



A comparison of psychological traits in elite, sub-elite and non-elite English cricketers

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Abstract

Within contemporary sport there is a need to highlight those psychological traits that distinguish performers at the height of their sport from the subsequent levels. The present study investigates psychological traits of elite, sub-elite and non-elite English cricketers in order to establish whether traits differ amongst the three levels of performer. A sample of 60 male cricketers (Mean age = 22.72 years, SD = .75), deriving from County Cricket Clubs (Elite cricketers), MCC Universities (Sub-elite cricketers) and National Cricket Clubs (Non-elite cricketers) were examined in the pre-season of 2011. Three questionnaires were administered, assessing mental toughness (SMTQ; Sheard, Golby & van Wersch, 2009), coping strategies (WOCS; Madden, Summers & Brown, 1988, as cited in Madden, Kirkby & McDonald, 1989) and motivation (SMS-6; Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006). In line with past research, it was hypothesised that the three levels of performer would differ significantly on such measures. Predictions regarding specific relations were made a priori. Multiple one way ANOVA's revealed that performers only differed significantly ($F = 2, 57, p < 0.003$) on measures of constancy (SMTQ), although a trend for external regulation (SMS-6) was noticeable. In regards to the former, non-elite cricketers were found to score significantly lower than elite and sub-elite cricketers, suggesting that non-elite cricketers are less determined to achieve success than elite and sub-elite players. In reference to external regulation, sub-elite cricketers scored higher than elite and non-elite players, implying that sub-elite cricketers may be more likely than elite and non-elite players to participate in order to obtain rewards. The results suggest that cricket performers may not significantly differ in the psychological traits they possess, with the only exception being constancy.

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Chapter One: Introduction

The identification of qualities associated with superior sports performance has become an issue of great interest within contemporary sport (Hardy, Jones & Gould, 1996; Holland, Woodcock, Cumming & Duda, 2010; Sheard & Golby, 2010). Having considered that physical capabilities become more even at higher sporting levels (Cleary, 2005), sports psychology strives to predict performance based on personality and psychological attributes (Miller and Kerr, 2002, as cited in Sheard, 2010). Evidence suggests that psychological attributes significantly contribute to sports performance (Cohn, 1991; Orlick & Partington, 1991; Smith & Christensen, 1995), with it becoming widely acknowledged that at least 40 to 90% of success within contemporary sport is as a result of mental factors (Williams, 2010).

Gucciardi and Gordon (2009) have proposed that psychological traits are also important predictors of success. Williams (2010) supports this proposal, suggesting that the winner is invariably the athlete who is the strongest mentally on a given day. Considering this, the English and Wales Cricket Board (ECB) now integrate mental skills training into their practical sessions in hope of building a winning environment (ECB, 2011a).

Top-level sport is characterised by 'a demand to excel at optimal levels while performing under conditions that are considered extremely demanding' (Jones, Hanton & Connaughton, 2007, p. 243), suggesting that elite athletes possess numerous psychological traits that stand them apart from less successful performers (Starkes & Ericsson, 2003). Multiple studies have attempted to measure psychological skills in order to differentiate between athletes at different levels. Two such studies include Murphy and Jowdy (1992, as cited in Horn, 1992) and Hodge and McKenzie (2002, as cited in Andrew, Grobbelaar & Potgieter, 2007). The former suggests that concentration, anxiety and mental fitness are controlled better by elite athletes than other performers, whilst the latter found successful rugby players had higher levels of self-confidence than their less successful counterparts.

Collectively, research concurs that elite athletes differ from lesser performers in regards to psychological traits (Mohammadzadeh, Boostani & Boostani, 2009). Differentiating between players may be useful as psychological skills could be the difference between two athletes that are equal in both tactical and physical ability (Karseras, 2011), hence determining who progresses.

Research into elite performance and psychological characteristics has largely focused on World and Olympic Champions (Holland, Woodcock, Cumming & Duda, 2010). Gould, Dieffenbach and Moffett (2002) identified traits such as self-confidence and focus within their evaluation of performers, whilst a myriad of alternative traits that may contribute to sporting progression have been proposed. These include coping strategies (Crocker, 1992), mental toughness (Bull, Shambrook, James & Brooks, 2005) and motivation (Meyers, Bourgeois, LeUnes & Murray, 1999). The remainder of this chapter will be devoted to a consideration of these three traits in particular and the effect they have on sporting performance.

1.1 Mental Toughness

Mental toughness is regularly identified in reference to peak performance (Durand-Bush & Salmela, 2002; Sheard, 2010). Despite an adequate definition of the construct eluding sports psychologists, its popularity as a prerequisite for sporting progression is irrefutable (Jones, Hanton & Connaughton, 2007; Crust, 2008; Sheard, 2010). The construct is said to encompass an abundance of positive psychological traits, including courage (Griffith, 1926, as cited in Sheard, 2010) and determination (Tutko, 1969, as cited in Sheard, 2010). As a result, it is becoming increasingly accepted as a multidimensional construct (Crust & Swann, 2010).

Numerous successful sportspeople have been highlighted as possessing mental toughness, many of whom originate from cricket e.g., Steve Waugh and Michael Atherton (Sheard, 2010). Progression within cricket demands 'chronic' mental toughness in that a player must be capable of revelling in the 'high intensity confrontation between batter and bowler' (Bull, Shambrook, James & Brookes, 2005, p.211). This seems feasible considering that the pathway towards becoming an elite cricketer is particularly long (Ericsson, 1996, as cited in Weissensteiner, Abernethy & Farrow, 2009) e.g., Weissensteiner, Abernethy and Farrow (2009) suggested that perceiving training as necessary for success and being willing to make sacrifices, are crucial for developing cricketing expertise.

Numerous explanations have been offered for mental toughness, including the ability to deal with stress (Goldberg, 1998, as cited in Sheard, 2010) and display resilience (Tutko & Richards, 1976, as cited in Sheard, 2010). An array of empirical testing has followed (Fourie & Potgieter, 2001; Cashmore, 2005; Thelwell, Weston & Greenlees, 2005), some of which has been criticised on the basis of: a) personal accounts being biased, b) mental toughness' knowledge base lacking scientific rigour, and c) the construct abounding with contradictions and conceptual bewilderment (Jones, Hanton & Connaughton, 2002). Despite this, mental toughness is believed to be a necessary skill within cricket, with elite players such as Mark Ramprakash alluding to the construct when explaining his own/others success (Sheard, 2010).

Producing a suitable measure of mental toughness has proven difficult considering those criticisms mentioned previously. Numerous psychometric measures have been developed however, including the Sports Performance Inventory (SPI; Jones, Neuman, Altmann & Dreschler, 2001) and Mental Toughness 48 (MT48; Clough, Earle & Sewell, 2002). Such measures have been critiqued in terms of their conceptual and theoretical basis, as well as for lacking psychometric support and key measures such as control (Clough, Earle & Sewell, 2002). Recently, Sheard, Golby and van Wersch (2009) have produced the Sports Mental Toughness Questionnaire (SMTQ); 'the first psychometrically acceptable measure of mental toughness' (Sheard, 2010, p. 73). The multi-dimensional measure consists of a three factor model that includes confidence, constancy and control. A higher order factor measuring global mental toughness is also included.

The measure was developed using quotes and themes from preceding qualitative research into mental toughness. In doing so, the SMTQ investigates characteristics of mental toughness that have been highlighted by qualitative research into elite performance i.e., 'confidence (vs. self doubt), constancy (vs. irresolute), and control

(vs. agitation)' (Sheard, 2010, p.74). The measure holds consistencies with other established mental toughness models, most noticeably, Clough et al's (2002, as cited in Crust & Swann, 2010) 4 C's model of mental toughness. Clough et al's model also represents confidence and control, in addition to challenge and commitment. The model correlates highly with performance levels. For example, of 115 professional rugby league footballers participating at an International, Super League or Division One level, those at the highest level (International) scored significantly higher on mental toughness sub-scales than players from the other two categories (Golby & Sheard, 2004).

In specific reference to cricket, Gordon (1990, as cited in Weissensteiner, Abernethy & Farrow, 2009) identified mental toughness as one mental skill that differed between expert and non-expert batsman. Expert batsman scored higher on measures of mental toughness than their non-expert counterparts, suggesting that mental toughness may be necessary for progression within cricket.

1.2 Coping Strategies

Coping has been defined as an ability to deal with the demands placed on one's self through the application of cognitive and behavioural effort. Demands may be external and/or internal, and are often perceived as excessive regarding the resources an individual has at their disposal (Crossman, 2001). Successful performance outcomes require effective coping (Lazarus, 2000, as cited in Lavalley, Thatcher & Jones, 2004), meaning that an athlete's capacity for coping with stress is critical in determining their potential to succeed (Crossman, 2001). Individual differences regarding the mechanisms an athlete employs heavily influence performer's ability to cope with stress (Crossman, 2001). An inadequacy in relation to dealing with stress has been found to significantly contribute to the failure of sports performers (Lazarus, 2000).

Various coping frameworks have been suggested (White, 1974; Pearlin & Aneshensel, 1986; Wethington & Kessler, 1991), all of which accept that two categories of coping strategy exist; emotion focused coping and problem focused coping (Lazarus and Folkman, 1984). Haney and Long (1995) examined the effects of such coping strategies on sports performance. They discovered that athletes who used problem focused coping performed better than athletes using emotion focused coping on shooting tasks e.g., football. This suggests that performance levels may vary depending on the coping strategies performers employ. Finch's (1994) investigation into softball players supports this notion. Up to 6.3% of variance in batting performance could be accounted for by coping strategies. Furthermore, results revealed a profile of effective performance that suggested the best performers used emotion focused coping less than problem focused strategies; whereas the worst performers opted for emotion focused strategies more than problem focused coping.

Further research into coping strategies has investigated national champion figure skaters (Gould et al., 1993, as cited in Thelwell, Weston & Greenlees, 2005). Champions preferred problem focused strategies to emotion focused coping when dealing with the demands of elite performance. Page, Sime and Nordell (1999) investigated the particular techniques athletes used. They discovered that non-elite

athletes used relaxation strategies (emotion focused) to decrease the intensity of stress' symptoms, resulting in the interpretation of symptoms as advantageous to performance. In contrast, elite performers maintained intensity levels, using basic psychological skills such as goal setting (problem focused) to perceive anxiety responses as useful to performance (Hanton, Wadey & Mellalieu, 2008). In essence, elite performers again used problem focused coping strategies more than athletes at lower levels, who used emotion focused strategies more so.

Another form of coping strategy is social support. Rees and Freeman (2010) discovered that participants with high levels of perceived social support performed better than those with low levels when completing a golf-putting task. Madden, Kirkby and McDonald (1989) discovered similar findings. They found that International middle class distance runners displayed higher frequencies of seeking social support than those at National and State levels. Results suggest that social support may also differ amongst performance levels.

Ineffective coping strategies have been linked to sports withdrawal (Klint & Weiss, 1986, as cited in Nicholls & Polman, 2006), decreased performance levels (Lazarus, 2000) and an inability to chase careers within professional sport (Holt & Dunn, 2004). Considering this, research into coping has been highlighted as crucial for coaches and performers alike (Nicholls & Polman, 2006). Following Thelwell, Weston and Greenlees' (2005) suggestion that research should focus upon sport specific coping, research has begun to centre its attention on particular sporting contexts. With reference to cricket, Finn and McKenna (2010) investigated players transition from academy to first team level. They discovered that coping strategies were necessary for successful movement between the levels. Holt's (2003) examination of an experienced elite cricketer also identified coping strategies as crucial in both the acquisition and maintenance of elite performance.

Performers have been found to employ multiple coping strategies when dealing with stress (Lazarus & Folkman, 1984), with a versatile repertoire of strategies proving necessary for successful adjustments (Wethington & Kessler, 1991). Madden, Summers and Brown (1988, as cited in Madden, Kirkby & McDonald, 1989) devised the Ways of Coping with Sport questionnaire (WOCS) as a means of measuring athletes use of coping strategies. The measure assesses strategies specific to sporting scenarios e.g. dealing with a slump in form. Items loads onto eight sub scales; two representing problem focused coping, five emotion focused coping and one seeking social support. Studies using the measure have found that subjects reporting high levels of competitive stress in a basketball scenario used problem focused coping and social support more than emotion focused coping (Madden, Summers & Brown, 1990). This suggests that emotion focused coping may be less useful than social support and problem focused coping when dealing with competitive stress.

1.3 Motivation

The decision to engage in an activity is a topic of great interest for psychologists and those given the responsibility of influencing others e.g., coaches (Mallatt, Kawabata, Necombe, Otero-Forero & Jackson, 2006). Many believe that motivation forms the foundations from which an athlete achieves greatness (Duda & Treasure, 2001, as

cited in Hagger & Chatzisarantis, 2007) i.e., 'without motivation, even the most gifted performer is unlikely to reach his or her athletic potential' (Hagger & Chatzisarantis, 2007, p.153).

In order to develop performers in a positive manner, considerable research has been conducted into theories of motivation (Vallerand, 1997; Duda, 2001). Self Determination Theory (SDT; Deci & Ryan, 1985) has become well known for its comprehensive understanding of the construct. The theory posits that individuals are motivated to master their social environment both instinctively and proactively. Different manifestations of motivation are said to exist, meaning the construct is seen as multidimensional (Vallerand, 1997). Two manifestations/dimensions are intrinsic motivation; participating in sport for the inherent satisfaction of doing so, and extrinsic motivation; engaging in order to obtain something one desires (Williams, 2010). Such forms vary upon a self determination continuum that ranges from amotivation (non-self determined) to internal motivation (self determined) (Deci & Ryan, 1985). Performance variation can be explained by an athlete's position on the continuum. For example, in a study of Bulgarian athletes that included figure-skaters and skiers, elite athletes non-self determined extrinsic motivation and amotivation levels were higher than less successful athletes, suggesting that elite athletes were more motivated by the desire to receive external rewards than their less successful counterparts. In addition, elite athletes were more likely to have no perceived reason for participating (Chantal, Guay, Dobрева-Marinoва & Vallerand, 1996).

Using SDT, numerous psychologists have developed scales for measuring motivation. One measure is the Sport Motivation Scale (SMS; Pelletier et al., 1995, as cited in Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006). The tool investigates seven forms of motivation, although it does not assess integrated regulation, the most self-determining form of extrinsic motivation (Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006). Despite being a crucial component of motivation for elite athletes (Mallett & Hahrahan, 2004), integrated regulation has been understudied within psychology, perhaps due to the SMS's difficulty in capturing words that represent varying forms of motivation (due to its original translation from French). As a result, The Sports Motivation Scale-6 (SMS-6; Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006) was developed. The questionnaire measures three forms of motivation; intrinsic, extrinsic and amotivation (Williams, 2010). Variations in scores have shadowed performance, in that elite athletes possessing high levels of self-determined motivation display increased persistence (Pelletier, Fortier, Vallerand & Briere, 2001, as cited in Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006) and effort levels (Pelletier et al., 1995, as cited in Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006) compared to less successful performers.

Despite research such as that above, the majority of investigations into motivation have focused on recreational/non-elite athletes. A need for insight into what motivates elite sportspeople (Hagger & Chatzisarantis, 2007) has meant contemporary research attempts to focus on elite performers however. Amiot, Gaudreau and Blanchard (2004) discovered that athlete's inspired by the inherent pleasure of an activity i.e., those who possess increased levels of self-determined motivation, were more successful than those with low levels. In contrast, Chantal, Guay, Dobрева-Martinoва and Vallerand (1996) discovered the most successful

performers used increased levels of external and introjected regulation, meaning their reasons for participating were tied to internal rewards and punishments.

1.4 The Present Study

In line with the literature mentioned previously, and considering the importance of mental toughness, coping strategies and motivation to performance levels, the current study aimed to achieve one critical outcome; to establish an insight into whether three different levels of cricket performer (i.e., elite, sub-elite and non-elite) varied in the psychological traits they possess. In doing so, the current paper limited the focus of the investigation to a specific sport (cricket), gender (male) and country (England), as previous research had recommended (Thelwell, Weston & Greenlees, 2005).

Using the Sports Mental Toughness Questionnaire (SMTQ; Sheard, Golby & van Wersch, 2009), Ways of Coping with Sport questionnaire (WOCS; Madden, Summers & Brown, 1988, as cited in Madden, Kirkby & McDonald, 1989) and Sports Motivation Scale-6 (SMS-6; Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006), it was hoped that a profile of elite cricket performance would be highlighted, meaning practical recommendations could be made regarding the strategies required to progress in the game. Ultimately, this could improve the performance of English cricketers at all levels i.e., sub/non-elite performers would become more aware of the aspects of their game they need to develop if they wish to progress to a higher/elite level, whilst elite performers would become more educated of their strengths/weaknesses and the need to develop/maintain these if they wish to remain at the top level for longer.

In line with past research (Bull, Shambrook, James & Brookes, 2005), it was hypothesised that elite cricketers would score higher on global mental toughness scores than sub-elite and non-elite cricketers. It was predicted that sub-elite athletes would score higher than non-elite players, but not as high as elite cricketers. Finally, non-elite cricketers were expected to score the lowest of all three performance levels on global mental toughness. Considering that global mental toughness consists of control, constancy and confidence, it was hypothesised that the same pattern of results would be found for each individual sub-scale.

With regards to coping strategies, elite cricketers were expected to employ higher levels of problem focused coping strategies than sub and non-elite athletes, as well as seeking social support more. Furthermore, they were predicted to employ emotion focused coping the least of all three groups. In contrast, it was hypothesised that non-elite cricketers would use higher levels of emotion focused coping and lower levels of problem focused coping and seeking social support than elite and sub-elite athletes. Sub-elite performers were expected to seek social support and employ problem focused coping more than non-elite athletes, but not as much as elite cricketers. Finally, sub-elite athletes were predicted to use emotion focused coping more than elite cricketers, but less than non-elite athletes.

It was hypothesised that performers would vary in their levels of motivation. No specific direction was hypothesised due to the contrasting findings reported earlier.

Chapter Two: Method

2.1 Participants

60 respondents provided data as part of the investigation; 20 were 'elite' cricketers, 20 were 'sub-elite' cricketers and 20 were 'non-elite' cricketers. The sample therefore represented competitive cricket performance at all levels. 'Elite' cricketers possessed a professional contract at one of England's 18 First Class Counties. Players that participate at a higher level i.e., International, may have been included in this category. Such players possessed a First Class contract however meaning that they met the criteria required. 'Sub-elite' performers represented one of the countries six MCC (Marylebone Cricket Club) Universities. 'Non-elite' performers played within one of England's Club Cricket Leagues. Participants were recruited using purposeful sampling in that they were assigned to groups based on their level of cricketing performance.

All participants were male and ranged in age from 18 to 43 years ($M = 22.72$, $SD = 5.29$). The elite cricketers were aged between 19 and 41 years ($M = 26.92$, $SD = 9.10$). Sub-elite cricketers were aged between 20 and 25 years ($M = 21.72$, $SD = 1.41$) and non-elite cricketers were aged between 18 and 23 years ($M = 20.79$, $SD = 1.23$). Competitive experience amongst all 60 participants ranged from 5 to 32 years ($M = 13.75$, $SD = 5.12$). Specifically, elite cricketers experience ranged from 5 to 32 years ($M = 16.38$, $SD = 7.30$), sub-elite cricketers from 6 to 18 years ($M = 12.27$, $SD = 3.01$) and non-elite players from 7 to 18 years ($M = 12.75$, $SD = 3.33$). The participants were predominantly of white ethnicity, with 55 (91.67%) being either 'British, Irish or other'. Four (6.67%) were Asian/Asian British (i.e., Indian, Pakistani, Bangladesh, Chinese, other), and one (1.67%) was black/black British (i.e., Caribbean, African, other).

2.2 Measures

2.2.1 Mental Toughness

Within the present study, mental toughness was conceptualised as a multidimensional construct. The Sports Mental Toughness Questionnaire (SMTQ; Sheard, Golby and van Wersch, 2009 – see Appendix 1) was used to measure cricketers: a) confidence; how much an athlete believes they are capable of achieving goals and performing better than their opponents, b) constancy; an athlete's ability to concentrate, take responsibility and remain determined, and c) control; an athlete's perceptions about whether they are capable of bringing about desirable outcomes. Global mental toughness (confidence, constancy and control scores combined) was also measured. Sample items include 'I interpret threats as positive opportunities' (confidence); 'I give up in difficult situations' (constancy); and 'I am overcome by self-doubt' (control). The SMTQ was chosen as it is the 'first psychometrically acceptable measure of mental toughness . . . that includes a control subscale' (Sheard, 2010, p.73-74). Furthermore, the measure developed out of qualitative research that was often cricket focused e.g. Bull et al. (2005, as cited in Sheard, 2010).

The 14 item questionnaire loads onto three sub-scales and is responded to using a 4 point likert scale. (See Appendix 2 for which items correspond to which sub-scale). Responses range from 'very true' (A) to 'not at all true' (D). Participants indicated which response corresponded best to them as cricketers. Items 1 to 8 were positively scored i.e., A=4, B=3, C=2, D=1, and items 9 to 14 negatively scored i.e., A=1, B=2, C=3, D=4. Confidence scores range from 6 to 24, whilst constancy and control scores range from 4 to 16. Global mental toughness scores range from 14 to 56, with high scores representing increased mental toughness.

According to Sheard et al., (2009, as cited in Crust and Swann, 2009, p.2) 'the SMTQ possesses satisfactory psychometric properties, with adequate reliability, divergent validity and discriminative power.' Correlations between related yet distinct concepts (e.g. optimism) were found, providing support for discriminant validity. Internal consistency was found to be satisfactory i.e., all Chronbach alpha coefficients exceeded .65 (Pallant, 2007); confidence = .86; constancy = .75; control = .80; and global mental toughness = .90.

2.2.2 Coping Strategies

Coping skills were measured in relation to the strategies cricketers employed when experiencing a slump in form. By slump, the researcher meant a time when the performer could not seem to do anything right on the field, meaning they had not performed well for some weeks (Madden, Summer & Browns, 1988, as cited in Madden, Kirkby & McDonald, 1989)

Madden, Summer and Brown's (1988, as cited in Madden, Kirkby & McDonald, 1989) Ways of Coping With Sport questionnaire (WOCS – see Appendix 3) was utilised to examine coping strategies. The 66 item questionnaire has high face validity in that each item reflects the strategies athletes have been found to use when dealing with stress (Madden, 1994, as cited in Fawkner, 1993).

Coping processes are variable, and considering that the WOCS measures coping strategies, participants were expected to respond differently. As such, the traditional test-retest estimates of reliability were deemed inappropriate (Folkman & Lazarus, 1985, as cited in Fawkner, 1993). Coefficients for the WOCS eight sub-scales are higher than those related to other measures of coping (Madden, 1994, as cited in Fawkner, 1993, p.48). Fifty-four items of the WOCS load above 0.40 (Madden, Kirby & McDonald, 1989, as cited in Fawkner, 1993). Reliability has been shown; chronbach's alpha = .91 (Madden, Kirby & McDonald, 1989, as cited in Fawkner, 1993).

38 items were used in the current investigation; these possessed the strongest factor loadings i.e., greater than or equal to 0.50 (Madden, Kirkby & McDonald, 1989). The sub-scales on which the remaining 28 items loaded onto could not be distinguished due to data only appearing in unpublished work (e.g., Madden, 1987). Three sub-scales were measured: 1) problem focused coping; attempts to manage/alter problems both internally and externally, 2) emotion focused coping; trying to maintain psychological equilibrium through regulating emotional responses, and 3) seeking social support. (See Appendix 4 for which items correspond to which sub-scale). Sample items include 'Try to get something positive from the situation' (problem

focused coping); 'Go on as if nothing is happening' (emotion focused coping); and 'Talk to someone about it' (seeking social support). The full 66 item questionnaire was administered, but only those 38 items were analysed.

Alpha coefficients were high, with each sub-scale having an alpha over .65; problem focused coping = .87; emotions focused coping = .74; and seeking social support = .83. All sub-scales were hence satisfactory/reliable (Pallant, 2007).

Athletes indicated how often they used strategies using a 4 point likert scale. Responses ranged from 'doesn't apply and/or not used' (0) to 'used a great deal' (4). The higher the mean score for each scale the more performers opted to use the specific coping strategy. Athletes were also noted whether they employed strategies 'on' field, 'off' field or 'both', although only athletes overall use of strategies was analysed.

2.2.3 Motivation

Within a sporting context, motivation refers to the reasons an athlete participates (Watts, 2003, as cited in Comer & Gould, 2011). The Sports Motivation Scale-6 (SMS-6; Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006 – see Appendix 5) was used to measure performer's levels of motivation. The measures 24 items load onto 6 sub-scales. (See Appendix 6 for which items correspond with which sub-scale). Each item is responded to using a 7 point likert scale. Responses range from 'does not correspond at all' (0) to 'corresponds exactly' (7). The greater the score on each sub-scale the more performers were motivated to practice their sport by that particular form of motivation. Sample items include 'It is not clear to me anymore: I don't really think my place is in sport' (amotivation); 'Because i must do sports regularly' (introjected regulation); and 'for the pleasure of discovering new performance strategies' (intrinsic motivation).

Concurrent validity of the SMS-6 has been confirmed through examining Pearson product-moment correlations between the SMS-6 and Dispositional Flow Scale-2 (DFS-2; Jackson & Eklund, 2004, as cited in Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006). Internal consistency was found to be high within the present study in that all Chronbach alpha's exceeded .65 (Pallant, 2007); amotivation = .91; external regulation = .72; internal regulation = .73; identified = .67; integrated regulation = .77; and intrinsic motivation = .85.

2.3 Procedure

Three distinct cricket samples were investigated as part of the current study; elite, sub-elite and non-elite (see 'Participants' for definition). Prior to the study, head coaches of County Cricket Clubs and MCC Universities were approached to establish which psychological traits required investigation within the current game. Following discussions with those actively involved in the psychological aspect of English cricket (e.g., the ECB's psychology team), a decision was made to investigate whether or not three levels of cricket performer varied in their possession and/or use of mental toughness, coping strategies and motivation.

Following this, team coaches of elite and sub-elite cricketers were contacted to highlight the investigations purpose and obtain permission to approach their players. Once permission had been given, informed consent was obtained from each cricketer by providing an information sheet (see Appendix 7) and receiving written consent (see Appendix 8). The information sheet made participants aware that their participation was voluntary, all data would be anonymous/stored securely and that they were free to withdraw themselves and/or their data from the investigation at any time without reason (up to two weeks after completing the questionnaire).

Non-elite performers followed the same sequence, with the only difference being that they were approached directly (i.e., without any prior contact with coaches). This was due to their participation within cricket being recreational, meaning that unlike elite and sub-elite performers, they had no legal connection to a particular team.

Participants provided their demographic information (see Appendix 9) before completing the three questionnaires. Each cricketer completed the questionnaires in the same order; SMS-6 first, WOCS second and SMTQ third. The timing of each questionnaire being completed varied between participants (i.e., some completed it before training, whilst others did so after). This was due to different teams being available at different times. All performers completed the questionnaires in one sitting during the 2011 pre-season, although they were free to take a short break if they wished. Athletes worked through the booklet at their own pace with no time limit being imposed. The majority of participants completed the booklet in 10 to 15 minutes.

Following completion of the questionnaires participants were thanked for their time both verbally and via a written debrief sheet (see Appendix 10). They were again made aware of their right to withdraw and given the opportunity to ask questions should they wish to. In the unlikely scenario that participants should suffer any distress as a result of the investigation, contact details for The Samaritans were provided. The researcher's contact details were also provided in case participants wanted to ask questions/withdraw their data at a later date.

Note: Prior to conducting the investigation a CRB disclosure was obtained in case any participants were aged 16 or younger. As can be seen from the 'Participants' section, none were.

2.4 Design

A between groups quasi-experimental design was employed, in which the independent variable/grouping tool was level of cricket performance. This had three levels; elite cricketers, sub-elite cricketers and non-elite cricketers. The dependent variables were the scores obtained by each athlete on tests of motivation, coping strategies and mental toughness. A quantitative methodology was opted for as it allowed for an investigating of the national game on a large scale.

2.5 Data Analysis

Descriptive statistics were calculated for the three performance categories. Tests of normality (using Shapiro Wilks) were then conducted for each measures sub-scales,

before internal consistency was checked using Chronbach Alpha. All data was visually screened to check for outliers. Multiple one-way ANOVA's were conducted to examine differences in mental toughness, coping strategies and motivation as a function of level of play. A Bonferroni Correction was administered to account for the multiple comparisons that took place i.e., in order to reduce the likeliness of a Type 1 error occurring. As to further protect against Type 1 errors, and explore the differences between groups (when results were significant), post hoc tests were conducted (Tukey's Honestly Significant Different test – HSD). Finally, effect size was calculated to determine the importance of significant findings; .01 = small effect; .06 = medium effect; and .14 = large effect (Cohen, 1988, as cited in Pallant, 2007).

Chapter Three: Results

3.1 Overview

Prior to statistical analysis the internal consistency of all sub-scales was measured. All sub-scales were internally consistent in that Chronbach Alpha's exceeded .65. Multiple Shapiro-Wilk tests of normality showed that the majority of data was normally distributed ($p > 0.05$). There were some departures from normality however ($p < 0.05$), resulting in a mixture of normally and not normally distributed data. Having considered that transformations are not always successful (Pallant, 2007), and that one-way ANOVA's are robust in nature (Pallant, 2007), the decision was made to employ thirteen one-way ANOVA's (one for each sub-scale used within the present study) followed by a Bonferroni correction ($p = .003$). Means and standard deviations for cricketers scores on tests of mental toughness (Table 1), coping strategies (Table 2) and motivation (Table 3) can be found over.

3.2 Mental toughness

A one-way between-groups ANOVA was conducted to examine if mental toughness varied as a function of cricket performance level. The mean scores and SD are presented in Table 1. The ANOVA revealed a significant difference in constancy scores as a function of performance level ($F(2, 57) = 7.64, p < .003$). Post-hoc comparisons using the Tukey HSD tests indicated that non-elite cricketers scored significantly lower on scores of constancy than elite (Mean Difference = $-.63, p = .001$) and sub-elite (Mean Difference = $-.49, p = .014$) players. The actual difference, calculated using eta square, was quite large at .21. There were no other significant differences in regards to constancy, that is, elite cricketers did not differ significantly from sub-elite players (Mean difference = $.14, p = .694$). The ANOVA showed no significant differences in confidence ($F(2, 57) = 1.37, p > .003$), control ($F(2, 57) = 1.62, p > .003$) or global mental toughness ($F(2, 57) = 3.69, p > .003$) scores as a function of performance level.

The results support the hypothesis regarding non-elite players and constancy i.e., non-elite cricketers were predicted to score the lowest on each measure of mental toughness. In regards to elite and sub-elite cricketer's scores of constancy, the null hypothesis was accepted. For the remaining hypotheses, the null hypothesis was accepted, as cricketers did not differ significantly on measures of confidence, control or global mental toughness.

3.3 Coping strategies

A one-way between-groups ANOVA was conducted to examine if coping strategies varied as a function of performance levels. The mean scores and SD are presented in Table 2. The ANOVA revealed no significant differences in problem focused coping ($F(2, 57) = 1.6, p > .003$), emotion focused coping ($F(2, 57) = 1.9, p > .003$), or seeking social support ($F(2, 57) = 3.0, p > .003$) as a function of performance. As a result, the null hypothesis was accepted.

Table 1**Mean scores and standard deviations of mental toughness scores (SMTQ) for elite, sub-elite and non-elite English cricketers.**

| Sub-scale | Performance level | <i>M</i> | <i>SD</i> |
|--------------------------------------|--------------------------|-----------------|------------------|
| Confidence (.86) | Elite | 3.13 | .51 |
| | Sub-elite | 3.02 | .47 |
| | Non-elite | 2.80 | .88 |
| Control (.80) | Elite | 3.61 | .40 |
| | Sub-elite | 3.48 | .35 |
| | Non-elite | 2.99 | .75 |
| Constancy* (.75) | Elite | 3.03 | .62 |
| | Sub-elite | 2.84 | .53 |
| | Non-elite | 2.64 | .86 |
| Global mental toughness (.90) | Elite | 42.98 | 5.36 |
| | Sub-elite | 41.17 | 4.95 |
| | Non-elite | 37.07 | 9.80 |

Chronbach's alpha shown in parentheses. Scores are rated out of four for the sub-scales constancy, control and confidence and 56 for global mental toughness. High scores symbolise superior levels of mental toughness. * = a significant difference was found in relation to this particular sub-scale.

Table 2**Means scores and standard deviations of coping strategies (WOCS) for elite, sub-elite and non-elite English cricketers.**

| Sub-scale | Performance level | <i>M</i> | <i>SD</i> |
|-------------------------------------|--------------------------|-----------------|------------------|
| Problem focused (.87) | Elite | 25.18 | 5.82 |
| | Sub-elite | 24.58 | 5.48 |
| | Non-elite | 22.18 | 5.36 |
| Emotion focused (.74) | Elite | 19.52 | 6.29 |
| | Sub-elite | 23.90 | 7.88 |
| | Non-elite | 22.60 | 7.80 |
| Seeking social support (.83) | Elite | 9.67 | 2.69 |
| | Sub-elite | 10.45 | 1.80 |
| | Non-elite | 8.51 | 2.93 |

Chronbach's alpha shown in parentheses. High scores represent an increased use of such coping strategies.

3.4 Motivation

A one-way between-groups ANOVA was conducted to examine if motivation varied as a function of performance levels. The mean scores and SD are presented in Table 3. The ANOVA revealed a trend towards significant difference in external

regulation scores as a function of performance level ($F(2, 57) = 4.42, p = .016$, note: Bonferroni adjusted p value = .003). If one looked at the post-hoc comparisons using the Tukey HSD tests, these indicated that sub-elite cricketers scored significantly higher on scores of external regulation than elite (Mean difference = .95, $p = .027$) and non-elite performers (Mean difference = .89, $p = .042$). The effect size, calculated using eta square, is large at .13. There were no other significant differences in regards to external regulation, that is, elite cricketers did not differ significantly from non-elite players (Mean difference = .06, $p = .983$).

The ANOVA also showed no significant differences in amotivation ($F(2, 57) = 1.40, p > .003$), introjected regulation ($F(2, 57) = 1.13, p > .003$), identified ($F(2, 57) = 3.53, p > .003$), integrated regulation ($F(2, 57) = 1.10, p > .003$) or intrinsic regulation ($F(2, 57) = 1.53, p > .003$) scores as a function of performance level.

In regards to external regulation, the results suggest that performers may differ in their levels of motivation. A lack of significant findings means the null hypotheses were accepted however.

Table 3

Means scores and standard deviations of motivation (SMS-6) for elite, sub-elite and non-elite English cricketers.

| Sub-scale | Performance level | <i>M</i> | <i>SD</i> |
|-------------------------------------|-------------------|----------|-----------|
| Amotivation (.91) | Elite | 1.49 | .98 |
| | Sub-elite | 1.45 | .85 |
| | Non-elite | 2.03 | 1.66 |
| External regulation (.72) | Elite | 4.15 | 1.24 |
| | Sub-elite | 5.10 | 1.10 |
| | Non-elite | 4.21 | 1.05 |
| Introjected regulation (.73) | Elite | 3.81 | 1.49 |
| | Sub-elite | 4.44 | 1.39 |
| | Non-elite | 4.10 | 1.02 |
| Identified (.67) | Elite | 4.59 | 1.34 |
| | Sub-elite | 5.49 | .66 |
| | Non-elite | 5.01 | 1.10 |
| Integrated regulation (.77) | Elite | 5.06 | 1.18 |
| | Sub-elite | 5.38 | .81 |
| | Non-elite | 4.89 | 1.14 |
| Intrinsic regulation (.85) | Elite | 5.49 | 1.16 |
| | Sub-elite | 5.68 | .59 |
| | Non-elite | 5.11 | 1.23 |

Chronbach's alpha shown in parentheses. Scores are recorded out of seven, with higher scores representing increased motivation in regards to that specific form.

Chapter Four: Discussion

In line with past research (Hardy, Jones & Gould, 1996; Holland, Woodcock, Cumming & Duda, 2010; Sheard & Golby, 2010), the present study has identified a psychological trait that may be associated with superior/inferior sports performance; constancy. Scores were significantly higher in elite and sub-elite cricketers than non-elite players. A trend for external regulation is noted, although the difference between cricketers did not reach statistical significance. No significant differences were found amongst cricketer's coping strategies. Considering the current findings, the only hypothesis that could be accepted was that non-elite cricketers would score the lowest of all three levels on measures of mental toughness. For all other data the null hypotheses were accepted.

Collectively, the results provide little support for Starkes and Ericsson's (2003) suggestion that elite athletes possess numerous psychological traits that stand them apart from less elite players. In contrast to Williams (2010) and Miller and Kerr (2002, as cited in Sheard, 2010), the effect of mental factors on cricket performance may not be as great as suggested. Considering this, past research conducted by Cohn (1991), Orlick and Partington (1988) and Smith and Christensen (1995) can neither be confirmed nor refuted, as it remains unknown whether psychological attributes significantly contribute to sports performance.

4.1 Mental Toughness

In regards to the SMTQ, cricketers only differed significantly on measures of constancy. The construct encompasses an athlete's capacity to concentrate and ability to show grit and determination (Sheard, 2010). The concept reflects an association between successful athletes inclination to keep a task oriented focus, whilst avoiding a preoccupation with negative outcomes (Sheard, 2010). The present studies results suggest that non-elite cricketers may be more likely than elite and sub-elite players to become preoccupied with negative outcomes. Considering that preoccupations have been linked to decreased effort levels and/or quitting (Williams & Krane, 2001, as cited in Williams, 2010), the current findings imply that non-elite participants may have not progressed within cricket due to them not applying as much effort as their superior counterparts. Considering this, non-elite athletes and their coaches should be encouraged to highlight the positive outcomes that accompany performances, as well as using a task oriented focus.

Athlete's scoring high in constancy have been found to maintain their focus when faced with provocation, that is the intentional disintegration of another's mental capabilities (Sheard, 2010). 'Sledging' as it has become known is common amongst cricket (Barnes, 2008, as cited in Sheard, 2010). Having considered the current findings, it appears that cricketers at higher levels may be better able to deal with 'sledging' than non-elite players. This supports Bull, Shambrook, James & Brookes' (2005, p.211) suggestion that cricketers must be willing to engage in the 'high intensity confrontation between batter and bowler' if they are to reach elite levels. Furthermore, it suggests that constancy may be a psychological trait that distinguishes between cricketers at different performance levels. Findings may have implications for the tactics that teams employ, in that non-elite cricketers may wish to

sledge their opponents in hope of gaining an advantage, whilst elite cricketers may wish to refrain.

Assuming that the ability to call upon mental toughness attributes cannot be wholly innate (Sheard, 2010), it seems likely that constancy can be learnt. This suggests that elite and sub-elite player's increased scores within the current study may be due to the learning environment they find themselves in daily. Findings therefore question the effect of constancy on performance levels i.e., have elite and sub-elite cricketers reached such levels as a direct result of possessing increased constancy, or have they developed their levels through participation at higher levels? Further research is recommended to confirm/refute such suggestions.

Until such research is conducted however, the results of the present study suggest that constancy may be a prerequisite for progression within cricket. This is in line with past research conducted by Crust (2008), Jones, Hanton and Connaughton (2007) and Sheard (2010). Furthermore, results partially support Bull, Shambrook, James and Brookes' (2005) suggestion that cricketers require 'chronic' mental toughness if they are to reach the top level and remain there. Considering constancy's definition, it seems likely that those traits proposed by Griffith (1926, as cited in Sheard, 2010) and Tutko (1969, as cited in Sheard, 2010) i.e., courage and determination, are applicable to cricket, meaning that coaches may wish to measure such constructs when making team selections.

In regards to the lack of significant findings for the SMTQ's remaining sub-scales, Gaudreau and Blondin's (2002, as cited in Sheard, 2010) proposal that mental toughness is driven by particular scenarios may help explain such findings. Considering that multiple determinants influence behaviour (Gaudreau & Blondin, 2002, as cited in Sheard, 2010), significant differences between cricketers may have not been found due to participants being in a scenario that did not require mental toughness whilst completing the SMTQ. Furthermore, mental toughness' functionality differs between individuals (Gaudreau & Blondin, 2002, as cited in Sheard, 2010), meaning it could be argued that what one athlete perceives as mental toughness another may not. Considering this, attempts at categorising mental toughness may not accommodate for the vast array of circumstances a cricketer find themselves in. In line with past research (e.g., Gucciardi, Gordon & Dimmock, 2008; Coulter, Mallett & Gucciardi, 2010; Thelwell, Such, Weston, Such & Greenlees, 2010), future research may therefore wish to investigate cricketers levels of mental toughness at different stages of a game, season or career, in order to determine whether levels vary over time and between performance levels. Research into particular cricketing roles may also be useful considering that it is rare within sport for one/two individuals to take on the entire opposition team (Thelwell, Weston & Greenlees. 2005).

A final point is in relation to those criticisms highlighted by Jones, Hanton and Connaughton (2002). Considering that the foundations from which mental toughness has grown are said to be abounding with uncertainty and conceptual bewilderment, the use of past research when devising the current hypotheses may be questionable. Considering this, it is not surprising that the current results differ from previous research. It cannot be said that they are invalid as a result however. Rather, they

highlight the need for further research into mental toughness, in order to confirm/refute the current findings and past research.

4.2 Coping Strategies

Within the present study, no significant differences were found between performance levels and the coping strategies that cricketers employed. This suggests that the level a player reaches may not vary as a function of coping strategies. This has implications for the use of psychological skills training in that attempts to develop 'effective coping' may not create significantly different players. Furthermore, it questions how effective the ECB's allowance of family members on overseas tours is. As a result, studies surrounding the effect of coping and variance that strategies can explain may be questioned (e.g., Finch, 1994; Klint & Weiss, 1986, as cited in Nicholls & Polman, 2006; Smith, 1986, as cited in Nicholls & Polman, 2006; Lazarus, 2000; Holt & Dunn, 2004).

As to why no differences were found, it may be that rather than elite, sub-elite and non-elite cricketers not differing at all, they did not vary in terms of the scenario used within the present study i.e., a slump in form. It could be that regardless of participant's performance level, they were aware of what would be expected of them should they suffer a slump, resulting in similar responses. In essence, participants may have answered with what they perceived were the 'correct' answers, rather than the strategies they actually employ. Such demand characteristics seem feasible considering that problem solving is desirable (Nicholas & Jebrane, 2008).

Alternatively, it could be that cricketers did not differ because the problem used is not amendable to being solved psychologically. Instead, getting out of a slump in form may be a function of physical ability. The implications of this include the need to focus on players physical skills when suffering a slump in form. Having considered this, future research may wish to investigate the coping strategies used in different scenarios, or at different stages of a match/season/career. In doing so, information would be attained regarding the: a) effectiveness of strategies within specific conditions, b) range of strategies employed, and c) physical and psychological skills that interact to create variations in performance. This may be useful considering that elite athletes are likely to be responding to situations that are significantly different to those at sub and non-elite levels (Terry, 1994).

In further reference to the lack of significant findings, coping strategies are deemed effective/ineffective based upon whether they aid mastery over ones environment (Crossman, 2001). This ignores other developmental outcomes that may accompany attempts at coping. For example, a performer may learn about the personal and/or situational resources they have at their disposal even if coping is ineffective (Crossman, 2001). This enhancement in one's identity is not accounted for by the WOCS. Furthermore, it suggests that past researches emphasis on problem solving as a trait that accompanies elite performance, devalues copings other objectives e.g., increased self-esteem (Crossman, 2001). Considering this, future research may wish to take a qualitative approach, in order to determine whether coping's other effects influence performance levels.

It should be noted that only 38 of the WOCS 66 items were used in the present study. It is therefore unlikely that the data obtained was as representative as it would have been should the entire 66 items been used. In addition to this, numerous participants complained about the WOCS length, suggesting that boredom may have influenced the results i.e., cricketers may have rushed the questionnaire in an attempt to finish, resulting in them not answering accurately. Both points could have implications for the WOCS future use, in that psychologists may wish to develop new measures that consider coping's other benefits, or use alternative means of assessing coping e.g., interviews.

Despite such criticisms, the present study has focused on sport specific coping, as recommended by Thelwell, Weston and Greenlees (2005). Although the findings are in contrast with past research that suggests attaining successful outcomes requires effective coping, (Lazarus, 2000, as cited in Lavalley, Thatcher & Jones, 2004), they question the criticality of coping in determining an athlete's potential to succeed. This has implications for cricket performers in that they may be able to progress within the sport regardless of the coping strategies they employ. This is in contrast with past research that suggests coping strategies are crucial for successful transitions between the levels (Holt, 2003; Nicholls and Polman, 2006; Finn & McKenna, 2010).

Finally, in contrast with the majority of past research (Lazarus & Folkman, 1984; Gould et al., 1993, as cited in Thelwell, Weston & Greenlees, 2005; Page, Sime & Nordell, 1999; Hanton, Wadey & Mellalieu, 2008; Madden, Kirkby and McDonald, 1989), the current results suggest that elite cricketers may employ multiple different strategies that distinguish them from less successful players (as opposed to just problem focused coping for example). This provides support for past research that suggests performers must have a versatile repertoire of strategies if they wish to make successful adjustments (Folkman & Lazarus, 1984; Wethington & Kessler, 1991). Considering this, future research may wish to investigate the way that coping strategies interact, and whether this is a key factor in determining performance levels. Should a profile of effective coping exist, this may have implications for the use of psychological screenings within cricket i.e., County Cricket Clubs may wish to screen potential players as a means of talent identification.

4.3 Motivation

The present study discovered a trend in regards to external regulation. Sub-elite cricketers scored higher than elite and non-elite players on such measures, suggesting that sub-elite cricketers are perhaps more motivated to participate by rewards and/or to satisfy an external demand (e.g., a coach). As a result, it may be assumed that although cricketers did not differ significantly on measures of internal motivation, elite cricketers may have higher levels of self-determined motivation that accounts for their increased success. Such assumptions are made in line with previous research (e.g., Pelletier, Fortier, Vallerand, & Briere, 2001, as cited in Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006; Amiot et al., 2004, as cited in Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006; Pelletier et al., 1995, as cited in Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2006; Amiot, Gaudreau and Blanchard, 2004).

Reasons for such differences may be that elite athletes spend a greater period of time performing their sport, meaning that they are likely to experience more periods of distress e.g., slumps in form. It is unlikely that athletes could remain highly motivated throughout the course of a career and such hardships without high levels of intrinsic motivation (Mahoney et al., 1987, as cited in Hardy, Jones & Gould, 1996; Williams, 2010). Having considered the heavy workload placed on professional cricketers within the modern game, it seems likely that the inherent pleasure gained from participating is an important criterion in distinguishing between cricketers. This supports Weissensteiner, Abernethy & Farrow's (2009) suggestion that intrinsic motivators are necessary for developing expertise.

The current findings are in contrast to work by Chantal, Guay, Dobрева-Martinova and Vallerand (1996), who suggest that successful athletes use increased levels of introjected and external regulation. This may not have been the case within the current study considering cricket's format and salary for example. The sport demands excessive amounts of time and effort, suggesting that elite players may have progressed due to the inherent pleasure they gain from participating i.e., they practice for pleasure and in doing so improve more/quicker than other cricketers. This is in line with past research that proposes performers with high levels of self determined motivation are more successful (Amiot, Gaudreau & Blanchard, 2004). In contrast, sub-elite cricketers may perceive the external rewards that accompany participation as not great enough for what they put in, resulting in them falling behind elite cricketers due them being less motivated to practice etc. The implications of this are that sub-elite cricketers may need to be made aware of the external rewards that await them should they progress to an elite level e.g., sponsorships, increased salary.

It is worth noting that external regulation is capable of becoming partially internalised over time (Williams, 2010), meaning that external controls are no longer required to maintain behaviour. Considered this, future research may wish to consider changes in motivation across the course of a season/career, in order to determine whether traits are fixed or dynamic. Furthermore, considering elite athletes increased age range in the present study, such research would allow psychologists to determine whether high levels of intrinsic motivation are required to repeatedly produce performances worthy of elite cricket (as suggested by Hardy and Parfitt, 1994, as cited in Lonsdale, Hodge & Rose, 2008).

In regards to the questionnaire used (SMS-6) to measure motivation, although the most crucial component for elite athletes was investigated; integrated regulation (Mallett & Hahrahan, 2004; Mallatt, Kawabata, Necombe, Otero-Forero & Jackson, 2006), there are debates surrounding psychometric measure's ability to find words that incorporate motivation's varying forms in sporting contexts. For example, the use of 'absolutely' within question 7 ('Because it is absolutely necessary to do sports if one wants to be in shape') may be restrictive/interpreted literally, in that for some, other means of exercise are as beneficial as sport for remaining fit/healthy.

In line with Hagger and Chatzisarantis' (2007) recommendation however, the current study has provided partial insight into what motivates sub-elite cricketers. It is hoped that in doing so, the effect of motivation on elite cricketers has also been highlighted. In contrast with arguments that various forms of motivation can explain much of

human behaviour (e.g., Hardy, Jones & Gould, 1996), the current findings suggest that multiple types of motivation may not be responsible for variations in cricket performance.

4:4 Limitations

Although gaining access to elite cricketers is difficult considering the small number of players that fall into the category, the sample size ($n = 60$) was relatively small considering roughly 250,000 adults, 250,000 juniors and 400 professionals play cricket within the UK (ECB, 2011b). Furthermore, of those 60 cricketers that participated, 55 were of white ethnicity, meaning it is unlikely that findings were representative of/generalisable to the national game as a whole. The nationality and gender of participants emphasises this point. An all male sample was selected due to males increased prevalence within the national game. The increasing popularity of women's cricket means an investigation of female cricketers would be just as beneficial however, as does research that suggests coping strategies for example are influenced by gender (Thoits, 1991; Gilligan, 1993). In regards to nationality, solely English cricketers were investigated, raising issues of generalisation to international cricket. Considering this, future research may wish to investigate other nationalities, in order to determine whether psychological traits differ as a function of nationality, and hence explain why some cricketing nations are superior to others.

Secondly, through measuring three specific psychological traits, the current study has been restrictive in attempting to describe and account for expert phenomena. Considering that expertise is dependent upon successful interactions between biology, psychology and socio-development (Starkes & Ericson, 2003), it seems likely that in order to capture an essence that distinguishes between performers, psychologists must use multi-disciplinary approaches that consider components interactive effects; rather than the uni-disciplinary approach used within this investigation.

Two final points to note are the segregation of performers into groups and the nature of such research. In regards to the former, although the segregation of cricketers based on their current performance levels was done in line with past research (Golby & Sheard, 2004), it was not the correct/only way of doing so. Interpretations of 'elite' cricket within the current study/sport were therefore specific to the investigation. As a result, they may be different to that of past/future research, meaning the current results should be approached with care. Secondly, in regards to the psychological traits investigated, all three are descriptive in nature, meaning they explain little regarding why performer's psychological traits do/do not differ. Furthermore, the self report nature of such research means that the study may have been susceptible to an abundance of confounds e.g., those demand characteristics discussed in relation to coping.

4.5 Conclusion

To conclude, in contrast with previous research, the present study suggests that cricketer's levels of mental toughness, coping strategies and motivation may not influence performance levels. Constancy has been highlighted as a distinct sub-scale of mental toughness that may differ between cricketers of different

performance levels however. This suggests that the extent to which an athlete is capable of dealing with intimidation influences the level at which they perform.

In regards to why the results may vary from previous research, differences between cricket and those sports previously investigated may mean that measuring mental toughness, coping strategies and motivation in relation to cricket is difficult. Alternatively, it may be that the three traits are not prerequisites for cricketer progression. In order to further investigate this suggestion, future research may wish to use measures that have been designed specifically for cricket e.g. the Cricket Mental Toughness Inventory (CMTI; Gucciardi & Gordon, 2009).

The present study has attempted to fill a void by comparing experts and novices on measures of 'social-cognitive determinants' (Starkes and Ericson, 2003, p.24). It is hoped that through highlighting the importance of constancy within cricket, players will become aware of how important the attribute may be in regards to progression. Having considered that 'expertise in one domain . . . can either facilitate or hinder the attainment of expertise in others' (Starkes & Ericson, 2003, p.24), future research may wish to investigate the effect that constancy has on other aspects of a cricketer's psychological game. For example, is constancy related to other traits highlighted as being crucial for progression within sport e.g., self confidence (Dieffenbach and Moffett, 2002, as cited in Sheard, 2010).

Finally, the results of the present study suggest that psychological traits may not significantly contribute to performance levels in specific reference to cricket. As a result, it could be suggested that differences in physical ability is the key factor in determining which cricketers progress within the sport.

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