship quality within a dyadic sport friendship. The second aim of the research was to examine how perceptions of dyadic friendship quality was influenced by both actor (e.g., self) and partner (e.g., other) attachment characteristics. Carr and Fitzpatrick (2011) hypothesised that actor secure attachment would predict perceptions of positive friendship quality, as previously reported (Carr, 2009b), but also that the attachment characteristics of the partner (e.g., best friend) would impact upon the actor’s perceptions of the friendship. As with Carr (2009b) the AAQ (West et al., 1998) and the SFQS (Weiss and Smith, 1999) were employed to measure attachment styles and friendship quality respectively.

In support of the initial findings reported by Carr (2009b), results showed that the attachment style characteristics displayed by adolescents in their parental relationship were associated with their (e.g., actor) perceptions of friendship quality.
Therefore, a secure attachment with parental figures resulted in positive friendships within sport. Additionally, analysis also revealed significant partner effects in the friendship quality of sport friend dyads. As such, an actor’s perception of friendship quality was also influenced by the partner’s attachment characteristics. Overall, Carr and Fitzpatrick (2011) concluded that adolescent perceptions of friendship quality, within dyadic friendships in sport, are formed from both their own (i.e., actor) and their best friends (i.e., partner) attachment characteristics. The studies conducted by Carr and colleagues (e.g., 2009b, 2011) have provided evidence for the importance of the attachment relationship with parents within a sport setting, whilst also demonstrating the effectiveness of attachment theory for research in the sport psychology domain.

Developing further from this research, Davis and Jowett (2010) investigated whether athletes’ attachment style relative to their coach was associated with perceived satisfaction with the coaching relationship and the sport in general. Davis and Jowett (2010) also investigated whether coaches were considered as attachment figures according to the athletes by examining whether they fulfilled the three main functions of attachment figures (i.e., proximity maintenance, safe haven, and secure base). Davis and Jowett administered a self-report questionnaire containing the Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998) to measure insecure attachment styles toward the coach, and the Components of Attachment Questionnaire (CAQ; Parish, 2000) to assess whether coaches fulfilled the basic functions of an attachment figure, as well as measures to assess sport satisfaction and satisfaction with the coaching relationship, to a sample of 309 undergraduate student athletes. Their analysis revealed that athletes’ viewed their coach as an attachment figure who fulfilled the three basic functions of providing a secure base, safe haven, and proximity maintenance for the athletes in times of need. Furthermore, athletes who reported anxious and avoidant attachment with the coach showed negative associations with relationship satisfaction and sport satisfaction. Davis and Jowett (2010) also revealed that athletes’ satisfaction with the coach-athlete relationship also mediated the association between attachment styles and sport satisfaction, suggesting that satisfaction of the coach-athlete relationship may be a process through which athlete attachment styles effect sport satisfaction. The findings reported by Davis and Jowett (2010) provide further evidence for the potential theoretical use of attachment theory to explore relationship within sport.
Beyond research into relationships within sport, research has also explored the influence of attachment styles on eating psychopathology amongst athletes (Shanmugam et al., 2012). Shanmugam et al. (2012) aimed to examine the associations between attachment styles and eating psychopathology among athletes, whilst also exploring the mediating role of self-esteem, perfectionism, and depression in these associations, within a sample of 411 athletes. Athletes completed a self-report questionnaire in which the ECR (Brennan et al., 1998) was utilised to measure the athlete’s attachment style. The findings reported by Shanmugam et al. (2012) demonstrated that athletes who reported high scores on the anxious and avoidant attachment styles also reported elevated eating psychopathology scores. However, they also revealed that the associations between insecure attachment and eating psychopathology were indirect and were thus mediated via the athletes’ perceptions of self-esteem, perfectionism, and depression. Overall, the findings reported in this study provided additional evidence for the utility of attachment theory within research concerning athletes, as well as supporting previous research findings (e.g., Laible, Carlo, & Roesch, 2004; Irons & Gilbert, 2005) regarding the associations between attachment styles and indices of well/ill-being such as self-esteem and depression.

While attachment theory would appear to provide a sound framework to explore individual differences in athletes experiences of such factors as; relationships within sport, sport satisfaction, and also clinical issues such as eating psychopathology, this thesis aimed to integrate attachment theory with another well established framework, that of self-determination theory and more specifically basic psychological needs theory, in order to examine athletes experiences of well/ill-being. The following section outlines self-determination theory and specifically the basic principles of basic psychological needs theory, whilst also considering the research that has examined well/ill-being from this theoretical perspective.

1.4. Outline of Self-Determination Theory

The environment in which athletes operate in has frequently been explored using the self-determination theory framework (SDT; Deci & Ryan, 2000). Within the SDT framework aspects of the sporting environment including motivation, behaviours, and basic psychological needs are proposed to have an impact upon the athlete’s well-being and performance (e.g., Amorose, 2007; Mageau & Vallerand, 2003). In the
context of sport, SDT proposes that behaviours from the coach can have an influence on the athlete’s perceptions of basic psychological need satisfaction and ultimately their well-being. These coaching behaviours have been classified as either autonomy-supportive or controlling (Deci & Ryan, 2000). Autonomy-supportive behaviours from the coach include such factors as offering athletes the opportunity to have input and make decisions during training or competitive situations, providing the athletes with a rationale for why they are doing certain tasks, and acknowledging the athletes feelings. In contrast, controlling coach behaviours include factors such as coercive and demanding attitudes, manipulation of the athletes through criticism or rewards, as well as punishment (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2009). Whilst autonomy-supportive coach behaviours have been shown to benefit an athlete in terms of basic need satisfaction and performance (e.g., Gillet, Vallerand, Amoura, & Baldes, 2010; Mageau & Vallerand, 2003), controlling coach behaviours are linked to poor need satisfaction in athletes (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010). Therefore, SDT provides an ideal framework for exploring the influence of the athlete’s social environment on the experiences of well/ill-being. In particular this thesis will aim to focus on how perceptions of basic psychological needs, as well as behaviours from the coach and parents (Study 3), can influence athletes’ experiences of well/ill-being.

1.4.1 Background to Basic Psychological Needs Theory

The basic psychology needs theory, formulated by Deci and Ryan (BPNT; Deci & Ryan, 2000) as a sub-theory of the larger self-determination theory framework (SDT; see Deci & Ryan, 1985; Ryan & Deci, 2002), specifically conceptualises the interactions between basic psychological needs and well/ill-being. Due to the role of BPNT in providing a framework for understanding experiences of well/ill-being, the current thesis will focus on this specific sub-theory.

In order to achieve “on-going psychological growth, integrity, and well-being” (Deci & Ryan, 2000, p. 229), BPNT posits three basic psychology needs that must be satisfied. These include the need for autonomy, competence, and relatedness. The need for autonomy within BPNT refers to the need to feel volitional in one’s action and to be the instigator of these actions (deCharms, 1968). It is important to note that the concept of autonomy within BPNT does not refer to independence. An individual could gladly choose to depend on others, as long as the action originates from the individual (Deci,
La Guardia, Moller, Scheiner, & Ryan, 2006). The need for *competence* refers to one's need to interact effectively with their environment in order to produce desired outcomes and thus enabling the individual to feel competent in avoiding undesired outcomes (White, 1959). Finally, the need for *relatedness* refers to an individual’s desire or need to feel connected to and understood by others (Baumeister & Leary, 1995). Therefore, BPNT predicts that the degree to which an individual experiences satisfaction of the three basic needs will directly predict their well-being. In contrast, when the needs for autonomy, competence, and relatedness are not satisfied, and are in fact thwarted, it is expected that ill-being will be fostered within the individual (Deci & Ryan, 2000). The concept of psychological need thwarting will be discussed in greater detail within a later section of this introduction. Firstly, the research supporting the associations between need satisfaction and well/ill-being will be considered.

### 1.4.2. Need Satisfaction and Well/Il-Being

There is a substantial literature base that has consistently reported positive associations between psychological need satisfaction and well-being, whilst also demonstrating negative associations to ill-being. In their study, Sheldon, Ryan, and Reis (1996) examined how daily fluctuations in autonomy and competence need satisfaction influenced well-being. Their findings indicated that autonomy and competence were significantly correlated with well-being at the between-person level. When the between-person variance was removed, the within-person analysis also showed that daily changes in need satisfaction predicted changes in daily well-being. Specifically, when autonomy and competence were satisfied the participants reported their well-being on that day to be higher than on days when autonomy and competence satisfaction was low (Sheldon et al., 1996). In a follow up study, Reis, Sheldon, Gable, Roscoe, and Ryan (2000) extended the previous study by examining the role of all three basic psychological needs in daily well-being. As with the previous research (Sheldon et al., 1996), Reis et al. (2000) reported significant between-person and within-person associations between satisfaction of autonomy, competence, and relatedness, and well-being.

Research carried out within work organisations has also provided support for the need satisfaction and well-being hypothesis. For example, Deci, Ryan, Gagné, Leone, Usunov, and Kornazheva (2001) examined the associations between need
satisfaction and well/ill-being within a sample of Bulgarian and American workers. This study aimed to show that the hypotheses regarding BPNT and well/ill-being would be supported within the work domain, and would also be supported across cultures. Findings showed support for the expected associations, with need satisfaction being positively associated with self-esteem and negatively with anxiety. Also, Deci et al. (2001) reported similar findings when comparing the Bulgarian workers to their American counterparts, suggesting that the role of need satisfaction in experiences of well/ill-being is universal. In further research to support the validity of BPNT within the work domain, Baard, Ryan, and Deci (2004) explored employees’ performance satisfaction and well-being utilising the BPNT framework. Their overall findings showed that satisfaction of the three basic needs was positively associated to work performance and well-being amongst a sample of employees. Baard et al. (2004) emphasised that the findings indicated how the precise concepts of the three needs allows for predictions to be made regarding the optimal conditions for employee well-being and performance, and as a result managers should provide conditions that encourage need satisfaction.

Previous research has also examined how need satisfaction within specific relationships can impact upon an individual’s well-being. In a study of romantic relationships, Patrick, Knee, Canevello, and Lonsbary (2007) investigated the role of psychological need satisfaction within romantic relationships and how it influenced perceptions of well-being and relationship functioning. The findings reported by Patrick et al. (2007) demonstrated that satisfaction of the three basic needs within a romantic relationship results in individuals experiencing greater well-being and relationship functioning (e.g., relationship satisfaction). These findings suggest that if a relationship satisfies the three basic needs it is likely to facilitate experiences of well-being as well as positive relationship functioning.

Another domain that has often utilised the basic psychological needs framework is the sport domain. The following section will provide a summary of literature within sport psychology that has explored the associations between need satisfaction and well/ill-being.

1.4.3. Need Satisfaction and Well/Il-being in Sport
Whilst sport psychology research has been slow in the acknowledgment of attachment theory as a functional framework for examining important outcomes within sport, there has been no such problem concerning the adoption of the BPNT framework to explore psychological functioning in athletes (e.g., Adie, Duda, & Ntoumanis, 2008; Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009; Gagné, Ryan, & Bargmann, 2003; Quested & Duda, 2010; Reinboth, Duda, & Ntoumanis, 2004; Reinboth & Duda, 2007).

Through conducting a diary based study, Gagné et al. (2003) aimed to examine the effects of social support on gymnasts’ need satisfaction and well/ill-being. Specifically, 33 female gymnasts completed diary forms before and after training sessions for a period of four weeks. The gymnasts completed measures regarding well-being before and after training sessions, whilst only completing a measure of need satisfaction after each session. The findings showed that experiences of need satisfaction during the training session influenced the gymnast’s well-being from before the session to after it, whilst ill-being (e.g., negative affect) was not influenced. Thus, if the gymnasts felt the training session allowed them to satisfy their needs for autonomy, competence, and relatedness, they were likely to experience greater well-being (e.g., positive affect, vitality) after the session. These findings support those of previous research (e.g., Reis et al., 2000) however they are limited due to the sample consisting of only female gymnasts, thus reducing the generalisability of results.

Continuing this line of research, Reinboth et al. (2004) examined the relationships between coaching behaviours, need satisfaction, and both psychological and physical well-being. The study recruited 265 male adolescent athletes from football and cricket and administered a questionnaire containing items relating to autonomy, relatedness, competence, subjective vitality, intrinsic satisfaction, and physical symptoms. The findings from structural equation modelling analysis revealed that autonomy and competence satisfaction were both positively associated with subjective vitality and satisfaction. Competence need satisfaction was also negatively associated with physical symptoms. The satisfaction of relatedness was not associated with any of the well-being outcomes. In sum, Reinboth et al. (2004) showed that if the athletes within this study experienced satisfaction for their autonomy and competence within their sport, they experienced greater subjective vitality as well as intrinsic satisfaction. Also, satisfaction of their competence need resulted in reduced experiences of physical symptoms.
symptoms, applied in this research as a measure of ill-being albeit physical not psychological. Reinboth et al. (2004) suggested that the absence of significant findings for relatedness, contrary to previous research in sport and other domains (e.g., Gagné et al., 2003; Reis et al., 2000), could be due to competence and autonomy playing a greater role in the well-being of athletes. However, limitations of the study, specifically a sample of all male participants from only two team sports, means that these presumptions need further examination.

Following on from this research, Reinboth and Duda (2006) conducted longitudinal research with a sample of 128 athletes, including males and females, recruited from a British university. The study aimed to examine the relationships between changes in perceptions of motivational climate to changes in need satisfaction and psychological and physical well-being. A self-report questionnaire was administered to the athletes at two time-points, the first at the start of the season and the second towards the end of the season. As with Reinboth et al. (2004), the questionnaire contained items to measure the three basic psychological needs, subjective vitality, and physical symptoms. In contrast to the previous study, relatedness was measured with regards the coach and team mates (Reinboth & Duda, 2006). Findings showed that satisfaction of the need for autonomy was a positive predictor of subjective vitality, as shown in previous research (e.g., Gagné et al., 2003; Reinboth et al., 2004). In contrast to the previous research, the need for competence was not associated to subjective vitality or physical symptoms. In terms of relatedness satisfaction, relatedness with the coach was revealed as a positive predictor of increases in subjective vitality, a finding not shown in previous research by Reinboth et al. (2004); however relatedness with team mates was not a significant predictor of well-being. None of the three basic needs predicted physical symptoms. Reinboth and Duda (2006) suggested this may be due to need satisfaction being more appropriate for assessing the presence of well-being than for the lack of ill-being. Also, ill-being was measured in terms of physical symptoms; an examination of psychological ill-being (e.g., negative affect, depression) may provide significant links to need satisfaction (Reinboth & Duda, 2006).

In line with the research conducted by Reinboth and colleagues (2004, 2006), additional research was carried out by Adie, Duda, and Nioumanis (2008; 2012). For this research Adie et al. (2008) examined the associations between autonomy support from the coach, basic psychological need satisfaction, and well/ill-being within a
sample of 539 participants. The participants completed a multi-section questionnaire to measure each of the study variables, with well-being measured with subjective vitality and ill-being with a measure of emotional and physical exhaustion (Adie et al., 2008). In addition to analysing these associations using structural equation modelling (SEM), Adie et al. (2008) also examined the mediating effects of the basic psychological needs on the associations between autonomy support and the indices of well- and ill-being. The findings showed that basic psychological need satisfaction positively predicted experiences of subjective well-being, whilst individuals reporting low levels of autonomy satisfaction were found to report higher levels of emotional and physical exhaustion. Satisfaction of the competence and relatedness needs were not associated with exhaustion. In terms of mediation, findings from the analysis showed partial mediation of the autonomy support to subjective vitality association via satisfaction of the autonomy and competence needs. These findings indicate that individuals experience greater subjective vitality in sport when they receive autonomy supportive behaviours because they feel their needs for autonomy and competence are satisfied (Adie et al., 2008). However, as the results only displayed partial mediation, satisfaction of these needs did not completely explain the association, suggesting further mediating factors may exist that were not included in the analysis. It must also be noted that mediation within this study was conducted according to Baron and Kenny’s (1986) causal steps approach. This method of assessing mediation has recently been identified to have low power and has been recommended to be replaced in research by more statistically powerful methods such as bootstrapping (see Preacher & Hayes, 2004; Shrout & Bolger, 2002 for a comprehensive review). Overall, the findings reported by Adie and colleagues (2008) provided further evidence for the important role that basic need satisfaction has in the psychological functioning of athletes.

Further to their previous work, Adie et al., (2012) conducted longitudinal research in which they explored the associations between autonomy support from the coach, basic psychological need satisfaction, and well-being over time in a sample of 54 male elite youth soccer players. In addition they also examined the mediating role of basic need satisfaction, as with their previous research (Adie et al., 2008). The participants completed a multi-section questionnaire assessing all the study variables at six time points across two competitive seasons. The findings showed that perceptions of coach-autonomy support positively predicted both within-person changes and between-
person differences in basic need satisfaction and well-being over the period of the study. Adie and colleagues (2012) also reported that satisfaction of the need for competence and relatedness predicted within-person changes in vitality, and that these needs also partially mediated the association between autonomy-support and vitality over the two seasons examined. These findings slightly contradict the previous research conducted by Adie et al. (2008) in which they identified competence and autonomy need satisfaction as mediating variables in the associations between autonomy-support and vitality, however the current findings still highlight the importance of basic psychological need satisfaction for optimal well-being over a longer period of time. However, as noted regarding their previous work (Adie et al., 2008), the mediation analysis conducted within this study employed the Baron and Kenny (1986) approach to mediation and therefore significant findings may have been overlooked and the power of the analysis could be questioned. Further research analysing these associations through a more robust method of mediation analysis, such as bootstrapping, would provide more statistically powerful results.

The research discussed above has evidently demonstrated the importance of basic need satisfaction in the experience of well-being in athlete populations. However, despite the attempts of several studies (e.g., Adie et al., 2008; Reinboth et al., 2004), the findings concerning need satisfaction and ill-being have been less apparent. The studies described above have attempted to explain the inconsistent findings relating to ill-being by using the arguments put forward by Sheldon and Bettencourt (2002), who claimed that need satisfaction may be more suited to an examination of well-being promotion than for examining a lack of ill-being. It is therefore suggested that ill-being and well-being are unique constructs, and that low levels of satisfaction for the basic psychological needs may not accurately represent the concept of need thwarting hypothesised to associate with ill-being (Deci & Ryan, 2000). Thus, in order to gain a greater understanding of ill-being, as well as well-being, within athletes, a consideration of psychological need thwarting is needed alongside need satisfaction. The following section will briefly discuss current research that has directly measured and explored the concept of psychological need thwarting.

1.4.4. Psychological Need Thwarting: Conceptualisation and Research
In order to accurately determine the associations between the basic psychological needs and ill-being, research has been conducted to specifically examine the impact of psychological need thwarting (e.g., Balageur, González, Fabra, Castillo, Mercé, & Duda, 2012; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011a; Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011b). Bartholomew and colleagues (2011a) proposed that the inconsistent findings relating to need satisfaction and ill-being in the previous literature could be accounted for by the fact that need thwarting was not explicitly examined. As such, low scores on basic psychological need satisfaction measures may not accurately represent need thwarting, as assumed by previous research, but could simply indicate need dissatisfaction (Bartholomew et al., 2011a). Therefore, unlike feelings of a lack of need satisfaction, Bartholomew et al. (2011a) propose that feelings of psychological need thwarting, brought about by the perception that others are actively undermining your psychological needs, are more likely to result in experiences of ill-being. In order to explore these hypotheses Bartholomew et al. (2011a) validated a measure of psychological need thwarting to be used within the sport context, termed the Psychological Need Thwarting Scale (PNTS). Initial findings revealed that psychological need thwarting was a stronger predictor of feelings of exhaustion, whereas need satisfaction was a stronger predictor of vitality.

In order to build upon these initial findings, Bartholomew et al. (2011b) conducted multi-study research in which they examined the effects of need thwarting and need satisfaction on well/ill-being factors. Overall, it was hypothesised that well-being would be more strongly predicted by need satisfaction, and on the other hand ill-being would be more strongly predicted by need thwarting (Bartholomew et al., 2011b). In the first study, Bartholomew et al. (2011b) examined the relationships between coaching behaviours, need satisfaction and need thwarting, and well/ill-being (e.g., vitality, depression, and disordered eating). The study variables were assessed using a multi-section questionnaire administered to 303 female athletes. The results of latent variable SEM supported the overall research hypotheses. Specifically, vitality was only predicted by need satisfaction within the sport context, whereas depression and disordered eating were only predicted by need thwarting. Overall, the findings from the first study supported the inclusion of psychological need thwarting within the BPNT
framework, whilst also showing the value of directly measuring need thwarting when exploring ill-being in athletes.

The second study conducted by Bartholomew and colleagues (2011b) aimed to replicate and expand upon the findings of study one by using different measures of well/ill-being, and by also extending the sample to include males and females. Therefore, positive and negative affect were chosen to represent measures of well- and ill-being respectively. A measure of athlete burnout was also included to determine whether need thwarting could predict burnout and its associated components (e.g., emotional and physical exhaustion, sport devaluation, and reduced accomplishment). This study also aimed to further previous research by examining the psychobiological response of athletes to perceptions of need thwarting by measuring levels of secretory immunoglobulin A (S-IgA) prior to a training session. S-IgA can be measured using saliva samples and is a protein produced in response to stress in order to protect against viruses or bacteria. Bartholomew et al. (2011b) hypothesised that perceptions of psychological need thwarting prior to a training session would increase athlete stress levels, and that they would therefore produce greater levels of S-IgA in their saliva than athletes with perceptions of need satisfaction prior to training sessions. A questionnaire was administered to 294 participants, both males and females, from a range of sports. The findings of the study supported the overall research hypotheses. Specifically, need satisfaction was a stronger predictor of positive affect, whilst need thwarting was a stronger predictor of negative affect and burnout. With regards to S-IgA, findings supported the hypothesis that athletes who perceived need thwarting within the sport context experienced increased levels of stress-related physiological arousal prior to training (Bartholomew et al., 2011b).

For the final study, Bartholomew et al. (2011b) conducted a diary study to examine whether the associations identified at the between-person level in studies one and two could be supported at the within-person level. A total of 64 participants completed measures of need satisfaction and need thwarting, well-being (e.g., positive affect), and ill-being (e.g., negative affect and physical symptoms) before and after training sessions for two weeks. Bartholomew et al. (2011b) reported that perceptions of need satisfaction during training sessions was significantly associated with changes in positive affect from before to after training. Contrastingly, perceptions of need thwarting during training sessions was significantly predictive of changes in negative
affect and physical symptoms from before to after training. These findings show that the associations demonstrated at the between-person level in the first two studies are also represented at the within-person level when examined on a daily basis.

Similar to the research conducted by Bartholomew and colleagues (2011b), Balaguer et al. (2012) produced longitudinal research in which the associations between autonomy-supportive behaviour and controlling behaviour from the coach, need satisfaction and need thwarting within the sport context, subjective vitality, and burnout were examined for an initial sample of 725 male soccer players (the sample reduced to 597 at the second time point due to dropout). The findings showed that autonomy-supportive behaviour from the coach positively predicted need satisfaction and negatively predicted need thwarting in the sport context. In contrast, controlling coach behaviours positively predicted need thwarting in the sport context. In addition, need satisfaction positively predicted experiences of vitality and negatively predicted experiences of burnout in the soccer players, whereas need thwarting positively predicted burnout and was not associated with vitality. Balaguer and colleagues (2012) also reported that need satisfaction mediated the associations between autonomy-support and vitality and burnout. Similarly, need thwarting in the sport context also mediated the associations between autonomy-support and controlling behaviours and burnout.

Overall, the study conducted by Balaguer et al. (2012) and the multi-study research produced by Bartholomew et al. (2011b) have clearly demonstrated the importance of assessing both psychological need satisfaction and need thwarting when examining the psychological functioning of athletes. In particular, need thwarting should be directly measured when examining athletes experiences of ill-being, be it psychological (e.g., negative affect) or physical (e.g., physical symptoms). The research conducted by Bartholomew and colleagues (2011a, 2011b) and Balaguer et al. (2012) was taken into consideration for the final study presented as part of the current thesis. However, the studies presented before the final study were conducted at a time prior to the availability of the research discussed above and therefore direct measures of need thwarting are not present.

The preceding sections of this introduction have highlighted and discussed the integration of attachment theory and BPNT into the sport psychology domain, with
specific emphasis placed on the examination of athletes psychological functioning. However, whilst these theories have been used to great effect independently of one another, previous research has also demonstrated the benefits of examining well/ill-being from a combined attachment and basic needs approach. The following section will provide an overview of the limited research that has utilised a dual theory approach in the study of psychological functioning.

1.5. The Integration of Attachment and Basic Needs in the study of Well/Ill-Being

As previously mentioned, whilst a considerable amount of research has examined well/ill-being from the perspective of attachment theory or BPNT, research has also discussed the links between the two theories (Deci & Ryan, 2000) as well as applying both theories in the examination of well/ill-being (La Guardia, Ryan, Couchman, and Deci 2000; Leak and Cooney 2001; Wei, Shaffer, Young, and Zakalik 2005).

La Guardia and colleagues (2000) conducted three studies in which they examined the associations between attachment styles, psychological need satisfaction, and well-being. The first study aimed to examine within-person variation in attachment across a range of attachment relationships (e.g., mother, father, romantic partner, friend), and the associations to need satisfaction and well-being within a sample of 136 undergraduate students. The findings demonstrated that individuals did vary in their attachment style with different individuals, and that the differences in attachment were associated with need satisfaction. Thus, secure attachment within a relationship was associated with basic need satisfaction within that relationship, whilst insecure attachment (i.e., avoidant or anxious) was not associated with need satisfaction (La Guardia et al., 2000). Similarly, secure attachment was positively associated with experiences of well-being, and variability in attachment across relationships did not influence the individual’s well-being.

In their second study, La Guardia et al. (2000) expanded on the previous study by including six relationships; four primary (e.g., mother, father, romantic partner, best friend) and two distal relationships (e.g., roommate, important adult figure). As with the first study measures of need satisfaction and well-being were included and a questionnaire was administered to 152 students. Findings supported those in study one, specifically, within-person variability in attachment across relationships was observed.
and the variability in attachment was associated with experiences of need satisfaction within the specific relationship. At the between-person level, overall security of attachment was positively associated with experiences of well-being. La Guardia et al. (2000) also conducted mediation analysis to examine the relationships between attachment, need satisfaction, and well-being at the between-person level. Their findings showed that need satisfaction partially mediated the relationship between attachment and well-being.

In the final study, La Guardia et al. (2000) aimed to replicate study two but when focussing on only the primary attachment relationships (e.g., mother, father, romantic partner, best friend). For this study 160 students took part and completed a multi-section questionnaire. The findings reported for study three supported the previous findings of study one and two (La Guardia et al., 2000). In summary, variability in attachment was associated with variability in need satisfaction across the various relationships, with secure attachment predictive of perceptions of greater need satisfaction. Secure attachment also predicted greater experiences of well-being, regardless of variability in attachment. Finally, satisfaction of the basic psychological needs fully mediated the relationship between attachment security and well-being; this is slightly contrary to study two in which only partial mediation was reported. In general, the combined findings reported by La Guardia and colleagues (2000) highlight the associations between attachment and need satisfaction, as well as further supporting the associations of both to experiences of well-being. They were also among the first to conduct mediation analysis in which the role of need satisfaction as a mediator in the association between attachment and well-being was identified. Therefore, it is suggested that secure attachment is associated with greater experiences of well-being due to individuals perceiving that their basic needs are satisfied within relationships.

Subsequently, Leak and Cooney (2001) conducted similar research examining the associations between attachment styles, autonomy satisfaction, and well-being in adult romantic relationships. Unlike La Guardia et al. (2000), Leak and Cooney focussed exclusively on the satisfaction of autonomy within the romantic relationships, therefore limiting the comparability of the research findings. A questionnaire containing measure of attachment, autonomy satisfaction in relationships, and well/ill-being was completed by 134 students. The associations between the variables, as well as the mediating role of autonomy, were examined. In line with previous research (e.g.,
La Guardia et al., 2000), secure attachment was positively associated with autonomy within the relationship, autonomy was predictive of well/ill-being, and secure attachment significantly predicted well/ill-being (Leak & Cooney, 2001). Finally, autonomy satisfaction within the romantic relationships was identified as a mediator of the relationship between attachment and well/ill-being, supporting the previous findings by La Guardia et al. (2000). Leak and Cooney (2001) therefore provided further evidence for the relationships between attachment styles, need satisfaction (albeit only autonomy), and well/ill-being. However, the findings are limited due to the decision not to include measures of competence and relatedness need satisfaction. Future research should follow La Guardia et al. (2000) and ensure that all three needs are considered when examined the associations between attachment, need satisfaction, and well/ill-being.

Finally, Wei et al. (2005) conducted research in which they examined the associations between attachment styles, need satisfaction, and measures of ill-being including shame, depression, and loneliness. The primary aim of their research was to examine whether psychological need satisfaction would mediate the relationship between insecure attachment (e.g., avoidant and anxious) and ill-being; referred to as distress by Wei et al. (2005). A sample of 299 students completed a questionnaire assessing the main study variables listed above. Analysis was conducted using SEM in order to determine the associations between the variables of attachment, need satisfaction (entered as a latent factor), and ill-being. Having identified a model with acceptable fit indices, bootstrap mediation analysis was conducted on the specific indirect effects. Wei et al. (2005) reported that attachment anxiety and avoidant were both negatively associated with perceptions of basic need satisfaction. Similarly, basic need satisfaction was negatively associated with the ill-being outcomes; therefore increases in perceptions of need satisfaction predicted a decrease in individuals’ experiences of shame, depression, and loneliness (Wei et al., 2005).

In terms of the mediation findings, Wei et al. (2005) revealed partial mediation via basic need satisfaction for the associations between attachment anxiety and ill-being, whereas full mediation was observed between attachment avoidance and ill-being. They suggested a reason for differences in the mediation findings could be related to the attachment styles and the IWM that dictate them. Wei et al. (2005) propose that due to anxious individuals possessing negative IWM of themselves they
may not be aware of, or are likely to suppress, their basic needs as they view them as part of the reason they are unloved by others. Therefore, whilst need satisfaction partially mediates the associations between anxious attachment and ill-being, direct effects still remain. Conversely, due to an individual with avoidant attachment maintaining a negative IWM of others, they believe that others will not fulfil their needs; however they may still view satisfying them as important and thus rely on themselves to achieve satisfaction (Wei et al., 2005). This may explain why basic need satisfaction fully mediated the associations between avoidant attachment and ill-being. Overall, the findings reported by Wei et al. (2005) showed further support for the research carried out by La Guardia et al. (2000) and to a lesser extent Leak and Cooney (2001). An important practical implication of this research highlighted by Wei et al. (2005) is that if basic needs can be identified as mediators via which attachment influences well/ill-being, then it could provide therapists (or coaches within the sport domain) with a target for interventions aimed at improving the psychological functioning of individuals who display insecure attachment styles.

The research highlighted above has demonstrated the value of analysing the psychological functioning of individuals from both an attachment theory and BPNT perspective. However, to date no such research exists within the sport psychology literature. This is a limitation of current sport psychology research, and one that the current thesis will aim to address. Prior to identifying the aims of the current thesis the following section with discuss some of the limitations of the current research, both within social psychology and sport psychology, in terms of examining well/ill-being from an attachment and BPNT perspective.

1.6. Limitations of Current Research and Rationale for Thesis

This chapter has highlighted how well/ill-being has primarily been examined using either an attachment theory or BPNT framework. Only relatively recently have the two frameworks been used in conjunction to provide more detailed insight into psychological functioning (e.g., La Guardia et al., 2000; Wei et al., 2005). Research within the sport psychology domain has consistently provided support for the importance of psychological need satisfaction for predicting experiences of well/ill-being in athletes (e.g., Adie et al., 2008; Gagné et al., 2003; Reinboth & Duda, 2006). Similarly, the broader social psychology literature provides evidence for the role that an
individual’s attachment style has in the experiences of well/ill-being (e.g., Laible et al., 2004; Simpson, 1990; Irons & Gilbert, 2005). Within sport psychology the literature has demonstrated the importance of attachment theory for examining friendships within sport (e.g., Carr 2009b), satisfaction within sport (Davis & Jowett, 2010), disordered eating (Shanmugam et al., 2012), and attention (Forrest, 2008). Whilst factors such as relationship satisfaction and eating disorders may be considered to reflect or impact upon athletes’ experiences of well/ill-being, the sport psychology literature is devoid of research that has focussed on the specific associations between attachment styles and explicit well/ill-being factors (e.g., self-esteem, vitality, negative affect). Therefore, in order to address this gap in the sport psychology literature, this thesis aimed to provide a concerted examination into the effect of an athlete’s attachment style on their experiences of different well/ill-being factors. The application of attachment theory into this research will allow us to examine how individual difference characteristics, in the guise of attachment styles, play a role in athletes’ perceptions of well/ill-being, thus helping to further our understanding of the complex interpersonal dynamics of the relationships examined (e.g., coach-athlete, parent-athlete).

As stated above, BPNT has been used extensively within sport research to examine well/ill-being. It is therefore well established that satisfaction of the basic needs for autonomy, competence, and relatedness, positively predicts well-being in athletes. However, it is important to note that the concept of basic psychological needs satisfaction has been examined by emphasising two distinct ‘targets’ within the sport and broader social psychology literatures. Firstly, the sport psychology literature (e.g., Adie et al., 2008; Gagné et al., 2003; Reinboth et al., 2004) has tended to examine basic needs within the sporting context. For example, “I am pretty skilled at soccer” is a typical item from a competence needs scale used in a study conducted by Reinboth et al. (2004). In contrast, the social psychology literature (e.g., La Guardia et al., 2000) has examined individuals’ satisfaction of basic psychological needs within a specific relationship. For example, are needs satisfied within the relationship with ones mother? An example on an item measuring relatedness within this context is “When I am with my mother, I feel loved and cared about” (La Guardia et al., 2000). The findings attributable to the two literatures have shown that satisfaction of basic psychological needs is important within both contexts. However, making the distinction between the contexts is important to the contributions these findings make to the theory and
practice. As such, the current sport psychology literature provides ample evidence (e.g., Adie et al., 2008; Gagné et al., 2003) that when athletes’ perceive their basic psychological needs to be satisfied within the sport environment as a whole they are more likely to experience well-being. The impact on well-being of athletes’ perceptions of basic psychological need satisfaction within important relationships in the sport environment is less understood. In order to further the sport psychology literature the studies presented within this thesis aimed to provide a significant contribution by measuring psychological need satisfaction with regards to the athlete’s relationships with their parent and coach. These individuals were selected as they are seen as pivotal figures in an athlete’s growth and development (Wylleman & Lavallee, 2004). An understanding of how athletes’ perceive their basic needs to be satisfied within these important relationships will allow a examination of how the athletes social network affects their well-being.

Research has also demonstrated how attachment styles are associated with the basic psychological needs (e.g., La Guardia et al., 2000; Wei et al., 2005). These studies reported that insecure attachment (i.e., avoidant and anxious) was predictive of lower scores on measures of perceived need satisfaction. Collectively, research within the broader social psychology, and to a lesser extent within sport psychology, has reported that attachment styles are associated with basic psychological need satisfaction and well/ill-being, and that basic psychological need satisfaction is also associated with well/ill-being. Thus, in order to examine the antecedents of athlete well/ill-being in greater detail than previous research, the current thesis aimed to apply both the attachment theory framework and that of BPNT in the examination of athlete well/ill-being. Specifically, based on previous research (e.g., La Guardia et al., 2000; Wei et al., 2005), in this thesis basic psychological need satisfaction within the coach and parent relational contexts would function as mediating variables in the associations between athlete attachment styles and well/ill-being.

The inclusion of basic psychological need satisfaction as mediating factors in the associations between attachment styles and well/ill-being provides several contributions to the current sport psychology literature. Firstly, the examination of basic psychological need satisfaction from an attachment theory perspective has not been explored within sport psychology. Whilst it could be expected that the associations between athlete attachment styles and basic need satisfaction within the parent
relational context should reflect those seen in broader social psychology (e.g., La Guardia et al., 2000), the associations between athlete attachment styles and basic need satisfaction within the coach relational context could provide unique insight into the complex interpersonal dynamics of the coach-athlete relationship. Secondly, the inclusion of mediating variables in the association between attachment styles and well/ill-being allows for a detailed examination of the possible mechanisms through which attachment styles affect well/ill-being. Providing greater knowledge of why athletes with certain attachment styles experience well/ill-being through the examination of mediators, in the form of basic psychological need satisfaction within the coach and parent relational contexts, could potentially not only improve the understanding of athlete well/ill-being from an interpersonal and intrapersonal perspective but could identify basic psychological needs as targets for future intervention research aimed at improving athlete well/ill-being.

In addition to furthering our understanding of the associations between athlete attachment styles and well/ill-being, and the mechanisms that influence the associations, from a cross-sectional perspective this thesis also sought to examine the associations between attachment styles, basic psychological needs, and well/ill-being using a longitudinal design. By examining the associations between the variables of attachment, basic needs, and well/ill-being longitudinally it allows the within-person changes and between-personal differences to be examined. The within-person changes in the variables provide information pertaining to whether a change in one variable over time results in a subsequent change in another variable. In terms of this thesis it would be valuable to examine whether changes in one athletes attachment style had an effect on that athlete’s perceptions of basic psychological need satisfaction or well/ill-being. In comparison, the between-person differences in the variables provide information concerning how one person differs when compared to others. For example, athletes who reported an increase in perceptions of basic need satisfaction would be expected to report increased well-being when compared to athletes who report no change or decreased perceptions of basic need satisfaction. These within- and between-person changes and difference have not been previously examined in this way and so the current thesis would contribute to the literature by demonstrating how attachment styles, perceptions of basic psychological need satisfaction, and experiences of well/ill-being develop over time and more crucially how changes and differences in the
variables impact upon each other. Findings from the longitudinal study could also potentially aid in the development of interventions as they may indicate how changes in basic psychological need satisfaction could influence experiences of well/ill-being.

Another limitation of the current literature, that was briefly alluded to earlier, is that few studies have actively employed a measure of psychological need thwarting in the examination of well/ill-being. Bartholomew and colleagues (2011a, 2011b) have been the first to create a valid measure of need thwarting and to provide evidence that need thwarting is a stronger predictor of ill-being than low scores on need satisfaction measures. Therefore, in order for research to gain more insight into the antecedents of athletes’ well/ill-being, need thwarting along with need satisfaction should be assessed. Thus, a further aim of this thesis was to assess athletes’ well/ill-being from a need thwarting perspective, whilst also examining the relationships between attachment styles and need thwarting. The association between attachment styles and psychological need thwarting have not previously been explored within the literature. The background literature (e.g., Bartholomew et al., 2011a, 2011b) and attachment theory suggests that insecure attachment would be positively associated with psychological need thwarting, and in contrast secure attachment would be negatively associated. It is important for the development of the theory and advancement of research that these associations be empirically investigated so that an understanding of the associations between attachment styles, basic psychological need satisfaction and thwarting, and well/ill-being can be established. This thesis aimed to provide the initial investigation into these associations.

Finally, attachment styles have most frequently been measured within the literature through the use of self-report questionnaires (e.g., ECR; Brennan, Clark, & Shaver, 1998; ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007), that assess the individual’s attachment in terms of the two insecure styles (i.e., anxious and avoidant). These self-report measures therefore assume secure attachment is present when an individual scores low on the anxious and avoidant attachment subscales. This assumption has not been empirically tested and remains an important limitation of these self-report measures. Therefore, to provide an advancement of the literature and to try account for the limitations of the ECR and ECR-S, the final study within this thesis (Study 4) employed a recently developed measure of attachment in which all three attachment styles (i.e., secure, anxious, avoidant) are assessed. This measure of
attachment also differs to ECR-S, used within the earlier studies within this thesis, as it assessed the athlete’s specific attachment style to the coach, unlike the global perspective of attachment measured by the ECR-S which assessed athletes’ attachment style with regards to all their close relationships. It is anticipated that the inclusion of the three style self-report measure of attachment will produce findings that support the underlying principles of attachment theory and thus help to further unravel the complex nature of athletes interpersonal differences and the impact that they have upon experiences of well/ill-being.

1.7. Broad Thesis Aims

The broad aims for each of the studies presented within this thesis are detailed below. More specific details can be found in the relevant chapters.

1.7.1. Study 1 (see Chapter 2)

• To examine the associations between athletes global attachment styles and their experiences of psychological functioning.
• To explore the mediating role of psychological need satisfaction within two important relational contexts (e.g., parent and coach relationships) in these associations.

1.7.2. Study 2 (see Chapter 3)

• To examine the within- and between-person changes/differences in athlete attachment styles, basic psychological need satisfaction within the coach and parent relational contexts and well/ill-being over a period of six months.
• To examine whether within- and between-person changes/differences in athlete attachment styles predicted changes/differences in basic need satisfaction within the coach and parent relational contexts and well/ill-being.
• To examine whether within- and between-person changes/differences in athlete perceptions of basic need satisfaction within the coach and parent relational contexts predicted changes/differences in well/ill-being.

1.7.3. Study 3 (see Chapter 4)
• To examine the mediating role of social factors (e.g., social support, conflict, controlling behaviours, autonomy-supportive behaviours) in the associations between athlete attachment styles and basic psychological need satisfaction within the coach and parent relational contexts.

1.7.4. Study 4 (see Chapter 5)

• To examine the associations between athletes attachment styles regarding the relationship with their coach and their experiences of well/ill-being.

• To examine the mediating role of basic psychological need thwarting within the two contexts of sport and the coach-athlete relationship in the association between athlete attachment styles and well/ill-being.
2

Study 1
2
Attachment and Well-Being: The Mediating Effects of Psychological Needs Satisfaction Within the Coach-Athlete and Parent-Athlete Relational Contexts

Abstract

Objectives: Grounded in attachment theory and self-determination theory, this study aimed to examine whether basic needs satisfaction is a mechanism by which athletes’ insecure attachment styles are associated with levels of well-being. Method: Athletes (N = 430) from a range of sports and competition levels completed a multi-section questionnaire to assess the main variables of the study. Results: Bootstrap mediation analysis revealed that athletes’ perceptions of satisfaction of basic psychological needs generally mediated the association between their attachment styles and well-being. Moreover, the indirect effect of athletes’ experience of the satisfaction of basic needs on well-being was greater within the parental relational context than within the coaching relational context. Conclusions: Overall, the findings from the study highlight that the integration of attachment and self-determination theories can promote understanding of relational process in sport.

2.1. Attachment and Well-Being: The Mediating Effects of Psychological Needs Satisfaction

Attachment theory (Bowlby, 1969/1982) has been extensively applied within the social psychology literature to examine a number of factors including, relationship quality (Collins & Read, 1990), self-esteem (Bylsma et al., 1997), distress (Wei et al., 2005), and well-being (Leak & Cooney, 2001; La Guardia et al., 2000) to name a few. In contrast, sport psychology has yet to fully utilise “attachment theory to enhance understanding of contemporary research issues” (Carr, 2009a, p. 97). Nonetheless, the value of attachment theory in sport psychology has recently begun to emerge in
research that aims to understand interpersonal aspects of sport such as friendship quality (Carr, 2009b; Carr & Fitzpatrick, 2011) and coach-athlete relationship quality (Davis & Jowett, 2010), and intrapersonal aspects of sport such as eating disorders (Shanmugam et al., 2012), attention (Forrest, 2008) and stress appraisals (Ben-Ari & Tsur, 2009). Similarly, relevant literatures including the broader social psychology literature, and sport psychology literature more specifically, have shown support for the association between basic psychological needs satisfaction and well-being (e.g., Adie et al., 2008; Gagné et al., 2003; Leak & Cooney, 2001; Patrick et al., 2007).

However, whilst there is a plethora of evidence for the associations between attachment styles and well-being as well as basic need satisfaction and well-being, few studies have examined these associations together. Within the broader social psychology literature there is limited research that has started to explore the mediating role of psychological needs satisfaction in the association between attachment styles and well-being (e.g., La Guardia et al., 2000). This research has shown that individuals with a secure attachment style experienced greater well-being due to their social (with friends) and personal (with parents) relationships providing satisfaction of their basic psychological needs.

Therefore, in an attempt to expand this line of inquiry and address a gap within the sport psychology literature, this study principally aimed to examine whether athletes’ perceptions of basic psychological needs satisfaction within the coach-athlete relationship and the parent-athlete relationship were capable of transferring the effects of athletes’ insecure attachment styles onto their well-being. From a theoretical viewpoint, it was assumed that the integration of attachment theory and self-determination theory could potentially contribute to the knowledge and understanding of behaviour significantly more than either of the theories could attain alone. The view was that since both theories are complementary in that they emphasise the importance of such aspects as autonomy, competence, and relatedness (Ryan & Deci, 2001), their integration could shed light on aspects of human behaviour less well understood. The focus of this study was on coaching and parental relational contexts as coaches and parents are considered as pivotal figures in an athlete’s growth and development (Wylleman & Lavallee, 2004). Moreover, for the purpose of the present study, athletes’ level and type of insecure attachment were measured from a generic or global perspective. This generic perspective helped us capture athletes’ insecure attachment
styles when they relate, communicate, and interact with other individuals including the coach and the parent. Based on previous research within the broader social psychology (e.g., La Guardia et al., 2000), it was hypothesised that basic need satisfaction within both relational contexts would mediate the associations between insecure attachment and well-being.

2.2. Method

Participants

A total of 430 athletes representing a range of individual (59%) and team (41%) sports participated in the study. The sample was comprised of 166 males (39%) and 264 females (61%) with an age range of 15 to 35 years of age ($M = 20.4$ years, $SD = 2.71$). The athletes in the sample were predominately of White British ethnicity (87%). The athletes competed at different levels of performance from club level (33%), and university (20%), to regional, national, and international (47%).

Measures

Experiences in Close Relationships Scale – Short version (ECR-S; Wei et al., 2007). The ECR-S is a 12-item self report questionnaire used to measure an athlete’s attachment style by assessing how they generally experience close relationships. The ECR-S was developed by Wei et al. (2007) as a brief tool for researchers to utilise whilst still possessing the psychometric properties of the long version of the ECR (Brennan, Clark, & Shaver, 1998). The ECR-S is composed of two 6-item subscales; the anxious subscale, e.g. “I worry that others won’t care about me as much as I care about them”, and the avoidant subscale, e.g. “I want to get close to my partners, but I keep pulling back”. The items were rated on a 7-point scale ranging from 1 (disagree strongly) to 7 (agree strongly). Several items were reverse scored before scores for anxious and avoidant attachments were computed. Cronbach’s alphas for the current study were .70 for the avoidant items and .72 for the anxious items.

Need Satisfaction Scale (NSS; La Guardia et al., 2000). The NSS was used to assess the degree to which the basic psychological needs of the athlete were satisfied within the coach-athlete relational context and the parent-athlete relational context. The NSS was developed by La Guardia et al. (2000) as a tool to measure the extent to which
significant others such as, mother, father, romantic partner, and best friend, satisfy an individual’s basic psychological needs of autonomy, competence, and relatedness. The NSS contains 9 items, three for each subscale: autonomy (“When I am with my coach/parent, I feel free to be who I am”), competence (“When I am with my coach/parent, I feel like a competent person”), and relatedness (“When I am with my coach/parent, I often feel a lot of distance in the relationship”), which were rated on a 7-point scale ranging from 1 (not at all true) to 7 (very true). The need satisfaction is assessed by averaging the scores of all items with 3 items being reverse scored (see La Guardia et al., 2000). Internal reliability scores for need satisfaction with the coach and parent in the current study were .86 and .92 respectively.

Subjective Vitality Scale (SVS; Ryan & Frederick., 1997). The SVS is a 7-item measure that assesses perceptions of mental and physical aliveness and energy in general terms. Items were rated on a 7-point scale ranging from 1 (not at all true) to 7 (very true), with item 2, “I do not feel very energetic” being reverse scored. A 6-item version of the SVS employing only the positively worded items was utilised in this study due to reported improvement in psychometric properties of the scale (see Bostic, Rubio, & Hood, 2000). Sample items include; “I feel alive and vital”, and “I look forward to each new day”. The overall vitality of the athlete is calculated by averaging all items; higher scores indicate greater vitality. Cronbach’s alpha for the 6-item vitality scale was .86 for the athlete sample in this study.

Rosenberg Self-Esteem Scale (RSE; Rosenberg., 1965). The RSE scale is a 10-item measure that assesses individual’s perception relative to how they regard themselves. The items were rated on a 4-point scale ranging from 0 (strongly disagree) to 3 (strongly agree). The overall self-esteem score is calculated by the sum of the items’ scores, having reverse scored the negatively worded items, with higher scores indicating higher levels of self-esteem. Sample items include; “On the whole I am satisfied with myself”, and “I feel I do not have much to be proud of”. In the current study the Cronbach’s alpha was .92.

Elite Athlete Self Description Questionnaire (EASDQ; Marsh, Hey, Johnson, & Perry, 1997). The EASDQ is a 32-item questionnaire that is used to assess athletes’ perceptions of their physical self-concept across five dimensions; skill ability, body shape, physiological state, mental competence, and overall performance. For the
purpose of this study only the sub-scales of skill ability (5 items) and overall performance self concept (6 items) were employed. Sample items from the two sub-scales include; “I am the most skilled athlete in my best sport/event” (skill ability) and “I excel at my best sport/event because I am able to give a peak performance when necessary” (overall performance). Items were measured on a 6-point scale ranging from 1 (false) to 6 (True). The Cronbach’s alphas for the current study were .93 for skill ability self concept and .90 for overall performance self concept.

The International Positive and Negative Affect Schedule - Short Form (I-PANAS-SF; Thompson, 2007). This scale was employed to assess the level of positive and negative affect experienced by the athletes. The I-PANAS-SF contains 10 items that originate from the Watson, Clark, and Tellegen (1988) 20-item PANAS. The items were rated on a 5-point scale ranging from 1 (very slightly or not at all) to 5 (extremely). A high score on the PA and NA scales indicate feelings of high positive and negative affect respectively. In the current study the Cronbach’s alpha values for PA and NA were .81 and .74 respectively.

Procedure

Following ethical approval from the university’s ethical committee, National Governing Bodies (NGB) and a range of university, local, county, and regional clubs from across the United Kingdom were contacted regarding participation in the study. Those NGB and sports clubs that reported an interest in participating were sent the information sheet for the study along with any other information they requested. The questionnaire was available either as a hard copy or electronic copy. Athletes were instructed to read the information sheet before giving their informed consent. Athletes under the age of 18 were instructed to gain parental assent before taking part in the study. Completion of the study questionnaire took approximately 20 minutes.

Data Analysis

Basic descriptive statistics including means (Ms), standard deviations (SDs), and intercorrelations (rs) were calculated for the main study variables. Mediation analyses were performed according to the bootstrap procedure in SPSS outlined by Preacher and Hayes (2004). Bootstrapping has been identified as a statistically robust method for assessing indirect effects; detailed explanation of the bootstrap procedure is beyond the
scope of this study (see Preacher & Hayes, 2004; Shrout & Bolger, 2002 for a comprehensive review). Zhao, Lynch Jr, and Chen (2010) developed a typology that underlines the different types of mediation: (a) *complementary mediation* whereby the indirect effect and the direct effect both exist and are in the same direction, (b) *competitive mediation* whereby the indirect effect and the direct effect both exist and are in opposite directions, (c) *indirect-only mediation* whereby the indirect effect exists but there is no direct effect, (d) *direct-only non-mediation* whereby a direct effect exists but there are no indirect effects, and (e) *no-effect non-mediation* whereby neither direct or indirect effects exist. The complementary and competitive mediation described by Zhao et al. are similar to the term used by Baron and Kenny (1986) to describe partial mediation, whilst indirect-only mediation is similar to the term full mediation. (Direct-only non-mediation and no-effect non-mediation are reflective of non-mediation.) What makes Baron and Kenny’s procedure of mediation analysis distinct from Preacher and Hayes’ bootstrap procedure of mediation analysis is that in the latter case the independent variable (IV) does not need to significantly predict the dependent variable (DV) in the test of the indirect effects of mediators (Ms) on the IV-DV association (see also Preacher & Hayes, 2004; Rucker, Preacher, Tormala, & Petty, 2011).

### 2.3. Results

**Descriptive Statistics**

The means, standard deviations, and bivariate correlations for all variables are presented in Table 2.1. The mean scores for both avoidant and anxious attachment were both below the midpoint of the response scale indicating that, on average, the athletes in this study were securely attached. Mean scores for the basic psychological needs satisfaction (BPNS) variables were above the scale’s midpoint suggesting that the athletes perceived that their basic psychological needs were satisfied within the *coach*-athlete relationship (BPNS-C) and within the *parent*-athlete relationship (BPNS-P). The vitality and self-esteem mean scores were moderate to high. The mean scores for positive and negative affect indicated that the sample of athletes in this study experienced more positive affect than negative affect on average. Finally, the physical self-concept mean scores showed that on average athletes experienced higher performance self-concept than skill self-concept, with both means above the scale’s midpoint.
Bivariate correlations were computed to assess the associations between the variables. Statistically significant correlations were found between the two attachment dimensions and the BPNS and well-being variables (i.e., vitality, self-esteem, positive affect, skill self-concept, and performance self-concept). The only non-significant correlations were between anxious attachment and BPNS-C, skill self-concept, and performance self-concept. Due to the non-significant correlation between anxious attachment and BPNS-C, mediation analysis was not performed between anxious attachment, BPNS-C, and well-being. Statistically significant correlations were also found between the BPNS variables and the well-being variables, with the exception of the association between BPNS-C and self-esteem.

**Mediation Analyses**

Two sets of mediation analyses were conducted: one set with avoidant attachment style and the other set with anxious attachment style being the two independent variables. In both sets of analysis the mediator variables of basic psychological needs satisfaction within the coach-athlete relationship (BPNS-C) and within the parent-athlete relationship (BPNS-P) were entered simultaneously in the analyses. The analyses were conducted separately for the six dependent variables employed to assess well-being (i.e., vitality, self-esteem, negative affect, positive affect, skill self concept, and performance self concept). The indirect effects of the mediator variables were bootstrapped using the SPSS macro-programme created by Preacher and Hayes (2004). This bootstrap programme re-samples the data five thousand times and calculates the indirect effect for each sample. The resulting output contains the mean indirect effect point estimate, standard error, and bias corrected (BC) 95% confidence interval (CI) for the indirect effect, as well as producing unstandardized path coefficients for all the paths in the mediation model (i.e., the a path IV- > M, b path M - >DV, c path ((ab)+IV-DV), and c’ path (IV-DV) – (ab)).

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1. In response to reviewer’s comments, we also conducted Bootstrap analyses with the basic psychological needs forming three single mediators to represent autonomy, competence, and relatedness. The results of this analysis regarding the effects of the coach and parent relational contexts were in line with the results we presented in the main body of the manuscript.
Table 2.1. Descriptive statistics of means, standard deviations, and bivariate correlations of all study variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Ms</th>
<th>SDs</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Avoidant</td>
<td>3.05</td>
<td>.97</td>
<td>.17**</td>
<td>-.14**</td>
<td>-.28**</td>
<td>-.24**</td>
<td>-.16**</td>
<td>-.21**</td>
<td>-.21**</td>
<td>-.14**</td>
<td>-.17**</td>
<td></td>
</tr>
<tr>
<td>2. Anxious-ambivalent</td>
<td>3.40</td>
<td>1.04</td>
<td>1</td>
<td>-.02</td>
<td>-.20**</td>
<td>-.17**</td>
<td>-.16**</td>
<td>.38**</td>
<td>-.10*</td>
<td>.03</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>3. Need Satisfaction Coach</td>
<td>4.73</td>
<td>1.02</td>
<td>1</td>
<td>.18**</td>
<td>.20**</td>
<td>.05</td>
<td>-.17**</td>
<td>.20**</td>
<td>.25**</td>
<td>.25**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Need Satisfaction Parent</td>
<td>5.82</td>
<td>1.13</td>
<td>1</td>
<td>.33**</td>
<td>.18**</td>
<td>-.40**</td>
<td>.28**</td>
<td>.15**</td>
<td>.25**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Vitality</td>
<td>5.10</td>
<td>1.12</td>
<td>1</td>
<td>.17**</td>
<td>-.32**</td>
<td>.65**</td>
<td>.16**</td>
<td>.11*</td>
<td>.14**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Self-Esteem</td>
<td>18.10</td>
<td>7.53</td>
<td>1</td>
<td>-.26**</td>
<td>.16**</td>
<td>.11*</td>
<td>.14**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Negative Affect</td>
<td>2.20</td>
<td>.72</td>
<td>1</td>
<td>-.16**</td>
<td>-.16**</td>
<td>-.29**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Positive Affect</td>
<td>3.92</td>
<td>.62</td>
<td>1</td>
<td>.23**</td>
<td>.29**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Skill Self Concept</td>
<td>3.73</td>
<td>1.11</td>
<td>1</td>
<td>.53**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Performance Self Concept</td>
<td>4.11</td>
<td>.95</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: ** p < .01, * p < .05*
The BC 95% CI is an important index to consider because it reports whether an indirect effect is significant. Accordingly, when BC 95% CI does not contain zero then it can be concluded that the indirect effect is significant at $p < .05$ (Preacher & Hayes, 2004, 2008; Shrout & Bolger, 2002). This information is displayed in Tables 2.2 and 2.3.

Although the mediation analysis contained both mediation variables simultaneously, we present the results focused on BPNS-C first and on BPNS-P second. Table 2.2 shows the results for BPNS-C as the mediator variable between the attachment avoidance and well-being variables. The indirect and direct effect of BPNS-C was significant between attachment avoidance and the well-being variables of vitality, negative and positive affect suggesting a complementary mediation (partial). Moreover, an indirect effect of BPNS-C only was found to be significant between attachment avoidance and the well-being variables of physical self-concept (both skill and performance) suggesting indirect-only mediation (full). A direct effect was also recorded between attachment avoidance and the well-being variable of self-esteem. The existence of these direct effects would seem to suggest a direct-only non-mediation.

Table 2.3 shows the results for BPNS-P as the mediator variable between attachment and well-being variables. The indirect and direct effect of BPNS-P was significant between attachment avoidance and all the well-being variables suggesting a complementary mediation (partial). Correspondingly, an indirect and direct effect of BPNS-P was significant between anxious attachment and the well-being variables of vitality, self-esteem and negative affect suggesting a complementary mediation (partial). Moreover, only an indirect effect of BPNS-P was found to be significant between attachment avoidance and the well-being variables of physical self-concept (performance only) and between anxious attachment and the well-being variables of positive affect and physical self-concept suggesting indirect-only mediation (full). Table 2.4 presents a summary of the contrasts between the indirect effects of the two mediators for all avoidant attachment to dependent variable associations. If the BC 95% CI for the mean contrast between the mediators was significant then it was concluded that a significant difference between the indirect effects existed (Preacher & Hayes, 2008).
Table 2.2. Bootstrap analysis summary showing the indirect effects of avoidant attachment on psychological well-being indexes via basic psychological needs satisfaction from the coach

<table>
<thead>
<tr>
<th>Independent variables (IV)</th>
<th>Mediator variable (MV)</th>
<th>Dependent variables (DV)</th>
<th>a path coefficient (IV-MV)</th>
<th>b path coefficient (MV-DV)</th>
<th>c' path coefficient (Direct effect)</th>
<th>Mean indirect effect (ab)</th>
<th>SE of mean</th>
<th>BC 95% CI mean indirect effect (lower and upper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-C</td>
<td>Vitality</td>
<td>-.14*</td>
<td>.14*</td>
<td>-.15*</td>
<td>-.02</td>
<td>.01</td>
<td>-0.0482, -0.0049*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-C</td>
<td>SE</td>
<td>-.14*</td>
<td>.08</td>
<td>-.91*</td>
<td>-.01</td>
<td>.06</td>
<td>-.1483, .0910</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-C</td>
<td>NA</td>
<td>-.14*</td>
<td>-.06*</td>
<td>.07*</td>
<td>.01</td>
<td>.01</td>
<td>.0007, .0246*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-C</td>
<td>PA</td>
<td>-.14*</td>
<td>.09*</td>
<td>-.08*</td>
<td>-.01</td>
<td>.01</td>
<td>-.0286, -.0036*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-C</td>
<td>Skill SC</td>
<td>-.14*</td>
<td>.24*</td>
<td>-.09</td>
<td>-.03</td>
<td>.01</td>
<td>-.0679, -.0086*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-C</td>
<td>Perf SC</td>
<td>-.14*</td>
<td>.19*</td>
<td>-.08</td>
<td>-.03</td>
<td>.01</td>
<td>-.0563, -.0075*</td>
</tr>
</tbody>
</table>

Note: * p < .05 level

a BPNS-P = Basic Psychological Needs Satisfaction – Parent, NA = Negative Affect, PA = Positive Affect, SE = Self-Esteem, Skill SC = Skill Self Concept, Perf SC = Performance Self Concept. b These values are based on unstandardized path coefficients
Table 2.3. Bootstrap analysis summary showing the indirect effect of insecure attachment styles on psychological well-being indexes via basic psychological needs satisfaction from the parent

<table>
<thead>
<tr>
<th>Independent variables (IV)</th>
<th>Mediator variable (MV)</th>
<th>Dependent variables (DV)</th>
<th>$a$ path coefficient (IV-MV)</th>
<th>$b$ path coefficient (MV-DV)</th>
<th>$c'$ path coefficient (Direct effect)</th>
<th>Mean indirect effect ($ab$)</th>
<th>SE of Mean indirect effect</th>
<th>BC 95% CI mean indirect effect (lower and upper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-P</td>
<td>Vitality</td>
<td>-.33*</td>
<td>.26*</td>
<td>-.15*</td>
<td>-.09</td>
<td>.02</td>
<td>-.1456, -.0457*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-P</td>
<td>SE</td>
<td>-.33*</td>
<td>1.00*</td>
<td>-.91*</td>
<td>-.33</td>
<td>.13</td>
<td>-6287, -1261*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-P</td>
<td>NA</td>
<td>-.33*</td>
<td>-.23*</td>
<td>.07*</td>
<td>.08</td>
<td>.02</td>
<td>.0475, .1150*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-P</td>
<td>PA</td>
<td>-.33*</td>
<td>.12*</td>
<td>-.08*</td>
<td>-.04</td>
<td>.01</td>
<td>-.0728, -.0157*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-P</td>
<td>Skill SC</td>
<td>-.33*</td>
<td>.09</td>
<td>-.09*</td>
<td>-.03</td>
<td>.02</td>
<td>-.0769, .0043</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>BPNS-P</td>
<td>Perf SC</td>
<td>-.33*</td>
<td>.16*</td>
<td>-.08</td>
<td>-.05</td>
<td>.02</td>
<td>-.0993, -.0248*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>BPNS-P</td>
<td>Vitality</td>
<td>-.21*</td>
<td>.27*</td>
<td>-.12*</td>
<td>-.06</td>
<td>.02</td>
<td>-.0981, -.0292*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>BPNS-P</td>
<td>SE</td>
<td>-.21*</td>
<td>1.04*</td>
<td>-.97*</td>
<td>-.22</td>
<td>.09</td>
<td>-.4429, -.0785*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>BPNS-P</td>
<td>NA</td>
<td>-.21*</td>
<td>-.21*</td>
<td>.22*</td>
<td>.04</td>
<td>.01</td>
<td>.0195, .0758*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>BPNS-P</td>
<td>PA</td>
<td>-.21*</td>
<td>.13*</td>
<td>-.03</td>
<td>-.03</td>
<td>.01</td>
<td>-.0506, -.0129*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>BPNS-P</td>
<td>Skill SC</td>
<td>-.21*</td>
<td>.12*</td>
<td>.07</td>
<td>-.03</td>
<td>.01</td>
<td>-.0599, -.0040*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>BPNS-P</td>
<td>Perf SC</td>
<td>-.21*</td>
<td>.17*</td>
<td>-.03</td>
<td>-.04</td>
<td>.01</td>
<td>-.0716, -.0153*</td>
</tr>
</tbody>
</table>

Note: * $p < .05$ level

$^a$ BPNS-P = Basic Psychological Needs Satisfaction – Parent, NA = Negative Affect, PA = Positive Affect, SE = Self-Esteem, Skill SC = Skill Self Concept, Perf SC = Performance Self Concept. $^b$ These values are based on unstandardized path coefficients
Table 2.4. Summary statistics for the contrasts between indirect effects

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variables (DV)</th>
<th>Mean indirect effect of BPNS-C</th>
<th>Mean indirect effect of BPNS-P</th>
<th>Mean contrast (BPNS-C vs. BPNS-P)</th>
<th>SE of contrast mean</th>
<th>BC 95% CI mean contrast (lower and upper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment avoidance</td>
<td>Vitality</td>
<td>-.02</td>
<td>-.09</td>
<td>.07</td>
<td>.03</td>
<td>.0208, .1254*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>SE</td>
<td>-.01</td>
<td>-.33</td>
<td>.32</td>
<td>.15</td>
<td>.0650, .6471*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>NA</td>
<td>.01</td>
<td>.08</td>
<td>-.07</td>
<td>.02</td>
<td>-.1085, -.0353*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>PA</td>
<td>-.01</td>
<td>-.04</td>
<td>.03</td>
<td>.02</td>
<td>.0000, .0594*</td>
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<tr>
<td>Attachment avoidance</td>
<td>Skill SC</td>
<td>-.03</td>
<td>-.03</td>
<td>-.01</td>
<td>.03</td>
<td>-.0565, .0491</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>Perf SC</td>
<td>-.03</td>
<td>-.05</td>
<td>.03</td>
<td>.02</td>
<td>-.0136, .0737</td>
</tr>
</tbody>
</table>

Note: *p < .05 level

* BPNS-P = Basic Psychological Needs Satisfaction – Parent, NA = Negative Affect, PA = Positive Affect, SE = Self-Esteem, Skill SC = Skill Self Concept, Perf SC = Performance Self Concept. b These values are based on unstandardized path coefficients.
Table 2.4 shows there were significant differences between the specific indirect effects of the mediators for all associations excluding those between attachment avoidance and both variables of physical self-concept. Contrasts for anxious attachment were not conducted as no models examining BPNS-C as a mediator were tested based on the correlations reported previously.

2.4. Discussion

Guided by both attachment theory and self-determination theory and relevant empirical research, the purpose of the current study was to examine whether the satisfaction of athletes’ basic psychological needs transfers the effects of athletes’ insecure attachment styles (anxious and avoidant) on their levels of well-being. Findings from the study provided general support for the main study hypothesis, in which it was hypothesised that basic psychological need satisfaction, within both relational contexts, would mediate the associations between an athlete’s attachment style and indexes of well-being. While the mediation analyses contained the mediators of basic psychological needs within the coaching and parental relational contexts simultaneously, the findings are discussed separately. The first section discusses findings regarding the mediating effect of basic psychological needs satisfaction within the coach-athlete relationship (BPNS-C), the second section discusses findings regarding the mediating effect of basic psychological needs satisfaction within the parent-athlete relationship (BPNS-P), and a discussion of the contrast analysis of the mediating effects follows.

Basic Psychological Needs Satisfaction within the Coach-Athlete Relationship

In the analysis when BPNS-C was the mediator between avoidant attachment and well-being indexes, the findings revealed a series of complementary mediations (partial) and indirect-only (full) mediations. BPNS-C served as a partial mediator between the avoidance style and vitality, positive and negative affect and as a full mediator between avoidance and physical self-concept (skill and performance). Partial mediation indicates that BPNS-C serves as a mediator through which an athlete’s avoidance style influences vitality, positive and negative affect; however, it also suggests that BPNS-C alone cannot account for all of the variance in athletes’ well-being indexes. Moreover, a reported significant indirect effect between avoidance attachment style and physical self-concept would suggest that an athlete’s perception of
their skill and performance was fully mediated by the BPNS-C. In contrast, no mediation effects were recorded between BPNS-C and athletes’ attachment avoidance and self-esteem. Overall, it would appear that the satisfaction of basic psychological needs from the coach can potentially explain the association between athletes’ avoidant attachment style and well-being but not between athletes’ anxious attachment style and well-being. Collectively, these findings raise the question, why does BPNS-C act as a mediator for the association between athletes’ avoidance attachment style and well-being indexes whereas BPNS-C does not act as a mediator for the association between athletes’ anxiety attachment style and well-being indexes?

First, the findings of this study would seem to suggest that athletes’ perception of basic needs satisfaction received from their coach transfers the effects of avoidant attachment on experiences of well-being, as captured by vitality, positive and negative affect, and physical self-concept. Specifically an avoidant attached athlete would perceive low levels of need satisfaction from their coach, and this perception that their needs are not being satisfied has an impact on their feeling of well-being. The coach’s behaviour could have an impact on how the athlete perceives the amount of need satisfaction they receive from the coach. Research has shown that coaches who employ autonomy supportive behaviour can create an environment in which the athlete feels their psychological needs are being satisfied (e.g., Mageau & Vallerand; 2003; Reinboth et al., 2004). Conversely, a coach who uses controlling behaviours is more likely to have athletes whose psychological needs are not satisfied (Blanchard et al., 2009; Bartholomew et al., 2010). Therefore, in order for the athlete to experience need satisfaction the coach should use autonomy supportive behaviour to develop a positive environment.

The findings of this study would seem to suggest that athletes with an avoidant attachment style can function optimally if they perceive that their basic psychological needs are satisfied within their relationship with the coach. In this study, optimal functioning has been viewed as synonymous to psychological and subjective well-being. This set of findings underline that the satisfaction of basic psychological needs within the coach-athlete relationship may serve as a process by which athlete’s avoidant style of attachment is linked to higher levels of psychological well-being and as such representative of athletes’ experiences of personal growth, mastery, and self-acceptance (Ryan et al., 2008; Ryff & Singer, 1998). Therefore, even athletes with an avoidant
attachment style are more likely to feel that their potential is realised if their needs are satisfied within the coaching relational context (cf. Ryan & Deci, 2001). This is especially encouraging in light of a previous study (Davis & Jowett, 2010) that has shown avoidant athletes who have a discomfort with closeness may be more likely to perceive sport participation but also the coach-athlete relationship as dissatisfying. While Davis and Jowett’s (2010) study showed that attachment avoidance is linked to athletes’ levels of dysfunctionality, their findings and the findings of this study collectively suggest that if an athlete’s basic needs are satisfied levels of dysfunctionality may be alleviated and possibly removed.

While this may be a possible explanation for athletes with an avoidant attachment style, there was no evidence to suggest that this may be possible with an anxious attachment style. The satisfaction of basic needs within the coach-athlete relationship did not seem to play a mediating role for athletes’ whose attachments with close others were mainly anxious. One reason for this could be the nature of the anxious attachment style and another reason could be the nature of sports coaching. According to attachment theory (Ainsworth et al., 1978; Bowlby, 1969/1982; Mikulincer & Shaver, 2007), anxious attached individuals are clingy, needy, and their level of closeness with others may remain unfulfilled despite caregivers or attachment figures (in this case, coaches) best attempts to connect emotionally and behaviourally. Therefore, any attempts for proximity on the part of the coaches may go unacknowledged as anxious attached individuals find it difficult to acknowledge the efforts of closeness and proximity others provide. Moreover, even when efforts of closeness and proximity are acknowledged by anxious attached individuals, these can never be fully satisfying (Ainsworth et al., 1978; Mikulincer & Shaver, 2007). While sport coaching has been defined as an interpersonal affair (Lyle, 2002; Jowett, 2005), the demands placed on coaches to interact with athletes whose attachment style is anxious may be so great that they are unable to satisfy athletes’ psychological needs which will then allow athletes to feel happy and fulfilled. Although coaches may not have the time, continuous effort, or endless energy to satisfy these athletes’ basic psychological needs and in turn well-being, the findings of this study would seem to suggest that the parents of these athletes may be better placed to do so.
Basic Psychological Needs Satisfaction within the Parent-Athlete Relationship

In the analysis when BPNS-P was the mediator between insecure attachment styles and well-being indexes, the findings revealed a series of complementary mediations (partial) and indirect-only (full) mediations. BPNS-P served as partial mediator between the avoidant style and vitality, self-esteem, positive and negative affect and as a full mediator between avoidance and physical self-concept (only performance). Moreover, BPNS-P served as a partial mediator between the anxious style and vitality, self-esteem, and negative affect and as a full mediator between anxiety and positive affect, as well as physical self-concept (skill and performance). Overall, it would appear that the satisfaction of basic psychological needs within the parent-athlete relationship can explain the association between athletes’ insecure attachment style and well-being. It is important to note that regardless of athletes’ insecure attachment style when basic psychological needs are satisfied within the parent-athlete relationship, athletes’ both general self-esteem and specific physical self-concept were positively affected. This finding underlines the role of the parent in athletes’ optimal functioning as this reflected in athletes’ perceptions of subjective (e.g., happiness) and psychological (e.g., growth) well-being. As mentioned earlier, athletes with an anxious attachment style specifically may benefit greatly with having their basic needs satisfied within the parent-athlete relationship as they may be less likely to satisfy their basic needs within the coach-athlete relationship.

Contrasts between Indirect Effects

The findings of the contrasts analysis for the associations of avoidant attachment and well-being indexes provided support that BPNS-P was a significantly better mediator than the BPNS-C. This finding adds support to the importance of athletes’ perceptions of the satisfaction of basic psychological needs within the parent-athlete relationship for perceiving a broader range of well-being indexes regardless of athletes’ specific insecure attachment style. Notably, the associations between attachment avoidance and physical self-concept showed no significant contrast between the indirect effects of BPNS-C and BPNS-P. This was despite the fact that BPNS-C was an indirect only mediator (full) in the association between attachment avoidance and both aspects of physical self-concept. Given the non-significant correlation between anxious attachment and BPNS-C, it may reasonable to suggest, albeit very
tentatively, that the parental relational context may potentially be more significant than the coaching relational context when athletes are generally anxiously attached with significant others. While these findings may be contrary to those of Jowett and Cramer (2010), who reported that the quality of the coach-athlete relationship had greater effect than the quality of the parent-athlete relationship on athletes’ perception of physical self-concept, it may be that the strength of the association or indeed its significance depends on athletes’ attachment styles. Overall, these findings support the limited research conducted in the context of sport (e.g., Adie et al., 2008; Gagne et al., 2003) and other relational contexts (e.g., La Guardia et al., 2000; Leak & Cooney, 2001).

From a practical perspective the findings of the current study could be tentatively used to develop potential interventions aimed at enhancing well-being in insecure athletes. As the findings suggest, psychological need satisfaction is an important factor in insecure athletes’ experiences of well-being and therefore could be targeted in order to enhance their well-being. Based on the current findings, it is possible that coaches may have the capacity to help and support athletes with avoidant attachment styles to satisfy their needs and thus potentially increase their well-being. The coach can create an environment in which needs are likely to be satisfied by adopting autonomy supportive behaviours when interacting with the athlete, while avoiding controlling behaviours. For an athlete with an anxious attachment style the present findings suggest that parents, and not coaches, may be instrumental in promoting athlete perceptions of need satisfaction and in turn well-being.

The present study sought to extend the literature by examining a sample of athletes and relational contexts never explored before within the attachment and self-determination literatures while paying attention to methodological and measurement flaws of previous studies. Although the findings from the current study offer interesting insights and fill a gap in relevant literatures, the study has limitations that will need to be addressed in future research. Firstly, the study was cross-sectional in nature which limits the causal inferences that can be drawn. Also cross-sectional data does not allow for the potential changes in an athlete’s global attachment style to be investigated over time while simultaneously exploring the impact of changes on need satisfaction and well-being. Secondly, the data were collected employing a multi-section self-report questionnaire which has the inherent risk of social desirability bias in responses. Finally, although the present study can provide initial information for interventions
regarding enhancing athlete well-being through the satisfaction of basic psychological needs, it remain unclear what specific need may be more important. With these limitations in mind more research should be conducted to expand theory and practice.

Future studies employing a longitudinal design could supply evidence related to the extent to which basic psychological needs satisfaction within relationships with significant others such as coaches and parents, can determine athletes’ well-being. Also, longitudinal research could examine whether within-person change in attachment has an effect on need satisfaction and well-being. These associations have yet to be examined within sport psychology. The present study examined attachment at the global level (e.g., how athletes generally feel in close relationships) without specifying the relational contexts examined (e.g., family members, coaches, close friends, romantic or martial partners). Thus, future research could explore attachment in close relationships with parents, coaches, and/or friends in order to uncover differences and commonalities in satisfying needs and well-being. An examination of the mechanisms by which attachment styles and basic psychological needs satisfaction, and basic psychological needs satisfaction and well-being are associated could aid our understanding of the processes that connect these variables. Understanding the mechanisms by which these variables are connected can lead to the development of interventions that help individuals with insecure attachment styles to reach optimal functioning within the domain of sport. Finally, the evidence of complementary mediation (partial) would seem to suggest that other mediators are responsible for the association between athletes’ insecure attachment styles and perceptions of well-being. Thus, research that explores additional mediators would provide understanding of the complex associations involved between athletes’ attachment style and well-being indexes.

### 2.5. Conclusion

Within the field of sport psychology no previous research has examined the mediating role of basic psychological needs satisfaction within the coaching and parental relational context in the association between attachment styles and well-being. The findings provide knowledge regarding how athletes’ attachment style and basic psychological needs satisfaction, from both within coach-athlete and the parent-athlete relational contexts, impact on a broad range of psychological and subjective well-being.
indexes. It would appear that anxious and avoidant attachment styles are associated with athletes’ well-being and that the indirect effect of the satisfaction of basic psychological needs within the parent-athlete relationship is likely to play an equal or greater role than the satisfaction of basic psychological needs within the coach-athlete relationship in athletes’ experience of well-being.
3

Study 2
Attachment Styles, Psychological Need Satisfaction, and Well-Being in a Sample of Sport Performers: A Longitudinal Study

Abstract

Objective: Grounded in attachment theory and self-determination theory, the current study examined whether mean differences and changes in athletes’ attachment style predicted psychological need satisfaction, within two relational contexts (coach and parent), and well-being. In addition, the current study also examined whether mean differences and changes in need satisfaction within the relational contexts predicted well-being. Method: One hundred and ten athletes aged between 15 and 32 years completed a multi-section questionnaire at three time points to assess the main study variables. Results: Multilevel modeling revealed that insecure attachment (anxious and avoidant) predicted well-being outcomes at the within- and between-person levels. Avoidant attachment predicted need satisfaction within the parent relational context at both levels and need satisfaction within the coach relational context at the between-person level. Need satisfaction within both relational contexts predicted various well-being outcomes at the between-person level, whilst need satisfaction within the parent relational context predicted vitality at the within-person level. Conclusion: Findings from the study provide further support for the role of attachment in need satisfaction and well-being within sport psychology, as well as highlighting important within- and between-person effects.

3.1. Attachment Styles, Psychological Need Satisfaction, and Well-Being in a Sample of Sport Performers: A Longitudinal Study.

Attachment theory (Bowlby, 1969/1982) and self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2002) are established frameworks that have been extensively employed to enhance understanding of relationship processes on one hand
and psychological functioning on the other. Over the past decade, there has been research, albeit limited, investigating in an integrative manner, postulates of attachment theory, self-determination theory, more specifically the basic psychological needs sub-theory (BPNT; Deci & Ryan, 2000), and well-being (e.g., Chapter 2; La Guardia et al., 2000; Leak & Cooney, 2001; Wei et al., 2005). Although the findings of this research supply important theoretical and practical implications, the scope of the findings is limited by the cross-sectional design of the research. Thus, the purpose of the current study was to expand the previous research by examining whether mean levels and changes in psychological need satisfaction and well-being of individuals who participate in competitive sport could be predicted by their attachment style.

While most of the research conducted in this area has been cross-sectional, a study by Reinboth and Duda (2006) employed a longitudinal research design and attempted to assess satisfaction of needs (only relatedness) within the context of the coach-athlete relationship and its association with well-being. They reported that changes in the athletes’ perceptions of satisfaction of the need for relatedness with the coach predicted significant changes in vitality. This is the only study that has examined associations when the target of basic need satisfaction (relatedness in this case) has solely been a specific relational context. The present study aimed to extend this line of inquiry in order to examine whether changes in need satisfaction within the coach-athlete and parent-athlete relational contexts, two important relationships in an athlete’s growth and development (Wylleman, De Knop, Verdet, & Cecic-Erpic, 2007), predicted changes in well-being. Through the examination of need satisfaction within these two relational contexts the findings of the current study should highlight how changes in perceptions of need satisfaction over time affect individuals’ experiences of well-being. This information could support previous cross-sectional research (e.g., La Guardia et al., 2000; Wei et al., 2005) that has reported the importance of need satisfaction for optimal well-being, whilst going beyond this research to show how these associations change over time. Such findings would also have the potential to inform interventions aimed at enhancing the well-being experienced by individuals.

The Present Study

The aims of the present study were two-fold. First, it aimed to investigate whether within-person changes (i.e., the change in an individual’s scores across the
time-points) and between-person differences (i.e., the difference in an individual’s scores across the time-points compared to others) in attachment styles predicted several indicators of well-being such as vitality, self-esteem, negative affect, and performance self-concept, and basic psychological need satisfaction within the coach and parent relational contexts. Second, it aimed to examine whether within-person changes and between-person differences in basic psychological needs satisfaction within the two relational contexts predicted well-being outcomes. Previous research has shown the mediating role of basic psychological needs satisfaction in the association between attachment and well-being (e.g., La Guardia et al., 2000; Chapter 2), therefore we did not examine these effects. Rather, we aimed to disentangle the within- and between-person relationships of each stage of the process using a longitudinal design.

It was hypothesised that avoidant and anxious attachment styles would positively predict negative affect and negatively predict vitality, self-esteem, and performance self-concept at both levels of analysis (H1). Moreover, basic psychological needs satisfaction within both the coach and parent relational context would positively predict well-being outcomes and negatively predict negative affect at both levels of analysis (H2). Finally, it was hypothesised that athletes’ avoidant and anxious attachment styles would negatively predict basic psychological needs satisfaction in both relational contexts at each level of analysis (H3).

3.2. Method

Participants

One hundred and ten athletes aged between 15 and 32 years ($M = 20.96, SD = 3.07, 68\%$ female) participated in the study. The athletes participated in a range of individual (51\%) and team (49\%) sport at various competitive levels including club (34\%), university (24\%), regional (17\%), and national/international (25\%).

Measures

Attachment. The Experiences in Close Relationships scale - Short version (ECR-S; Wei et al., 2007) was used to measure athletes’ attachment style by assessing how they generally feel in close relationships. The ECR-S was developed by Wei et al (2007) as a more compact tool for researchers to utilise whilst still maintaining the reliability of the original ECR (Brennan, Clark, & Shaver, 1998). The ECR-S is
composed of two six-item subscales measuring anxious and avoidant styles, with the items rated on a 7 point scale ranging from 1 (disagree strongly) to 7 (agree strongly). The scale has demonstrated acceptable internal reliability during development and in previous research (e.g., Wei et al., 2007; Chapter 2).

**Psychological Need Satisfaction.** The Need Satisfaction Scale (NSS; La Guardia et al., 2000) was used to assess the degree to which the basic psychological needs of the athlete were satisfied by the coach and parent. The NSS was developed to measure the extent to which significant others (e.g. mother, father, romantic partner) support an individual’s basic psychological needs of autonomy, competence, and relatedness. The NSS contains three subscales containing three items each which were rated on a 7 point scale ranging from 1 (not at all true) to 7 (very true). A composite needs satisfaction score was used by calculating the mean of the three subscales. For the purpose of this study participants completed the items with reference to their coach and parents separately. Internal reliability for overall need satisfaction with various significant others (e.g., parent, romantic partners, friends) have been reported in previous research (e.g., La Guardia et al., 2000).

**Vitality.** The 6-item version of the Subjective Vitality Scale (SVS; Bostic et al., 2000) was used to assess perceptions of mental and physical aliveness and energy in general terms. Items were rated on a 7-point scale ranging from 1 (not at all true) to 7 (very true), with one item reverse coded and then an average was calculated to represent overall vitality. Strong internal reliabilities of the scale have been reported in previous research (e.g., Bostic et al., 2000; Patrick et al., 2007), with Cronbach’s alphas ranging from .84 to .91.

**Self-Esteem.** The 10-item Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) was used to assess individuals’ self-esteem. The items were rated on a 4-point scale ranging from 0 (strongly disagree) to 3 (strongly agree). The overall self-esteem score was calculated by the average of the items’ scores, having reverse scored the negatively worded items. Cronbach’s alphas of .88 (Leak & Cooney, 2001) and .89 (Bylsma et al., 1997) have been reported in the literature.

**Negative Affect.** The International Positive and Negative Affect Schedule - Short Form (I-PANAS-SF; Thompson, 2007) was employed to assess the level of negative affect experienced by the athletes. The I-PANAS-SF contains 10 items that
originate from the Watson, Clark, and Tellegen (1988) 20-item PANAS. The items were rated on a 5-point scale ranging from 1 (very slightly or not at all) to 5 (extremely). An average was calculated for the scale to represent overall negative affect. Internal reliability and validity of the scale has been demonstrated in previous research (e.g., Thompson, 2007).

**Performance Self-Concept.** The 6-item performance self-concept subscale of the Elite Athlete Self Description Questionnaire (EASDQ; Marsh et al., 1997) was used to measure the athletes’ perceptions of their sporting performance. Items were measured on a 6-point scale ranging from 1 (false) to 6 (true). Overall performance self-concept was calculated by an average of the item scores. The scale as a whole has been found to possess sound psychometric properties (Marsh et al., 1997) with consistently excellent reliability scores for the subscale in question (e.g., Jowett, 2008; Jowett & Cramer, 2010).

**Procedure**

Following ethical approval from the university’s ethical committee, National Governing Bodies (NGBs) and a range of university, local, county, and regional teams from across the United Kingdom were contacted regarding participation in the study. The questionnaire was available to the athletes either as a hard copy or electronic copy made available online. Athletes were instructed to read the information sheet before giving their informed consent. Athletes under the age of 18 were instructed to gain parental consent before taking part in the study. The participants completed the questionnaire at three time points, each separated by three months.

**Data Analysis**

Thirty one participants did not complete the questionnaire at the third time point. These participants remained in the analysis, however, because multilevel modelling does not require an equal number of responses from each participant (Singer & Willett, 2003). Utilising MLwiN software (version 2.22; Rashbash, Charlton, Browne, Healy, & Cameron, 2009), multilevel models (Raudenbush & Bryk, 2002) were used to test the study hypotheses. The first step was to construct intercept-only models (i.e., no predictor variables included) for all the study variables in order to examine the amount of variance attributable to the within- and between-athlete levels.
The purpose of intercept-only models was to deconstruct the variable variance associated with level-1 errors (i.e., within-athlete) and the variance associated with level-2 errors (i.e., between-athlete; Hox, 2002). These models allow intraclass correlation coefficients (ICCs) to be computed in order to describe the proportion of variance attributed to the between-athlete level.

In the second step, models were formulated to test the primary study hypotheses. In order to test whether within-person changes in attachment style predicted the well-being outcome variables, avoidant and anxious attachment were group mean centered on each participants’ mean score and entered into the level-1 multilevel equation (H1). Between-person differences in attachment style and their associations with the well-being outcomes were examined by grand mean centering the two attachment styles and entering them into the level-2 equation (H1). All predictor variables were examined as both fixed effects and random effects across participants, and were included in the final models as random effects if the variance of the slope was statistically significant. A similar procedure was followed to test relational need satisfaction as predictors of the well-being outcomes (H2), as well as attachment styles as predictors of coach and parent need satisfaction (H3).

3.3. Results

Descriptive Statistics, Cronbach’s Alpha Coefficients, and ICCs

The means, standard deviations, Cronbach’s alpha coefficients for all study variables at each of the three time points, along with ICCs for each variable, are shown in Table 3.1. All variable subscales demonstrated acceptable internal consistency. Athletes reported levels of avoidant and anxious attachment, as well as negative affect below the midpoint of the scale, whereas all remaining variables were above the midpoint of the scale on average. The ICC values indicated that between 0 and 31% of the variance in the variables was at the between-person level therefore, between 69 and 100% of the variance in the variables was at the within-person level. It is of particular note that between 70 and 78% of the variance in the two attachment styles was at the within-person level.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Time Point 1</th>
<th></th>
<th>Time Point 2</th>
<th></th>
<th>Time Point 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>α</td>
<td>Mean</td>
<td>SD</td>
<td>α</td>
</tr>
<tr>
<td>Anxious</td>
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<td>.70</td>
<td>3.60</td>
<td>1.04</td>
<td>.69</td>
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<td>4.07</td>
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<td>.90</td>
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<td>BPNS-P</td>
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<td>1.00</td>
<td>.90</td>
<td>4.75</td>
<td>.44</td>
<td>.91</td>
</tr>
<tr>
<td>Vitality</td>
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<td>4.98</td>
<td>1.24</td>
<td>.94</td>
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<td>.74</td>
<td>.91</td>
<td>2.09</td>
<td>.60</td>
<td>.91</td>
</tr>
<tr>
<td>NA</td>
<td>2.13</td>
<td>.65</td>
<td>.65</td>
<td>2.15</td>
<td>.66</td>
<td>.70</td>
</tr>
<tr>
<td>Performance self-concept</td>
<td>4.06</td>
<td>1.04</td>
<td>.93</td>
<td>4.15</td>
<td>1.05</td>
<td>.94</td>
</tr>
</tbody>
</table>

*Note: Self-esteem uses a 0-3 scale*
Attachment Styles as Predictors of Well-Being Outcome Variables

Table 3.2 provides results of the multilevel growth models for each outcome variable and is summarized below.

**Vitality.** At the within-person level changes in anxious attachment negatively predicted vitality. Changes in levels of avoidant attachment did not predict vitality, however, this relationship varied across participants ($\sigma = .30, p < .05$). At the between-person level athletes with higher scores on the avoidant and anxious attachment on average reported lower levels of vitality.

**Self-Esteem.** At the within-person level changes in avoidant and anxious attachment negatively predicted athletes’ self-esteem. Similar results were found for the between-person level where avoidant and anxious attachment negatively predicted self-esteem.

**Negative Affect.** At the within-person level changes in both avoidant and anxious attachment positively predicted negative affect, however, the relationship between negative affect and anxious attachment varied across participants ($\sigma = .11, p < .01$). At the between-person level avoidant and anxious attachment positively predicted negative affect.

**Performance Self-Concept.** At the within-person level only changes in avoidant attachment negatively predicted changes in performance self-concept. At the between-person level again only avoidant attachment negatively predicted performance self-concept. At both the within- ($\sigma = .17, p < .05$) and between person level ($\sigma = .23, p < .05$) the relationship between avoidant attachment and performance self-concept varied across participants.

Attachment Styles as Predictors of Psychological Need Satisfaction Variables

Table 3.3 provides results of the multilevel growth models, a summary of the results for each outcome variable follows.

**Basic Needs Satisfaction with Coach (BPNS-C).** At the within-person level changes in avoidant and anxious attachment did not predict changes in BPNS-C. However, the relationship between avoidant attachment and BPNS-C varied across participants ($\sigma = .28, p < .05$). At the between-person level only avoidant attachment negatively predicted BPNS-C.
Table 3.2. Multilevel Growth Models Exploring Within- and Between-Person Variability in Attachment Style as Predictors of Vitality, Self-Esteem, Negative Affect, and Performance Self-Concept

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Vitality</th>
<th>Self-esteem</th>
<th>Negative Affect</th>
<th>Performance SC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$ (SE)</td>
<td>$\beta$ (SE)</td>
<td>$\beta$ (SE)</td>
<td>$\beta$ (SE)</td>
</tr>
<tr>
<td>Intercept</td>
<td>5.09 (.08)*</td>
<td>2.00 (.05)*</td>
<td>2.14 (.04)*</td>
<td>4.13 (.06)*</td>
</tr>
<tr>
<td>Within-person relationships</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxious</td>
<td>-.30 (.08)*</td>
<td>-.14 (.05)*</td>
<td>.18 (.06)*</td>
<td>.00 (.07)</td>
</tr>
<tr>
<td>Avoidant</td>
<td>-.21 (.11)</td>
<td>-.16 (.05)*</td>
<td>.13 (.05)*</td>
<td>-.19 (.09)*</td>
</tr>
<tr>
<td>Between-person relationships</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean anxious</td>
<td>-.31 (.12)*</td>
<td>-.21 (.06)*</td>
<td>.29 (.06*)</td>
<td>-.11 (.09)</td>
</tr>
<tr>
<td>Mean avoidant</td>
<td>-.34 (.10)*</td>
<td>-.25 (.05)*</td>
<td>.23 (.06)*</td>
<td>-.30 (.09)*</td>
</tr>
</tbody>
</table>

*p < .05
Table 3.3. Multilevel Growth Models Exploring Within- and Between-Person Variability in Attachment Style as Predictors of Basic Psychological Needs Satisfaction from the Coach and the Parent

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Needs Satisfaction Coach</th>
<th>Needs Satisfaction Parent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β (SE)</td>
<td>β (SE)</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.72 (.06)*</td>
<td>5.56 (.06)*</td>
</tr>
<tr>
<td>Within-person relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxious</td>
<td>-.11 (.09)</td>
<td>-.07 (.09)</td>
</tr>
<tr>
<td>Avoidant</td>
<td>-.11 (.11)</td>
<td>-.26 (.09)*</td>
</tr>
<tr>
<td>Between-person relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean anxious</td>
<td>-.08 (.09)</td>
<td>-.08 (.08)</td>
</tr>
<tr>
<td>Mean avoidant</td>
<td>-.24 (.08)*</td>
<td>-.29 (.08)*</td>
</tr>
</tbody>
</table>

*p < .05
Basic Needs Satisfaction with Parent (BPNS-P). At the within-person level only changes in avoidant attachment negatively predicted changes in BPNS-P. At the between-person level again only avoidant attachment negatively predicted BPNS-P.

Psychological Need Satisfaction as Predictors of Well-Being Outcomes

Finally, Table 3.4 provides results of the final set of multilevel growth models. A summary of the results follows.

Vitality. At the within-person level changes in BPNS-P positively predicted changes in vitality. At the between-person level both BPNS-C and BPNS-P predicted vitality.

Self-Esteem. At the within-person level changes in BPNS-C and BPNS-P did not significantly predict changes in self-esteem. At the between-person level, only BPNS-P positively predicted self-esteem.

Negative Affect. At the within-person level changes in BPNS-C and BPNS-P did not significant predict changes in negative affect. However, the relationship between BPNS-C and negative affect varied across participants (σ = .07, p < .05). At the between-person level BPNS-P negatively predicted negative affect.

Performance Self-Concept. At the within-person level changes in BPNS-C and BPNS-P did not significantly predicted changes in performance self-concept. At the between-person level only BPNS-C predicted performance self-concept.

3.4. Discussion

The present study aimed to examine the degree to which athletes’ within-person changes and between-person differences in attachment styles predicted several indicators of well-being (vitality, self-esteem, negative affect, and performance self-concept) and basic psychological needs satisfaction within both the coach and parent relational contexts. An additional aim of the study was to examine whether within-person changes and between-person differences in athletes’ basic psychological needs satisfaction within the two relational contexts predicted well-being outcomes.

Attachment Styles as Predictors of Well-Being Outcome Variables

Previous research (e.g., La Guardia et al., 2000; Wei et al., 2005) has demonstrated that securely attached individuals, reflected in low levels
Table 3.4. Multilevel Growth Models Exploring Within- and Between-Person Variability in Basic Psychological Needs Satisfaction from the Coach and Parent as Predictors of Vitality, Self-Esteem, Negative Affect, and Performance Self-Concept

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Vitality</th>
<th>Self-esteem</th>
<th>Negative Affect</th>
<th>Performance SC</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$\beta$ (SE)</td>
<td>$\beta$ (SE)</td>
<td>$\beta$ (SE)</td>
<td>$\beta$ (SE)</td>
</tr>
<tr>
<td>Intercept</td>
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<td>2.00 (.04)*</td>
<td>2.14 (.05)*</td>
<td>4.11 (.07)*</td>
</tr>
<tr>
<td>Within-person relationships</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needs satisfaction coach</td>
<td>.14 (.08)</td>
<td>.04 (.04)</td>
<td>-.04 (.05)</td>
<td>.06 (.06)</td>
</tr>
<tr>
<td>Needs satisfaction parent</td>
<td>.19 (.08)*</td>
<td>.05 (.04)</td>
<td>-.09 (.05)</td>
<td>.05 (.07)</td>
</tr>
<tr>
<td>Between-person relationships</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean needs satisfaction coach</td>
<td>.28 (.12)*</td>
<td>.05 (.07)</td>
<td>- .09 (.07)</td>
<td>.31 (.10)*</td>
</tr>
<tr>
<td>Mean needs satisfaction parent</td>
<td>.47 (.14)*</td>
<td>.24 (.07)*</td>
<td>-.26 (.08)*</td>
<td>.17 (.12)</td>
</tr>
</tbody>
</table>

*p < .05
of anxious and avoidant attachment, experience greater levels of well-being and lower levels of distress. Consistent with previous research, findings from the current study showed that anxious and avoidant attachment, at both the within- and between-person levels, were predictors of the well-being outcomes (H1). At the within-person level anxious attachment negatively predicted vitality and self-esteem, whilst positively predicted negative affect. Therefore, if an athlete’s level of anxious attachment increased, they experienced reduced vitality and self-esteem but increased negative affect as a result. Correspondingly, increases in an athlete’s level of avoidant attachment resulted in reduced self-esteem and performance self-concept as well as an increase in negative affect. This is the first study that the authors are aware of to examine these associations at the within-person level. These findings highlight that if an individual athlete’s global attachment style becomes more insecure, be it more anxious or avoidant, they will experience reduced well-being and greater ill-being (negative affect). In line with attachment theory (Bowlby, 1969/1982), changes in an athlete’s attachment style could be indicative of subtle changes within their internal working models of attachment (Bowlby, 1973). These internal working models are developed according to the behaviour of significant others toward the individual. Based on the current findings it could be suggested that athletes’ who begin to experience increased negative behaviour, for example inconsistent support or a complete lack of support, within their relationships start to develop negative working models of attachment that ultimately lead to changes in their global attachment style (Hamilton, 2000; Weinfield, Whaley, & Egeland, 2004).

At the between-person level, mean differences in anxious attachment negatively predicted vitality and self-esteem, and positively predicted negative affect. Similarly, mean differences in avoidant attachment negatively predicted vitality, self-esteem, and performance self-concept, and positively predicted negative affect. Thus, athletes’ who reported higher levels of anxious attachment experienced reduced vitality and self-esteem, and also experienced greater negative affect compared to athletes who reported low levels of anxious attachment. In the same vein, athletes’ who reported higher levels of avoidant attachment also experienced reduced vitality and self-esteem as well as greater negative affect. However, they also reported less performance self-concept compared to athletes who reported low levels of avoidant attachment. These findings provide further support for the impact that attachment styles have on well-being.
As the present study was an initial investigation into possible within- and between-person differences, athlete attachment was measured at the global level to encompass a perception of all relationships. It would be interesting for future research to measure attachment in specific relationships in order to examine whether specific relationships are potentially more susceptible to cause subtle changes in attachment style. It could perhaps be expected that the attachment style individuals’ display in the relationship with their parents will remain stable over time as this is the longest relationship an individual is likely to have. Also, the parental relationship is the one that developed the internal working models of attachment and attachment style that individuals’ have displayed since infancy (Ainsworth et al., 1978; Bowlby, 1969/1982). In contrast, other attachment relationships that have been entered into later in the individuals life, for example romantic relationships, peer relationships, coach relationships, could be more susceptible to change if the behaviour exhibited by the attachment figure (e.g., partner, peer, coach) provides a contrast to that of their established relationship with their parents. An understanding of which relationships are more open to changes in attachment perceptions could allow for more targeted interventions for improving individuals’ well-being.

**Attachment Styles as Predictors of Psychological Need Satisfaction**

Cross-sectional research has previous shown the negative association between insecure attachment and psychological need satisfaction within relationships (e.g., Chapter 2; La Guardia et al., 2000; Wei et al., 2005). The present study reported similar findings at both the within- and between-person levels regarding avoidant attachment (H2). Specifically, at the within-person level avoidant attachment negatively predicted psychological need satisfaction in the parent relational context. This suggests that if an athlete reports increases in avoidant attachment they will also perceive reduced psychological need satisfaction from their parent. Similarly, at the between-person level mean differences in avoidant attachment negatively predicted need satisfaction in both the parent and coach relational contexts. Therefore, athletes who reported high levels of
avoidant attachment experienced less need satisfaction from their parent and coach than athletes who reported low levels of avoidant attachment. The findings highlight that only those athletes’ reporting avoidant attachment experienced significant reductions in need satisfaction within the parental and coach relational contexts. This can be explained through research by Bowbly (1973) who proposed that those with avoidant attachment perceive others as being unsupportive and unavailable and therefore they develop a negative working model of attachment driven by the expectation that they will not receive support. Thus, in the present study if the athletes reported greater avoidant attachment they had increased expectations that no support would be provided and this transpired in the negative association to need satisfaction from the parent at both the within- and between-person levels, and the coach at the between-person level.

In contrast no significant findings were reported regarding the coach need satisfaction or anxious attachment. The lack of significant findings pertaining to need satisfaction within the coach relational context is in line with previous sport psychology research (Chapter 2). These findings suggest that athletes’ global attachment style has no impact on their perception of psychological need satisfaction within the coach relational context. This finding could be explained due to attachment being measured at the global/general level. The athletes’ global attachment style, as a measure of how the athletes’ perceive their relationships in general, may be more reflective of the attachment style developed in infancy following interactions with their parents (usually the mother). However, the non-significant association of anxious attachment to need satisfaction from the parent at the between-person level is contrary to previous cross-sectional findings. Further research examining these associations within specific relationships, for example the athlete’s attachment style related to the coach and parent, would help determine whether these results are reliable and consistent across different types of relationships that to some degree serve different functions/purposes or whether specific attachments vary in their associations to psychological need satisfaction.

Psychological Need Satisfaction as Predictors of Well-Being Outcomes

The final set of findings was related to how psychological need satisfaction predicted the well-being outcomes (H3). The findings of previous cross-sectional studies have shown that psychological need satisfaction within various contexts (e.g., Gagné et al., 2003; La Guardia et al., 2000; Reinboth et al., 2004) results in individuals
experiencing greater well-being. Similar findings have also been previously reported in longitudinal research (Reinboth & Duda, 2006). At the within-person level need satisfaction in the parent relational context positively predicted vitality. Consequently, if an athlete’s perception of need satisfaction within the parent relationship increases they will experience increases in vitality. At the between-person level, mean differences in need satisfaction within the coach relational context positively predicted athlete vitality and performance self-concept. Likewise, mean differences in need satisfaction within the parent relational context positively predicted vitality and self-esteem whilst negatively predicting negative affect. These findings are in line with previous research (see Chapter 2) and show that athletes who perceive greater need satisfaction within these relational contexts experience greater well-being than those who experience less need satisfaction. Interestingly both relational contexts predicted vitality while the coach relational context predicted performance self-concept and the parent relational context predicted general self-esteem. These findings highlight the importance of need satisfaction within both relational context for predicting complementary functions (vitality), but also the importance of paying attention to context-specificity. For example, an important finding relating to sport was that perceptions of need satisfaction in the coach context positively predicted perceptions of performance self-concept, thus an athlete will perceive themselves as a more capable and effective performer if their needs are met in the coach relationship. Additionally, a perception of need satisfaction in the parent context, unlike the coach context, was also a predictor of reduced negative affect experienced by the athletes. These findings suggest it is only the parent who can influence experiences of ill-being. As such the current findings show that when considering experiences of well-being, need satisfaction within a range of relationships should be considered in order to achieve a complete understanding of how the social environment in which individuals’ operate affects them psychologically.

The present study provides additional knowledge into associations rarely examined within psychology research in a longitudinal design. Overall, our findings have built upon previous cross-sectional research into attachment, need satisfaction, and well-being (e.g., Chapter 2; La Guardia et al., 2000) by showing the unique within-person changes in attachment and psychological need satisfaction and the ability of these changes to predict well-being. The findings highlight that, whilst attachment styles are recognised as fairly stable across an individual’s life span and can promote an
understanding of “human behaviour from the cradle to the grave” (Bowlby, 1979, p. 129), increases in feelings of insecure attachment can impact on athlete well-being. Additionally, athlete experiences of psychological need satisfaction within the parent relational context were shown to decrease as a result of within-person changes in avoidant attachment. This finding is potentially more important when considering that within-person change in need satisfaction within the parent relational context was the only significant predictor of change in any well-being variable (vitality). Therefore, if an athlete begins to feel increased avoidant attachment this will result in perceiving less need satisfaction from their parent, which can then cause the athlete to experience reduced vitality. From a practical perspective our findings show that an athlete’s attachment style is an important factor to consider in understanding perceptions of well-being over time, both in changes within an individual and differences between individuals. Specifically, behaviours exhibited by the individual’s attachment figures (e.g., parent, coach) that influence the individual’s internal working models of attachment, either positively or negatively, could over a period of time change the individual’s attachment perspective. Our findings also support the notion that, at the between-person level, differences in perceptions of need satisfaction within the coach and parent relational contexts affect well-being, therefore if a coach/parent wants their athlete/child to experience high levels of vitality, self-esteem, and performance self-concept, whilst experiencing low negative affect, they should aim to satisfy their basic psychological needs.

Whilst this study presents a number of findings, some previously unexplored within sport psychology, that can heighten our understanding of the role athlete attachment plays in perceptions of psychological need satisfaction and well-being, limitations are still present. As mentioned, athlete attachment was measured at the global level in order for the study to provide initial investigation into the relevant associations. This may have resulted in the lack of significant within-person findings for the associations between attachment and need satisfaction within the coach relational context. Future research in which attachment is measured in regards to specific relationships (e.g., coach-athlete, parent-child) could provide more detailed information as to the complex associations involved.

A second limitation is that psychological need satisfaction was measured as a composite factor, therefore not allowing the current study to make inferences regarding
the importance of each basic need in the associations examined. Although all three needs must be satisfied for optimal psychological growth (Deci & Ryan, 2000), understanding the importance of attachment style on each need and subsequently each needs effect on well-being would be useful for future research to examine and would provide specific information for possible interventions. A further limitation was that self-report measures of the study variables were used, creating the possibility for bias in athletes responses. However this limitation may have been reduced as the three time points were spread across several months and athletes did not have access to their previous responses, reducing the chance that they simply copied their previous responses. Finally, only need satisfaction was measured in the current study. Recent research (e.g., Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011) has demonstrated psychological need thwarting as an important variable to consider alongside need satisfaction when assessing well-being and ill-being. As need thwarting is associated to negative aspects of the social environment and ill-being it could be expected that insecure attachment (anxious and avoidant) would show strong associations to need thwarting. Future research that incorporates need thwarting alongside need satisfaction within similar models to the current study would help to provide knowledge of these associations and the resulting impact of athlete well-being.

3.5. Conclusion

The present study adds to the literature by exploring within-person change and between-person differences in attachment and the impact on need satisfaction within two important relational contexts (coach and parent) and well-being. The present study also shows within-person change and between-person differences in need satisfaction within these relational contexts and the subsequent impacts on well-being. These findings provide a platform for future research whilst also demonstrating the importance of athlete attachment, as well as need satisfaction, for improving well-being.
4

Study 3
The Mediating Role of Social Environmental Factors in the Associations Between Attachment Styles and Basic Needs Satisfaction

Abstract

Objective: The present study aimed to explore the mediating role of social factors on the associations between attachment styles and basic psychological needs satisfaction within two relational contexts. Method: Athletes (N = 215) completed a multi-section questionnaire pertaining to attachment styles, basic needs satisfied within the coaching and the parental relational context, and such social factors as social support, interpersonal conflict, autonomy-supportive and controlling behaviours. Results: Bootstrap mediation analysis revealed that the association between avoidant attachment style and basic needs satisfaction with the coach was mediated by social support and autonomy-related behaviours from the coach. The association between avoidant attachment style and basic needs satisfaction with the parent on the other hand was mediated by all social factors investigated. Finally, the association between anxious attachment style and basic needs satisfaction from the parent was mediated by conflict and controlling behaviours. Conclusion: Overall, the findings of the current study suggest that social factors play an important role in explaining the associations between attachment styles and basic needs satisfaction within two central relational contexts athletes operate in, and thus should be targeted in future interventions.

4.1. The Mediating Role of Social Environmental Factors in the Associations Between Attachment Styles and Basic Needs Satisfaction

Within the broader social psychology literature, research has started to synthesise both basic psychology needs theory (BPNT; Deci & Ryan, 2000) and attachment theory (AT: Bowlby, 1969/1982) in an attempt to explore the mediating role of basic psychological needs satisfaction on the association between an individual’s attachment styles and psychological well-being (e.g., La Guardia et al., 2000; Leak &
Cooney, 2001). These associations have also been recently examined within the sport psychology literature (Chapter 2). Results from these studies have shown that perceptions of basic psychological needs satisfaction mediate the association between attachment styles and well-being. Whilst these findings have theoretical and practical implications, for example in guiding interventions, they also pose questions for further theoretical and empirical research. In particular, what are the possible mechanisms that link attachment and basic psychological needs?

A series of studies have focused on exploring the role of interpersonal factors, such as athletes’ perceptions of coach autonomy supportive and controlling behaviours, on influencing perceptions of need satisfaction within the broader social psychology literature (e.g., Black & Deci, 2000; Baard et al., 2004), and within sport psychology literature more specifically (e.g., Blanchard et al., 2009; Reinboth et al., 2004; Bartholomew et al., 2011b). Although these studies have shown that perceptions of autonomy supportive and controlling behaviours do influence perceptions of need satisfaction, the application of attachment theory is less apparent. Recently, research has shown the importance of athlete attachment on factors such as friendship quality (Carr & Fitzpatrick, 2011) and coach-athlete relationship quality (Davis & Jowett, 2010; 2011), however there is currently no research examining the role of athlete attachment on perceptions of coach behaviour. An examination of the mechanisms that transfer the effects of attachment onto perceptions of basic psychological needs satisfaction could provide information concerning how insecurely attached individuals may achieve satisfaction of their basic needs, which can ultimately affect experiences of well-being. This question has not been investigated before, hence the present study, guided by previous research (e.g., Bartholomew et al., 2011b; Moreira, et al., 2003; Simpson, Rholes, & Phillips, 1996), aimed to explore the possible mediating role of important social factors (e.g., social support, conflict, autonomy supportive and controlling behaviours) on the associations between attachment styles and basic psychological needs satisfaction within an athlete population. The factors of social support and conflict within the parent and coach relational context were included within the current study due to their importance within social relationships that has been highlighted in previous research (e.g., Pierce, Sarason, & Sarason, 1991; 1997). The concept of social support pertains to an individual’s expectations regarding the availability of other to be forthcoming and approachable when support is needed. Pierce
and colleagues (1991) proposed that individuals can develop varying expectations of social support across different relationships, thus supporting the assessment of social support within the two relational contexts examined in the current study. The athlete’s perceptions of interpersonal conflict were examined as it has been shown in research that conflict plays a substantial role in an individual’s adjustment and that the impact of conflict is independent of social support (e.g., Pierce et al., 1991, Jowett, 2009). Interpersonal conflict within the current research assessed the athlete’s perceptions of anger and uncertainty caused by conflict regarding the coach and parent relational contexts.

The Present Study

Guided by the theories of self-determination and attachment, and based on previous empirical studies (e.g., La Guardia et al., 2000; Chapter 2) the present study aimed to examine whether social environmental factors act as mechanisms by which athletes’ attachment styles associate with their perceptions of basic psychological needs satisfaction within both the coach-athlete and parent-athlete relational contexts. Athletes’ attachment was measured from a global perspective. This global perspective was employed to capture athletes’ attachment style when they relate, communicate, and interact with significant others, including the coach and the parent. Thus, in this study, attachment styles were not captured within a specific relational context (parental or coaching) but across a number of relational contexts. Satisfaction of the basic needs within these two relational contexts was chosen due to coaches and parents being considered as important individuals in an athlete’s growth and development (Wylleman & Lavallee, 2004), as well as being identified as valued attachment figures (e.g., Bowlby, 1969/1982, Davis & Jowett, 2010). Based on previous research (e.g., Bartholomew et al., 2011b; Moreira et al., 2003), it was hypothesised that social environmental factors, as these pertain to significant others’ interpersonal behaviours, would be associated with both attachment style and basic psychological needs satisfaction. The findings from the current study could potentially provide information that could contribute to the development of interventions that target the promotion of needs satisfaction across different relational contexts in individuals whose attachment style is insecure.
4.2. Method

Participants

A sample of 215 athletes representing a range of individual (40%) and team (60%) sports participated in the study. The sample was comprised of males (41%) and females (59%) aged 15 to 35 years of age ($M = 20.56$ years, $SD = 3.21$). The athletes in the sample were predominately of White British ethnicity (88%). Athletes competed at regional, national and international level (56%), club level (30%), or university level (14%).

Measures

Experiences in Close Relationships Scale – Short version (ECR-S). The ECR-S (Wei, et al., 2007) is a 12 item self report questionnaire used to measure an athlete’s attachment style by assessing how they generally feel in close relationships. Scores on the subscale items are averaged to achieve anxious and avoidant totals.

Need Satisfaction Scale (NSS). The NSS (La Guardia et al., 2000) was used to assess the degree to which the basic psychological needs of the athlete were satisfied by the coach and parent. A global needs satisfaction score is achieved by calculating the composite mean of the three subscales. For the purpose of this study the items were worded to target the athlete’s coach or parent.

Sport-Specific Quality of Relationship Inventory (S-SQRI). Only the subscales of social support and interpersonal conflict of the S-SQRI (Jowett, 2009) were used for the purpose of this study. In the case of the parent version of the S-SQRI, participants were asked to respond to the statements in relation to the parent who has had the most prominent influence in their sport. Items were rated on a 4 point likert scale ranging from 1 (not at all) to 4 (very much). Example items from the social support subscale include “To what extent could you turn to your coach/parent for advice about problems?” and from the conflict subscale “How often do you need to work hard to avoid conflict with your coach/parent?” Scores are derived from averaging the sum of scores for each subscale, with higher scores reflecting higher levels of support and conflict in the relationship. Internal reliability scores for the subscales used have been reported to show Cronbach’s alphas of .79-.82 and .80-81 for social support and conflict respectively (Jowett, 2009).
The Sport Climate Questionnaire (SCQ). The current study measured the athletes’ perceptions of their coaches and parents behaviour on two dimensions; support and control. The SCQ, developed from the Health Care Climate Questionnaire (Williams, Grow, Freedman, Ryan, & Deci, 1996), is a 6-item scale that assesses the degree to which a coach’s behaviour is autonomy supportive. The scale was modified to also assess perceptions of parental autonomy support. Athletes reported the degree to which they agreed with each statement (e.g., “I feel that my coach/parent provides me with choices and options”) on a 7 point likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Item scores were averaged to gain the autonomy support scores. Internal reliability scores for the SCQ have been reported to range from .73-.95 (e.g., Reinboth et al., 2004).

Coaches’ Controlling Behaviour Scale (CCBS). The CCBS (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010) was used to measure coaches controlling interpersonal style. As with the SCQ, the items of the CCBS were also re-worded to assess perceptions of parental control on the same factors, for example; “My coach/parent tries to control what I do during my free time”. Athletes rated 15 items on a 7 point likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). All items were averaged to create an overall CCBS score for each athlete. Internal reliability coefficients for the subscales contained within the CCBS have been reported to range between .74-.85 (Bartholomew et al., 2010).

Procedure

Following ethical approval from the university’s ethical committee, National Governing Bodies (NGB) and a range of university, local, county, and regional teams from across the UK were contacted regarding participation in the study. The questionnaire was available as a hard copy or an electronic copy completed online.

Data Analysis

Basic descriptive statistics including means (Ms), standard deviations (SDs), alpha coefficients (α), and intercorrelations (rs) were calculated for the main study variables. Guided by the bivariate correlation analysis, tests for indirect effects were performed following the bootstrap procedure in SPSS outlined by Preacher and Hayes (2004). In the present study, the bootstrap procedure re-sampled the data five thousand times.
times and calculated the indirect effect for each sample. The bias corrected (BC) 95% confidence interval (CI) of the indirect effects was obtained for the five thousand bootstrap re-samples. The BC 95% CI indicates significant indirect effects if it does not contain zero (Preacher & Hayes, 2004, 2008; Shrout & Bolger, 2002).

4.3. Results

Descriptive statistics

The means, standard deviations, reliability alphas, and bivariate correlations for the study variables are presented in Table 4.1. Mean scores for the avoidant and anxious attachment styles were both below the midpoint of the response scale, indicating the sample of athletes in this study were more likely securely than insecurely attached. Basic psychological need satisfaction scores indicated that whilst the athletes experienced above average satisfaction of their needs in both the coach and parent relational setting, they perceived greater psychological need satisfaction from the parent; as evidenced by a higher mean score. The mean scores for the social support and conflict variables, for both the coach-athlete and parent-athlete relationship contexts, indicated that the athletes perceived above average levels of social support and low levels of conflict within both relational contexts. A similar pattern is present with the autonomy supportive (SCQ) and controlling (CCBS) behaviour variables. Regarding the coach’s behaviours (SCQ-C and CCBS-C), athletes perceived above average levels of autonomy supportive behaviour from their coach and low levels of controlling behaviour. Similarly, for the parent’s behaviours (SCQ-P and CCBS-P) athletes perceived above average autonomy supportive behaviours from their parent and low levels of controlling behaviours.

Correspondingly, as demonstrated in Table 4.1, avoidant attachment style was significantly correlated to all the study variables with the exception of coach conflict (C-C) and CCBS-C. In contrast anxious attachment was correlated to four variables; basic psychological need satisfaction from the parent (BPNS-P), C-C, parent conflict (C-P), and CCBS-P. The BPNS-C was significantly correlated to all the mediator variables with the exception of C-P and parent social support (SS-P). Similarly, BPNS-P was significantly correlated to all the proposed mediators except for coach social support (SS-C).
**Indirect Effect Analysis**

The indirect effects of the proposed mediators were examined within three independent bootstrap analyses. Two sets of analysis examined the associations between avoidant attachment, the mediators, and basic psychological need satisfaction from the coach (BPNS-C) and parent (BPNS-P) separately. The same analyses were conducted for the associations between anxious attachment, the mediators, and BPNS-P. Bootstrap mediation analysis for the associations between anxious attachment and BPNS-C were not conducted due to the non-significant correlations between these variables, as shown in Table 4.1. Table 4.2 displays all the relevant information from these analyses.
Table 4.1. Bivariate correlations for all factors in the attachment style and need satisfaction models.

<table>
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<th>Mean</th>
<th>SD</th>
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<td>.09</td>
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<td>C-C</td>
<td>1.50</td>
<td>.53</td>
<td>.80</td>
<td>.14</td>
<td>-.11</td>
<td>-.45</td>
<td>.59</td>
<td>-.11</td>
<td>.21</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SS-P</td>
<td>3.39</td>
<td>.69</td>
<td>.90</td>
<td>-.49</td>
<td>.18</td>
<td>-.01</td>
<td>.73</td>
<td>-.51</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>C-P</td>
<td>1.80</td>
<td>.68</td>
<td>.90</td>
<td>-.11</td>
<td>.06</td>
<td>-.54</td>
<td>.58</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCQ-C</td>
<td>5.20</td>
<td>1.09</td>
<td>.91</td>
<td>-.40</td>
<td>.27</td>
<td>-.07</td>
<td>.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCBS-C</td>
<td>2.55</td>
<td>1.03</td>
<td>.90</td>
<td>-.58</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>SCQ-P</td>
<td>5.76</td>
<td>1.22</td>
<td>.93</td>
<td>-.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCBS-P</td>
<td>2.21</td>
<td>1.05</td>
<td>.92</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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</table>

*Note: ** p < .01 level  * p < .05 level  
Table 4.2. Summary of bootstrap analysis showing the indirect effects of the proposed mediators on the various attachment style and basic psychological needs satisfaction associations

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Mediator variable</th>
<th>Dependent variable</th>
<th>$a$ path coefficient$^i$</th>
<th>$b$ path coefficient$^i$</th>
<th>$c'$ path coefficient$^i$</th>
<th>Mean indirect effect$^i$ ($ab$)</th>
<th>$SE$ of mean$^i$</th>
<th>BC 95% CI mean indirect effect$^i$ (lower and upper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment avoidance</td>
<td>C-C</td>
<td>BPNS-C</td>
<td>.02</td>
<td>.04</td>
<td>-.03</td>
<td>.00</td>
<td>.00</td>
<td>-.0048, .0176</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>SS-C</td>
<td>BPNS-C</td>
<td>-.11*</td>
<td>.43*</td>
<td>-.03</td>
<td>-.05</td>
<td>.02</td>
<td>-.0943, -.0065*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>CCBS-C</td>
<td>BPNS-C</td>
<td>.04</td>
<td>-.20*</td>
<td>-.03</td>
<td>-.01</td>
<td>.02</td>
<td>-.0425, .0182</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>SCQ-C</td>
<td>BPNS-C</td>
<td>-.15*</td>
<td>.44*</td>
<td>-.03</td>
<td>-.07</td>
<td>.03</td>
<td>-.1414, -.0070*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>C-P</td>
<td>BPNS-P</td>
<td>.16*</td>
<td>-.18*</td>
<td>-.03</td>
<td>-.03</td>
<td>.01</td>
<td>-.0667, -.0065*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>SS-P</td>
<td>BPNS-P</td>
<td>-.29*</td>
<td>.52*</td>
<td>-.03</td>
<td>-.15</td>
<td>.04</td>
<td>-.2339, -.0872*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>CCBS-P</td>
<td>BPNS-P</td>
<td>.31*</td>
<td>-.22*</td>
<td>-.03</td>
<td>-.07</td>
<td>.02</td>
<td>-.1298, -.0306*</td>
</tr>
<tr>
<td>Attachment avoidance</td>
<td>SCQ-P</td>
<td>BPNS-P</td>
<td>-.47*</td>
<td>.33*</td>
<td>-.03</td>
<td>-.16</td>
<td>.04</td>
<td>-.2494, -.0798*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>C-P</td>
<td>BPNS-P</td>
<td>.16*</td>
<td>-.17*</td>
<td>-.01</td>
<td>-.03</td>
<td>.02</td>
<td>-.0670, -.0049*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>SS-P</td>
<td>BPNS-P</td>
<td>-.05</td>
<td>.54*</td>
<td>-.01</td>
<td>-.03</td>
<td>.03</td>
<td>-.0840, .0187</td>
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<tr>
<td>Attachment anxiety</td>
<td>CCBS-P</td>
<td>BPNS-P</td>
<td>.16*</td>
<td>-.22*</td>
<td>-.01</td>
<td>-.04</td>
<td>.02</td>
<td>-.0803, -.0094*</td>
</tr>
<tr>
<td>Attachment anxiety</td>
<td>SCQ-P</td>
<td>BPNS-P</td>
<td>-.13</td>
<td>.34*</td>
<td>-.01</td>
<td>-.04</td>
<td>.03</td>
<td>-.1126, .0062</td>
</tr>
</tbody>
</table>

Note: * $p < .05$ level

The analyses concerning associations between avoidant attachment, social factors and BPNS-C reported two significant indirect effects. The indirect effects of both social support and autonomy supportive behaviour from the coach (SS-C and SCQ-C respectively) were found to be significant for the associations between avoidant attachment and BPNS-C. In contrast the analyses for the associations between attachment styles, social factors, and BPNS-P reported several significant indirect effects. Firstly, the indirect effects of parent conflict (C-P), social support (SS-P), controlling behaviours (CCBS-P), and autonomy behaviours (SCQ-P), were all significant for the association between avoidant attachment and BPNS-P. Secondly, the indirect effects of C-P and CCBS-P were also significant for the association between anxious attachment and BPNS-P.

4.4. Discussion

The aim of the current study was to investigate whether social environmental factors act as mechanisms by which athletes’ attachment styles associate with their perceptions of basic psychological needs satisfaction within both the coach-athlete and the parent-athlete relational contexts. Findings from the study concerning the associations between insecure attachment (avoidant and anxious) and basic psychological needs satisfaction were in line with previous research (e.g., La Guardia et al., 2000; Chapter 2). Specifically, avoidant attachment was significantly and negatively associated with BPNS-C and BPNS-P. Anxious attachment was significantly and negatively associated with BPNS-P only; however the negative association to BPNS-C was not significant.

The current findings showed that within the coach-athlete relational context, social support from the coach (SS-C) and autonomy supportive behaviours from the coach (SCQ-C) mediated the association between attachment avoidance and BPNS-C. However, the indirect effects of conflict with the coach (C-C) and controlling coach behaviours (CCBS-C) on the association between attachment avoidance and BPNS-C were non-significant. Whilst these findings are novel due to the nature of the study, the findings that SS-C and SCQ-C were associated to BPNS-C were expected based on previous research that has examined the effects of the social environment on basic needs (e.g., Bartholomew et al., 2011b; Moreira et al., 2003). These findings expand on previous research by demonstrating the mediating role of these behaviours on insecure.
athletes’ perceptions of BPNS-C. It is interesting to note that it was only the two positive behaviours, SS-C and SCQ-C, that demonstrated significant indirect effects and that these effects were only present for avoidant attachment. A possible explanation for these findings could be the nature of this insecure attachment style. Individuals with an avoidant attachment style have no expectation for support from close others (i.e., the coach) due to having never experienced support during infancy, whereas individuals with a more anxious attachment style have negative expectations of support that are brought about through inconsistent support behaviour experienced during infancy (Ainsworth et al., 1978; Bowlby, 1973). Therefore, an avoidantly attached athlete may be more responsive to continued demonstrations of social and autonomy supportive behaviours from their coach as they do not enter the relationship expecting any but view themselves as being deserving of such behaviours. In contrast, anxious individuals view themselves as unworthy of support and their negative IWM of others would cause them to be suspicious of any support they receive. It has also been suggested in previous research (Davis & Jowett, 2011) that whilst conflict could signal instability in the relationship, an avoidant athlete may not be concerned by conflict as they do not value the relationship and the expected degree of interdependence or connectedness. This could help to explain the lack of significant association between avoidant attachment and C-C. In contrast, due to anxiously attached athletes’ experiences of inconsistent support, coaches’ attempts to support and care for them may be seen as less genuine or possibly as not good enough by these athletes. Thus, it would appear from the current findings that if an avoidantly attached athlete perceives their coach to be high in social support (e.g., provide support, advice, guidance, assistance, listen and willing to accommodate) and autonomy support behaviours (e.g., allowing athlete input, providing reasons for instructions), this may help to improve their perceptions of basic needs satisfaction within the coach-athlete relational context. Despite these findings not being replicated for anxiously attached individuals, the findings related to the parent-athlete relational context provide interesting comparisons.

More specifically, the findings for the associations between insecure attachment styles and BPNS-P showed that all four social environmental factors of social support parent (SS-P), conflict parent (C-P), autonomy supportive behaviour parent (SCQ-P), and controlling behaviours parent (CCBS-P), mediated the association between avoidant attachment and BPNS-P. Also, the indirect effects of C-P and CCBS-P were
significant for the association between anxious attachment and BPNS-P, indicating mediation. The avoidant attachment findings demonstrate that, unlike the association between avoidance and BPNS-C, negative parental behaviours (i.e., interpersonal conflict and controlling behaviour) also impact on athletes’ perceptions of needs satisfaction within the parent relational context. As mentioned earlier, avoidantly attached individuals harbour no expectation for support from significant others, and in fact display behaviour that indicates no desire for intimacy or support (Ainsworth et al., 1978). The current findings suggest that avoidantly attached athletes perceptions of BPNS-P are mediated by both positive and negative behaviours experienced from the parent. Therefore, it would appear that parental behaviours characterised by social and autonomy support, and low in conflict and controlling behaviours, would create an environment conducive to satisfying the athlete’s three basic psychological needs.

In contrast, the association between anxious attachment and BPNS-P was only mediated by conflict with the parent and controlling behaviours from the parent. Thus, it is suggested that an athlete with an anxious attachment style would experience greater BPNS-P if there was less conflict with the parent and if the parent was less controlling. The findings that social support and autonomy support had no indirect effect on anxiously attached athletes’ perception of needs satisfaction is in line with previous research (Moreira et al., 2003). The mediation effects of conflict with the parent and controlling parent behaviours could be attributed to anxiously attached individuals’ heightened awareness of negative behaviour from significant others (Bowlby, 1969/1982). Consequently, athletes may be more sensitive, conscious, and aware of negative behaviours the parent may display; and it is thus likely that these behaviours have the greatest impact on their perceptions of BPNS-P.

Collectively, the findings underlined the potential importance of interactions within both the coach and parent relational contexts. Overall, increased positive behaviours and decreased negative behaviours are capable to satisfy athletes’ basic psychological needs and may even be capable to alter their insecure attachment styles (anxious and avoidant) over time. This conjecture requires further investigation. Moreover, the findings of the current study have shown a large variation in how social environmental factors can affect basic needs satisfaction of insecure athletes within the two relational contexts. The differences in the indirect effects found could be explained by the types of relational contexts examined in the study. The relational context
between the athlete and the parent is the longest and usually closest relationship one has, and one in which the athletes’ attachment style will have formed from during infancy (Bowlby, 1969/1982). Therefore, the mediating effects of social factors reported could reflect the nature of this unique bond. Nonetheless, it is noteworthy that coaches supportive behaviours (i.e., social support and autonomy) had significant indirect effects on perceptions of BPNS-C, and that these effects were found for avoidantly attached athletes whom theory suggests do not expect support from others and overtly avoid it. Overall, positive and supportive interpersonal behaviours from the coach and the parent can potentially function as a mechanism that helps avoidantly attached individuals realise (over time) that significant others are there to help and not necessarily threaten or interfere with their interdependence. The results of the present study have valuable practical implications because they highlight that potentially the most negatively affected individuals (avoidantly attached athletes; see Davis & Jowett, 2010; Chapter 2) could actually enjoy sport, maintain participation, and in turn, achieve their potential if their coaches and parents consciously create a positive and supportive interpersonal environment.

From a theoretical viewpoint, the theoretical implications of the current study revolve around identifying the social environmental factors, reflected in interpersonal behaviours of support, autonomy, control, and conflict, as potential mediators that can explain why individuals with insecure attachment styles have low perceptions of basic psychological needs satisfaction. The authors are unaware of previous research that has examined these associations and thus further research replicating and expanding on these findings would be appropriate in highlighting definitive conclusions. From a practical viewpoint the findings provide information that could be utilised in interventions, both with sport and social psychology, which aim to increase insecure individuals’ experiences of needs satisfaction across different relational contexts. For example, a coach could be given specific training in order to target their provision of social supportive and autonomy supportive behaviours in an attempt to help athletes with an avoidant attachment style experience greater needs satisfaction, which as previous research has shown is associated with improved psychological functioning (Bartholomew et al., 2011b; La Guardia et al., 2000; Chapter 2). Coaches’ capacity to recognise the attachment styles of their athletes through the manner they interact, relate, and communicate with them may help them understand their behaviours.
Understanding the reasons why athletes behave the ways they do, coaches would be in a much better position to influence their athletes to better respond, adapt, and adjust to certain situations. An athlete with an avoidant attachment style may find it difficult to interact and rely on the coach for support and guidance because they have learned to value dependence rather than interdependence (Davis & Jowett, 2010). For example, if coaches are unaware of the cause of their athlete self-reliant, self-sufficient, and detached behaviour, they may view that athlete as being uncooperative, unapproachable, and unfriendly. Given that coaching and training is such an interpersonal environment, the coach may eventually give up on that athlete on the basis of his distant and cold behaviour. However, if the coach is aware of attachment styles and the behaviours that are associated with each one of them, then they will be more understanding and can focus on the positive behaviours that can help the athlete grow and develop at psychological, social, and physical levels.

Although the present study has several methodological and statistical strengths, the limitations of the study should be acknowledged. The sample used comprised of mainly White British athletes of university age, therefore the generalisability of the results are limited. Future research that samples a more diverse range of ethnicities and a cross-section of ages could provide interesting results that could be generalised to a wider population. Moreover, the cross-sectional nature of the study restricts clarification of causal paths involved in the mediation models tested. Longitudinal research would be useful in order to explore causal paths as well as possibly exploring the effects of temporal fluctuations and any within and between-person differences in the various social environmental factors. Similarly, the current study employed self report questionnaires that have the inherent risks of social desirability and response bias. Future research employing qualitative methods, such as interviews, could help to alleviate some of the issues related to self report measures. Attachment styles within the current study were measured at the global level. This was done in order to assess how the athletes perceptions of need satisfaction within the two relational contexts examined, was influenced by their underlining attachment orientation. However, interesting associations may be present between attachment to specific figures, e.g., parent, coach, and the variables measured within the study. This limitation can be overcome by future research measuring attachment within specific relationships. A final limitation concerns the attachment measure employed in the current study. This
measure assumes secure attachment is present if low scores are observed on the anxious and avoidant subscales. This may not be the case and so future research utilising a measure of attachment that actively assesses the three attachment styles could enhance our understanding.

4.5. Conclusion

In summary, the findings in the current study provide initial knowledge regarding the specific interpersonal behaviours that mediate this association within both the coach-athlete and parent-athlete relational contexts. Specifically, within the coach-athlete context it appeared that social and autonomy supportive behaviours from the coach could influence avoidantly attached athletes basic psychological needs satisfaction. In contrast, within the parent-athlete context social support, autonomy support, interpersonal conflict, and controlling behaviours had an impact on avoidantly attached athletes needs satisfaction with the parent, whereas only conflict and controlling behaviours had a role to play for anxiously attached athletes. Prior research within the disciplines of social and sport psychology have demonstrated the associations between attachment styles and basic psychological needs satisfaction and have identified the social environmental factors that they influence and are influenced by. However, no previous research has explored the possible mechanisms by which attachment styles and basic needs are associated. Thus, this study makes theoretical and empirical in-roads in an area of research that has both theoretical and practical significance.
5

Study 4
Abstract

Objective: Grounded in attachment theory and basic psychological needs theory, the current study aimed to examine the possible mediating role of basic psychological need thwarting between athlete attachment to the coach and indexes of well/ill-being.

Method: Athletes (N = 241) completed a multi-section questionnaire assessing the main study variables. Results: Bootstrap mediation analysis revealed that athletes’ perceptions of their thwarted psychological needs, within both the specific coaching relational context and more generic sporting context, have the capacity to explain the associations between athlete insecure attachment to the coach and well/ill-being indexes. Conclusion: Overall, the findings of the study highlight that the examination of negative aspects of sport participation may help us obtain a more complete understanding of athletes’ psychological functioning.

5.1. The Mediating Role of Psychological Need Thwarting on the Association Between Attachment Styles and Well/Ill-Being Indexes

Research conducted within the last five years has begun to highlight the importance of attachment theory within sport, specifically concerning peer relationships (Carr, 2009; Carr & Fitzpatrick, 2011) and coach-athlete relationships (Davis & Jowett, 2010), as well as athlete eating psychopathology (Shanmugam et al., 2012) and well-being (see Chapter 2 and 3). Collectively the findings have demonstrated the negative impact of insecure attachment styles upon these various aspects of an athlete’s life. In line with previous research conducted within the broader social psychology (e.g., La Guardia et al., 2000; Leak & Cooney, 2001), research within sport psychology has also reported the indirect role that basic psychological needs have in the relationship
between athlete attachment styles and well-being (see Chapter 2). In particular, how insecure attachment styles are likely to indirectly associate with low perceptions of well-being when athletes’ perceive that their basic psychological needs are not fully satisfied within the coaching and parental relational contexts. Whilst this sport-specific research has supported research conducted within broader social psychology, it is limited as it has only focused on how insecure attachment affects positive outcomes (e.g., need satisfaction and well-being). Research by Bartholomew and colleagues (e.g., Bartholomew et al., 2011a) have identified the importance of measuring not only the satisfaction of psychological needs but also the thwarting of psychological needs. They highlight that low psychological need satisfaction may not necessarily imply need thwarting (Bartholomew et al., 2011b). They have purported that actively measuring perceptions of psychological need thwarting is an important step in generating a fuller understanding of how interpersonal behaviours and relationships impact upon individuals psychological functioning. Thus, the present study aimed to examine the possible role of basic psychological needs thwarting in explaining the link between athletes’ attachment styles to coach and their well/ill-being.

**Basic Psychological Needs Theory and Thwarting of Needs**

Basic psychological needs theory (BPNT; Deci & Ryan, 2000), a sub-theory of self-determination theory (SDT; see Deci & Ryan, 1985; Ryan & Deci, 2002), identifies three basic needs which individuals must satisfy in order for “ongoing psychological growth, integrity, and well-being” (Deci & Ryan, 2000, p. 229). These basic needs are the need for autonomy, competence, and relatedness. The need for autonomy refers to needing to feel volitional in one’s action and to be the originator of these actions (deCharms, 1968). The need for competence refers to the need to interact effectively with the environment to produce desired outcomes (White, 1959). Finally, the need for relatedness refers to needing to feel connected to and understood by others (Baumeister & Leary, 1995). In terms of psychological need satisfaction, research within social and sport psychology has regularly supported its positive associations to well-being indexes (e.g., Gagné et al., 2003; Reinboth et al., 2004; La Guardia et al., 2000).

However, the concept of psychological need thwarting has only been recently conceptualized and operationalized. The concept of need thwarting goes beyond a
simple perception of low levels of need satisfaction, rather it is characterised by perceptions that the basic needs are being actively damaged and obstructed (Bartholomew et al., 2011a). Bartholomew et al. (2011b) suggested that psychological need thwarting would be more likely to lead to ill-being than low perceptions of need satisfaction because need thwarting represents the active behaviour of others aimed at preventing individuals’ from satisfying their basic needs, in contrast to low perceptions of need satisfaction which still implies that an individual’s needs are being met to some degree. They supported this by reporting significant positive associations between need thwarting and indexes of ill-being including depression, negative affect, and burnout. Need thwarting was also found to be non-significantly associated to indexes of well-being including vitality and positive affect. Whilst Bartholomew et al. (2011b) also reported significant negative associations between need satisfaction and the ill-being factors of negative affect and burnout, a comparison to the positive associations linked to need thwarting showed that need thwarting was a stronger predictor of the ill-being factors, further supporting the validity of psychological need thwarting as an important factor to consider when examined optimal functioning in athletes.

The Present Study

The present study was based on established theoretical frameworks and relevant empirical research (Bartholomew et al., 2011b; see Chapter 2 and 3), albeit limited, in order to examine the associations between athlete attachment, psychological need thwarting, and indexes of well-being and ill-being. The purpose was to further expand the limited research, whilst addressing its gaps and limitations. First, this study not only will examine the potential thwarting of psychological needs within the sporting context as it is customary within sport psychology research (Bartholomew et al., 2011b), but it will also examine the thwarting of psychological needs in another context, namely, the coaching relational context. This develops further upon previous findings in which need satisfaction within the coaching relational context was found to indirectly affect the associations between athlete attachment styles and well-being (see Chapter 2). First, examining need thwarting within the sporting and coaching relational contexts can promote a more in depth and more complete understanding of athletes’ sporting environment. Second, this study examined all three attachment styles with respect to the specific bonds athletes developed with their coach. A great deal of research especially within the broader social psychology literature has been conducted.
employing the ECR (Brennan et al., 1998) that is limited to assessing insecurity attachment styles (i.e., avoidant and anxious). Finally, this study will assess indexes of both well-being and ill-being in an attempt to provide a more detailed insight into the impact of attachment and need thwarting on athletes’ psychological (dis)functioning.

Based on previous research (e.g., Bartholomew et al., 2011b; La Guardia et al., 2000; see Chapter 2), the following hypotheses were formulated: (a) it was hypothesised that anxious and avoidant attachment to the coach would be positively associated with psychological need thwarting variables (H1); (b) it was also hypothesised that the associations between anxious and avoidant attachment to the coach and the well/ill-being outcomes would be mediated via need thwarting within both the sporting and coaching relational contexts (H2); (c) it was further hypothesised that secure attachment to the coach would be negatively associated to the need thwarting variables, and as a result the associations with the well/ill-being outcomes would not be mediated (H3). This is due to the expectation that secure attachment would be negatively associated to need thwarting as secure individuals perceive relationships positively and are therefore not expected to report significant perceptions of need thwarting.

5.2. Method

Participants

A total of 241 athletes aged between 18 and 31 years ($M = 20.74$, $SD = 2.23$, 64% female) participated in the study. Athletes participated in a range of individual (27%) and team (65%) sports and performed at various competitive levels including club (7%), university (50%), regional/county (20%), and national/international (23%). Nineteen athletes did not specify their sport, accounting for 8% of the sample.

Procedure

Following ethical approval from the university’s ethical committee, university, local, county, and regional teams from across the United Kingdom were contacted regarding participation in the study. All sports teams that reported an interest in participating were sent the information sheet for the study along with any other requested information. The questionnaire was available electronically where the
questionnaire could be completed online. Athletes were instructed to read the study information sheet before giving their informed consent.

**Measures**

*Psychological Need Thwarting Scale.* Psychological need thwarting, within the coach relational and sport contexts, was measured using the Psychological Need Thwarting Scale (PNTS; Bartholomew et al., 2011a). The PNTS contains 12-items that measure the thwarting of autonomy (4-items e.g., I feel forced to follow training decisions made for me), competence (4-items, e.g., There are times when I am told things that make me feel incompetent) and relatedness (4-items, e.g., I feel I am rejected by those around me). To measure need thwarting within the sport context the item stem used was “In my sport…” however in order to measure need thwarting within the coach relational context the stem was altered to “When I am with my coach…” The relatedness items were also re-worded in order to represent the coach relational context more appropriately, (e.g., “I feel rejected by him/her”). Items were measured on a 7-point scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Individual need thwarting scores were derived by summing the items for each subscale and calculating the average. Bartholomew et al., (2011a) reported internal consistency scores for all need thwarting dimensions, within the sport context, ranging from .77 to .82.

*Coach-Athlete Attachment Scale.* The recently developed Coach-Athlete Attachment Scale (CAAS; Davis & Jowett, in press) was used to measure athletes’ attachment style with regards to their relationship with the coach. The CAAS contains 19 items measuring an athlete’s avoidant (7 items; e.g., I do not turn to my coach for reassurance), anxious (7 items; e.g., I often worry if my coach cares about me as an athlete), and secure attachment (5 items; e.g., I know my coach is loyal to me). Athletes indicated their agreement with the items on a 7-point scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Attachment scores were calculated by averaging the sum of the items for each style subscale. Davis and Jowett (in press) reported good internal consistency of the three dimensions of the CAAS ranging from .82 to .86.

*Satisfaction with Life Scale.* The athletes’ level of life satisfaction was measured using the Satisfaction with Life Scale (SLS; Diener et al., 1985). The SLS contains 5-items (e.g., “The conditions of my life are excellent”) with responses
measured on a 5-point scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Total life satisfaction scores were calculated by summing the item scores, with higher scores indicating greater satisfaction. The SLS hold good internal consistency with Diener et al. (1985) reporting an alpha coefficient of .87.

**Athlete Satisfaction Questionnaire.** The degree of performance satisfaction perceived by the athletes was measured using the performance subscale of the Athlete Satisfaction Questionnaire (ASQ; Riemer & Chelladurai, 1998). The 3-items (e.g., “I am satisfied with the improvement in my performance over the previous season”) of the ASQ performance subscale were measured on a 7-point scale ranging from 1 (Not at all Satisfied) to 7 (Extremely Satisfied) with a midpoint of 4 (Moderately Satisfied). A satisfaction with performance score was formulated by averaging the sum of the items. Internal consistency scores for the ASQ have been reported to range from .78 to .95 (Riemer & Chelladurai, 1998).

**Brief Symptom Inventory.** Depression was measured using the depression subscale of the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983). The depression subscale contains 6-items preceded by the stem “Indicate how much each statement has distressed or bothered you during the past 7 days, including today…”, for example “Feeling lonely”. Athletes responded to each item on a 5-point scale ranging from 0 (Almost Never) to 4 (Almost Always). A total depression score was calculated by averaging the sum of the subscale items. The depression subscale of the BSI has been recorded to have an alpha coefficient of .85 (Derogatis & Melisaratos, 1983).

**International-Positive and Negative Affect Scale-Short Form.** The athletes’ experience of negative affect was measured with the negative affect subscale of the short form PANAS (I-PANAS-SF; Thompson, 2007). The items were rated on a 5-point scale ranging from 1 (Very Slightly or Not at all) to 5 (Extremely). Negative affect score was calculated through averaging the sum of the item scores. Higher scores indicate high experience of negative affect. Thompson (2007) reported internal consistency values ranging from .72 to .76 for the negative affect subscale.

**Data Analysis**

Means (Ms), standard deviations (SDs), internal reliability coefficients (α), and intercorrelations (rs) were calculated for the main study variables. In order to analyse
the mediation effect of each of the need thwarting variables, mediation analysis was conducted following the bootstrap procedure outlined by Preacher and Hayes (2004, 2008) and through use of the ‘MEDIATE’ macro in SPSS (Hayes & Preacher, 2011). The advantages of the ‘MEDIATE’ macro are that it allows the testing of models with multiple independent and mediator variables.

5.3. Results

Descriptive Statistics

Means, standard deviations, alpha coefficients, and bivariate correlations for all study variables are presented in Table 5.1. The mean score for anxious attachment was below the scale midpoint. Mean scores for avoidant and secure attachment were above the midpoint, although only marginally for avoidant attachment. Mean scores for psychological need thwarting variables, both within the coaching and sporting context, were below the midpoint of the scale. In terms of the well- and ill-being outcomes, scores suggest that athletes experienced moderate to high levels of performance and life satisfaction and low levels of depression and negative affect.

Bivariate correlations were calculated in order to assess the associations between the variables. Significant correlations were found between most variables ranging from relatively weak to strong associations. The only variables that did not significantly correlate were anxious attachment and performance satisfaction, and anxious attachment and life satisfaction. Due to the significant correlations between the three attachment styles and all of the psychological need thwarting factors, a full set of mediation analysis of all hypothesised associations were conducted.

Mediation Analysis

Bootstrap analysis employing the ‘MEDIATE’ macro in SPSS (Hayes & Preacher, 2011) was used to examine the mediation effects of psychological need thwarting, within the coaching and sporting context, on the associations between athletes’ attachment style to their coach and indexes of well- and ill-being. Due to the large amount of analysis conducted only the significant results are reported in Table 5.2.
Table 5.1. Descriptive Statistics including Means, Standard Deviations, Alpha Coefficients, and Bivariate Correlations for all Study Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>α</th>
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<th>2</th>
<th>3</th>
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<th>7</th>
<th>8</th>
<th>9</th>
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<td></td>
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<td></td>
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<tr>
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<tr>
<td>4. Autonomy Thwarting Coach</td>
<td>2.85</td>
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<td>.36**</td>
<td>.44**</td>
<td>-.36**</td>
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<td>5. Competence Thwarting Coach</td>
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<td>7. Autonomy Thwarting Sport</td>
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<td>.13*</td>
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<td>11. Life Satisfaction</td>
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<td>-.09</td>
<td>.18**</td>
<td>-.22**</td>
<td>-.14*</td>
<td>-.15*</td>
<td>-.25**</td>
<td>-.32**</td>
<td>-.41**</td>
<td>.36**</td>
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<td>.27**</td>
<td>-.21**</td>
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<td>.33**</td>
<td>.26**</td>
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<td>.31**</td>
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<td>.25**</td>
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<td>.40**</td>
<td>-.09</td>
<td>-.40**</td>
<td>.56**</td>
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</tbody>
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*Correlation is significant at the .05 level
**Correlation is significant at the .01 level
Table 5.2. Bootstrap analysis summary showing all significant indirect effects via need thwarting in the coach and sport contexts on associations between attachment styles and well-being indexes

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Mediator variable</th>
<th>Dependent variables</th>
<th>$a$ path coefficient</th>
<th>$b$ path coefficient</th>
<th>$c'$ path coefficient</th>
<th>Mean indirect effect</th>
<th>SE of mean</th>
<th>BC 95% CI mean indirect effect (lower and upper)</th>
</tr>
</thead>
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<tr>
<td>Avoidant</td>
<td>Auto NTC</td>
<td>Life Satisfaction</td>
<td>.23*</td>
<td>-.19*</td>
<td>-.10</td>
<td>-.04</td>
<td>.02</td>
<td>-.0951, -.0040*</td>
</tr>
<tr>
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<td>Comp NTC</td>
<td>Negative Affect</td>
<td>.20*</td>
<td>.12*</td>
<td>.03</td>
<td>.02</td>
<td>.01</td>
<td>.0018, .0519*</td>
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<tr>
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<td>Perf' Satisfaction</td>
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<td>-.29*</td>
<td>-.08</td>
<td>-.08</td>
<td>.03</td>
<td>-.1443, -.0207*</td>
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<tr>
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<td>Life Satisfaction</td>
<td>.22*</td>
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<td>-.03</td>
<td>-.08</td>
<td>.03</td>
<td>-.1468, -.0325*</td>
</tr>
<tr>
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<td>.06</td>
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<td>.02</td>
<td>.0220, .1011*</td>
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<td>-.2033, -.0543*</td>
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<tr>
<td>Anxious</td>
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<td>Depression</td>
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<td>.08</td>
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<td>.0371, .1412*</td>
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<tr>
<td>Anxious</td>
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<td>.13*</td>
<td>-.02</td>
<td>.04</td>
<td>.02</td>
<td>.0074, .0825*</td>
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</tbody>
</table>

Note: * $p \leq .05$ level. * Auto NTC = Autonomy Need Thwarting Coach, Comp NTC = Competence Need Thwarting Coach, Relate NTC = Relatedness Need Thwarting Coach, Comp NTS = Competence Need Thwarting Sport, Relate NTS = Relatedness Need Thwarting Sport, Perf' Satisfaction = Performance Satisfaction.

b These values are based on unstandardised path coefficients.
**Needs Thwarted in Coaching Relational Context.** First, findings show that for athletes who are avoidantly attached to the coach, perceptions of life satisfaction were fully mediated via the thwarting of autonomy, whilst perceptions of negative affect were mediated via the thwarting of competence. Specifically, avoidant coach attachment resulted in increased perceptions of autonomy ($\beta = .23$) and competence ($\beta = .20$) need thwarting. The increase in autonomy thwarting resulted in reduced experiences of life satisfaction ($\beta = -.19$), whilst increased competence thwarting resulted in increased experiences of negative affect ($\beta = .12$). Second, findings show that athletes with an anxious attachment towards their coach have experiences of life satisfaction that are fully mediated via autonomy, and experiences of negative affect that are fully mediated via competence need thwarting. Specifically, anxious coach attachment resulted in increased perceptions of autonomy ($\beta = .37$) and competence ($\beta = .41$), need thwarting. The associations between autonomy and life satisfaction, and competence and negative affect, for the anxiously attached athletes are the same as those found for avoidant attachment. No significant findings were found for the associations between insecure attachment to coach and performance satisfaction and depression. The only significant finding regarding secure coach attachment was that athletes who viewed their attachment with the coach as secure perceived a decrease in relatedness thwarting ($\beta = -.14$).

**Needs Thwarted in Sporting Context.** Findings for athletes’ avoidant attachment to the coach showed that the associations to life satisfaction were fully mediated via the indirect effects of relatedness need thwarting in sport. Competence need thwarting also fully mediated the association between athletes’ avoidant attachment and performance satisfaction. Specifically, the findings show that avoidant coach attachment resulted in increased perceptions of competence ($\beta = .26$) and relatedness ($\beta = .22$) need thwarting, which subsequently resulted in negative experiences of life ($\beta = -.37$) and performance satisfaction ($\beta = -.29$). Table 2 also shows that associations between avoidant attachment to the coach and depression and negative affect, were also fully mediated via relatedness thwarting. Specific associations show that increased perceptions of relatedness thwarting resulted in increased experiences of depression ($\beta = .26$) and negative affect ($\beta = .13$) for avoidantly attached athletes. The findings for anxiously attached athletes mirrored those of the avoidantly attachment athletes, the only reported difference being stronger associations between anxious attachment to the coach and
perceptions of competence ($\beta = .46$) and relatedness ($\beta = .32$) need thwarting in sport. No significant findings were found for secure attachment to the coach and any of the need thwarting in sport variables.

5.4. Discussion

Guided by established theoretical framework and recent empirical research (Bartholomew at al., 2011b; see Chapter 2), the current study aimed to examine whether associations between athlete attachment to the coach and indexes of well- and ill-being can be explained by athletes’ perceptions of psychological need thwarting within two distinct yet overlapping contexts: the sport context and the coaching relational context. Findings highlighted a number of significant associations between the study variables, as well as several significant full mediations via thwarting of the three basic psychological needs. In terms of hypothesis 1 (H1), the findings supported the hypothesis as it was demonstrated that all of the associations were significantly positive and demonstrated small to moderate associations. These associations indicate that if athletes perceive their attachment style to be either anxious or avoidant towards the coach they are likely to experience greater need thwarting within both the coach relational and sport contexts. These findings are in line with previous research within sport that have reported negative associations between insecure attachment styles and psychological need satisfaction (see Chapter 2 and 3), as well as literature within the broader social psychology literature that has shown negative associations between insecure attachment styles and need satisfaction in different types of relationships (e.g., La Guardia et al., 2000).

According to attachment theory (Bowlby, 1968/1982; Ainsworth et al., 1978; Mikulincer & Shaver, 2007), individuals with an anxious attachment are more likely to be clingy, needy, and their level of intimacy with others may remain unfulfilled despite attachment figures’ (such as coaches, parents, peers, and administrators) best attempts to connect emotionally and behaviourally with these individuals. In sport, coaches, teammates, parents, and administrators’ best efforts to support an athlete who is anxiously attached may go unnoticed as these athletes find it difficult to acknowledge such efforts. Such efforts may simply not be good enough to satisfy the extreme and fragile need of closeness and proximity of these athletes. In the sport and coaching contexts, where coaches and other athletes have to remain intensely focus on the
specific task at hand, they may inevitably have to pass over these athletes on the basis that they are continuously too much hard work (i.e., too emotionally and psychologically demanding). As a result a perfectly “talented” athlete may then perceive their needs being thwarted in both the coaching relationship and in the sporting environment. Similarly, due to avoidant individuals inherit desire to remain distant in relationships, and their negative perception of others as not providing support (Bowlby, 1973), athletes may falsely believe that their basic needs are thwarted due to the perception that coaches and other important people within the sport are not actively attempting to support them. It is unlikely for one to feel satisfied in a dyadic relationship unless both relationship members are interdependent (one supports the other) (Kelley & Thibaut, 1978; Jowett & Nezlek, 2012), however for avoidantly attached individuals depending or relying on the other person may be especially hard to experience due to their past interactions, especially with primary care givers (Bowlby, 1973).

The third study hypothesis (H3) was also supported through findings that secure attachment was negatively, although not significantly, associated with need thwarting; with the exception of relatedness thwarting in the coach context. According to attachment theory, individuals with secure attachment develop close and trusting relationships based on the expectation that support will be forthcoming in times of need, and through their positive IWMs of themselves and others developed through the early interactions with their primary care givers and reinforced with other attachment figures over the years (Bowlby, 1969/1982). Therefore, athletes who are securely attached to their coach have no expectations for need thwarting within that relationship, as highlighted by the negative associations between secure attachment and relatedness thwarting.

Whilst the associations between the attachment styles and need thwarting factors are informative and help fill a gap in the sport psychology literature, the main purpose of the current study, and one of the main hypotheses (see H2), was to examine whether need thwarting mediated the associations between attachment and well/ill-being. The analysis revealed a range of significant full mediations that supported the second hypothesis (H2). The mediation findings for the associations of avoidant and anxious attachment with life satisfaction, performance satisfaction, and negative affect were all similar. In terms of life satisfaction, findings showed that the associations were
fully mediated via autonomy need thwarting within the coach relational context, as well as relatedness thwarting within the sport context. These results suggest that athletes who display insecure attachment within the relationship with the coach experience lower levels of life satisfaction because their basic psychological needs are thwarted. Overall, insecure athletes perceive greater thwarting of these needs, and thwarting of autonomy from the coach on the one hand, and thwarting of relatedness within the sport on the other, which result in low experiences of life satisfaction. In addition, competence thwarting within sport fully mediated the association between insecure attachment and performance satisfaction, whilst relatedness thwarting within the sport context and competence thwarting within the coach relational context also fully mediated the associations between insecure attachment and negative affect. Findings suggest that increased perceptions of competence thwarting in sport lead to negative experiences of performance satisfaction, whilst perceptions of relatedness thwarting in the sport context and competence thwarting in the coach relational context resulted in greater experiences of negative affect. These findings support previous research exploring the associations between need thwarting and well- and ill-being (Bartholomew et al., 2011b), whilst also highlighting that for athletes with insecure attachment towards their coach, the broader sporting environment can have a negative influence on their well/ill-being through influencing perceptions of need thwarting. Therefore, in order to instil experiences of well-being in their athletes, coaches should interact with their athletes in ways that encourage satisfaction of the basic needs (e.g., autonomy supportive behaviour) and avoid behaviours which thwart them (e.g., controlling behaviours). This is due to satisfaction of the basic psychological needs being previously shown to offer insecure athletes a possible means to experience greater well-being despite the attachment expectations (see Chapter 2). Finally, the mediation findings for the associations between avoidant and anxious attachment and depression revealed that the association to depression was fully mediated via relatedness thwarting within the sporting context. These findings support those of previous research (Bartholomew et al., 2011b) and indicate that if athletes with an insecure attachment style towards their coach perceive their relatedness need to be actively thwarted they are likely to experience increased levels of depression.

It is important to also note that despite the range of significant full mediation findings reported, there were no associations found via the autonomy thwarting in sport
mediator. This could be explained by the lack of significant associations between autonomy thwarting in sport and the well/ill-being outcomes. Thus, whilst previous research has shown the value of autonomy satisfaction in sport for improved well-being (e.g., Gagné et al., 2003; Reinboth et al., 2004), thwarting of this need in sport within the current study had no impact on either well-being or ill-being indexes. This could be a result of the indexes of well/ill-being utilised in the current study, or that the athletes in the current study did not view autonomy thwarting as an important factor when compared to competence or relatedness. As the sport environment requires the athlete to listen to the coach and follow their instructions during training sessions, as well as the instructions of other people within the sport environment (e.g., nutritionist, psychologists), these findings could also indicate that athletes’ expect a degree of autonomy thwarting and that this expectation offsets any potential negative effects on their well/ill-being. Further research into these associations is needed to clarify these speculations.

Overall the current findings supported the study hypotheses in demonstrating the mediating role of psychological need thwarting in the associations between athlete attachment and indexes of well- and ill-being (H2), as well as the direct associations between attachment styles and need thwarting (H1). The findings support previous research that has shown the associations between need thwarting in sport and psychological functioning (Bartholomew et al., 2011a, b), whilst also exploring the impact of need thwarting within the coach relational context. The mediation findings reported were also in line with the formulated hypotheses based on previous research (e.g., La Guardia et al., 2000; see Chapter 2) in that need thwarting, as with need satisfaction, mediated associations between attachment and psychological functioning. An important development of this study over previous research within sport is that athlete attachment was measured within the specific relationship with the coach through the use of the CAAS (Davis & Jowett, in press). This allowed the current findings to be focused specifically within the sporting environment and, along with need thwarting within the coach relational and sport contexts, provides an in depth investigation in the factors that affect an athlete’s psychological functioning. Finally, the findings of the current study provide further support for the importance of attachment theory within sport psychology.
Whilst the findings from the current study offer interesting insights and fill a gap in the sport psychology literature, the study has limitations that need to be addressed in future research. Firstly, the study was cross-sectional which limits the causal inferences that can be inferred. This also does not allow for potential changes in need thwarting over time to be investigated whilst simultaneously observing the impact on psychological functioning. Secondly, the data were collected employing a multi-section self-report questionnaire which has the inherent risk of social desirability bias in responses. Finally, as this study provided an initial examination of the associations between attachment, need thwarting, and well- and ill-being the capacity of the findings to support possible interventions is limited, however they do provide a solid basis to continue this line of research.

With these limitations in mind more research should be conducted to expand theory and practice. Research examining the associations in the current study is warranted in order to provide support for the findings or to highlight differences that may inform further research into attachment theory within sport. An examination of the current associations employing a longitudinal design should also be conducted in order to provide information regarding whether changes in need thwarting over time influence athletes experiences of well- and ill-being. If perceptions of need thwarting and experiences of well- and ill-being were assessed at regular intervals during a full competitive season, the impact of important events on these perceptions and experiences could be examined. It could be that athletes’ perceive more need thwarting during periods of heavy, regimented training, for example during the off season, when the coach is perhaps more likely to control the athletes, compared to during the competitive season when athletes may be afforded more freedom. Longitudinal research should also explore whether within-person change in attachment to the coach has an effect of need thwarting and psychological functioning. These associations were examined within this thesis (see Chapter 3), however with regards to need satisfaction rather than need thwarting. Based upon the findings reported in Chapter 3 it could be expected that if the behaviour of the coach caused an athlete to become more insecurely attached they would be likely to perceive more need thwarting. If these findings were reported they would support those of Chapter 3 and provide additional evidence for interventions aimed at educating coaches in the behaviours they should exhibit in order to support their athletes’ psychological functioning. Future research could also aim to
compare the impact of psychological need satisfaction and thwarting on the associations between attachment and psychological well- and ill-being in order to explore the specific differences between them. It could be that there is interplay between need satisfaction and thwarting within different contexts. If athletes’ have their basic psychological needs satisfied within one context, for example the parent relational context, this could provide a buffer against potential need thwarting within other contexts, for example the coach relational or sport contexts. These associations would also depend upon the degree to which the athletes’ perceive their needs to be satisfied or thwarted within each context, low levels of need satisfaction may not provide a significant defence against high levels of need thwarting. Future research should explore these speculations in order to further understanding of basic psychological needs.

5.5. Conclusion

In summary, no previous research has examined the mediating role of psychological needs thwarting within two social contexts, namely the coaching relational and the sporting context, in the associations between athlete attachment styles and well- and ill-being. Overall, findings support the study hypotheses. First, findings showed that athletes’ insecure attachment to their coach is negatively associated with perceptions of basic psychological need thwarting within both the coach relational and sport contexts (H1). Second, associations for insecure attachment to the coach with well- and ill-being factors were mediated via perceptions of psychological need thwarting within both the coach relational and sport contexts (H2). Finally, secure attachment to the coach reported a negative, non-significant, association with perceptions of need thwarting within both contexts explored (H3). These findings further the research by examining the three attachment styles (i.e., avoidant, anxious, and secure) directly, unlike previous research in which low scores on scales of avoidant and anxious attachment have been assumed to indicate secure attachment (see Chapter 2, 3, and 4). In doing so the findings also provide support for the attachment theory framework (Bowlby, 1969/1982) that stipulates on the one hand that insecure attachment will be positively associated with negative outcomes (e.g., need thwarting), and on the other that secure attachment will negatively associated with negative outcomes.
6

General Discussion
This chapter provides a general discussion of the findings generated from the four studies presented in this thesis. Grounded within attachment theory (Bowlby, 1969/1982) and basic psychology needs theory (BPNT; Deci & Ryan, 2000), the studies reported in this thesis aimed to examine the psychological functioning of athletes with regards to their attachment styles and perceptions of both psychological need satisfaction and thwarting. In addition, guided by previous research within the broader social psychology (e.g., La Guardia et al., 2000), this thesis examined the mediating role of psychological need satisfaction (Study 1) and thwarting (Study 4) on the associations between athletes attachment style and their experiences of well/ill-being. The findings from this thesis have shown that individuals with an avoidant attachment style have experiences of well/ill-being that are influenced by their perceptions of basic psychological need satisfaction within the coach and parent relational contexts (Study 1). These associations have also been shown to vary over time with avoidant attachment predicting changes in need satisfaction at the within-person and between-person levels (Study 2). In contrast, associations between anxious attachment and well/ill-being was shown to be influenced by needs satisfaction in the parent relational context only (Study 1), indicating that the parent may have a larger role to play in ensuring athletes with an anxious attachment style can experience well-being. Findings from Study 2 also indicated that anxious and avoidant attachment styles predicted within-person change and between-person differences in well/ill-being.

Further to these findings, this thesis also demonstrated how insecure individual’s perceptions of basic need satisfaction within the coach and parent relational contexts are influenced by their perceptions of social environment factors such as autonomy-support and controlling behaviours, social support, and interpersonal conflict (Study 3). Therefore, the findings from the first three studies within this thesis have provided important information in the understanding of how an athlete’s attachment style can influence their experiences of well/ill-being through their perceptions of the social environment and basic need satisfaction. Finally, the last study
within this thesis (Study 4) reported that athletes’ perceptions of basic psychological need thwarting within the sport context and coach relational context mediated the associations between athletes’ insecure attachment style with the coach and experiences of well/ill-being. These findings provided the first examination of need thwarting from an attachment perspective, whilst also supporting previous research that has shown the importance of exploring need thwarting in relation to athlete well/ill-being (e.g., Bartholomew et al., 2011b). Overall the thesis findings have shown that athletes who demonstrate an anxious attachment may be at more risk of experiencing poor well-being as they have fewer opportunities available to them to achieve the appropriate degree of need satisfaction. In contrast, avoidant athletes appear to have a wider range of options available to them as need satisfaction within the parent and coach relational contexts was shown to impact upon their well/ill-being. This section has provided a brief summary of the thesis findings, a detailed outline of the study findings are highlighted in Table 6.1.

6.1. Contribution of Findings to Theory and Research

The findings produced from the studies in this thesis make an important contribution to theory and research within the sport psychology domain, and to the broader social psychology literature. Specifically, the examination of athlete well/ill-being using an attachment theory framework provides a unique perspective into athlete well/ill-being, whilst also complimenting previous research by providing further evidence for the importance of attachment theory for research within sport psychology (e.g., Carr & Fitzpatrick, 2011; Davis & Jowett, 2010; Forest, 2008; Shanmugam et al., 2012). In addition, the inclusion of both satisfaction and thwarting of basic psychological needs as mediating variables in the associations between attachment styles and well/ill-being provides further understanding of athlete well/ill-being, whilst also providing direct links to previous research from broader social psychology (e.g., La Guardia et al., 2000; Wei et al., 2005). Finally, the associations between attachment styles and basic psychological needs have not previously been examined within the sport context, therefore this thesis makes a large contribution to our understanding of how the two theories (i.e., attachment theory and BPNT theory) relate and can be utilised together to provide a more in depth understanding of important psychological
Study 1 (Chapter 2)

To examine the associations between athletes' global attachment styles and their experiences of psychological functioning (i.e., well-being).

To explore the mediating role of psychological need satisfaction within two important relational contexts (e.g., parent and coach relationships) in these associations.

430 athletes participated in the study by completing a multi-section questionnaire assessing the main study variables.

Mediation analysis revealed that athletes' perceptions of satisfaction of basic psychological needs within the coach relational context mediated the associations between the avoidance style and vitality, positive and negative affect, and physical self-concept (skill and performance). In contrast, anxious attachment was not associated to basic need satisfaction in the coach relational context and thus no mediation findings were reported.

Mediation analysis also revealed that athletes' perceptions of basic psychological need satisfaction within the parent relational context mediated the associations between the avoidant style and vitality, self-esteem, positive and negative affect, and physical self-concept (only performance). Moreover, basic needs in the parent relational context also served as a mediator between the anxious style and vitality, self-esteem, positive and negative affect, as well as physical self-concept (skill and performance).

Table 6.1. Summary of main thesis findings.
The indirect effect of athletes’ experience of the satisfaction of basic needs on well-being was greater within the parental relational context than within the coaching relational context.

Overall, the findings from the study highlight that the integration of attachment and self-determination theories can promote understanding of relational processes in sport.

Study 2 (Chapter 3)

To examine whether mean differences and changes in athletes’ attachment style predicted psychological need satisfaction, within two relational contexts (coach and parent), and well-being

To explore whether mean differences and changes in need satisfaction within the relational contexts predicted well-being.

110 athletes participated in the study by completing a multi-section questionnaire assessing the main study variables at three time-points. (Note: Thirty three athletes only completed questionnaires at time-points one and two).

Multilevel modelling revealed that insecure attachment (anxious and avoidant) predicted well-being outcomes at the within- and between-person levels. At the within-person level anxious attachment negatively predicted vitality and self-esteem, whilst positively predicted negative affect. Increases in an athlete’s level of avoidant attachment resulted in reduced self-esteem and performance self-concept as well as an increase in negative affect.

Mean differences in anxious attachment negatively predicted vitality and self-esteem, and positively predicted negative affect. Similarly, mean differences in avoidant attachment
negatively predicted vitality, self-esteem, and performance self-concept, and positively predicted negative affect.

Avoidant attachment predicted need satisfaction within the parent relational context at both levels and need satisfaction within the coach relational context at the between-person level. In contrast anxious attachment did not predict need satisfaction within either relational context at any level of analysis.

At the between-person level, mean differences in need satisfaction within the coach relational context positively predicted athlete vitality and performance self-concept. Mean differences in need satisfaction within the parent relational context positively predicted vitality and self-esteem whilst negatively predicting negative affect. Need satisfaction within the parent relational context predicted vitality at the within-person level.

Findings from the study provide further support for the role of attachment in need satisfaction and well-being within sport, as well as highlighting important within- and between-person effects.
Study 3
(Chapter 4)

To explore the mediating role of social factors (e.g., social support, autonomy support, control, and conflict) on the associations between attachment styles and basic psychological needs satisfaction within two relational contexts.

A sub-sample of 215 athletes, randomly selected from the larger 430 collected for Study 1, completed a multi-section questionnaire assessing the main study variables.

Analysis revealed that the association between avoidant attachment style and basic needs satisfaction with the coach was mediated by social support and autonomy-supportive behaviours from the coach.

The association between avoidant attachment style and basic needs satisfaction with the parent on the other hand was mediated by parent conflict, social support, controlling behaviours, and autonomy-supportive behaviours.

Finally, the association between anxious attachment style and basic needs satisfaction from the parent was mediated by conflict and controlling behaviours.

Overall, the findings suggest that social factors play an important role in explaining the associations between attachment styles and basic needs satisfaction within two central relational contexts athletes operate in, and thus should be targeted in future interventions.
To examine the possible mediating role of basic psychological need thwarting between athlete attachment to the coach and indexes of well/ill-being.

241 athletes completed a multi-section questionnaire assessing the main study variables.

For analysis concerning need thwarting in the coach relational context, findings showed that for athletes who are avoidantly attached to the coach perceptions of life satisfaction were mediated via the thwarting of autonomy, whilst perceptions of negative affect were mediated via the thwarting of competence.

Athletes with an anxious attachment towards their coach have experiences of life satisfaction that are mediated via autonomy, and experiences of negative affect that are mediated via competence need thwarting.

No significant findings were found for the associations between insecure attachment to coach and performance satisfaction and depression.

Within the sport context, findings for athletes’ avoidant attachment to the coach showed that the associations to life satisfaction were mediated via the indirect effects of relatedness need thwarting in sport. Competence need thwarting also mediated the association between athletes’ avoidant attachment and performance satisfaction. Also, associations between avoidant attachment to the coach and
depression and negative affect, were mediated via relatedness thwarting.

The findings for anxiously attached athletes mirrored those of the avoidantly attachment athletes, the only reported difference being stronger associations between anxious attachment to the coach and perceptions of competence ($\beta = .46$) and relatedness ($\beta = .32$) need thwarting in sport.

The only significant finding regarding secure coach attachment was that athletes who viewed their attachment with the coach as secure perceived a decrease in relatedness thwarting ($\beta = - .14$). No significant findings were found for secure attachment to the coach and any of the need thwarting in sport variables.

Overall, the findings of the study highlight that the examination of negative aspects of sport participation may help us obtain a deeper and fuller understanding of athletes' psychological functioning.
outcomes in an athlete population. These contributions, and their implications, will be discussed in the following paragraphs.

Research from broader areas of psychology has frequently shown that individual differences in attachment styles can influence a range of well/ill-being factors including self-esteem (e.g., Bylsma et al., 1997), positive and negative affect (e.g., Simpson, 1990), vitality (La Guardia et al., 2000), depression (Irons & Gilbert, 2005), and life satisfaction (Deniz & Isik, 2010). In contrast the sport psychology literature is devoid of research that has examined well/ill-being in this direct manner. Accordingly, this thesis contains the first studies (Chapters 2, 3, and 5) to examine athletes’ experiences of well/ill-being according to individual differences in attachment styles. Collectively the findings from this thesis demonstrated that both the avoidant and anxious attachment styles were associated with well/ill-being in accordance with expectations from previous research from the broader social psychology (e.g., Deniz & Isik, 2010; Irons & Gilbert, 2005; La Guardia et al., 2000; Wei et al., 2005). At the global attachment level (i.e., the attachment style that represents the athletes behaviour across all close relationships) cross-sectional findings showed that the insecure attachment styles (i.e., avoidant and anxious) were negatively associated with experiences of vitality and self-esteem, and positively associated with experiences of negative affect (Chapter 2). In addition, avoidant attachment was negatively associated with positive affect.

At the specific attachment level (i.e., regarding the specific attachment style athletes display to the coach) findings showed that the avoidant attachment style was significantly negatively correlated to both performance and life satisfaction whilst being significantly positively correlated to depression and negative affect (Chapter 5). Whilst these are only correlational findings, they still demonstrate that avoidant attachment to the coach has similar associations to well/ill-being as global avoidant attachment or avoidant attachment in other specific relationships (e.g., La Guardia et al., 2000; Wei et al., 2005). This is important from a theoretical perspective as it supplies further support that coaches can be viewed as attachment figures (Davis & Jowett, 2010). In terms of anxious attachment significant positive correlations were shown to the ill-being factors. Negative correlations were observed to the well-being factors, however these were not significant. This could be a result of anxious individuals having a heightened awareness for negative behaviours caused by their
negative IWM of self (Bowlby, 1973). A unique finding of this thesis was that secure attachment showed significant positive correlations to well-being and negative to ill-being. Whilst these associations were expected based on the definition of secure attachment (see Ainsworth et al., 1978), they are still important as they confirm that secure attachment is positively linked to well-being outcomes and negatively to ill-being when considering attachment to the coach. These associations are rarely investigated directly in research due the use of self report questionnaires, such as the ECR (Brennan et al., 1998) and the ECR-S (Wei et al., 2007), that assess attachment in terms of the two insecure styles (i.e., anxious and avoidant) and often assume low scores indicate secure attachment.

These associations were further explored by employing a longitudinal study design in order to examine the within-person changes and between-person differences in attachment styles and well/ill-being (Chapter 3). The findings at the between-person level provide further support for the associations found in Study 1 and for those of previous research. Accordingly, mean difference in anxious attachment negatively predicted vitality and self-esteem whilst positively predicting negative affect. Meanwhile, mean difference in avoidant attachment negatively predicted vitality, self-esteem, and performance self-concept, whilst also positively predicting negative affect. These findings infer that athletes who report higher levels of insecure attachment are likely to experience reduced well-being when compared to athletes who report low levels of insecure attachment.

The unique contribution of this study concerned the associations between insecure attachment and well-being at the within-person level, as these demonstrated how potential changes to an athlete’s attachment style could impact upon their experiences of well/ill-being. In terms of anxious attachment, within-person changes showed that an increase in an athlete’s level of anxious attachment would result in the athlete experiencing reduced levels of vitality and self-esteem. In contrast their experience of negative affect would increase. In a similar vein, increases in an athlete’s level of avoidant attachment would cause the athlete to experience lower levels of self-esteem and performance self-concept whilst also experiencing higher levels of negative affect. These findings show that athlete perceptions of attachment styles at the global level are susceptible to change; and that these changes, however subtle, can have an impact on their well-being. Whilst one of the basic tenets of attachment theory
(Bowlby, 1969/1982) is that attachment styles formed in infancy are stable and affect functioning throughout the life span, research within broader social psychology (e.g., Davila et al., 1997; Fraley et al., 2011) has also shown that they can be susceptible to change due to the IWM of attachment that individuals possess (Bowlby, 1973). This research proposed that these IWM can accommodate as well as assimilate information, and as such changes in attachment style could be considered as normal reactions to changeable events and circumstances that individuals encounter during their lives (Davila et al., 1997).

In line with this expectation, research (e.g., Davila et al., 1997; Fraley et al., 2011; Weinfield et al., 2004) has shown that attachment styles can change as a result of circumstances encountered by individuals throughout their lives, and that these changes are brought about by individuals reassessing their IWM of attachment due to new experiences. The findings reported in Study 2 therefore support the findings from broader social psychology in demonstrating within-person changes in attachment during the period of the study. The previous research (e.g., Fraley et al., 2011), also reported that stability of attachment varied across romantic and parental relationships. Specifically, stability of attachment was lower in romantic relationship than it was in relationships individuals had with their parents. Fraley and colleagues (2011) attributed these differences in attachment stability to the history that individuals have within the two relational contexts. Whilst relationships with parents had a large developmental history, the romantic relationships were relatively new in comparison. As a result Fraley et al., (2011) proposed that individuals in romantic relationships may still be adapting to the relationship, and finding a way of relating to one another that is effective, which allows more opportunities for adjustment in the IWM of the individuals. Another explanation put forward by Fraley et al., (2011) was that individuals, within their study, potentially had more frequent interactions with their romantic partner than their parents. These more frequent interactions provided greater opportunity for the IWM within the romantic relational context to be altered, even slightly, over time, in comparison to parental relational IWM that due to limited contact were more likely to remain unaltered.

These findings provide an interesting discussion point regarding the findings from this thesis. It could be that the within-person changes in attachment were primarily due to the athlete’s relationship with the coach. As the sample was
predominantly university student athletes it could be assumed that the majority were in more contact with their coach than their parents during the period of the study. Also, the coach-athlete relationships within the study were not as developmentally mature as the parent-athlete relationships due to the differences in relationship duration. Therefore, the IWM that underpinned the athlete’s attachment style to the coach could be more likely to undergo change as there are more opportunities for the coach and athlete to interact. As attachment was measured at the global level within the longitudinal study these suggestions would need to investigated in order to determine whether they support previous research (e.g., Fraley et al., 2011).

Within the sport psychology literature, basic psychological need satisfaction has often been used to explain the associations between the coaching environment and athletes experiences of well-being (e.g., Adie et al., 2008; Blanchard et al., 2009; Gagné et al., 2003). The collective findings of this research has consistently reported that when the environment satisfies the athletes needs for autonomy, competence, and relatedness, they are likely to experience greater well-being. Similarly, recent research (e.g., Bartholomew et al., 2011b) has shown that when the coaching environment thwarts the athlete’s needs for autonomy, competence, and relatedness, they are likely to experience less well-being and greater ill-being. In addition, research within the broader social psychology literature (e.g., La Guardia et al., 2000; Leak & Cooney, 2001; Wei et al., 2005), has demonstrated the mediating role that basic psychological need satisfaction has in the associations between attachment styles and experiences of well/ill-being. Accordingly, the current body of research presented in this thesis goes beyond previous research by demonstrating the mediating role of not only basic need satisfaction but also basic need thwarting in the associations between athlete attachment styles and experiences of well/ill-being. Specifically, need satisfaction was measured with regards to the coach and parent relational contexts (Chapter 2, 3). Assessing need satisfaction within these two relational contexts, as opposed to within the general sport context as in the majority of previous research in sport psychology (e.g., Adie et al., 2008), allowed for a comparison to the previous research within social psychology whilst also advancing knowledge within sport psychology literature. For instance examining need satisfaction within these two important relational contexts, and the role they have in athlete global attachment style and well/ill-being, supplied information as to the relative importance of each context, as seen in studies 1 and 2. Similarly, need
thwarting was assessed with regards the coach relational and sport contexts (Chapter 5) in order to determine the interplay between thwarting in these contexts, athletes’ attachment style to the coach, and experiences of well/ill-being.

Evidence for the significant role that need satisfaction and need thwarting have on athletes’ experiences of well/ill-being, and how athletes’ attachment styles influence perceptions of needs, have been demonstrated by studies 1, 2, and 4. In terms of need satisfaction the studies presented within this thesis (Chapter 2 and 3) have demonstrated that insecure athletes’ perceptions of how their needs are satisfied within both the coach and parent relational contexts have an impact upon how they experience several well/ill-being outcomes (e.g., vitality, self-esteem, performance self-concept). Overall, the findings reported in Study 1 supported the broader social psychology research (e.g., La Guardia et al., 2000, Wei et al., 2005) by demonstrating negative associations between insecure attachment and basic need satisfaction, positive associations between need satisfaction and well/ill-being, and ultimately the associations between insecure attachment and well/ill-being being mediated by perceptions of need satisfaction. Specifically, avoidant athletes’ experiences of the majority of well/ill-being factors were mediated by perceptions of need satisfaction within both relational contexts. Experiences of self-esteem were mediated by needs within the parent context only, whilst experiences of skill self-concept were mediated by needs within the coach contexts only. In contrast, anxious athletes’ experiences of well/ill-being were solely dictated by their perceptions of need satisfaction within the parent relational context. These findings indicate that avoidant athletes have more opportunities to experience well-being because perceptions of need satisfaction within both the coach and parent relational contexts were found to influence their experiences. It could also be suggested that, as both relational contexts mediated the associations between avoidant attachment and several well/ill-being outcomes (e.g., vitality, negative affect, positive affect, and performance self-concept), avoidant athletes may require satisfaction of needs within both contexts to complement each other in order to experience optimal well/ill-being.

The examination of these associations within a longitudinal design in Study 2 also highlights how changes in the athlete’s attachment style can affect their perceptions of need satisfaction, as well as how changes in the perceptions of need satisfaction can affect experiences of well/ill-being. In particular, at the within-person level increases in avoidant attachment was shown to result in reduced perceptions of
need satisfaction within the parent relational context, and similarly at the between-person level those who reported higher levels of avoidant attachment reported lower perceptions of need satisfaction. These findings appear to suggest that changes and differences in avoidant attachment have a significant impact upon perceptions of need satisfaction within the parent relational context. This could be explained by the avoidant attachment style being underpinned by an IWM of attachment that is based upon the view that others are not available for support (Bowlby, 1973). Therefore, if an athlete becomes more avoidant over time they are likely to have this negative view of others confirmed, which consequently results in them perceiving less need satisfaction from the parent. Need satisfaction within the parent context has been shown to influence athletes’ experiences of vitality, negative affect, positive affect, and performance self-concept alongside need satisfaction within the coach context (Chapter 2). Therefore, if perceptions of need satisfaction within the parent context reduced due to increases in avoidant attachment, experiences of these well/ill-being factors would also be affected. This is emphasised by the findings at the between-person level in which athletes who perceived greater need satisfaction within both the coach and parent relational contexts experienced greater well-being than athletes who perceived less need satisfaction. Specifically, athletes perceiving greater need satisfaction in the coach context experienced more vitality and performance self-concept than those who perceived less need satisfaction. Meanwhile, athlete perceiving greater need satisfaction in the parent context than others experienced more vitality and self-esteem as well as reduced negative affect.

These findings support previous longitudinal research within sport (Reinboth & Duda, 2006) whilst also providing considerable expansion by demonstrating the importance of not only the coach but the parent in determining athletes’ experiences of well/ill-being over time. Therefore, studies 1 and 2 represent evidence for the link between need satisfaction within a range of interpersonal relationships and the experiences of well/ill-being for insecure athletes. This has implications for research as this broader examination of need satisfaction, beyond the sport context typical examined within sport (e.g., Adie et al., 2008, Blanchard et al., 2009; Gagné et al., 2003), can be used to assess the importance of need satisfaction within other important relationships (e.g., teammate, partner) on the well/ill-being of insecure athletes.
The examination of the associations between attachment styles and perceptions of basic psychological need satisfaction has been extensive both within this thesis (see Chapter 2 and 3) and previous research (e.g., La Guardia et al., 2000; Leak & Cooney, 2001; Wei et al., 2005). However, an understanding of the mechanisms that dictate why individuals with certain attachment styles perceive need satisfaction in the way they do has been less forthcoming. Accordingly, the findings generated in Study 3 (Chapter 4) provide evidence for the mediating role of the social environment in the associations between insecure attachment and need satisfaction within the coach and parent relational contexts. In particular the mediating role of social support, autonomy support, controlling, and conflict behaviours from the coach and the parent were demonstrated. The results of this study suggest that social support and autonomy supportive behaviours from the coach are important factors that influence avoidant athletes’ perceptions of basic need satisfaction within the coach relational context. In contrast, avoidant athletes’ perceptions of need satisfaction within the parent relational context were mediated by all of the parent behaviours, suggesting that how the athlete perceives their parent in terms of positive and negative behaviours can affect their need satisfaction perceptions. Similarly, anxious athletes’ perceptions of need satisfaction within the parent relational context were mediated by conflict with, and controlling behaviours from, the parent.

As highlighted previously, it would appear that avoidant athletes have more opportunities to not only experience well/ill-being (see Chapter 2) but also need satisfaction within the coach and parent relational contexts. The findings that only negative parental behaviours were associated with anxious attachment could be attributed to anxiously attached individuals having a heightened awareness of negative behaviour from significant others (Bowlby, 1969/1982). These findings have strong implications for research. Specifically, the focus of research involving attachment styles, basic needs, and well/ill-being can now be expanded to include investigation of salient mediators that can influence perceptions of need satisfaction within additional relational contexts (e.g., teammates, romantic partners), as well as furthering the research by investigation the associations between attachment styles and perceptions of need thwarting (e.g., Bartholomew et al., 2011b).

Recently psychological need thwarting has been identified as an important variable to consider in the study of well/ill-being (see Bartholomew et al., 2011a,
This is due to low scores on perceptions of need satisfaction not being representative of active need thwarting, but rather an indication of need dissatisfaction (Bartholomew et al., 2011b). Therefore, in order to provide a more complete understanding of well/ill-being it is recommended that psychological need thwarting should be considered. In accordance with this recommendation, Study 4 provides evidence for the mediating role of need thwarting within two contexts (i.e., coach relational and sport context), in the associations between athletes specific attachment styles to the coach and their experiences of well/ill-being. Findings showed that secure attachment to the coach was not significantly associated to need thwarting within either context and therefore no mediation was reported. This is likely due to secure individuals being confident that their needs will be satisfied within their relationships based upon the expectation of others as supporting and available (Bowbly, 1969/1982). As such, secure individuals have no expectations that their needs will be thwarted in either the coach relational or sport environment contexts. In comparison, insecure attachment to the coach was significantly, positively, associated to need thwarting within both the coach relational and sport context. These associations are supported by attachment theory (Bowbly, 1969/1982) which states that individuals who display anxious attachment are often clingy, needy, and are constantly looking for support and comfort. However, within sport, coaches and other athletes have to remain focussed on the specific task of training or competing. Due to this they are likely to be unable to provide the anxious individual with the constant support and reassurance that they require. This may result in the anxious individual feeling that their needs are being thwarted within both the coach relational and sport environment contexts. In comparison, avoidant individuals have a desire to remain distant in relationships, and negative internal working models that foster the belief that others are not supportive (Bowbly, 1973), which may cause them to falsely perceive that their needs are being thwarted because their coach or other people within the sporting environment are not going out of their way to actively support them.

Furthermore, thwarting of the individual basis needs (i.e., autonomy, competence, relatedness) within both contexts acted as significant mediators for the associations between insecure attachment and well/ill-being factors (i.e., life satisfaction, performance satisfaction, depression, negative affect) (see Chapter 5). These findings represent a significant development within the sport research by
demonstrating that perceptions of basic psychological need thwarting, within both the previously examined sport (e.g., Bartholomew et al., 2011b) and coach relational contexts, are salient mechanisms which can influence insecure athletes’ experiences of well/ill-being. Research examining the association between need thwarting and well/ill-being is limited (e.g., Bartholomew et al., 2011a, b), and the current thesis is the only research which has examined the associations of attachment styles to need thwarting. However, the current findings provide complementary support for the previous research into need satisfaction and attachment styles (e.g., La Guardia et al., 2000; Wei et al., 2005; Chapter 2 and 3) by demonstrating that insecure attachment is positively associated to need thwarting. Whilst an extension of these findings is warranted, the findings of this thesis represent initial evidence for the relevance of need thwarting as mediators in the link between attachment styles and well/ill-being in athletes. Consequently, these findings serve as a foundation upon which future research can extend upon, by further examining the impact of need thwarting and satisfaction across different relational contexts on the well/ill-being of athletes with varying attachment styles.

6.2. Practical Implications

Although the implications for practice have been discussed for each study within the relevant study chapters, this section will bring together the collective ideas of previous chapters in a more coherent manner. Whilst the research conducted as part of this thesis has explored ideas that are relatively new to sport psychology, the findings that have been generated highlight a number of important implications for practice, especially for the understanding of individual difference characteristics that affect athlete well/ill-being. These implications will be discussed in the following paragraphs.

The findings produced from Study 1 of this thesis suggest that whilst athletes with global insecurity of attachment are likely to experience lower levels of well-being than those with secure attachment, these experiences can be influenced by their perceptions of basic psychological need satisfaction within the relationships with their coach and parent. Specifically, in light of the Study 1 findings, avoidant athletes’ experience of well-being could be influenced through need satisfaction within both relational contexts, albeit with greater emphasis placed on the parent, whilst anxious athletes well-being would appear to be solely dependent on their perceptions of need
satisfaction within their parental relationship. Therefore, it could be suggested that interventions aimed at educating coaches, and parents, in behaviours that can satisfy the athletes basic needs may prove beneficial in fostering experiences of well-being in athletes, irrespective of their attachment style. Continued satisfaction of the insecure athletes needs may, over a period of time, begin to cause the athlete to re-evaluate their internal working models of attachment, which could result in a shift in their attachment style (Bowlby, 1969/1982, Fraley et al., 2011). This change in internal working models is however a long term potential consequence of interventions aimed at improving experiences of well-being through satisfaction of the basic needs. The short term effects of these interventions could simply allow the coach and parent to create an environment for the athlete that allows needs to be satisfied and well-being to be experienced as a result. Strategies for encouraging need satisfaction and preventing need thwarting can be taken from previous research within sport psychology (e.g., Adie et al., 2008; Bartholomew et al., 2010; Reinboth et al., 2004), in which the environment created by the coach was shown to influence athletes perceptions of need satisfaction. Specifically, autonomy supportive behaviours have been shown to be positively associated with satisfaction of the basic needs (e.g., Adie et al., 2008; Reinboth et al., 2004), whilst controlling behaviours have been reported to show negative associations to satisfaction of the basic needs and to actively thwart them (e.g., Bartholomew et al., 2010). The creation of an autonomy supportive environment can be achieved by providing the athlete with an opportunity to have an input into training sessions or more broadly allowing them to make decisions concerning their athletic career. Similarly, in order to reduce the athletes perceptions that they are being controlled coaches and parents should be made aware of which behaviours to avoid, such as using rewards to control the athlete, intimidating the athlete to gain obedience, etc (Bartholomew et al., 2010). Therefore, interventions aimed at educating coaches and parents in how to provide satisfaction of the athletes basic needs would benefit from demonstrating the importance of creating an autonomy support climate in which controlling behaviours are not used in interactions with the athlete.

These suggestions for successful interventions can be further supported using the findings of Study 3 in which the social environment factors that influence insecure athletes’ perceptions of need satisfaction, within the coach and parent relational contexts, were examined. The findings generated from Study 3 suggest that
Interventions aimed at improving athletes’ perceptions of need satisfaction should target social support behaviours and conflict within the relationships, as well as autonomy support and controlling behaviours. More specifically, the coach and parent should be informed that social support behaviours, alongside autonomy supportive behaviours, can positively influence the athlete’s perceptions of need satisfaction. This could be achieved through educational interventions such as the coach effectiveness training proposed by Smith and Smoll (CET; Smith & Smoll, 2002; Smoll & Smith, 2006). The CET consists of five principles of effective coaching that coaches are encouraged to adhere to. It terms of improving social support, the third principle of the CET is aimed at establishing norms within the sport that emphasise the athlete’s obligations to help and support one another (Smith & Smoll, 2007). It is expected that creating this behavioural norm will increase social support within the sport team as a whole, and that coaches should ensure they are also supportive in order to help develop this environment. These principles could also be adapted to help instruct parents on how they can enhance need satisfaction through developing social and autonomy support. Social supportive behaviours would include the coach and parent providing advice, guidance, and general support to the athlete, whilst autonomy support behaviours would involve the coach and parent allowing the athlete to have an input into decisions that are made. The fifth principle of the CET is also important to highlight. The principle states that coaches should become aware of their own behaviours and the consequences that they have on the athletes. Research by Smith and colleagues (Smith, Smoll, & Curtis, 1978) reported low correlations between the actual behaviours demonstrated by coaches and the coaches perceptions of their own behaviour. Therefore, in order for coaches, and parents, to improve the athletes perceptions of social and autonomy support and ultimately need satisfaction they need to be made aware of what behaviours they are demonstrating and the impact they are having.

Whilst a promotion of these positive behaviours is important, it is equally important that any interventions include information on the behaviours that may have a negative influence of the athletes need satisfaction. As such, providing coaches and parents with the knowledge that controlling behaviours and conflict within their relationships with the athlete are likely to have negative implications on not only the satisfaction of the athletes needs but consequently the athletes well/ill-being, could help
to raise their awareness regarding the behaviours they use and the interactions they have with the athlete. In order to help coaches and parents reduce instances of conflict with the athlete the COMPASS model could be utilised (Rhind & Jowett, 2010). The COMPASS model contains seven dimensions that should be considered for the maintenance of successful relationships. The ‘C’ of the model refers to conflict management and reflects “expectations, consequences of unmet expectations, and cooperation in the discussion of conflict” (Rhind & Jowett, p. 113). It is highlighted within the COMPASS model that in order to avoid conflict proactive and reactive strategies should be put in place. Proactive strategies are put in place to avoid potential conflict and can be achieved through the coach/parent and the athlete clarifying their expectations of one another. A simple example could be that they both expect the other to arrive on time for training sessions. Adhering to these expectations should help to reduce potential conflict. However, if conflict does occur within the relationships, reactive strategies should be put in place so that the conflict can be resolved quickly and effectively. Such strategies could include ensuring open lines of communication are present and that the coach/parent or athlete is free to express any problems openly.

Providing coaches and parents with information and possible interventions such as the CET and COMPASS model should enable them to gain an understanding of how they can help their athlete/s by satisfying their basic psychological needs. In addition the preliminary longitudinal findings of Study 2 have shown that any intervention that can successfully improve perceptions of need satisfaction, within both the coach and parent relational contexts, could over time improve the athlete’s experience of well/ill-being. As such it would also be important that any intervention set up to improve athletes experiences of well/ill-being should not be a ‘one-off’ programme over a short period of time. The coaches and parents behaviours, and athletes’ perceptions of need satisfaction and experiences of well/ill-being, should also be monitored over the length of the intervention in order to determine the effectiveness and to highlight any changes that need to be made.

The findings from this thesis provide the first insight into the associations between attachment styles, psychological need thwarting, and well/ill-being. As previously mentioned, Study 4 focused exclusively on the sporting environment by assessing athletes’ attachment to the coach, as well as need thwarting within the coach relational and sport environment contexts. The practical implications that can be
ascertained from Study 4 are twofold. Firstly, the results provided further support for the CAAS (Davis & Jowett, in press) as a valid and reliable measure of athlete attachment to the coach. Therefore, in a practical environment, a sport psychology consultant could utilise the CAAS to measure the attachment style that an athlete has towards their coach in order to provide insight into any potential problems that the athlete may be experiencing (e.g., low levels of well-being). Secondly, the findings of Study 4 suggest that insecure athletes perceive more need thwarting within the coach relational and sport contexts than secure athletes, which in turn reduces their experience of well-being (e.g., performance and life satisfaction) whilst heightening experiences of ill-being (e.g., depression, negative affect). Coaches and other individuals within the sport environment (e.g., teammates) need to be made aware of the impact of need thwarting on insecure athletes well/ill-being. Thus, interventions could be put in place that highlight the damaging affects that thwarting individuals psychological needs for autonomy, competence, and relatedness have. Based on the findings from this thesis it could be suggested that training/education of similar behaviours for enhancing perceptions of need satisfaction should be provided to coaches to provide them with the necessary information to try and reduce perceptions of need thwarting, and especially of competence and relatedness, within their athletes. In terms of reducing perceptions of competence thwarting, coaches and other important individuals within the sport environment (e.g., teammates, physiotherapists) need to be made aware of how they can satisfy the athlete’s feelings that they are competent at what they do, for example through such methods as providing positive feedback. In order to satisfy and not thwart the athlete’s relatedness need, the coach and other individuals within the sport environment should regularly engage the athlete in conversation, not only about issues surrounding the sport but also show an interest in the athlete’s activities away from the sport in order for the athlete to feel connected to these individuals (e.g., Gagné et al., 2003). From a practical perspective, a sport psychology consultant could measure an athlete’s perceptions of need thwarting and need satisfaction, along with their attachment style in terms of the coach, in order to gain an understanding of the possible explanations for why an athlete may be experiencing low well-being. The results of these measures could then inform the consultant in choosing any intervention strategies that would need to be employed to help the athlete achieve optimal levels of well/ill-being.
The final practical implication of the thesis findings relates to athlete attachment styles. The studies in this thesis have shown that athletes who are more insecurely attached, both globally (Chapter 2, 3, & 4) and specifically towards the coach (Chapter 5), are more likely to perceive low levels of need satisfaction and high levels of need thwarting across a range of contexts. Whilst interventions that target the behaviours of both coaches and parents are recommended in order to improve perceptions of need satisfaction, reduce perceptions of need thwarting, and ultimately improve well/ill-being, it may also be important to educate these individuals in the behaviours related to the attachment styles. As has been discussed throughout this thesis, insecure individuals display a range of behaviours in close relationships that are influenced by their internal working models developed during infancy. These behaviours, including the clingy, needy behaviours of anxious attachment and the self-reliant, detached behaviours of avoidant attachment, may cause a coach/parent to become frustrated with the athlete and eventually give up on attempting supporting them. Such frustration may also provoke the coach/parent to employ controlling behaviours towards the athlete to get them to do what they want, as well as developing conflict in the coach/parent-athlete relationships, which will both potentially result in perceptions of reduced need satisfaction and most likely increased need thwarting in the athlete.

However, if coaches/parents are made aware of the attachment styles, and are able to recognise behaviours associated with the insecure attachment styles, they would be in a better position to respond accordingly. For example, an avoidant athlete may find it difficult to interact with the coach/parent or rely on them for support, due to their expectation that others are inadequate at providing support, which causes them to appear distant and non-interested. If the coach/parent is aware that this behaviour may relate to an underlying attachment style, they will be better prepared to react appropriately by continuing to support the athlete and provide an environment that allows the athlete to begin perceiving their basic psychological need to be satisfied. However, coaches/parents should be made aware that changes in perceptions of need satisfaction, and resulting improvements in well/ill-being, may take time, as highlighted in Study 2, and as such patience and perseverance are required. Providing coaches/parents with a mentoring system could also help them to gain experience from experienced individuals (e.g., social psychologists) in how to relate to athletes with different attachment styles, whilst also providing the opportunity for reflective practice.
Overall, providing coaches and parents with information concerning the attachment styles, whilst also employing interventions aimed at improving athletes’ perceptions of psychological need satisfaction through coach and parent behaviours, could help to improve the well/ill-being of athletes in the long term.

6.3. Strengths and Limitations of the Thesis

The strengths and limitations of each specific study have been highlighted within their respective chapters, what follows is a discussion of the general strengths and limitations of the entire thesis. The studies presented in this thesis represent the first research to examine athlete well/ill-being from a joint attachment theory and basic psychological needs theory perspective. A key strength of this thesis is that the associations investigated were grounded within two well established theories (e.g., Bowlby, 1969/1982; Deci & Ryan, 2000), and were supported by empirical research from both sport and broader social psychology. Employing an integrative theoretical framework allowed the studies within this thesis to explore the effects of important individual difference characteristics (e.g., attachment styles) and intrapersonal factors (e.g., basic needs) within two important relational contexts on athletes’ experiences of well/ill-being. This approaching provided greater understanding of how coaches and parents influence athletes’ experiences of well/ill-being, and also highlighted important considerations for interventions.

The adoption of this integrative theoretical framework approach also provided a subsequent strength of this thesis, that of exploring the mechanisms between attachment styles and well/ill-being. Within the sport psychology literature there has been no previous research that has examined the mechanisms that explain the associations between attachment styles and well/ill-being. By including the basic psychological needs as mediator variables, which have been shown in previous research to effect well/ill-being (e.g., Blanchard et al., 2004; Gagné et al., 2003), this thesis was able to demonstrate the mechanisms that underlie the association between attachment styles and well/ill-being. This represents a clear advantage over previous research that has examined the single associations between attachment and well/ill-being, whilst also bringing sport psychology literature in line with recent developments in social psychology (e.g., La Guardia et al., 2000, Wei et al., 2005).
Additional methodological and statistical strengths of this thesis are also apparent. The inclusion of a longitudinal research design to investigate the within-person changes and between-person differences in the main thesis variables over time is another important strength of this thesis as no previous research in sport, and limited research in broader social psychology, has examined these associations in such a manner. Often research is conducted using a cross-sectional design in which associations are examined at one point in time and inferences about the effects of change in the variables are not appropriate. Thus, the inclusion of a longitudinal design allowed for the examination into the effects of change over time in the associations between attachment styles, need satisfaction, and well/ill-being. Regarding the statistical analysis conducted within the thesis, the use of bootstrapping mediation analysis, as supported by Preacher and Hayes (2004, 2008), represents an important strength over traditional mediation analysis. As highlighted in Study 1 (Chapter 2), the casual steps approach to mediation, as outline by Baron and Kenny (1986), is often the method used to conduct mediation analysis. However, despite its common use in research, the causal steps approach has recently been identified as flawed. Specifically, the causal steps approach is not suitable for testing multiple mediators simultaneously, and also states that a direct effect between the independent variable (IV) and the dependent variable (DV) is needed for mediation to be present. Several researchers (e.g., Preacher & Hayes, 2004; Shrout & Bolger, 2002; Zhao et al., 2010) have proposed that the direct effect of the IV on the DV is not required for detecting mediation, stating that the IV can still be related to the DV indirectly via the mediating variables. As such, the Preacher and Hayes’ approach to mediation was employed within this thesis allowing for; the ‘purification’ of the indirect effects by controlling for all mediators, a reduction in the alpha inflation that would have resulted from multiple single mediator models, and a direct comparison between mediators.

The range of contexts in which psychological need satisfaction and thwarting was measured is also a notable strength of this thesis. Across the studies need satisfaction was measured within the coach and parent relational contexts, whilst need thwarting was measured within the coach relational and sport environment contexts. Research within sport psychological has had a preference for exploring need satisfaction and thwarting within the context of sport (e.g., Adie et al., 2008; Bartholomew et al., 2011b). Whilst this context has importance, as demonstrated within
Study 4 of this thesis, it also limits the depth of the research findings and ignores the importance of need satisfaction within important relationships. Therefore, by taking cues from both sport and broader social psychology this thesis provided greater depth of information concerning how satisfaction and thwarting of needs within specific relationships (e.g., coach and parent), as well as within the sport context, are associated to attachment styles and well/ill-being. A similar strength of this thesis is that the well/ill-being indexes measured included a broad range of psychological factors and also included measures specifically related to athletes. Specifically, within Study 1 performance and skill self-concept were measured alongside well/ill-being factors including vitality, positive and negative affect, and self-esteem. Performance self-concept was also included within Study 2, whilst a measure of performance satisfaction was included in Study 4 along with life satisfaction, depression, and negative affect. This allowed the findings of the studies to be discussed not only in terms of psychological well/ill-being, but also with particular regard to sport specific outcomes. Previous attachment theory research within sport that has indirectly assessed well/ill-being through examination of relationship satisfaction (Davis & Jowett, 2010) and eating psychopathology (Shanmugam et al., 2012). Therefore, strength of the current thesis is that well/ill-being has been examined more directly through the use of well established factors.

Despite the strengths of this thesis there are also some limitations that need to be addressed. The first important limitation of this thesis is that the data collected was done so through the use of self-report measures. As a result it is subject to the inherent limitations associated with self-report measures including; response bias, misinterpretation of items, and subjectively measured data. Additionally, self-report measures are utilised on the preconception that the individuals have an understanding of the psychological factor that is being measured and are willing to report it (see Judd & McClelland, 1998). Therefore, if the individuals do not have an awareness of why they do what they do and behave in certain ways, then this can potentially affect their responses. Ideally the information gained from the self-report measures would be further examined through additional methods, such as interviews, in order to validate the information provided. However, due to the number of participants recruited, and the explorative native of the studies within this thesis, such methods were not feasible. Despite this, procedures were put in place to ensure the accuracy of the data collected.
The self-report measures used were all well validated and had displayed acceptable reliability in previous research. Moreover, the participant’s data was kept anonymous and confidential and participants completed the questionnaires in private in order to encourage honest responses. Whilst self-report measures have limitations they also have some advantages including; being cost effective, less time consuming, and easy to administer to large samples.

A further limitation of this thesis is the methodological design used for several of the studies. In particular, Studies 1, 3, and 4 were all conducted using a cross-sectional design, thus not enabling conclusions about causality to be drawn. However, as these studies were representative of the first research of these associations within sport, it was deemed appropriate to employ a cross-sectional design in order to provide initial evidence for the proposed associations, with the idea being that future research employing prospective and experimental studies should be conducted to complement the thesis findings.

A subsequent limitation of this thesis relates to the characteristics of the sample and the generalisability of the findings. Whilst the sample of athletes within this thesis was of a moderate size (641 athletes in total), the majority were of White British ethnicity and were of an age associated with undergraduate university students. Therefore, the results from the studies may not be relevant to a broader range of ethnic populations, non-westernised countries, or athletes younger or older than the average undergraduate university student (e.g., 20 years old). Moreover, the means of the insecure attachment styles scores in studies 1, 2, and 3 were often low, indicating that the sample of athletes used was more likely to be securely attached. Thus, it is not clear whether the associations observed would extend to a sample of highly insecure athletes. However, the scale scores on the insecure dimensions of attachment were never zero within any of the studies within this thesis, therefore suggesting that athletes did experience elements of insecure attachment within the relationships explored and thus supporting the importance of the findings reported. Despite these issues, and given the exploratory and novel nature of these studies, these findings should be taken as a starting point for future research.

Finally, attachment styles within this thesis were only measured with regards the global level (Studies 1, 2, and 3) and the specific relationship athletes have with
their coach (Study 4). This is despite the fact that basic psychological need satisfaction was measured in both coach and parent relational context within studies 1, 2, and 3. Research within social psychology (e.g., La Guardia et al., 2000), and attachment theory (Bowlby, 1969/1982), suggests that individual may present different attachment styles with different attachment figures, thus athlete attachment to the parent could possibly have been included within this thesis. However, as explained within Study 1 (Chapter 2), measuring global attachment allowed for the analysis of basic need satisfaction within the coach and parent relational contexts without biasing the results based on attachment. Also, as this was the first study to examine the associations between athlete attachment and basic needs, it was felt an initial investigation into global attachment orientation was warranted before specific attachment relationships were explored, as in Study 4 (Chapter 5).

6.4. Future Directions

Directions for future research have been suggested for each of the studies in this thesis within the appropriate chapters, however a summary of these details are provided below.

The findings generated from this thesis have provided initial evidence for the role of athlete attachment styles in the experiences of well/ill-being, and more specifically the mediating role that both psychological need satisfaction and thwarting have in these associations. However, the sample within the current thesis was predominantly white British, university aged athletes. Continuing on from this, future research could explore the associations observed in this thesis within a more varied sample. For example, research could examine these associations in a sample of younger or older athletes, as well as athletes from non-westernised cultures (e.g., China), in order to broaden the generalisability of the thesis findings.

The longitudinal design employed within Study 2 to examine the changes and differences in athlete attachment, need satisfaction, and well/ill-being at the within- and between-person levels was the first study, to the author’s knowledge, to examine such associations within sport psychology. Therefore, the findings produced from Study 2 should be replicated by future research in order to strengthen the reliability of the associations shown, specifically that changes in attachment styles predict subsequent change in basic need satisfaction, which in turn can predict changes in well/ill-being.
Similarly, the findings of Study 4 could be examined from a longitudinal perspective in future research in order to establish whether changes in athletes attachment style concerning the relationship with their coach over time results in changes in perceptions of psychological need thwarting and experiences of well/ill-being. Such research would be important as it would further establish the importance of an appreciation for attachment styles in the experience of well/ill-being in athletes, along with demonstrating further links to their perceptions of need thwarting. In addition, it would be interesting for future research to explore the longitudinal associations examined in Study 2 over a longer period of time. If these associations were assessed at regular intervals for the durations of an entire season, including pre-season and the competitive season, the impact that success and failure have on the athlete’s perceptions of needs and experiences of well/ill-being could be explored. Similarly, it would be interesting to observe whether changes in attachment styles and perceptions of psychological needs (i.e., satisfaction and thwarting) are capable of affecting one another in a reciprocal manner, such as in a recursive model. It could be that perceptions of needs affect the internal working model expectations of athletes over time, which can then begin to change the athletes attachment style which could then influence their perceptions of needs. Research that provides evidence for this reciprocal association could provide further support for interventions.

The findings produced throughout the thesis concerning the mediating role of need satisfaction demonstrated a range of full and partial mediations. However, recent research has highlighted that even models demonstrating full mediation should not be viewed as having identified all possible mediators for the associations that were examined (see Rucker et al., 2011). It may, therefore, be beneficial for further research to explore other possible mediating factors in the associations between athlete attachment and well/ill-being in order to enhance our understanding. Possible examples could include the athlete’s degree of self-determined motivation (Deci & Ryan, 1985), or the quality of the relationships the athlete have with their coach and parent. The identification of additional mediators for the associations between attachment styles and well/ill-being could provide further targets for inventions aimed at improving insecure athletes’ experiences of well/ill-being.

Another potential direction for future research is to explore need satisfaction and need thwarting simultaneously within the associations between attachment styles
and well/ill-being. Research in which need satisfaction and thwarting are both examined could provide information regarding which specific needs insecure athletes feel are satisfied and thwarted, and how they influence the athlete’s experiences of well/ill-being. It would also be interesting to examine the influence of need satisfaction and thwarting simultaneously across different contexts (e.g., sport and life). Research of this type could demonstrate whether the negative impact of thwarting of the basic needs within one context can be counteracted by satisfaction of the needs within a related context. This research could inform interventions as well as further demonstrating the conceptual links between attachment theory and basic psychological needs theory and the advantages of employing both frameworks in the examination of athlete well/ill-being.

6.5. Concluding Remarks

In 2009, Carr stated that sport psychology has yet to fully utilise “attachment theory to enhance understanding of contemporary research issues” (p. 97). Since then research employing attachment theory (Bowlby, 1969/1982) in sport has grown and has demonstrated the importance of examined individual differences in attachment styles for a range of important sport related outcome (e.g., Carr & Fitzpatrick, 2011, Davis & Jowett, 2010, Shanmugam et al., 2012). However, this thesis presents the first set of studies within sport to examine athlete well/ill-being from an attachment theory perspective. Additionally, the studies presented are the first within sport to build upon research within broader social psychology (e.g., La Guardia et al., 2000), in exploring the mediating role of basic psychological needs in the associations between athlete attachment styles and well/ill-being. The examination of well/ill-being from this dual attachment theory and basic psychological needs theory (Deci & Ryan, 2000) allowed the findings of this thesis to provide a detailed understanding of how interpersonal and intrapersonal factors can influence an individual’s well/ill-being. Specifically, findings suggest that perceptions of satisfaction and thwarting of the athlete’s basic psychological needs mediate the associations between the athlete’s attachment styles and their experiences of well/ill-being. The current research findings generated within this thesis provide a foundation for which interventions, and future research, aimed at improving athlete well/ill-being can be based upon.
The findings of this thesis provide evidence in support of an integrated attachment theory and basic psychological needs theory approach to advancing our knowledge of athlete well/ill-being. Furthermore, along with previous research that has applied attachment theory within sport (e.g., Carr, 2009a, 2009b; Carr & Fitzpatrick, 2011; Davis & Jowett, 2010; Forrest, 2008; Shanmugam et al., 2012), the findings also provide further evidence for the importance of individual differences in attachment styles on a range of contemporary issues. In order to continue our understanding of athlete well/ill-being, and to develop effective interventions, future research grounded in the attachment theory and basic psychological need theory frameworks is required.
References


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Attachment and Well-Being: The Mediating Effects of Psychological Needs Satisfaction
Within the Coach-Athlete and Parent-Athlete Relational Contexts

Participant Information Sheet

Who is doing this research and why?

This research is being conducted by Luke Felton as part of PhD research at Loughborough University. The research is being supervised by Dr Sophia Jowett of the School of Sport, Exercise, and Health Sciences.

What is the purpose of the study?

The purpose of the research is to examine the effects of athletes’ relationships with their coach and parents on their psychological well-being. The research will also examine the quality of athletes’ relationships with their coach and parents and look at the reasons behind why some athletes’ find these relationships more satisfying than others.

Are there any exclusion criteria?

If you are to participate you must be aged 15-35 years and be participating regularly in club level sport or higher e.g. university, county, regional, national, international. Please note that if you are currently in the off-season but are usually in regular training during the season you can still take part in this study.

What will I be asked to do?

If you are 18 years old or older you will first be asked to complete the informed consent form before completing the accompanying questionnaire. The questionnaire contains questions related to how you perceive your relationship with you coach and parents as well as well-being aspects such as self-esteem, vitality, and empathy. If you are under 18 years old you will be required to get parental consent to take part in the study. You will also need to complete the willingness to participate form. Once parental consent and the willingness to participate forms have been received by the investigator you will complete the same questionnaire as the over 18’s. The questionnaire can either be completed in paper form or online at www.survey.lboro.ac.uk/athletewellbeing.
Once I take part, can I change my mind?

Yes. After you have read this information and asked any questions you may have you will be asked to complete the informed consent form, or to get your parents to fill out the parental consent form. However if at any time, before, during or after you have completed questionnaire you wish to withdraw from the study please just contact the main investigator. You can withdraw at any time, for any reason and you will not be asked to explain your reasons for withdrawing. Please be aware however that deciding to withdraw from the study after the final results have been published may be difficult.

How long will it take?

The questionnaire should take no longer than 30 minutes to complete. Once you have completed the questionnaire that is all you will be required to do for this study.

Who should I send the questionnaire back to?

The investigator will attend a training session a week after initially giving out the questionnaire in order for you to give them back fully completed. If you complete the questionnaire online the results will be automatically sent to the investigator and you will not be required to do anything.

What personal information will be required from me?

The study will only require you to give basic information including; age, gender, sport (and event if relevant), level of participation (e.g. club, national etc), and number of years as an athlete in your sport.

Are there any risks in participating?

There are no recognised risks to taking part in this study, however if you feel uncomfortable about anything you are free to withdraw at anytime.

Will my taking part in this study be kept confidential?

Yes your confidentiality will be maintained throughout the study. You will not provide your name on any documentation and will be assigned a participant code for all use during the studies write up. Also any data analysis will be kept separate to your questionnaire. Data will be held by the university for 10 years following the completion of the study and then be destroyed. All information you provide will be treated in accordance with the Data Protection Act 1998.

What will happen to the results of the study?

The results of the study will be published as part of a PhD thesis and it is anticipated that the findings of the study will be published in a sport or psychology journal. The results may also be presented at conferences. In all cases your anonymity will be maintained as no names will be reported. Following your participation in the study you will be given information regarding how to obtain the results if you wish to read them. However, please be aware that the results you would receive would be the overall study findings and it will not be possible to send you your individual results.
I have some more questions who should I contact?

If you have any further questions do not hesitate to contact the following people:

Luke Felton  
Tel: 01509 228450  
Email: L.Felton@lboro.ac.uk

Dr Sophia Jowett  
Tel: 01509 226331  
Email: S.Jowett@lboro.ac.uk

What if I am not happy with how the research was conducted?

No special compensation arrangements are in place in the extreme unlikely case that taking part in this research results in any negative effects for you. However, if you wish to discuss or complain about any aspect of the study, such as the way you have been approached or treated during the course of this study, please contact Dr Sophia Jowett. In addition the University has a policy relating to Research Misconduct and Whistle Blowing which is available online at http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).htm

Thank you for taking the time to consider participation in this study.
**Appendix 2**

*Participant Information Sheet: Study 2*

**Athlete attachment, psychological need satisfaction, and well-being: A longitudinal study**

**Participant Information Sheet**

**Who is doing this research and why?**

This research is being conducted by Luke Felton as part of PhD research at Loughborough University. The research is being supervised by Dr Sophia Jowett of the School of Sport, Exercise, and Health Sciences.

**What is the purpose of the study?**

The purpose of the research is to examine the changes in athletes’ relationships with their coach and parents and their psychological well-being over time. The research will also examine the quality of athletes’ relationships with their coach and parents and look at the reasons behind why some athletes’ find these relationships more satisfying than others.

**Are there any exclusion criteria?**

If you have been contacted to take part in the research you should fit all the criteria to participate. Please note that if you are currently in the off-season but are usually in regular training during the season you can still take part in this study.

**What will I be asked to do?**

If you are 18 years old or older you will first be asked to read through this information sheet and also read the information displayed at the start of the online questionnaire. Please note that completing the questionnaire will be taken as informed consent. The questionnaire contains questions related to how you perceive your relationship with your coach and parents as well as well-being aspects such as self-esteem and vitality. If you are under 18 years old you will be required to get parental consent to take part in the study. Once parental consent has been received you will complete the same questionnaire as the over 18’s. The questionnaire is only available online at [www.survey.lboro.ac.uk/athletewellbeing2](http://www.survey.lboro.ac.uk/athletewellbeing2)

**Once I take part, can I change my mind?**
Yes. After you have read this information and asked any questions you may have, you will be asked to complete the informed consent form, or to get your parents to fill out the parental consent form. However, if at any time, before, during or after you have completed the questionnaire you wish to withdraw from the study, please just contact the main investigator. You can withdraw at any time, for any reason, and you will not be asked to explain your reasons for withdrawing. Please be aware, however, that deciding to withdraw from the study after the final results have been published may be difficult.

**How long will it take?**

The questionnaire should take no longer than 15 minutes to complete. Once you have completed the questionnaire, that is all you will be required to do for this study.

**Who should I send the questionnaire back to?**

Due to you completing the questionnaire online, the results will be automatically sent to the investigator, and you will not be required to do anything.

**What personal information will be required from me?**

The study will only require you to give basic information including: ID number (given to you in the accompanying email), age, gender, and email (the same one you have been contacted on). This information is needed to match your questionnaire data together.

**Are there any risks in participating?**

There are no recognised risks to taking part in this study, however, if you feel uncomfortable about anything, you are free to withdraw at any time.

**Will my taking part in this study be kept confidential?**

Yes, your confidentiality will be maintained throughout the study. You will not provide your name on any documentation and will be assigned a participant code for all use during the studies write up. Also, any data analysis will be kept separate to your questionnaire. Data will be held by the university for 10 years following the completion of the study and will then be destroyed. All information you provide will be treated in accordance with the Data Protection Act 1998.

**What will happen to the results of the study?**

The results of the study will be published as part of a PhD thesis and it is anticipated that the findings of the study will be published in a sport or psychology journal. The results may also be presented at conferences. In all cases, your anonymity will be maintained as no names will be reported. Following your participation in the study, you will be given information regarding how to obtain the results if you wish to read them. However, please be aware that the results you would receive would be the overall study findings and it will not be possible to send you your individual results.

**I have some more questions who should I contact?**

If you have any further questions, do not hesitate to contact the following people:
What if I am not happy with how the research was conducted?

No special compensation arrangements are in place in the extreme unlikely case that taking part in this research results in any negative effects for you. However, if you wish to discuss or complain about any aspect of the study, such as the way you have been approached or treated during the course of this study, please contact Dr Sophia Jowett. In addition the University has a policy relating to Research Misconduct and Whistle Blowing which is available online at http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).htm

Thank you for taking the time to consider participation in this study.
Appendix 3

Participant Information Sheet: Study 4

The Mediating Role of Psychological Need Thwarting on the Association Between
Attachment Styles and Well/Ill-Being Indexes

Participant Information Sheet

Who is doing this research and why?

This research is being conducted by Luke Felton as part of PhD research at Loughborough University. The research is being supervised by Dr Sophia Jowett of the School of Sport, Exercise, and Health Sciences.

What is the purpose of the study?

The purpose of the research is to examine the effects of the interactions between coaches and athletes on (dis)satisfying basic needs and psychological well-being. The research will also consider the influence of individual difference characteristics on athletes’ interactions with their coaches.

Are there any exclusion criteria?

If you are to participate you must be aged 18-45 years, have a coach you are in regular contact with, and be participating regularly in club level sport or higher e.g. university, county, regional, national, international. Please note that if you are currently in the off-season but are usually in regular training during the season you can still take part in this study.

What will I be asked to do?

You will first be asked to complete the informed consent form before completing the accompanying questionnaire. The questionnaire contains questions related to how you perceive your relationship with your coach, your motivation towards your sport, as well as well-being aspects such as life satisfaction, and ill-being aspects such as negative affect. The questionnaire can either be completed in paper form or online at www.survey.lboro.ac.uk/athletesneeds

Once I take part, can I change my mind?


Yes. After you have read this information and asked any questions you may have you will be asked to complete the informed consent form. However if at any time, before, during or after you have completed questionnaire you wish to withdraw from the study please just contact the main investigator. You can withdraw at any time, for any reason and you will not be asked to explain your reasons for withdrawing. Please be aware however that deciding to withdraw from the study after the final results have been published may be difficult.

**How long will it take?**

The questionnaire should take no longer than 15 minutes to complete. Once you have completed the questionnaire that is all you will be required to do for this study.

**Who should I send the questionnaire back to?**

The investigator will attend a training session one week after initially giving out the questionnaire in order for you to hand the completed questionnaire back. If you complete the questionnaire online the results will be automatically sent to the investigator and you will not be required to do anything.

**What personal information will be required from me?**

The study will only require you to give basic information including; age, gender, email, sport (and event if relevant), level of participation (e.g. club, national etc), and number of years as an athlete in your sport.

**Are there any risks in participating?**

There are no recognised risks to taking part in this study, however if you feel uncomfortable about anything you are free to withdraw at anytime.

**Will my taking part in this study be kept confidential?**

Yes your confidentiality will be maintained throughout the study. You will not provide your name on any documentation and will be assigned a participant code for all use during the studies write up. Also any data analysis will be kept separate to your questionnaire. Data will be held by the university for 10 years following the completion of the study and will then be destroyed. All information you provide will be treated in accordance with the Data Protection Act 1998.

**What will happen to the results of the study?**

The results of the study will be published as part of a PhD thesis and it is anticipated that the findings of the study will be published in a sport or psychology journal. The results may also be presented at conferences. In all cases your anonymity will be maintained as no names will be reported. Following your participation in the study you will be given information regarding how to obtain the results if you wish to read them. However, please be aware that the results you would receive would be the overall study findings and it will not be possible to send you your individual results.

**I have some more questions who should I contact?**

If you have any further questions do not hesitate to contact the following people:
What if I am not happy with how the research was conducted?

No special compensation arrangements are in place in the extreme unlikely case that taking part in this research results in any negative effects for you. However, if you wish to discuss or complain about any aspect of the study, such as the way you have been approached or treated during the course of this study, please contact Dr Sophia Jowett. In addition the University has a policy relating to Research Misconduct and Whistle Blowing which is available online at http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).htm

Thank you for taking the time to consider participation in this study.
Hello,

My name is Luke Felton and I am a PhD student in the Sport Psychology Department at Loughborough University. I am contacting you to ask whether members of your club (aged 15-35) would be willing to take part in my research? Participants would be asked to complete a simple questionnaire which should take no longer than 30 minutes. I have attached the research information sheet for you to browse if needed.

My research is titled "Personal and social issues associated with sport performance and well-being" and is being supervised by Dr Sophia Jowett. The principal aim of my research is to examine how sport performers’ relationships (with coach and parents) affect their well-being.

If it suits you I can arrange a time in which to hand out copies of the questionnaire at a training session, alternatively you could pass this message to your athletes and they can follow the questionnaire link. The link to the online questionnaire can be found at the end of this message. I would appreciate any help you can provide.

Please feel free to contact me with any questions.

Thank you for your time,

Luke Felton

Online questionnaire: www.survey.lboro.ac.uk/athletewellbeing
Dear athlete,

My name is Luke Felton and I am a PhD student in the Sport Psychology Department at Loughborough University. I am contacting you following your participation in my first PhD study around January this year. I would like to thank you again for your participation, it really is appreciated.

The other reason for contacting you is that I would like to request your participation in my next piece of PhD research. The aim of the research is to examine the fluctuations in sport performers’ relationships and well-being over time. The research is supervised by Dr Sophia Jowett and has been passed by the University Ethics Committee.

All that is required is for you to complete a simple questionnaire, considerably shorter than the previous one, which should take no longer than 15 minutes. I have attached the research information sheet for you to browse if needed. The questionnaire can be completed online and the link to the online questionnaire can be found at the end of this message.

To complete the questionnaire you will need to enter your Athlete ID number, this can be found at the end of this message.

Your participation in this research is extremely valuable and would be greatly appreciated. Please feel free to contact me with any questions.

Thank you for your time,

Luke

Online questionnaire: www.survey.lboro.ac.uk/athletewellbeing2

Athlete ID number:
Dear athlete,

You were contacting in early March to thank you for participating in my first PhD study back in December '10 and to request your participation in my second PhD study. This email is just to remind you that the questionnaire is still available for completion online.

For your information the aim of the research is to examine the fluctuations in sport performers’ relationships and well-being over time. The research is supervised by Dr Sophia Jowett and has been passed by the Loughborough University Ethics Committee.

Participation involves completing a simple questionnaire, considerably shorter than the previous one, which should take no longer than 15 minutes. I have attached the research information sheet for you to browse if needed. The link to the online questionnaire can be found at the end of this message.

To complete the questionnaire you will also need to enter your unique Athlete ID number, this can be found at the end of this message beneath the questionnaire link.

Your participation in this research would be greatly appreciated. However if you choose not to take part I thank you again for your previous participation. Please feel free to contact me with any questions.

Thank you for your time,

Luke

Online questionnaire: www.survey.lboro.ac.uk/athletewellbeing2

Athlete ID number:
Appendix 7

Recruitment email for Study 2, Time-point 3

Dear athlete,

This is a quick email to thank you again for your continued participation in my research, it really is appreciated, and to inform you that the final questionnaire for the second study is now available for you to complete.

For your information the aim of the research is to examine the fluctuations in sport performers’ relationships and well-being over time. The research is supervised by Dr Sophia Jowett and has been passed by the Loughborough University Ethics Committee.

As before, participation involves completing a simple questionnaire which should take no longer than 15 minutes. All the study information is available at the beginning of the online questionnaire. The link to the online questionnaire can be found at the end of this message.

To complete the questionnaire you will also need to enter your unique Athlete ID number, this can be found at the end of this message beneath the questionnaire link (please note this is the same ID that you were given in January).

This questionnaire marks the final data collection point of the study and therefore your participation is invaluable and would be greatly appreciated. Please feel free to contact me with any questions.

Thank you for your time,

Luke

Online questionnaire: www.survey.lboro.ac.uk/athletewb3

Athlete ID number:
Appendix 8

Recruitment email for Study 4

Dear athlete,

My name is Luke Felton and I am a PhD student in the School of Sport, Exercise, and Health Sciences at Loughborough University.

I am contacting you to request your help in recruiting participants from your club for the final study of my PhD. The aim of the research is to examine the effects of the interactions between coaches and athletes on (dis)satisfying basic needs, motivation, and well-being. The research is supervised by Dr Sophia Jowett and has been passed by the University Ethics Committee.

I have attached the research information sheet for you to read over. All the athlete’s are required to do is complete a simple questionnaire that will take no longer than 10-15 minutes. If you are happy to allow the athletes in your club to take part in the study, the questionnaire can be completed online by following the link at the end of this message.

The participation of your athletes in this research is extremely valuable and would be deeply appreciated. Please feel free to contact me with any questions.

Thank you for your time,

Luke

Online questionnaire: www.survey.lboro.ac.uk/athletesneeds
Appendix 9

Generic Personal Consent Form

INFORMED CONSENT FORM
(to be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.

I agree to participate in this study.

Your name

Your signature

Signature of investigator

Date

175
Appendix 10

Generic Parental Consent Form

PARENTAL INFORMED CONSENT FORM
(to be completed by parents of those under 18 years of age, after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my child’s participation.

I understand that my child is under no obligation to take part in the study.

I understand that my child has the right to withdraw from this study at any stage for any reason, and that he/she will not be required to explain the reasons for withdrawing.

I understand that all the information my child provides will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.

I agree to allow my child participate in this study.

Your name

Your signature

Signature of investigator

Date

Your name

Your signature

Signature of investigator

Date
Appendix 11

Willingness to Participate Form

WILLINGNESS TO PARTICIPATE FORM
(to be completed by those aged under 18, after reading information sheet)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.

I agree to participate in this study.

Your name ________________________________
Your signature ________________________________
Signature of investigator ________________________________
Date ________________________________
# Appendix 12

*Generic Demographic Questionnaire*

<table>
<thead>
<tr>
<th>Athlete details:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
</tr>
<tr>
<td>____ yrs</td>
</tr>
<tr>
<td>Gender:</td>
</tr>
<tr>
<td>Male / Female (delete as appropriate)</td>
</tr>
<tr>
<td>Ethnicity (e.g., White British, Asian Chinese):</td>
</tr>
<tr>
<td>Email address:</td>
</tr>
<tr>
<td>Please specify the sport (and event if appropriate) you participate in:</td>
</tr>
<tr>
<td>How long have you been participating in the sport you have specified above?</td>
</tr>
<tr>
<td>____ months</td>
</tr>
<tr>
<td>At what level of sport do you generally participate/compete? (circle all appropriate)</td>
</tr>
<tr>
<td>University</td>
</tr>
<tr>
<td>Club</td>
</tr>
<tr>
<td>National</td>
</tr>
<tr>
<td>International</td>
</tr>
<tr>
<td>Other _____________ (specify)</td>
</tr>
<tr>
<td>Are you currently injured?</td>
</tr>
<tr>
<td>Yes / No (delete as appropriate)</td>
</tr>
<tr>
<td>What is the gender of your current/principal coach?</td>
</tr>
<tr>
<td>Male / Female (delete as appropriate)</td>
</tr>
<tr>
<td>How long have you been training with this coach?</td>
</tr>
<tr>
<td>____ months</td>
</tr>
<tr>
<td>How many hours on average do you train per week?</td>
</tr>
<tr>
<td>____ hrs</td>
</tr>
</tbody>
</table>

*Please note that if you are under 18 years old you are required to seek permission for your parent/s or guardian/s before taking part in the study. Your parent needs to sign the consent form that is attached to the information sheet.*
Appendix 13

ECR-S

The following statements concern how you generally feel and think about your relationships with close ones (e.g., parents, friends, coach/es). Please fully mark the number that represents your level of agreement or disagreement with the statements.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Neutral/mixed</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- It helps to turn to close others in times of need
- I need a lot of reassurance that close relationships partners really care about me
- I want to get close to others, but I keep pulling back
- I find that my partners don’t want to get as close as I would like
- I turn to close relationship partners for many things, including comfort and reassurance
- My desire to be very close sometimes scares people away
- I try to avoid getting too close to others
- I do not often worry about being abandoned
- I usually discuss my problems and concerns with close others
- I get frustrated if relationship partners are not available when I need them
- I am nervous when another person gets too close to me
- I worry that others won’t care about me as much as I care about them
Appendix 14

*S-SQRI - Coaches*

Please indicate the degree to which each question is true or not for you regarding your relationship with your (current and principal) coach.

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little</th>
<th>Quite a bit</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

To what extent can you count on your coach to listen to you when you are very angry at someone else?

| 1 | 2 | 3 | 4 |

To what extent can you turn to your coach for advice about problems?

| 1 | 2 | 3 | 4 |

To what extent can you really count on your coach to distract you from your worries when you feel under stress?

| 1 | 2 | 3 | 4 |

To what extent could you count on your coach for help with a problem?

| 1 | 2 | 3 | 4 |

If you wanted to do something different in a training session (something that would affect your participation or performance), how confident are you that your coach would be willing to do something with you?

| 1 | 2 | 3 | 4 |

To what extent could you count on your coach to help you if a family member very close to you died?

| 1 | 2 | 3 | 4 |

How angry does your coach make you feel?

| 1 | 2 | 3 | 4 |

How often does your coach make you feel angry?

| 1 | 2 | 3 | 4 |

How much do you argue with your coach?

| 1 | 2 | 3 | 4 |

How upset does your coach sometimes make you feel?

<p>| 1 | 2 | 3 | 4 |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you need to work hard to avoid conflict with your coach?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much would you like your coach to change?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 15

*S-SQRI - Parents*

The following questions concern your interactions and relationship quality with the parent who you feel has been most influential in your engagement in sport. Please indicate the degree to which each question is true or not.

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little</th>
<th>Quite a bit</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent can you count on your parent to listen to you when you are very angry at someone else?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To what extent can you turn to your parent for advice about problems?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To what extent can you really count on your parent to distract you from your worries when you feel under stress?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To what extent could you count on your parent for help with a problem?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you wanted to do something different or something out of the ordinary, how confident are you that your parent would be willing to do something with you?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To what extent could you count on your parent to help you if a family member very close to you died?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How angry does your parent make you feel?</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>How often does your parent make you feel angry?</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>How much do you argue with your parent?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How upset does your parent sometimes make you feel?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>How often do you need to work hard to avoid conflict with you parent?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much would you like your parent to change?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Appendix 16

**NSS - Coaches**

Please indicate how your (current and principal) coach makes you generally feel.

<table>
<thead>
<tr>
<th>Not at all true</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Somewhat true</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Very true</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I am with my coach, I feel free to be who I am</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I feel like a competent person</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I feel cared about</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I often feel inadequate or incompetent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I have a say in what happens, and I can voice my opinion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I often feel a lot of distance in our relationship</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I feel very capable and effective</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I feel a lot of closeness and intimacy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my coach, I feel controlled and pressured to be certain ways</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 17

NSS - Parents

Please indicate how your parent (who has been most influential in your engagement in sport) makes you feel generally:

<table>
<thead>
<tr>
<th>Not at all true</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Somewhat true</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Very true</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I am with my parent, I feel free to be who I am</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I feel like a competent person</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I feel loved and cared about</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I often feel inadequate or incompetent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I have a say in what happens, and I can voice my opinion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I often feel a lot of distance in our relationship</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I feel very capable and effective</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I feel a lot of closeness and intimacy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am with my parent, I feel controlled and pressured to be certain ways</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 18

SCQ - Coaches

The following statements concern your (principal) coach’s behaviour in training and competition. Please indicate the degree to which you agree or disagree with the statements.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Neutral</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
<th>7</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel that my coach provides me choices and options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel understood by my coach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach conveys confidence in my ability to do well at my sport</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>My coach encourages me to ask questions</td>
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<tr>
<td>My coach listens to how I would like to do things</td>
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<tr>
<td>My coach tries to understand how I see things before suggesting a new way to do things</td>
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</tbody>
</table>
Appendix 19

SCQ - Parents

The following statements concern your parent's (who has been most influential in your engagement in sport) behaviour relative to your sport and/or relative to other activities that you have been engaged in. Please indicate the degree to which you agree or disagree with the statements.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Neutral</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
<th>7</th>
</tr>
</thead>
</table>

I feel that my parent provides me choices and options

I feel understood by my parent

My parent conveys confidence in my ability to do well at my sport or any other activity

My parent encourages me to ask questions

My parent listens to how I would like to do things

My parent tries to understand how I see things before suggesting a new way to do things
Appendix 20

CCBS - Coaches

The following statements concern your (principal) coach’s behaviour in training and competition. Please indicate the degree to which you agree or disagree with the statements.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Neutral</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>My coach is less friendly with me if I don’t make the effort to see things his/her way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach shouts at me in front of others to make me do certain things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach only uses rewards/praise so that I stay focused on tasks during training</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach is less supportive of me when I am not training and competing well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
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</tr>
<tr>
<td>My coach tries to control what I do during my free time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach threatens to punish me to keep me in line during training</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
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</tr>
<tr>
<td>My coach tries to motivate me by promising to reward me if I do well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach pays me less attention if I have displeased him/her</td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
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</tr>
<tr>
<td>My coach intimidates me into doing the things that he/she wants me to do</td>
<td>1</td>
<td>2</td>
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<td>5</td>
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<td>7</td>
<td></td>
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</tr>
<tr>
<td>My coach tries to interfere in aspects of my life outside of sport</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
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</tr>
<tr>
<td>My coach only uses rewards/praise so that I complete all the tasks he/she sets during training</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach is less accepting of me if I have disappointed him/her</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
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<tr>
<td>Statement</td>
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<tr>
<td>My coach embarrasses me in front of others if I do not do the things he/she wants to do</td>
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<tr>
<td>My coach only uses rewards/praise to make me train harder</td>
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<tr>
<td>My coach expects my whole life to centre on my sport participation</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 21

CCBS - Parents

The following statements concern your parent's (who has been most influential in your engagement in sport) behaviour relative to your sport and/or relative to other activities that you have been engaged in. Please indicate the degree to which you agree or disagree with the statements.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Neutral</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>My parent is less friendly with me if I don't make the effort to see things their way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My parent shouts at me in front of others to make me do certain things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My parent only uses rewards/praise so that I stay focused on tasks</td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My parent is less supportive of me when I am not training and competing well</td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>6</td>
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<tr>
<td>My parent tries to control what I do during my free time</td>
<td>1</td>
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<td>6</td>
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<tr>
<td>My parent threatens to punish me to keep me focused</td>
<td>1</td>
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<td>My parent tries to motivate me by promising to reward me if I do well</td>
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<tr>
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<tr>
<td>My parent intimidates me into doing the things that he/she wants me to do</td>
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<tr>
<td>My parent tries to interfere in aspects of my life inside and outside of sport</td>
<td>1</td>
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<tr>
<td>My parent only uses rewards/praise so that I complete all the tasks they set</td>
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<td>My parent embarrasses me in front of others if I do not do the things they want to do</td>
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<tr>
<td>My parent only uses rewards/praise to make me work and train harder</td>
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<tr>
<td>My parent expects my whole life to centre on my sport participation</td>
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</table>
Appendix 22

CAAS

The following statements concern how you think and feel about your relationship with your coach. Please fully mark the number that represents your level of agreement or disagreement with the statements.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Neutral/mixed</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Agree strongly</th>
<th>7</th>
</tr>
</thead>
</table>

I don't usually discuss my problems or concerns with my coach

I do not turn to my coach for reassurance

I avoid discussing personal issues with my coach

I do not rely on my coach when I have a problem to solve

I do not turn to my coach when I need to get something off my chest

I do not ask my coach for advice and help

I do not seek out my coach when things go wrong

I often wonder if my coach cares about me as an athlete

I often worry that my coach does not value me as much as I value him/her

I worry a fair amount about my coach leaving me to coach elsewhere

I am concerned that my coach will find another athlete that he/she prefers


<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often worry that my coach does not want to coach me anymore</td>
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<tr>
<td>Sometimes I worry that my coach is not as committed to me as I am to</td>
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<tr>
<td>them</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I worry that my coach does not respect me as much as I respect him/her</td>
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<tr>
<td>I know that my coach is loyal to me</td>
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<tr>
<td>I feel confident that our coach-athlete relationship will last</td>
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<td></td>
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<tr>
<td>I find it easy to interact with my coach</td>
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<tr>
<td>I know my coach likes me</td>
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<tr>
<td>I know I can rely on my coach</td>
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</tr>
</tbody>
</table>
Appendix 23

PNTS - Coaches

Please fill in the answer that indicates how you feel when with your coach.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Moderately</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
<th>7</th>
</tr>
</thead>
</table>

WHEN I AM WITH MY COACH.....

- I feel prevented from making choices with regard to the way I train
- Situations occur in which I am made to feel incapable
- I feel rejected by him/her
- I feel pushed to behave in certain ways
- There are times when I am told things that make me feel incompetent
- I feel he/she can be dismissive of me
- I feel forced to follow training decisions made for me
- There are situations where I am made to feel inadequate
- I feel he/she dislikes me
- I feel under pressure to agree with the training regimen I am provided
- I feel inadequate because I am not given opportunities to fulfil my potential
- I feel he/she is envious when I achieve success
## Appendix 24

_PNTS - Sport_

Please indicate the degree to which you agree or disagree with the following statements regarding your participation in sport.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Moderately</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
<th>7</th>
</tr>
</thead>
</table>

**IN MY SPORT...**

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel prevented from making choices with regard to the way I train</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Situations occur in which I am made to feel incapable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel rejected by those around me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel pushed to behave in certain ways</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>There are times when I am told things that make me feel incompetent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel others can be dismissive of me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel forced to follow training decisions made for me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>There are situations where I am made to feel inadequate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel other people dislike me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel under pressure to agree with the training regimen I am provided</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel inadequate because I am not given opportunities to fulfil my potential</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel other people are envious when I achieve success</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
## Appendix 25

*SVS*

The following statements concern how you generally feel about yourself and your life. Please respond to each of the following statements by marking fully the number that best represents how you generally feel.

<table>
<thead>
<tr>
<th>Not at all true</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Very true</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel alive and vital</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel energised</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Sometimes I feel so alive I just want to burst</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I have energy and spirit</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I look forward to each new day</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I nearly always feel alert and awake</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
Appendix 26

Please respond to each of the following statements by marking fully the number that best represents how you generally feel.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the whole, I am satisfied with myself</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>At times I think I am no good at all</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I feel that I have a number of good qualities</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I am able to do things as well as most other people</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I feel I do not have much to be proud of</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I certainly feel useless at times</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I feel that I'm a person of worth</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I wish I could have more respect for myself</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>All in all, I am inclined to think that I am a failure</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I take a positive attitude toward myself</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>
Appendix 27

*I-PANAS-SF*

Please indicate to what extent you feel the emotions listed below on average.

<table>
<thead>
<tr>
<th>Very slight or not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upset</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hostile</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ashamed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determined</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attentive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afraid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Appendix 28

**EASDQ – Skill and Performance**

Please indicate how true the statements below are with regard to your participation in sport

<table>
<thead>
<tr>
<th>False</th>
<th>Mostly false</th>
<th>More false than true</th>
<th>More true than false</th>
<th>Mostly true</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a most skilled athlete in my best sport/event</td>
</tr>
<tr>
<td>My technical skills in my best sport/event are better than most at my level of competition</td>
</tr>
<tr>
<td>I recognise myself as very skilful in my best sport/event</td>
</tr>
<tr>
<td>Coaches and competitors at my level of competition see me as very skilful in my best sport/event</td>
</tr>
<tr>
<td>I excel in my best sport/event because of my skill level</td>
</tr>
<tr>
<td>In my best sport/event I consistently perform to the level of my ability</td>
</tr>
<tr>
<td>My performance in my best sport/event is particularly good for important competitions</td>
</tr>
<tr>
<td>My performance in my best sport/event consistently meets my goals or expectations</td>
</tr>
<tr>
<td>I am consistently able to give my best overall performance in my best sport/event</td>
</tr>
<tr>
<td>I excel at my best sport/event because I am able to give a peak performance when necessary</td>
</tr>
<tr>
<td>I am consistently able to ‘pull it all together’ (e.g. skills, physiological, body, and the mental side of things) when performing in my best sport/event</td>
</tr>
</tbody>
</table>

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Appendix 29

ASQ – Performance Scale

Please indicate the degree to which you are satisfied particularly with your sport.

<table>
<thead>
<tr>
<th>Not at all satisfied</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Moderately satisfied</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Extremely satisfied</th>
<th>7</th>
</tr>
</thead>
</table>

I am satisfied with the degree of which I have reached my performance goals so far this season

I am satisfied with the improvement in my performance over the previous season

I am satisfied with the improvement in my skill level thus far
Appendix 30

*SLS*

Please indicate your level of agreement with the following statements

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Neutral</th>
<th>Slightly agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

- In most ways my life is close to my ideal
  1 2 3 4 5 6 7
- The conditions of my life are excellent
  1 2 3 4 5 6 7
- I am satisfied with my life
  1 2 3 4 5 6 7
- So far I have gotten the important things I want in life
  1 2 3 4 5 6 7
- If I could live my life over, I would change almost nothing
  1 2 3 4 5 6 7
## Appendix 31

**BSI – Depression Sub-scale**

Please read the statements below and indicate how much each statement has distressed or bothered you during the past 7 days, including today.

<table>
<thead>
<tr>
<th>Almost never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Almost always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thoughts of ending your life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling lonely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling blue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling no interest in things</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling hopeless about the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feelings of worthlessness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>