EXAMINING EMOTIONAL INTELLIGENCE IN SPORT

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UNIVERSITY OF WOLVERHAMPTON

SCHOOL OF SPORT AND PERFORMING ARTS

EXAMINING EMOTIONAL INTELLIGENCE IN SPORT

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Abstract

Emotional intelligence has become a popular construct in both academic and applied settings (Petrides, Furnham, & Fredickinson, 2004; Zizzi, Deaner, & Hirschhorn, 2003). Research indicates that emotional intelligence is associated with successful performance outcomes in a range of domains including academia (Parker, Summerfeldt, Hogan, & Majeski, 2004), business (Zeidner, Matthews, & Roberts, 2004) and health (Pau & Crocker, 2003). Such findings have prompted researchers to explore the potential utility of emotional intelligence in sport (Meyer & Fletcher, 2007; Meyer & Zizzi, 2007). The present MPhil thesis has a two-pronged approach of examining emotional intelligence in sport. Conceptual issues of emotional intelligence are examined in relation to model approach and measurement. Therefore, two studies investigated the validity and reliability of the Emotional Intelligence Scale (EIS: Schutte et al., 1998). Results demonstrate that a revised version of the EIS (Schutte et al., 1998) is a useful measure of emotional intelligence for use in sport, although it has several limitations. These investigations also found support for the use of a six-factor model of the EIS (Schutte et al., 1998) comprising of appraisal of own emotions, appraisal of others emotions, regulation, utilization of emotions, optimism and social skills. Once conceptual issues have been examined and psychometric properties are found for a measure, it is also prudent to explore relationships between emotional intelligence and other related variables. To this extent, two studies explored the relationships between emotional intelligence and other related variables. In examining relationships between emotional intelligence and anger, both quantitative and qualitative data demonstrated that participants high in emotional intelligence ability were able to utilise strategies to combat the negative effects of anger. In a follow up study, relationships between emotional intelligence, mental toughness, and

psychological skills were examined. Results showed that emotional intelligence, mental toughness, and psychological skills relationships co-exist. Arguably, these findings are important given that these variables can relate to emotional control and successful performance outcomes. Findings also lend support to the assumption that practitioners could utilise intervention programmes to assess emotional intelligence and its direction in relation to mental toughness and psychological skills. In summary, emotional intelligence is an important construct and its utility in sport should be further examined.

Keywords: Emotions, psychometric, mental skills, trait, self-report

1.0 Introduction

Emotional intelligence was established as a popular area of research during the 1990's and has since emerged as an important construct (Meyer & Zizzi, 2007; Petrides, et al., 2004). Emotional intelligence is defined as *'the ability to perceive, monitor, employ, and manage emotions within oneself and in others.'* (Salovey & Mayer, 1990, p.189).

Arguably, the popularity of emotional intelligence emerged when Goleman (1995) indicated that the construct was more important than intelligence quotient (IQ) in the workplace (Mayer, Roberts, & Barsade, 2008). Investigating this proposition has led researchers to examine emotional intelligence in more depth. Extensive research in both popular press publications and scientific journals has been conducted (e.g. Austin, 2004; Bar-On, 1997; Brackett, Mayer & Warner, 2003; Goleman, 1995; Mayer & Salovey, 1997; Meyer & Fletcher, 2007; Petrides & Furnham, 2000; Petrides & Furnham, 2003; Petrides et al., 2004; Salovey & Mayer, 1990; Warwick & Nettelbeck, 2004; Zeidner et al., 2004; Zizzi, et al., 2003).

Research findings from fields such as academia (Parker et al., 2004), business (Zeidner et al., 2004) and health (Pau & Crocker, 2003) have demonstrated the efficacy of emotional intelligence. For example, Parker et al. (2004) identified relationships between emotional intelligence ability and achievement. In business settings, emotionally intelligent participants utilised strategies to cope with pressure, dealt effectively with customers, lowered stress relief and increased work performance (Jordan, Ashkanasy, & Charmaine, 2002; Salovey, Meyer, & Caruso, 2002; Slaski & Cartwright, 2002). Research in health settings suggests that participants higher in emotional intelligence reported better psychological well being (Extremera & Fernandez-Berrocal, 2002; Slaski & Cartwright, 2002). Further, Schutte, Malouff,

Simunek, McKenley, and Hollander (2002) reported positive relationship between emotional intelligence and mood, amongst a group of United States (US) workers across a range of occupations. In addition, meta-analysis results, which combines the results of several studies, have shown that emotional intelligence associates with effective work performance (Van Rooy & Viswesvaran, 2004) and enhanced health (Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007).

Despite these reported results, issues regarding the conceptualisation and measurement of emotional intelligence remain (Mayer & Fletcher, 2007; Petrides et al., 2004). In conceptualising emotional intelligence, researchers have identified three different approaches (Petrides et al., 2004). The first is the trait approach (Petrides et al., 2004). This approach proposes that individuals report their own self-perceptions and dispositions (Petrides et al., 2004). A common measure of trait emotional intelligence is the EIS (Schutte et al., 1998). The second is the ability approach (Meyer & Fletcher, 2007). This proposes that participants need to have the ability to encode the information to direct cognition and motivate behaviour (Meyer & Zizzi, 2007). The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT: Mayer et al., 2002) is a reported measure of ability emotional intelligence. Third, there is the mixed models approach (Meyer & Fletcher, 2007). This views emotional intelligence in conjunction to both mental and self-reported personality characteristics, such as, empathy and mood (Meyer & Zizzi, 2007). The Emotional Competence Inventory-2 (ECI-2: Goleman, 1998) and the Emotional Quotient Inventory (EQ-i: Bar-On, 1997) are commonly used measures for the mixed approach. With these contrasting definitions, it might not be surprising that emotional intelligence is a difficult concept to measure (Meyer & Fletcher, 2007; Petrides et al., 2004).

In reviewing the evidence above, this MPhil investigates conceptual issues of emotional intelligence concurrently through two studies. The rationale for conducting two studies concurrently is based on the argument that each contributes equally to an interpretation of validity. Assessing validity and reliability is important because scientific enquiry needs to utilise robust measures (Schutz, 1994). Therefore, an examination of factorial validity and reliability of the trait self-report EIS (Schutte et al., 1998) took place. It has been argued that self-report measures are typically used to assess trait emotional intelligence (Kirk, Schutte, & Hine, 2008). Indeed, recent research has used the EIS (Schutte et al., 1998) in sports psychology (e.g. Lane, Thelwell, Lowther, & Devonport, 2009; Thelwell, Lane, Weston, & Greenlees, 2008; Zizzi et al., 2003).

A confirmatory factor analysis of the 33-item EIS (see appendix, A) was carried out. Confirmatory factor analysis provides an in-depth examination of a measure and reports any invariance associated with items. Subsequently, two competing models of emotional intelligence, a single model and a 6-factor model that assessed awareness of own and others emotions, regulation, utilization of emotion, social skills, and optimism were tested. A follow up study examined the reliability of the EIS through a test-retest to assess the reproducibility of scores against resistance. Establishing stability, defined as observing minimal measurement error is vital to validating psychometric tools (Anastasi & Urbina, 1997; Kline, 1993). Determining the relative stability of emotional intelligence is important. Salovey and Mayer (1990) hint that the construct should be malleable to the effects of an intervention, but sufficiently stable to offset the effects of random error. In sum, validity and reliability allow exploration of the conceptual issues concerning emotional intelligence.

Once the conceptual issues related to emotional intelligence have been examined, investigating relationships to other associated variables is warranted. Therefore, a further literature review will outline the link between emotional intelligence and sport. Following this review, two studies will be presented which outline possible relationships between emotional intelligence and associated variables. In presenting an investigation on emotional intelligence and anger, two short studies explored potential association (see appendix, B). This investigation was necessary for a number of important reasons. For example, there is scant literature that assesses anger in sport settings (Cerin & Barnett, 2006; Hanin, 2000; Maxwell, 2004). Further, assessing effective coping strategies to regulate anger is important to enhance performance. Given that emotional intelligence is postulated to relate to the recognition and awareness of emotions (Salovey & Mayer, 1990) exploring the possible regulatory mechanism of anger is important. Subsequently, in one study data was gathered to investigate the direction of emotional intelligence and anger. In addition, a longitudinal study, based on a tennis player assessed the role of emotional intelligence on performance. To conclude appropriate intervention strategies were outlined to highlight possible ways to enhance emotional intelligence.

A follow up investigation examined relationships between emotional intelligence, mental toughness and psychological skills. Theoretically, emotional intelligence relates to the ability to monitor, employ, and manage emotions (Salovey & Mayer, 1990). Therefore, participants high in emotional intelligence are more likely to regulate their emotions. Another construct that aligns with controlling emotions and arguably shares some similar characteristics to emotional intelligence is mental toughness. One useful strategy to enable emotional control is psychological skills (Thelwell, 2008), which may help to raise emotional intelligence and enhance mental

toughness. Therefore, it was necessary to examine relationships between emotional intelligence, mental toughness and psychological skills.

Overall, the intended purpose for this MPhil is to outline a suitable model and measure of emotional intelligence for use in sport. In sum, the main aims of this thesis are:

1) To provide a critique of emotional intelligence models and measures.

2) To validate a suitable model and measure of emotional intelligence to be used in sport.

3) To examine the reliability of the EIS (Schutte et al., 1998) via a test-retest.

4) Exploring the link between emotional intelligence and associated variables in sport.

5) To examine relationships between emotional intelligence, mental toughness and psychological skills.

6) To develop a discussion highlighting how the aims and objectives of the MPhil have been achieved.

7) To forward a reflective chapter using Gibbs (1997) model of reflective practice to explore experiences of emotional intelligence during the MPhil process.

2.0 Emotional Intelligence: A Critique

Discussing model and measurement issues that resonate within emotional intelligence is important. Therefore, this next section explores the different theoretical approaches to emotional intelligence. To conclude this critical review, a rationale will be offered for the approach selected for use in the present MPhil.

2.1 Emotional intelligence: Models and measurement issues

The study of emotional intelligence has resulted in a number of models and measurements being proposed (e.g. Bar-On, 1997; Goleman, 1995; Petrides & Furnham, 2003, 2006; Mayer & Salovey, 1997; Salovey & Mayer, 1990; Schutte et al., 1998). As a result, ambiguity has arisen regarding the most effective way of measuring emotional intelligence (Ciarrochi & Blackledge, 2006; Matthews, Zeidner, & Roberts, 2004; Meyer & Zizzi, 2007; Petrides et al., 2004). The aim for researchers is to decide which model and measurement approach will be most useful as each distinction emanates from construct interpretation (see Meyer & Fletcher, 2007; Meyer & Zizzi, 2007; Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009; Petrides & Furnham, 2000).

Emotional intelligence is conceptualised into three main lines of thought (Petrides et al., 2004). The trait approach (Petrides & Furnham, 2001, 2003) relates to emotional experiences and self-perceptions of participants, which is measured through self-report inventories (Brackett & Meyer, 2003). For example, if interested in assessing self-perceptions one would employ self-report measures to best understand the subjective experience of individuals. One way to understand these subjective experiences could relate to exploring attitudes of students prior to examination. The ability approach (Mayer & Salovey, 1997) relates to cognitive ability and is measured through maximal performance (Van Rooy & Viswesvaran,

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2004). The Raven Progressive Matrices (Petrides et al., 2004) is one example of assessing cognitive ability, where participants are asked to identify emotion. The mixed approach (Bar-On, 1997; Goleman, 1995) encompasses an array of abilities that are related to both mental (emotional self-awareness, empathy, problem-solving, impulse control) and personality characteristics (mood, genuineness, warmth) (Meyer & Fletcher, 2007).

Research has clearly outlined that distinguishing between different approaches to emotional intelligence is important because each approach will produce different results (Lane et al., 2009; Petrides et al., 2004; Petrides & Furnham, 2001). For example, based on the model of Mayer and Salovey (1997) self-report measures will assess behavioural tendencies, in contrast maximum performance measures will be concerned with actual abilities. However, research continues to explore how best to conceptualise emotional intelligence (Mayer et al., 2008; Meyer & Fletcher, 2007; Petrides et al., 2004). For example, Mikolajczak, Petrides, Coumons and Luminet (2009) suggested that emotional intelligence could be related to a tripartite model of knowledge, ability and trait. Knowledge levels relate to width of emotion, ability levels relate to application and trait levels refer to emotion dispositions. In another review, researchers Mayer et al. (2008) have identified the specific-ability and integrative model approaches as conceptualising and measuring emotional intelligence most effectively. Specific approaches allude to the capacity of individual mental capacities. In contrast, integrated approaches allude to the overall cohesive capacity of emotional intelligence (Mayer et al., 2008). In sum, different approaches of measuring emotional intelligence continue to be proposed (Perez, Petrides, & Furnham, 2005).

2.2.1 Trait approach to emotional intelligence

Trait approaches to emotional intelligence emanate from emotional behavioural dispositions and encompass self-perceptions in accord to experiences (Petrides, Furnham, & Fredickinson, 2004; Petrides, Pita, & Kokkinaki, 2007). Within trait emotional intelligence, participants reflect on emotional experiences across different situations and report their subjective perceptions. The efficacy of trait emotional intelligence has been reported in previous research (e.g. Dawda & Hart, 2000; Furnham & Petrides, 2003).

Following content analysis, Petrides and Furnham (2001) identified 15 distinct components that were common to emotional intelligence models. Furnham and Petrides (2003) suggest that participants high in trait emotional intelligence believe that they are in touch with their own emotions and through regulating these emotions, well being is promoted (Hayes, Strosahl & Wilson, 1999). In addition, incremental validity of trait emotional intelligence, which can help determine if a particular instrument or method provides a significant improvement, has been reported (Petrides et al., 2007; Tett, Fox, & Wang, 2006). This suggests that trait-EI is distinct from mainstream personality variables (Perez et al., 2005).

Trait approaches to emotional intelligence are measured through self-report (Kirk et al., 2008; Petrides & Furnham, 2001; Petrides, Furnham, & Mavrovelli, 2007; Schutte et al., 1998). Examples of self-report measures of trait emotional intelligence include the Emotional Intelligence Scale [EIS: Schutte et al., 1998]; Trait Emotional Intelligence Questionnaire [TEIque: Petrides & Furnham, 2003] and Trait Emotional Intelligence Questionnaire Short-Form [TEIque-SF: Petrides & Furnham, 2006]. Tett et al. (2006) argue that trait self-report is the most effective

way to measure emotional intelligence as reliability associates to all ten facets of the Salovey and Mayer (1990) model.

A commonly used measure of trait emotional intelligence (Austin, Saklofske, Huang, & McKenney, 2004) and one recently utilised in sport (Lane et al., 2009; Thelwell et al., 2008; Zizzi et al., 2003) is the EIS. Developed by Schutte et al. (1998), the EIS is a self-report measure and assess an individual's ability to identify, understand, harness and regulate emotions (Meyer & Fletcher, 2007). The 33-item EIS is positively regarded because of its reliability, validity and easy administration. The 33-item questionnaire is answered on a 5 point Likert Scale, ranging from 1 (strongly agree) to 5 (strongly disagree). Schutte et al. (1998) reported adequate internal consistency reliability (r=.87 to .90) and moderate test-retest reliability (.78). Further, Tett, Fox and Wang (2005) report that the EIS self-report is the only measure that has been test-retested in peer reviewed literature. In addition, meta-analysis (Van Rooy & Viswesvaran, 2004) has reported higher predictive validity for the EIS (Schutte et al., 1998) than all other emotional intelligence measures examined. Initial issues have related to incorporation of the EIS as either a unidimensional (Brackett & Mayer, 2003) or multidimensional construct (Petrides & Furnham, 2000). Research has indicated different factor approaches for example, Zizzi et al. (2003) examined the relationship between emotional intelligence and baseball performance through a single factor model. In contrast, there is evidence of a three factor, four factor and six factor model use (see, Lane et al., 2009).

2.2.2 Ability approach to emotional intelligence

The ability approach is based on the argument that participants need to have the ability to encode the information to direct cognition and motivate behaviour (Mayer, 2001; Meyer & Zizzi, 2007). The ability approach to emotional intelligence is measured through objective performance (Van Rooy & Viswesvaran, 2004). In this approach, participants answer questions for which there are correct or incorrect responses (Petrides et al., 2004).

The ability model proposes that development occurs with experience and maturity (Mayer, 2001). In classifying the ability model, Mayer and Salovey (1997) propose a four-branch model of perceiving emotion, integrating emotion in thought, understanding emotion and managing emotion. For example, emotional perception relates to identification of emotion in feelings and thoughts within oneself and others (Mayer, Salovey, & Caruso, 2002). Branch two, use of emotions, relates to the ability of using emotions to prioritise amongst other things, thinking and problem solving to change perception and approach (Macann, Mathews, Zeidner, & Roberts, 2003). Branch three, emotional understanding, is based on understanding emotions, and how they fluctuate to aid interpretation and transitions amongst individuals (Macann, Matthews, Zeidner, Roberts, 2003). Branch four, emotional management, is related to regulating emotions to support emotional growth (Meyer & Zizzi, 2007). In supporting emotional growth, it is proposed that negative emotions are replaced with positive emotions (Macann, Matthews, Zeidner, Roberts, 2003). Therefore, an individual may identify that they are in a bad mood. However, individuals who have high emotional intelligence may be able to prioritise and problem solve more efficiently. Further, those high in emotional intelligence can better understand their emotions and act accordingly. For example, these individuals are capable of regulating their own bad mood and

develop strategies to overcome this mood state. In sum, Mayer et al. (2008) suggest that this four-branch model is suggestive of understanding emotions from which participants have the capacity to regulate them accordingly.

Petrides et al. (2004) suggest that trait emotional intelligence does not run into the conceptual issues that resonate with ability approaches. The ability approach to emotional intelligence has come under scrutiny as there is difficulty in creating items or tasks, which can be scored objectively (e.g. Petrides, Furnham, & Mavroveli, 2007; Robinson & Clore, 2002; Watson, 2000). In addition, there are concerns regarding the usefulness of ability emotional intelligence and its comprehensive coverage. For example, information on items from the intrapersonal component of emotional intelligence is only available to the respondent. The intrapersonal component is important because it concerns internal emotional states of individuals (Petrides et al., 2004).

A popular measure of ability emotional intelligence is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT: Mayer et al., 2002). The MSCEIT measure contains 141 items that divide into four divisions; perceiving emotion, emotion to facilitate thought, understanding emotion and managing emotions (Mayer et al., 2003). However, a number of criticisms have been identified regarding the use of the MSCEIT (Petrides & Furnham, 2000; Petrides et al., 2004; Petrides et al., 2007). A problem with the MSCEIT (Mayer et al., 2002) concerns the objectivity of the measure. For example, abstract reasoning designs cannot be objectively scored. For example, Petrides et al. (2004) point out that the objective scoring is difficult because there can be disagreement of the emotional content of items. Although ability tests have applied alternative scoring procedures, for example accepting a majority in a normative sample (Perez et al., 2005), these lead to a host of conceptual, psychometric and empirical

limitations (Brody, 2004; Matthews, Roberts, & Zeidner, 2004; Petrides et al., Robinson & Clore, 2002). Thus, measures that fail to meet psychometric integrity will lead to poor tests of emotional intelligence (Lane, 2007; Perez et al., 2005). Beyond these conceptual problems, there are also logistical problems associated with the MSCEIT (Mayer et al., 2003) measure. For example, the MSCEIT (Mayer et al., 2003) takes 30-45 minutes to complete, and reduces the likelihood of objective scoring due to its rigid systems. Further, the MSCEIT (Mayer et al., 2003) measure is not freely available and requires training before it can be administered.

2.2.3 Mixed models of emotional intelligence

Two common mixed model approaches of emotional intelligence are based on the work of Goleman (1998) and Bar-On (1997).

2.2.3.1 Goleman's model

Goleman (1998) conceptualised emotional intelligence through a range of skills, such as, self-awareness, self-management, empathy, social awareness, and relationship management. The Goleman (1998) model is measured using the Emotional Competence Inventory-2 (ECI-2), however, the author reports low alpha scores although proposes these are acceptable. He reported low alpha values with score ranges from .59 (trustworthiness) to .82 (conscientiousness), which indicate inconsistency. This inconsistency has led researchers to question the validity and reliability of the Goleman (1998) model (Conte, 2005; Matthews et al., 2004). Further, Conte (2005) suggests that the work of Goleman needs further testing before it can be seriously considered as a valid and reliable model of emotional intelligence (Landy, 2005; Matthews et al., 2004; Meyer & Zizzi, 2007; Salovey & Pizarro, 2003).

2.2.3.2 Bar-On's model

Bar-On (1997) suggests that emotional intelligence is a multifactorial collection of both trait and state characteristics, including intrapersonal (e.g. emotional self-awareness), interpersonal (e.g. empathy), adaptability (e.g. problem solving), stress-management (e.g. stress tolerance) and general mood (e.g. optimism). Association of lifelong experiences, which humans adapt throughout their lifespan, can be attributed towards characteristics set out by Bar-On. In measuring emotional intelligence, Bar-On utilised the EQ-I, which is a 133 item self-report measure, forming a higher order measure of the emotional intelligence construct, based on 5 dimensions. Although test-retest reliability of ($r=.73$) and a small but statistically significant value for predictive

validity (p=.20) (Van Rooy & Viswesvaran, 2004) was reported, concurrent validity suggests overlap between EQ-I and other psychological measures (Meyer & Fletcher, 2007). Further, reviews have identified convergent and discriminant validity data suggesting overlap between EQ-I and personality variables, such as, optimism and emotional stability (Brackett & Mayer, 2001; Conte, 2005; Dawda & Hart, 2000; Meyer & Zizzi, 2007). Therefore, difficulty ensues in separating the Bar-On model from personality and emotional intelligence, which further impacts testing procedures.

In sum, the work of both Goleman and Bar-On is difficult to apply to sports settings because of validity, reliability and issues of overlap with other constructs (Conte, 2005; Mayer et al., 2003; Meyer & Fletcher, 2007; Meyer & Zizzi, 2007). Mixed models are not defined robustly in line with scientific rigour and a number of reviewers have questioned the use of mixed ability approaches to emotional intelligence (e.g. Davies, Stankov, & Roberts, 1998; Matthews et al., 2004; Mayer & Cairrochi, 2006, Murphy, 2006).

In consideration of the above literature, it was deemed appropriate to utilise the trait approach of emotional intelligence and to utilise the EIS measure within this MPhil. In rationalising this approach a number of considerations can be put forward. For example, trait emotional intelligence allows exploring how emotions impact on everyday life. Thus, the trait approach and self-report measures can allow participants to report their emotional experiences and self-perceptions (Petrides et al., 2004). Indeed, Petrides, Sangareau, Furnham and Frederickson, (2006) report that because trait emotional intelligence relates to self-perception it is more likely to allow change. Both emotional experiences and self-perceptions are best placed within a trait emotional intelligence framework.

In relation to the EIS, it can be suggested that the scale offers opportunities for assessing participants' emotional intelligence. Further, within the domain of sport individual differences could dictate that participants' emotional intelligence could differ. For example, participants could arguably appraise their own emotions, but struggle to regulate these emotions. The present MPhil is designed to focus on a six factor model that was used in the Lane et al. (2009) investigation. These six factors are, appraisal of own emotions, appraisal of others emotions, regulation, optimism, social skills and utilization of emotions. The EIS can allow practitioners opportunities to identify participants who require guidance and support. In rationalising the use of the six-factor model, Lane et al. (2009) suggest that it is important for the regulation of emotions to be distinguished between self and others. Previous research fails to distinguish between emotions of self and others (e.g. Petrides & Furnham, 2000). In reviewing the evidence, this present MPhil programme examines the trait self-report approach to emotional intelligence.

2.3 Validity of the Emotional Intelligence Scale: A review

Examining the validity of a measure is important to scientific enquiry (Schutz, 1994). Therefore, an investigation into the validity (see, appendix A) of the EIS measure (Schutte et al., 1998) took place. Two models were investigated, a single factor model, which is the typical way the EIS is used in research (Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007; Zizzi et al., 2003) and a 6-factor model (Lane et al., 2009). The 6-factor model is factorised into appraisal of others emotions, appraisal of own, regulation, social skills, utilisation of emotions and optimism. Appraisal of other emotions has 7-items and examples include, '*I am aware of the non-verbal messages other people send*' and '*It is difficult for me to understand why people feel the way they do*'. Appraisal of own emotions has 5-items and examples include, '*I know why my emotions change*' and '*I easily recognise my emotions as I experience them*'. Regulation has 4-items and examples include, '*I have control over my emotions*' and '*I know when to speak about my personal problems to others*'. Social skills has 5-items and examples include, '*Other people find it easy to confide in me*' and '*I arrange events that others enjoy*'. Utilization of emotions has 7-items and examples include, '*When my mood changes, I see new possibilities*' and '*I use good moods to help myself keep trying in the face of obstacles*'. Optimism has 5-items and examples include, '*I expect that I will do well on most things I try*' and '*I expect good things to happen*'.

In developing this six-factor model, items were distinguished by assessing emotions related to oneself from items assessing emotional experiences focused on others. In addition, items were also assessed in line with emotional intelligence theory in terms of awareness, regulation, and utilization of emotions (Salovey & Mayer, 1990). Results indicated poor fit indices for the single factor model, however acceptable fit indices were identified for the 6-factor model. This clearly suggests that

single factor scores for the EIS (Schutte et al., 1998) have limitations. For example, single factor models (e.g. Petrides & Furnham, 2001) do not distinguish between self and others emotions. Further, the single factor model does not allow practitioners opportunities to work with participants in the same way as the six-factor model. Given that a key aspect of a sports psychologists work would be to enhance the emotional intelligence of participants, the six-factor model provided acceptable fit.

Concurrent to examining the validity of the EIS (Schutte et al., 1998), reliability was also assessed. Assessing the reliability of the EIS (Schutte et al., 1998) through a test-retest is important for a number of reasons. Test-retest provides researchers with an opportunity to assess each individual item. Determining the relative stability of emotional intelligence is important as Salovey and Mayer (1990) hint that the construct should be malleable to the effects of an intervention, but sufficiently stable to offset the effects of random error. Thus, the test-retest investigation examined the EIS (Schutte et al., 1998) through the 6-factor model proposed within the validity study (see appendix A).

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Study 1: Test-retest Stability of the Emotional Intelligence Scale

Abstract

The present study examined the test-retest stability of the self-report trait 33-item Emotional Intelligence Scale (EIS: Schutte et al., 1998) for use in sport. Following institutional approval, Sport Science students (N=69) completed the 33-item EIS and were re-tested a week later. Results demonstrated that 20-items on the 33-item EIS were within a value of -1/+1 of 90% or over. In examining the 6-factor model of emotional intelligence, utilisation of emotions, optimism and social skills demonstrated that items largely scored over the >90% proportion of agreement. The 6-factor model of emotional intelligence is proposed to provide best fit over a single model (Lane et al., 2009). In consideration of systematic bias, a number of items identified with instability. A theoretically stable construct should not lead to systematic bias. Overall, findings may suggest that the EIS (Schutte et al., 1998) scale demonstrates a degree of reliability that can be useful in sport. However, it would be important to establish reasons why certain items did not meet the recommended criteria. It is evident that future research should consider the stability of the EIS (Schutte et al., 1998) with a much larger sample size and explore factors that could be associated with instability. Future work on the EIS (Schutte et al., 1998) should also consider the theoretical position of each subcomponent and its relationship with emotional intelligence.

Keywords: Psychometric, measurement, stability, test-retest, self-report

3.1 Introduction

Emotional intelligence has evolved into a key construct and is the subject of continuous research (Mayer et al., 2008; Meyer & Fletcher, 2007; Petrides et al., 2004). Salovey and Mayer (1990) propose that emotional intelligence relates to the ability to perceive, monitor, employ, and manage emotions within one-self and in others. The efficacy of emotional intelligence has been outlined in meta-analysis, including predicting desirable outcomes (Van Rooy & Viswesvaran, 2004) and enhanced health (Schutte et al., 2007). Further, research in various fields espouses the benefits of emotional intelligence (e.g. Parker et al., 2004; Slaski & Cartwright, 2002; Zeidner et al., 2004) and as a direct consequence has led researchers to actively engage with this construct in sport psychology (e.g. Meyer & Fletcher, 2007; Meyer & Zizzi, 2007). Indeed, early examination of emotional intelligence in sport highlights some promising results (Lane et al., 2008; Thelwell et al., 2008; Zizzi et al., 2003).

Whilst assessing emotional intelligence in sport is worthy of consideration, establishing reliability of associated measures is critical for both methodological and theoretical purposes (Schutz, 1994). Methodologically, it has been suggested that reliability and validity should not be assumed when transferring measures from one population to another (Shutz, 1994). Reliability is a degree of resistance, which is required over time (Anastasi & Urbina, 1997; Kline 1993) and rigorous methods of test-retest are pertinent when assessing stability (Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001). Theoretically it is proposed that test-retest stability can be inferred when the majority of participants (90%) should record differences within a referent value ±1 per item of a scale (Nevill et al., 2001). For example, if a construct is theoretically stable, then most items would report over the >90% proportion of agreement. In contrast, if the majority of items report below the <90%

proportion of agreement, the reliability of the construct is deemed unstable. Another feature for assessing stability relates to detecting bias amongst scores. Therefore, if any item(s) on a scale show an increase or decrease in scores they lead to systematic bias. Nevill et al. (2001) suggests that a stable construct should not report any systematic bias.

Given that research into emotional intelligence continues to evolve and is the subject of continuous debate (Mayer et al., 2008; Meyer & Fletcher, 2007; Perez et al., 2005; Petrides et al., 2007) addressing reliability is important. One point of continuous debate resonates with the numerous approaches that have been advocated for emotional intelligence (see, Ciarrochi, Forgas, & Meyer, 2006; Meyer & Fletcher, 2007; Meyer & Zizzi, 2007; Petrides et al., 2004). To this degree, literature has largely outlined the ability and trait approach of emotional intelligence (Mayer & Salovey, 1997; Petrides & Furnham, 2003; Petrides et al., 2004). Therefore, it would be pertinent to unpack issues related to both ability and trait approaches.

Ability measures of emotional intelligence are identified through performance tests (e.g. the MSCEIT: Mayer et al., 1999) and relate to an individuals ability to answer questions with correct or incorrect responses (Petrides et al., 2004). In contrast, trait measures of emotional intelligence are identified through self-report (e.g. the EIS: Schutte et al., 1998) and assesses an individual's ability to report subjective experiences and relate to an individuals self-perception. Analysis carried out to examine ability and trait measures report low correlation (Brackett & Geher, 2006) and therefore arguably measure separate constructs (Petrides & Furnham, 2003).

Research that utilises self-report inventories to measure emotional intelligence is relatively sparse (Tett & Fox, 2004). Further, evidence clearly points out that reliability and validity are important with regards to self-report measures (Clark &

Watson, 1995). In consideration of trait emotional intelligence, research suggests that self-report is the usual form of assessment (Kirk et al., 2008). One self-report measure of trait emotional intelligence is the EIS (Austin et al., 2004), which has been utilised in sports settings (Lane et al., 2009; Thelwell et al., 2008; Zizzi et al., 2003).

The EIS (Schutte et al., 1998) purports to measuring self-perceptions of individuals' emotions about themselves and others. The EIS is a 33-item questionnaire, which identifies with a range of varying statements. Schutte et al. (1998) reported adequate internal consistency (r = .87 to .90) and moderate test-retest reliability (r= .78). Further, research has reported initial construct and content validity (Zizzi et al., 2003) for the EIS. In relation to the EIS, researchers must assess the contribution of each item to emotional intelligence, examples of items include, *'I know why my emotions change,'* or *'I am aware of my emotions as I experience them.'*

Debate regarding how best to conceptualise the EIS has taken place (Meyer & Fletcher, 2007). Recent research (e.g. Lane et al., 2009) has advocated the six-factor model of emotional intelligence. The six-factor model distinguishes between emotions of oneself and others when regulating emotions. However, earlier research has conceptualised the EIS (Schutte et al., 1998) as a unidimensional measure or a multidimensional measure (Tett & Fox, 2006). For example, Petrides and Furnham (2000) conceptualised a four-factor model of optimism/mood regulation, appraisal of emotions, social skills, and utilization of emotions. A critique of the four-factor model proposed by Petrides and Furnham (2000) resonates with the ambiguity of distinguishing between optimism and mood regulation (Lane et al., 2009). More recently, Kirk et al. (2008) point out that the EIS relates to, appraisal of emotions in self and others, understand emotions in self and others, regulate emotions in self and others and utilise emotions to solve problems.

Assessing the reliability of a trait self-report emotional intelligence measure through test-retest is important. Theoretically, trait emotional intelligence allows participants to reflect on their own subjective experiences (Cairrochi, 2006) and further accept proposed interventions to improve their own well-being (Hayes, Strosahl & Wilson, 1999). Methodologically, Brackett and Geher (2006) have suggested that a useful measure of trait emotional intelligence should yield adequate test-retest reliability. In addition, calls have been made to develop more rigorous methods to assess the validity and stability of measures (Biddle et al., 2001; Schutz, 1998). This is imperative because although perfect measures can never be developed, rigorous measures are required (Schutz, 1994). To this degree, measures should assess the construct under investigation. One approach would be to consider test-retest, which should lead to reproducibility if the construct is stable. Schutz (1994) argued that psychometric measures should be theory-driven, and thus item-analysis in terms of test-retest agreement should fulfil this aim. Clearly, if each item is proposed to assess a theoretically stable construct, each item should demonstrate acceptable stability using a suitable criterion. If some items show poor test-retest stability scores, it would suggest that the underlying construct is unstable. Using test-retest, the present study investigates the six-factor EIS measure (Schutte et al., 1998) to examine stability.

The six-factor EIS measure (Schutte et al., 1998) is factorised into subcomponents of appraisal of others emotions, appraisal of own, regulation, social skills, utilisation of emotions and optimism. The six-factor model has reported acceptable fit indices in comparison to a single factor model (Lane et al., 2009). This clearly suggests that single factor scores for the EIS (Schutte et al.,) have limitations. For example, single factor models (e.g. Petrides & Furnham, 2001) do not distinguish

between self and others emotions. Further, the single factor model does not allow practitioners opportunities to work with participants in the same way as the six-factor model. For example, Zizzi, et al. (2003) utilised the single factor model on participants in the sport of baseball. However, a clear limitation was that a needs analysis could not be formed to support participants on weak areas and therefore prevented suitable intervention. Given that a key aspect of a sports psychologists work would be to enhance the emotional intelligence (Lane et al., 2009) of participants through intervention, the six-factor model was tested.

3.2 Methods

Participants

Volunteer participant athletes (N = 69) completed the 33-item EIS (Schutte et al., 1998). Participant ages ranged from 16-18 years (M= 17.1, SD= 0.89). All participants were students who enrolled onto a range of sports courses at a Further Education College.

Measure

The EIS (Schutte et al., 1998) comprises six factors where items are rated on a 5-point scale anchored by 1=strongly agree to 5=strongly disagree.

Procedure

Following institutional ethical approval, participants were recruited and instructed about the research process. Participants completed the EIS measure online, with testing taking place over two-weeks. Completing measures online is becoming increasingly popular (Buchanan, Johnson, & Goldberg, 2005). Data were analysed via the Statistical Package for the Social Sciences (SPSS, version 10).

3.3 Results

Results examining the nature of test-retest for the trait emotional intelligence EIS measure (Schutte et al., 1998) are contained in Table 1. Test-retest of the six-factor model is identified through the degree of proportion method from which an analysis is formed. The degree of proportion method allows researchers to record the number of participants who score the same on two separate occasions (Wilson & Batterham, 1990). In addition, the degree of proportion also allows rogue items to be identified (Nevill et al., 2001). Based on the degree of proportion method, a degree of analysis is formed and relates to the number of items that actually fall into either a >90% degree of agreement or <90% degree of agreement on each subcomponent of the EIS. Arguably, items that are above the >90% show a greater degree of agreement of test-retest.

Test-retest scores ranged from 76.8% to 97.10% for the six-factor EIS (Schutte et al., 1998) measure and an overall proportion of 67% agreement was recorded. An explanation of results for the 6-factor model of emotional intelligence proposed by Lane and colleagues (2009) will be provided. In examining the 6-factor model, results highlight that items from the utilisation of emotions, regulation, optimism and social skills subcomponents meet the >90% proportion of agreement.

The subcomponent of utilization of emotions identified that all 7 items met the >90% proportion of agreement, with factor scores ranging from 97.10% to 89.80%. The subcomponent of optimism identified that 4 items corresponded with >90% proportion of agreement and scores ranged from 95.70% to 84.10%. One exception to this was the item, *'When I am faced with a challenge, I give up because I believe I will fail'* *(84.10%).* The subcomponent of regulation identified three items that met with the >90% proportion of agreement. Factor scores for the regulation subscale ranged from 94.20% to 87.00%. Two items that failed to meet the >90% criteria were, *'I motivate*

myself by imagining a good outcome to tasks I take on' (88.40%), 'Some of the major events of my life have led me to re-evaluate what is important and not important' (86.95%) and *'I have control over my emotions' (86.95%).* The subcomponent of social skills identified 4 out of 5 items within the >90% proportion of agreement and scores ranged from 94.20% to 86.95%. One exception to this was the item, *'I like to share my emotions with others, (86.95%).*

The subcomponent, appraisal of own emotions identified 2 items within the >90% criteria, scores ranged from 92.80% to 76.81%. Three items that failed to meet within the >90% criteria were, *'I easily recognize my emotions as I experience them' (86.95%), 'I am aware of my emotions as I experience them' (81.15%),* and *'I know why my emotions change' (76.81%).* The subcomponent of appraisal of others emotions identified 3 items within the >90% degree of proportion, scores ranged from 91.30% to 81.15%. However, the three items that corresponded to meeting the >90% degree of proportion related heavily on detecting emotions of others that may have an impact on oneself. For example, *'When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself' (89.95%).* In contrast, four items that failed to meet the >90% degree of proportion related to detecting emotions that impacted on others. For example, *'I can tell how people are feeling by listening to the tone of their voice' (88.40%), 'I know what other people are feeling just by looking at them' (84.05%), 'I find it hard to understand the non-verbal messages of other people' (81.15%),* and *'It is difficult for me to understand why people feel the way they do' (81.15%).*

Another analysis that is important to stability is the systematic shift in scores of items. In the present analysis, nine items identified with a systematic shift in scores. Items that associate with a systematic shift associate with instability (Nevill et al.,

2001). Items that associated with a positive systematic shift included, *'I am aware of the non-verbal messages I send to others,' 'I present myself in a way that makes a good impression on others'* and *'When I am in a positive mood, solving problems is easy for me.'* Items that identified with a negative systematic shift included *'I find it hard to understand the non-verbal messages of other people,' 'I like to share my emotions with others,' 'I arrange events others enjoy,' 'By looking at their facial expressions, I recognize the emotions people are experiencing,' 'When I am in a positive mood, I am able to come up with new ideas,'* and 'I *have control over my emotions.'*

Table 1	Min	Max	Test		Test 2		r	t	% (≤1)	≥1	0	1≤—
Range of Scores for the 6 Factor Emotional Intelligence Scale (EIS)			*M*	*SD*	*M*	*SD*						
Appraisal of own emotions												
I am aware of the non-verbal messages I send to others	-2	4	2.38	0.89	2.33	0.85	0.37	0.37	92.8	14	33	17
When I am faced with obstacles, I remember times I faced similar obstacles and overcame them	-2	2	2.1	0.77	2.16	0.85	0.33	-0.51	89.9	16	33	13
I easily recognize my emotions as I experience them	-2	2	2.12	0.95	2.14	0.81	0.34	-0.24	87	23	28	9
I am aware of my emotions as I experience them	-2	4	2	0.89	2.12	0.72	0.05	-0.86	81.2	12	31	7
I know why my emotions change	-2	4	2.43	1.1	2.25	0.85	0.18	1.24	76.8	10	26	15
Appraisal of others emotions												
I am aware of the non-verbal messages other people send	-2	3	2.33	0.87	2.36	0.86	0.33	-0.24	91.3	18	23	15
By looking at their facial expressions, I recognize the emotions people are experiencing	-2	3	2.07	0.81	2.12	0.65	0.09	-0.36	89.9	16	33	13
When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself	-2	2	2.72	1	2.75	1.01	0.55	-0.25	89.9	5	33	18
I can tell how people are feeling by listening to the tone of their voice	-3	2	2.22	0.84	2.19	0.77	0.34	0.26	88.4	5	38	14

I know what other people are feeling just by looking at them	-2	3	2.61	1.02	2.59	0.81	0.41	0.12	84.1	19	31	8
I find it hard to understand the non-verbal messages of other people	-2	3	3.14	1	3.17	0.94	0.33	-0.21	81.2	10	36	10
It is difficult for me to understand why people feel the way they do	-4	4	2.99	1.09	2.87	0.98	0.15	0.71	81.2	11	30	15

Regulation

I seek out activities that make me happy	-2	2	1.96	0.81	2.09	0.78	0.47	-1.32	94.2	20	35	10
I know when to speak about my personal problems to others	-2	3	2.06	0.94	1.93	0.69	0.44	1.22	91.3	12	39	12
I motivate myself by imagining a good outcome to tasks I take on	-4	4	2.23	0.97	2.2	0.78	0.21	0.22	89.9	11	36	12
Some of the major events of my life have led me to re-evaluate what is important and not important	-4	4	2.17	1.03	2.25	0.85	0.30	-0.54	87	18	34	8
I have control over my emotions	-3	2	2.3	1.1	2.42	0.9	0.55	-1	87	17	34	10

Social skills

I arrange events others enjoy	-3	2	2.58	0.86	2.29	0.88	0.42	2.56	94.2	8	34	23
I compliment others when they have done something well	-4	2	2	0.84	2.19	0.88	0.52	-1.85	94.2	16	39	10
I help other people feel better when they are down	-3	3	2.29	0.94	2.28	0.89	0.52	0.13	92.8	9	43	9

Other people find it easy to confide in me	-2	3	2.35	0.76	2.23	0.79	0.23	1	92.8	17	27	20
I like to share my emotions with others	-3	2	2.75	0.99	2.72	0.84	0.54	0.27	87	11	38	11

Utilization of emotions

When I am in a positive mood, I am able to come up with new ideas	-1	2	1.93	0.83	2.03	0.71	0.63	-1.26	97.1	15	38	11
When my mood changes, I see new possibilities	-2	4	2.55	0.96	2.38	0.89	0.32	1.33	92.8	17	25	22
I present myself in a way that makes a good impression on others	-3	4	2.22	0.91	2.32	0.85	0.35	-0.84	91.3	17	36	10
When I am in a positive mood, solving problems is easy for me	-2	2	2.14	0.99	2.17	0.86	0.54	-0.27	91.3	16	37	9
I use good moods to help myself keep trying in the face of obstacles	-2	4	2.41	0.88	2.29	0.75	0.20	0.93	91.3	13	28	15
When I feel a change in emotions, I tend to come up with new ideas	-3	2	2.67	0.92	2.57	0.78	0.31	0.84	89.9	9	38	14
When I experience a positive emotion, I know how to make it last	-2	2	2.43	0.99	2.43	0.85	0.56	0	89.8	13	40	9

Optimism

I expect that I will do well on most things I try	-1	2	1.99	0.81	2.03	0.75	0.53	-0.48	95.7	18	39	9
I expect good things to happen	-2	2	2.19	0.9	2.28	0.92	0.60	-0.88	94.2	14	35	17

Emotions are one of the things that make my life worth living	-3	3	2.35	0.94	2.46	0.93	0.55	-1.09	91.3	18	38	9
When I am faced with a challenge, I give up because I believe I will fail	-4	3	3.71	1.16	3.51	1.31	0.60	1.51	84.1	11	32	15

3.4 Discussion

The aim of this present study was to test-retest the stability of the self-report trait EIS (Schutte et al., 1998) measure of emotional intelligence. Rigorous methods are required when assessing stability to retain a degree of resistance to change over time (Biddle et al., 2001; Schutz, 1994). Theoretically, the self-report EIS (Schutte et al., 1998) is a trait measure of emotional intelligence and one would expect stability (Salovey & Mayer, 1990). In review of the reported results, 67% of EIS items were within the recommended >90% proportion of agreement. The purpose of this discussion will be to explain these findings in line with theoretical interpretation. This is important, as it will allow researchers to develop measures that are in line with conceptualisation of a construct and support scientific rigour.

The findings from this investigation lend support to the utility of the six-factor model (Lane et al., 2009) of emotional intelligence for use in sport. Of the six-factor model, the subcomponents of utilization of emotions, regulation, social skills and optimism identified with the >90% degree of proportion. These findings indicate that the emotional intelligence of participants relates to the ability of being aware, having the ability to reflect, remaining positive and having empathy. The subcomponents of appraisal of own emotions and appraisal of others emotions identified with some items that met with the >90% degree of proportion. However, some items on these two subcomponents did not meet the >90% degree of proportion. Both the appraisal of own emotions and appraisal of others emotions are core sub-components of emotional intelligence (Salovey & Mayer, 1990). Given that test-retest relates to assessing the construct in question it would be pertinent to provide reasons to why certain items failed to meet the proportion of agreement or provided only a marginal fit. For instance, the item, '*When I am faced with obstacles, I remember times I faced similar obstacles*

and overcame them,' demonstrated a marginal fit. However, it can be suggested that the recalling of major events is likely to be strong and thus should have registered a stronger fit. The item, *' I am aware of my emotions as I experience them,'* reported very poor stability and could amount to low emotional intelligence of participants. However, one could assume that mood states, between the two testing periods, could have dictated this result. The item, *'I know why my emotions change,'* also reported low fit and needs explaining. For instance, it could be suggested that this item is not specific as it fails to identify emotion type. Thus, emotions and their intensity can vary, for example, winning and losing would exhibit two different emotional states.

When reviewing systematic shifts in scores (Nevill et al., 2001) results clearly demonstrate that several items led to bias. Factors associated to systematic bias could be explained through fluctuating emotional states. For example, factors could dictate that emotional state can vary from one week to the next (Hanin, 2000; Jones, 2003; Lazarus, 2000). Thus, examining the strategies participants use to regulate their emotions is a future line of enquiry. Other issues could relate to emotion questions either lacking direction or overlapping with other items. Distinguishing the emotional content of the EIS is an important consideration because previous research, (e.g. Petrides & Furnham, 2000) has failed to distinguish between self and others emotions. An additional consideration relates to the balance of the present EIS (Schutte et al., 1998) and its subcomponents as emotional content can overlap. For example, the item *'when my mood changes, I see new possibilities,'* is an item on the subcomponent of utilization of emotions, but could also relate to optimism. Another item from the subcomponent of optimism, *'I seek out activities that make me happy,'* could be placed under the subcomponent of regulation. Further, the subcomponents of appraisal of own emotions, optimism, regulation and utilization of emotions relate to self-emotions. The

subcomponents of appraisal of others emotions and social skills relate to emotions of other people.

Limitations and issues related to the EIS need to be clarified and discussed. For example, the EIS asks questions where the respondent answers questions based on their self-perception. An example of one such question is, *'When I experience a positive emotion, I know how to make it last.'* This self-perception question offers little in the way of conceptualising emotional intelligence. The present investigation did not identify male and female differences and therefore no assessment in relation to gender was made. A benefit of assessing gender differences would be important to make analysis of different emotional intelligence profiles amongst males and females. Further, through purposeful test-retest reliability analysis, researchers can explore single items in depth to identify the direction of the EIS (Schutte et al., 1998). Through this exploration, both item stability and item content needs further investigation and future research should assess each item of the EIS (Schutte et al., 1998).

In addition to these limitations, it would be purposeful to identify any practice effects observed. It is important to acknowledge that practice effects in test-retest can occur and one associated factor relates to time intervals. Thus, longer time periods could arguably influence results. For example, differences in scores during the testing period could be reported. However, this two-week test-retest method has been previously adopted in peer-reviewed research (e.g. Nevill et al., 2001; Schutte et al., 1998) and therefore should have minimised time interval practice effects. Another factor that could lead to practice effects relates to competency levels of participants. Thus, the item *'I know why my emotions change'* scored 76.8% over the two-week re-test period. Arguably, the item, *'I know why my emotions change,'* pertains to stable emotions and should score higher on the scale. However, this study was centred on

College students between the ages of 16-18 whom may have struggled to identify their emotions sufficiently. In addition, participants may have struggled to understand some items because emotional intelligence is not fully developed. For example, the item *'It is difficult for me to understand why people feel the way they do,'* scored 81.4% over the two-week testing period. Therefore, it is plausible to suggest that participants could have been confused about the exact meaning of some items during the testing period.

Despite the reported limitations, it is pertinent to suggest that the data provides ways forward in developing the EIS (Schutte et al., 1998). In sum, although further work is required and items associated to instability need to be examined, the EIS (Schutte et al., 1998) demonstrates some degree of promise for use in sport.

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4. Examining emotional intelligence in sport

4.1 Introduction

Once conceptual issues have been explored and the psychometric properties of the measure to be utilised are established the next stage of the research process commences. As a result, two further studies examined the nature of emotional intelligence and associated variables. In one study, emotional intelligence and anger was explored to identify any relationships. The purpose of this investigation was to identify how participants can utilise emotional intelligence to regulate the emotion of anger. One way to regulate anger was through the utilisation of psychological skills. To this degree, relationships between emotional intelligence, mental toughness and psychological skills were explored. Examining these relationships is rationalised because emotional intelligence, mental toughness and psychological skills relate to optimal performance states and emotional regulation. Therefore, as emotions play a significant role in sport (Botterill & Brown, 2002; Hanin, 2000; Jones, 2003) regulating these emotions become important. Prior to reporting on these two studies, it would be prudent to establish a link between emotional intelligence and sport.

4.2 Emotional intelligence and its potential link to sport

Researchers have studied the role of emotion in sport and have outlined its significance (Botterill & Brown, 2002; Lazarus, 1999b; Jones, 2003; Hanin, 1997, 2000; Totterdell & Leach, 2001). Emotions can fluctuate between performances and performers can experience both positive and negative emotions (Hanin, 1997; Jones, 2003). In reviewing emotions and their impact on sports performance, Botterill and Brown (2002) contend that athletes should critically reflect on their own emotional experiences. Further, Hanin (2000) suggests participants need to develop skills in order to recognise and manage their emotions. It could be argued that the evidence presented

above closely aligns with the construct of emotional intelligence. Considering that the construct of emotional intelligence is defined as the ability to perceive, monitor, employ, and manage emotions, it is necessary to assess the relationship between emotional intelligence and the regulation of emotion(s). Indeed, research has found that emotional regulation can lead to optimal performance states (e.g. Totterdell & Leach, 2001). Thus, it comes as no surprise that researchers have begun to explore the utility of emotional intelligence in sport (Meyer, Fletcher, Kilty, & Richburg, 2003; Meyer & Fletcher, 2007; Meyer & Zizzi, 2007; Zizzi, et al., 2003).

One of the first studies examining emotional intelligence in sport was Zizzi et al. (2003). Zizzi et al. explored relationships between emotional intelligence and baseball performance. Findings identified that emotional intelligence was an important predictor of success for pitchers, but relationships were not as strong for batters. Zizzi et al. suggested that emotional intelligence for pitchers was higher because they have more time to think of their own emotions and engage in regulatory processes. Arguably, it could be proposed that one regulatory process is psychological skills (Thelwell, 2008). For example, the reported effectiveness of psychological skills could support participants to regulate their own anxiety levels (Hanton & Jones, 1999). Research by Zizzi et al. provided researchers in sport psychology potential ways forward to examine emotional intelligence in sport. A major limitation highlights the use of the EIS (Schutte et al., 1998) as a unitary construct. Further, assessing the EIS (Schutte et al., 1998) as a unitary construct arguably leads to a loss of information. Theory suggests that the EIS (Schutte et al., 1998) relates to appraising, regulating and utilising emotions (Lane et al., 2009; Petrides, Furnham, and Mavrovelli, 2007; Petrides, Pita, and Kokkinaki, 2007). Therefore, when examining the EIS (Schutte et al., 1998) it would be prudent to assess each subscale. For example, participants may understand

their emotions, but fail to recognise how to regulate their emotions in certain situations. Given that one of the roles for sport psychologists includes needs analysis, utilising the EIS (Schutte et al., 1998) by assessing its subscales would have been more efficient.

In another study, Lane et al. (2009) investigated emotional intelligence and psychological skills. It was postulated that emotional intelligence and psychological skills could associate because they both relate to successful performance and emotional regulation. A key finding of the investigation was that psychological skills were associated with appraisal of other emotions and the ability to regulate these emotions. For example, self-talk associated significantly with appraisal of own emotions. Therefore, results show that participants who utilise psychological skills also reported stronger perceptions of emotional intelligence. Thus, it is argued that strong perceptions of emotional intelligence lead participants to utilise psychological skills because they will recognise the importance of regulating and managing emotion (Lane et al., 2009).

An exploration of emotional intelligence and coaching efficacy showed a reciprocal association (Thelwell et al., 2008). For example, a correlation between appraisal of own emotions and regulation was established with all scales of coaching efficacy. This is a key finding because it identifies that as one can appraise their own emotions they should be in a position to regulate others emotions. A key role for coaches would be to regulate emotions of their participants in various situations that present themselves. Thelwell and colleagues (2008) argue that psychological skills could help coaches to regulate not only their own emotions, but also those of participants whom they coach. Thelwell et al. (2008) suggest that coaches high in emotional intelligence will be more effective in supporting participants. In sum, this investigation demonstrates the utility of emotional intelligence within sport settings and calls for further research in the area.

Although research using the EIS in sport is limited, further investigation into the area is warranted for a number of reasons. The evidence presented above clearly highlights the working relationship of emotional intelligence and other related variables. In reviewing the evidence, it is clear that the six-factor model of emotional intelligence (Lane et al., 2009) provides best fit for use in sport. The usefulness of the six-factor model resonates with both participant and practitioner. For example, participants high in emotional intelligence ability should not only be able to recognise the need to regulate their emotions, but also maintain these emotions. However, participants low in emotional intelligence ability may need support to recognise these emotions. Therefore, the role of practitioners becomes important as they can provide this support through useful strategies, such as psychological skills.

4.3 Emotional intelligence and anger: A review

Within our research group, a decision was made to investigate anger and emotional intelligence in sport. This decision was an acknowledgement to the finding that there is scant literature on anger and sports performance (Maxwell, 2004). This is surprising, especially considering that anger is common within sports performance. Further, it can be suggested that anger is also a powerful emotion in sports performance. Whilst anger can be both positive and negative to emotion (Hanin, 1997, 2000), it could be postulated that participants who exhibit negative emotions as a direct consequence could be supported. In consideration of this postulation and considering that emotional intelligence espouses participants to recognise and become aware of emotions (Mayer & Salovey, 1997), it would be purposeful to examine anger and emotional intelligence. A further recommendation of examining anger and emotional intelligence resonates with the causes of anger, which can be detrimental to both

performance and team/individual results. In sum, if regulating anger associates to emotional intelligence, researchers can develop appropriate interventions.

When assessing relationships between emotional intelligence and anger it was evident that participants were likely to develop strategies to improve their own performance. The relationship of anger and emotional intelligence in two studies was explored to examine patterns. In examining anger and emotional intelligence in sport, it was proposed that emotionally intelligent participants are most likely to better understand and identify anger patterns than less intelligent participants. Further, emotionally intelligent participants should be able to utilise strategies to control their anger in certain situations. Key findings indicate that appraisal of emotions, optimism and regulation of emotions are important factors in relation to anger. Findings also show that emotional intelligence is linked to changes in anger between successful and unsuccessful performance, as might be predicted by the nature of emotional intelligence. In sum, it was purposeful to focus on regulating anger through emotional intelligence. As a result, a qualitative study looked at emotional intelligence to explore anger-performance in a case study.

In a second study, a tennis player utilised skills to combat anger and through an intervention programme it was identified emotional intelligence was enhanced. This was possible through developing strategies, such as utilising imagery and goal setting that allowed recognition of emotions and a change of mindset when regulating own mood states. These strategies allowed the participant to assess their own emotions and regulate these accordingly. In reviewing these results, it was evident that emotional intelligence can enhance performance of participants. It could also be argued that some characteristics of emotional intelligence resonate closely with mental toughness. For example, the tennis participant gained raised self-belief and confidence following the

intervention. In offering the appropriate interventions, it was evident that strategies such as psychological skills can enhance emotion and combat anger.

Following this investigation, it was decided to examine relationships between emotional intelligence, mental toughness and psychological skills. The purpose for this was established because of the possible correlation between the three variables. For example, literature has already established the nature of emotional intelligence and its purported enhancement of performance (Van Rooy & Viswesvaran, 2004). Further, elements of mental toughness could align with emotional intelligence, for example raised self-confidence and self-belief. The utilisation of psychological skills to enhance emotional intelligence and raise mental toughness could be examined. Indeed, research has identified relationships between psychological skills and emotional intelligence (Lane et al., 2009) and mental toughness (Connaughton et al., 2008). Therefore, examining emotional intelligence with other associated variables, such as, mental toughness and psychological skills is important. A number of considerations were taken into account in conducting this investigation. For example, emotional intelligence and mental toughness relate to emotional control and successful performance outcomes (Jones et al., 2002; Lane et al., 2009). Further, emotional intelligence and mental toughness share similar characteristics, such as, emotional control, regulating anxiety and managing competitive pressure. To further enhance and maintain emotional control, psychological skills could be utilised to support participants. Therefore, in reviewing the information above, it was decided to investigate possible relationships between emotional intelligence, mental toughness and psychological skills.

Study 2: Relationships between emotional intelligence, mental toughness, and psychological skills.

Abstract

The aim of this study was to explore relationships between emotional intelligence, mental toughness, and psychological skills. Participants (N=143) completed the six-factor Emotional Intelligence Scale (EIS; Schutte et al*., 1998), a 27-item Mental Toughness Scale that was developed by using quotes proposed to illustrate mental toughness (Jones, et al., 2002) and the 68-item Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999). Results lend support to the notion that emotional intelligence, mental toughness, and psychological skills usage inter-correlate. Regression analysis suggested that variance between emotional intelligence, mental toughness and psychological skills were evident. Indeed, increased usage of psychological skills might enhance both emotional intelligence and mental toughness. Therefore, developing intervention programmes to support participants use of psychological skills may be the scope for future research. The correlational design used in the present study prevents conclusions regarding the proposed direction of relationships. Therefore, future research should investigate the extent to which changes in psychological skills usage reflect concomitant improvements in emotional intelligence and mental toughness.

Keywords: constructs, emotions, practitioners, relationships, measures

5.1 Introduction

The competitive nature of sport can elicit a range of emotions ranging from mild to intense that are considered integral to performance (Botterill & Brown, 2002; Jones, 2003). In proposing a hierarchal structure of emotions, Lazarus (1991b) suggests that stronger and more important goal(s) will elicit intense emotion. For example, one would expect an increase in emotional intensity leading up to the 100m Olympic Games Final. In contrast, a golfer may not experience the same degree of intense emotion on the second putting green. In consideration, that emotional intensity can vary and depends on both individual and situational factors, researchers agree that performers need to develop skills to recognise and manage their own emotions (Botterill & Brown, 2002; Hanin, 2000; Jones, 2003).

The regulation and management of emotions could align closely with the construct of emotional intelligence (Mayer & Salovey, 1997; Salovey & Mayer, 1990). Salovey and Mayer (1990) propose that emotional intelligence relates to the ability to monitor feelings and to use these to guide further thinking and actions. Indeed, research has highlighted the effectiveness of emotional intelligence in a range of domains (Parker, et al., 2004; Salski & Cartwright, 2004; Zeidner, et al., 2004). Meta-analysis results are further evidence that support the utility of emotional intelligence in both health and work performance (e.g. Schutte et al., 2007; Van Rooy & Viswesvaran, 2004). To this degree, researchers (Meyer & Zizzi, 2007; Meyer & Fletcher, 2007) have become interested in examining emotional intelligence in sport. Indeed early research into emotional intelligence and sport has found some promising results (Lane et al., 2009; Thelwell et al., 2008; Zizzi et al., 2003).

Another construct that could align closely with regulating and managing emotions is mental toughness (Connaughton et al., 2008; Jones et al., 2002; 2007). Jones et al. (2002) define mental toughness as remaining determined, focused, confident, and in control under pressure through training and competition. Recent research has espoused this definition in both cricket (Bull et al., 2005) and football (Thelwell et al., 2005). Further, some attributes of mental toughness could align closely with emotional intelligence. For example, coping with pressure, maintaining focus, dealing with anxiety and maintaining self-belief are arguably attributes that align with emotional intelligence. Theoretically, emotional intelligence is postulated to being aware of emotions and to regulate one's own emotion (Salovey & Meyer, 1990). Therefore, participants who can understand pressure and deal with anxiety levels by developing strategies to support emotion are more likely to be successful. Further, evidence suggests that both emotional intelligence and mental toughness align to emotional control and successful performance outcomes (Jones et al., 2002; Van Rooy & Viswesvaran, 2004). To regulate emotional control and developing successful performance, strategies that could enhance emotional intelligence and raise mental toughness should be explored.

One strategy that relates to emotional control and successful performance is psychological skills (Thelwell, 2008). The effectiveness of psychological skills has been reported in meta-analysis (e.g. Greenspan & Feltz, 1989; Weinberg & Comar, 1994). Recent evidence has documented utilising psychological skills in emotional intelligence (Lane et al., 2009; Thelwell et al., 2008) and mental toughness (Connaughton et al., 2008). For example, Lane et al. (2009) identified a link, which suggested that participants high in emotional intelligence ability were most likely to utilise psychological skills to regulate emotions. For example, self-talk associated to

emotional intelligence subcomponents of appraisal of others emotions, appraisal of own emotions, regulation and utilisation of emotions. Goal setting and imagery associated to emotional intelligence subcomponents of utilisation and regulation. It therefore could be suggested that participants utilise psychological skills because they see the benefits that these skills could bring to performance.

Connaughton et al. (2008) demonstrated that participants utilised psychological skills to develop and maintain mental toughness. The employment of psychological skills could support participants in becoming aware of their emotions and regulate these accordingly. Research has suggested that practitioners (e.g. sport psychologists and coaches) could support participants in their use of psychological skills, which could help to develop and maintain mental toughness and enhance emotional intelligence (Connaughton et al., 2008; Thelwell et al., 2008). One aspect of mental toughness and emotional intelligence could arguably relate to regulating anxiety levels. Previous research has assessed the impact of anxiety on performance. For example, Hanton and Jones (1999) postulated that regulating emotion can lead to reduced anxiety levels. To this degree, it was demonstrated that performers who utilised self-talk, imagery and goal setting were able to interpret anxiety levels as facilitating for performance. Thus, through employing psychological skills, participants could regulate their own anxiety levels and become more acutely aware of how to respond to these emotions.

In exploring possible relationships between emotional intelligence, mental toughness, and psychological skills, relative examples can be proposed. For example, positive self-talk could enhance self-belief to achieve goals and subsequently raise optimism because of increased determination to succeed (Connaughton et al., 2008). Thus, being acutely aware of your own emotions and having an ability to regulate these

emotions through utilising psychological skills (Lane et al., 2009) can lead to positive self-belief and desire. As emotional intelligence relates to developing awareness and understanding emotions, participants may be able to facilitate appropriate behaviour. For example, psychological skills, such as goal setting and positive self-talk can support behaviour by controlling emotions and maintaining a high sense of self-belief (Connaughton et al., 2008). In addition to this example, participants who are in control of their emotions may develop strategies, such as, imagery to maintain focus and build self-confidence (Connaughton et al., 2008). Arguably, participants who are aware of their own emotions and have the ability to regulate these emotions may see and understand the value of developing appropriate strategies to regulate emotion (Thelwell et al., 2008; Totterdell & Leach, 2001). We could further argue that practitioners could value the use of psychological skills because it may enhance emotional intelligence (Lane et al., 2009; Zizzi et al., 2003) and raise mental toughness (Connaughton et al., 2008). Taken together, this evidence suggests that emotional intelligence, mental toughness and psychological skills should inter-correlate.

In reviewing the evidence above, it would appear that significant relationships between emotional intelligence, mental toughness, and psychological skills could exist. Further, given that emotions in sport (Jones, 2003) are considered integral and considering interest in the regulation and management of these emotions (Botterill & Brown, 2002; Jones, 2003; Hanin, 2000) this investigation is worthy of consideration. Therefore, an examination of relationships between emotional intelligence, mental toughness, and psychological skills was carried out.

5.2 Methods

Participants

Volunteer participant athletes (N = 143) included 110 males and 33 females. Ages ranged from 16 to 56 (M = 19.82, SD = 6.74), and 1 to 35 hours a week was spent on training for their sport (M = 6.58, SD = 5.56). Levels of performance ranged from amateur (n=42), club (n=10), college (n=31), county (n=9), national level (n=11), professional (n=5), and semi-professional (n=35). Participation ranged from aerobics (n= 1), athletics (n=8), badminton (n=2), basketball (n=19), boxing (n=7), cricket (n=20), dance (n=2), football (n=59), gymnastics (n=1), martial arts (n=4), netball (n=8), rugby (n=1), running (n=2), skiing (n=1), tennis (n=1), trampoline (n=2), weights (n=3), and wrestling (n=2).

Measures

Emotional Intelligence Scale

The Emotional Intelligence Scale (EIS; Schutte et al., 1998) is made up from six factors (where items are rated on a 5-point scale anchored by 1 = strongly agree to 5 = strongly disagree).

Mental Toughness Scale

The mental toughness scale (see appendix, C) used for this MPhil was developed by using quotes from the original qualitative work of Jones, et al. (2002). The mental toughness scale best captures the nature of the concept as described by Jones et al. (2002). Further, research in other areas (e.g. Bull et al. 2005; Connaughton et al., 2008; Jones, et al., 2007; Thelwell et al., 2005) has also utilised the definition of mental toughness (Jones et al., 2002; 2007). The mental toughness scale is based on 27-items and is rated on a 7-point scale anchored by not at all (1) and very much so (7). Although work is needed to develop factorial and construct validity, it is argued that the

mental toughness scale represents a conceptually valid measure as it is based on qualitative data from elite athletes. Further, a reliability analysis of Cronbach Alpha of .92 was reported for the scale. The mental toughness scale is sub-classified into attributes of self-belief, desire and motivation, performance focus, lifestyle, competitive pressures, anxiety, and pain and hardship.

Test of Performance Strategies.

The Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999) is a 64-item measure with items rated for frequency of use on a 5-point scale anchored by never (1) to always (5). The TOPS assesses eight psychological strategies used competition and practice. These strategies are activation, automaticity, emotional control, goal-setting, imagery, negative thinking, relaxation, and self-talk. During practice, negative thinking is replaced by attentional control.

Procedure

Following institutional ethical approval, participants were recruited and instructed about the research process. Volunteer participant athletes completed the EIS (Schutte et al., 1998), the mental toughness scale and the test of psychological skills (Thomas et al., 1999) online. Completing measures online is becoming a popular method (Buchanan et al., 2005). Further, evidence suggests that online methods are equivalent to traditional paper and pencil methods (Lonsdale et al., 2006). Data were analysed via the Statistical Package for the Social Sciences (SPSS).

5.3 Results

Descriptive statistics report that participants emotional intelligence ability

(*M=3.63, SD=0.57*) was higher than their use of psychological skills (*M=3.21,*

SD=0.74) and levels of mental toughness (*M=2.69, SD=0.69*).

Table 2: Correlations between emotional intelligence, psychological skills and

mental toughness

Emotional Intelligence	Appraisal of others emotions	Appraisal of own emotions	Optimism	Regulation	Social Skills	Utilisation of emotions	Mental Toughness
TOPS Practice							
Self-talk	0.40*	0.36*	0.50*	0.37*	0.49*	0.49*	0.36*
Emotional Control	-0.06	-0.06	-0.06	-0.18	-0.06	0.00	-0.11
Automaticity	0.16	0.19	0.25*	0.11	0.22	0.12	0.22
Goal Setting	0.24	0.29*	0.34*	0.25*	0.29*	0.41*	0.33*
Imagery	0.37*	0.28*	0.39*	0.33*	0.34*	0.37*	0.35*
Activation	0.22	0.33*	0.39*	0.27*	0.29*	0.39*	0.24
Relaxation	0.15	0.06	0.07	0.09	0.16	0.18	0.05
Attentional Control	0.00	0.14	0.03	0.01	0.13	0.15	0.09
TOPS Competition							
Self-talk	0.34*	0.35*	0.40*	0.34*	0.43*	0.48*	0.29*
Emotional Control	-0.13	-0.14	-0.25*	-0.22	-0.13	-0.07	-0.26*
Automaticity	0.04	0.16	0.18	0	0.15	0.18	0.16
Goal Setting	0.15	0.12	0.24*	0.21	0.19	0.32*	0.23
Imagery	0.25*	0.23	0.30*	0.24	0.17	0.27*	0.32*
Activation	0.32*	0.36*	0.45*	0.37*	0.38*	0.42*	0.33*
Relaxation	0.09	0.13	0.12	0.04	0.14	0.12	0.06
Negative Thinking	-0.2	-0.34*	-0.37*	-0.26*	-0.32*	-0.25*	-0.35*
MENTAL TOUGHNESS	0.46*	0.41*	0.51*	0.42*	0.44*	0.42*	1
***P<.0.00**							

Results from Table 2 suggest that correlation reported significance in relationships between emotional intelligence, mental toughness, and psychological skills. For example, correlations ranged from 0.52 to 0.68 for emotional intelligence, -0.17 to 0.53 for psychological skills in training and -.037 to 0.70 psychological skills in competition, and -0.35 to 0.71, for mental toughness. Correlations between emotional intelligence and mental toughness ranged between 0.41 and 0.51. Correlations between emotional intelligence and psychological skills ranged between -0.37 and 0.68. Correlations for mental toughness against psychological skills ranged between -0.35 and 0.40. In sum, the relationship between emotional intelligence, mental toughness and psychological skills reported a total correlation of 0.68. These results are also consistent with descriptive data, which identifies emotional intelligence ability as being higher than mental toughness and psychological skills usage.

A further examination was carried out to assess relationships through multiple regression analysis. Multiple regression allows exploration of the three variables to assess influence amongst relationships. The present study postulated that relationships between emotional intelligence, mental toughness, and psychological skills co-exist. For example, emotional intelligence and mental toughness relate to the regulation of emotions and psychological skills could be utilised to regulate these emotions. With this regard, emotional intelligence was the dependent variable as it was the focus of this study. However, as relationships were correlational any of the three variables could have acted as the dependent variable. Multiple regression analysis identified a 39% variance between emotional intelligence, mental toughness and psychological skills usage (*Multiple R* = .68, *p* = .001). Significant predictors included appraisal of others emotions (β = .22, *t* = 2.34, *p* = .01), optimism (β = .23, *t* = 2.25, *p* = .001), goal setting

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practice (β = .16, t = 1.94, p = .05), imagery practice (β = .17, t = 2.06, p = .04) and emotional control during competition (β = -.23, t = -2.33, p = .02).

5.4 Discussion

Given the interest in emotions (Botterill & Brown, 2002; Jones, 2003) and their potential impact on sport, the examination of variables, which resonate with these emotions, becomes important. Therefore, the present investigation assessed relationships between emotional intelligence, mental toughness, and psychological skills. Findings indicate that relationships between, emotional intelligence, mental toughness, and psychological skills co-exist. Therefore, an exploration of these findings, potential avenues for practitioners and future research avenues will be outlined.

A key finding identified that emotional intelligence associated with both mental toughness and psychological skills. For example, emotional intelligence and mental toughness correlated significantly with psychological skills, such as, self-talk, goal setting and imagery. These findings align closely with recent research (Lane et al., 2009), which established a relationship between self-talk and appraisal of own emotions. Further, it could be argued that our findings comply with theoretical interpretations of emotional intelligence (Mayer & Salovey, 1997) and mental toughness (Jones et al., 2002), which espouse to regulating emotional control. For example, recent research has demonstrated relationships between emotional intelligence and psychological skills (Lane et al., 2009) and mental toughness and psychological skills (Connaughton et al., 2009). Theoretically, we could propose that participants with high emotional intelligence ability (Thelwell et al., 2008; Lane et al., 2009) and raised mental toughness (Connaughton et al., 2008) are more likely to utilise psychological skills. One reason for these findings could be that participants value

psychological skills as a way of regulating and managing their own emotions (Lane et al., 2009).

Through utilising psychological skills, participants mental toughness could also be raised (Connaughton et al., 2008). For example, psychological skills usage led to the ability to cope with competitive anxiety and allow participants to thrive on the pressure of competition (Connaughton et al., 2008). Further, the use of psychological skills identified that participants high in emotional intelligence were more likely to appraise their own emotions by utilising self-talk (Lane et al., 2009). Findings from this investigation also lend weight to the fact that psychological skills are useful for both raising mental toughness and enhancing emotional intelligence. The ability to utilise and regulate emotions could arguably be raised through psychological skills usage. Further, with psychological skills, confidence and the ability to overcome setbacks becomes more resilient.

This present investigation demonstrated some alignment to these aforementioned studies. For example, appraisal of own emotions correlated with imagery and activation. This suggests that the use of imagery and activating your emotions could relate with attaining focus to desired goals. The subcomponent of appraisal of others emotions associated with self-talk. This finding was in line with previous research (Lane et al., 2009), which demonstrated that participants could utilise emotions of others through effective self-talk. Further, research by Hardy, Jones, & Gould (2006) also highlights the benefits of utilising self-talk for both motivational and cognitive purposes. The subcomponent of utilisation of emotions was associated predominately with goal setting. Thus, being aware of the influences of emotions and setting appropriate goals suggests that participants could prioritise targets. An association was found for optimism and self-talk, thus results could purport to the use

of self-talk leading to greater optimism and determination to reach targets. In consideration, that through utilising psychological skills one could also postulate that participants self-confidence becomes more robust and therefore resilient to setbacks. The subcomponent of regulation associated with a range of psychological skills, including activation, self-talk, goal setting and imagery. This suggests that participants' ability to regulate their own emotions through utilising psychological skills could lead to self-belief and determination to accomplish goals. In sum, these findings indicate that psychological skills enhance emotional intelligence and raise mental toughness and falls in line with previous research (Connaughton et al., 2008; Lane et al., 2009).

Another key finding identified a variance between emotional intelligence, mental toughness, and psychological skills. This variance suggests that the three variables share similar conceptual space. For example, utilising emotions can help to maintain emotional control, which could relate to both emotional intelligence and mental toughness. Utilising psychological skills, such as, self-talk and goal setting could support participants to enhance their emotions. Literature has demonstrated that the use of psychological skills can enhance emotional intelligence (Lane et al., 2008) and develop mental toughness (Connaughton et al., 2008). Thelwell et al. (2008) found that coaches utilised self-talk as a way of controlling their emotions. The theoretical and practical implications from this investigation align to research calling for further exploration of variables, which associate to regulating emotion (Lane et al., 2009). For example, emotional intelligence relates to awareness and recognition of emotions and research highlights the importance of examining emotional intelligence (Lane et al., 2008; Meyer et al., 2003; Meyer & Fletcher, 2007; Meyer & Zizzi, 2007; Zizzi et al., 2003) in sport. In examining mental toughness, it is acceptable to associate similar

characteristics of emotional control to those typified in emotional intelligence, such as, regulation of competitive stressors (Hanton & Jones, 1999a, 1999b).

In lending support to the usage of psychological skills to foster supporting participants in controlling emotions, it is crucial that intervention programmes are developed accordingly. For example, performers could benefit from recognising, regulating and managing their emotions through intervention programmes. Connaughton et al. (2008) argue that through increasing performer awareness and utilising psychological skills, performers could subsequently develop mental toughness. Further, Lane et al. (2009) highlight that performers who are likely to utilise psychological skills, could also raise their emotional intelligence because they recognise the value of such practice. Indeed, evidence exists of such intervention programmes to be of benefit to performers (Devonport, 2007; Hanton & Jones, 1999; Thelwell & Greenlees, 2003; Thelwell, et al., 2006). Given that a key role of practitioners is to develop emotional awareness, the contention that psychological skills could be used to regulate emotion offers a useful line of future investigation. Findings from this investigation could allow an exploration of possible relationships between practitioner and participant. For example, Thelwell et al. (2008) identified that coaches could benefit from understanding their own emotional intelligence and use of psychological skills with performers.

Whilst findings support relationships between emotional intelligence, mental toughness, and psychological skills, some limitations need to be considered. The correlation design of the study does not attribute which variable is directing relationships. Thus, does emotional intelligence and mental toughness lead to greater use of psychological skills or vice versa. We therefore recommend that future research considers these relationships through a longitudinal intervention programme using both

qualitative and quantitative methods. For example, within our research group we found anger was regulated following a range of intervention strategies being utilised. Therefore, obtaining data and then developing interventions over a period can allow practitioners to work with participants to regulate their own emotions. The benefits of a season long programme in assessing coping strategies has been documented previously (e.g. Devonport, 2007). Further, research should also investigate how emotional intelligence ability may encourage use of psychological skills in both practice and competition settings. Evidence seems to promote the use of psychological skills to enhance performance and regulate emotions (Connaughton et al., 2008; Lane et al., 2009; Thelwell et al., 2008). For example, Thelwell et al., (2008) have proposed to examine the use of psychological skills usage amongst coaches in a qualitative study. In proposing this, an intervention programme that assesses psychological skills usage to enhance emotional intelligence (e.g. Lane et al., 2009) and raise mental toughness (Connaughton et al., 2008) to shape emotional regulation is recommended.

In conclusion, the present investigation explored potential relationships between emotional intelligence, mental toughness and psychological skills. Findings suggest that inter-correlations exist and justification for further research to explore relations is identified. Through developing effective intervention programmes participants may be supported to regulate and manage their emotions. Future research is needed to address which variable actually directs relationships.

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6. Discussion

6.1 General Overview

The present MPhil thesis examined the construct of emotional intelligence in sport. To this degree, an outline of each aim and objective will be discussed. Taken together, a two-way approach examined conceptual issues that resonate with emotional intelligence and then explored relationships of this construct with other associated variables. In addition, a reflective account of how emotional intelligence has evolved for the author is provided.

The initial aim of this thesis was to provide a critique of emotional intelligence model and measures. The conceptualisation and measurement of emotional intelligence is important to understand because of its different interpretations (see, Mayer et al., 2008; Meyer & Fletcher, 2007; Meyer & Zizzi, 2007; Perez et al., 2005; Petrides, et al., 2004). Conceptual issues related to emotional intelligence largely concern the model and measurement that provides most suitable fit (Meyer & Fletcher, 2007; Petrides et al., 2004). Indeed, evidence supports the use of different interpretations of emotional intelligence in a volume of research in academia, business and health (Mayer et al., 2008). Based on this evidence, it was prudent to examine a suitable model and measure of emotional intelligence to align closely with sport. Taken together, the evidence suggests that emotional intelligence could align closely to regulating emotion. Given that, emotions are important and varied within sports performance (Jones, et al., 2003), it was deemed necessary to examine emotional intelligence in sport.

To examine a suitable model and measure of emotional intelligence within sport, an exploration to validate the trait EIS (Schutte et al., 1998) took place. To this extent the effectiveness of the trait EIS (Schutte et al., 1998) measure for use in sport was examined. Whilst research has discussed the use of the ability and mixed approach

(see, Meyer & Fletcher, 2007) there are a number of reasons why these approaches and associated measures were not useful for sports performance. For example, the MSCEIT measure carries psychometric issues calling into question validity (Day & Carroll, 2004; Roberts, et al., 2001). To this degree, Perez et al. (2005) have called into question the use of ability models and its associated measures. Perez et al. (2005) explain that ability emotional intelligence is problematic as issues related to internal consistency and factor structure remain. In addition, Petrides et al. (2006) have also been critical of the ability model, citing concerns of incremental validity. A criticism related to mixed models proposed by Goleman (1995) and Bar-On (1997), is that they lack the conceptualisation related to emotional intelligence (Davies et al., 1998; Matthews et al., 2007; Mayer & Ciarrochi, 2006). For example, some scales in mixed models overlap considerably with personality variables, making distinction difficult. In substantiating this argument, Mayer and Fletcher (2007) have suggested that mixed models lack a primary focus because they include too many generic scales that are not related to emotional intelligence.

In considering the evidence above, the reliability of a test-retest of the trait EIS (Schutte et al., 1998) measure was examined. In examining the reliability of the trait EIS (Schutte et al.) a six-factor model was explored for use in sport. This investigation shows that a six-factor model potentially represented most acceptable fit for use in sport. Indeed, the six-factor model is useful for sport psychology practices because it allows practitioners to work with participants and assess individual needs. For example, to form a needs analysis, sport psychologists can assess the different subcomponents of emotional intelligence. This is essential because participants who are weak in some areas could be supported with intervention work, for example through psychological

skills. Arguably, one key facet of a sports psychologist is to support and guide participants through intervention work.

Once the issue of reliability was established, it was prudent to explore relationships between emotional intelligence and associated variables. This exploration showed that emotional intelligence, mental toughness and psychological skills correlated moderately. Theoretically, research in both emotional intelligence (Lane et al., 2009; Van Rooy & Viswesvaran, 2004) and mental toughness (Connaughton et al., 2008) align to emotional control and successful performance outcomes. This investigation clearly highlighted the possible opportunities for practitioners to work with participants. Further, this possible co-existence of the three variables lends support to the notion of developing interventions to regulate emotion. For example, emotional intelligence and mental toughness are regulatory processes, which could enhance performance using psychological skills. Arguably, it was identified that through utilising psychological skills, participants could enhance both their emotional intelligence and raise mental toughness.

Emotional intelligence espouses that participants are able to identify, modify and regulate their emotions. One possible way to develop emotional intelligence is arguably through reflective practice. To this degree, calls for reflective practice to be considered within the field of sports psychology (Anderson, Knowles, & Gilbourne, 2004; Knowles, Gilbourne, Tomlinson, & Anderson, 2007) have been made. This is important for a number of considerations within this present MPhil. Reflective practice enables the author to identify ways in which his or her work has evolved and in which way it has developed him/her. Further, through reflection the reader can gain an insight into the working mind of the author. To enable this process, the six-stage model of Gibbs (1988) is designed to describe and increase awareness of feelings,

evaluation/analysis, conclusion, which leads to a formation of an action plan. Arguably, emotional intelligence aligns closely with the Gibbs model because it relates to self-reflection to become aware of one's own emotions.

The initial phases of the MPhil consisted of reading literature on emotional intelligence, collecting data, and writing abstracts to present at the BASES 2006 Conference. The literature on emotional intelligence was diverse, confusing and complex. To gain a basic understanding some articles were read a few times (e.g. Meyer & Zizzi, 2007; Zizzi et al., 2003). For example, the paper by Zizzi et al. (2003) was utilised as a starting point in understanding emotional intelligence. Inevitably, this initial issue presented some different challenges. One pertinent challenge was to understand the conceptualisation of emotional intelligence. Another challenge was to link emotional intelligence with the regulation of emotions.

This initial phase highlighted that own ability to regulate emotions was poor. There were too many negative thoughts that inhibited progress at certain times. For example, constructive criticism transferred into negative thinking. In appraising other people's emotions there was always judgement about their thinking, for example was the programme failing? One mechanism to overcome this state was to reflect on supervisory meetings. These meetings were most effective because it allowed for an analysis of body language. For example, a smile and relaxing atmosphere was more than welcome. On the other hand, a disapproval or frown led to questioning of own ability. Therefore, there was some attempt at utilising and then regulating own emotions, although its initial success was limited.

Through the development of the two principal studies, assessing own emotions became more effective. For example, the theoretical nature of self-report measures had provided an opportunity to self-reflect and take into account self-perceptions (Petrides

et al., 2004). Researchers contend that because trait emotional intelligence relates to self-perception it is more likely to allow change (Petrides, Sangareau, Furnham, & Frederickson, 2006). Therefore, the self-report measure of emotional intelligence was most suitable for this research as assessing perceived abilities and developing self-perceptions was achieved via self-report measures.

The nature of emotional intelligence allows emotions to be monitored and regulated. Therefore, emotional intelligence has been enhanced with the additional use of psychological skills. The utility of emotional intelligence has been enhanced both though the research programme and via full time employment status. For example, in disciplining students an opportunity is provided for them to discuss their own issues. Based on this opportunity an attempt to guide their own thinking is made. Thus, emotional intelligence has allowed an utilisation of this construct not just in completing the research but also in everyday life situations. Therefore, this vindicates the adoption of the trait emotional intelligence model and EIS measure (Schutte et al., 1998). In sum, emotional intelligence is in line with own employment and everyday use.

6.2 Conclusion

To conclude and summarise there were two key aims of this research. The first was to examine conceptual issues related to emotional intelligence. Once these issues were unpacked and the psychometric properties of the EIS (Schutte et al., 1998) measure established, the next aim was investigated. Therefore, relationships between emotional intelligence and other related variables were explored. Whilst issues regarding the conceptualisation, model, and measurement continue, research in emotional intelligence has evidently grown (Meyer & Fletcher, 2007). As a result, sport psychologists have an increasing interest to investigate the construct of emotional intelligence (Meyer, Fletcher, Kilty, & Richburg, 2003; Meyer & Fletcher, 2007;

Meyer & Zizzi, 2007; Zizzi, et al., 2003). Indeed, early results clearly indicate the effectiveness of emotional intelligence in sports settings (Devonport, 2007; Lane et al., 2009; Thelwell et al., 2008; Zizzi et al., 2003). Within the scope of this MPhil, it was evident that the trait emotional intelligence approach and use of self-report EIS (Schutte et al., 1998) measure was most useful. Therefore, it is evident that the research aims set out initially were largely supported. Although there is a need to overcome conceptual issues, this exploration deems it necessary for further studies on emotional intelligence and sport to be conducted.

To enable this, future research should develop systematic research within emotional intelligence and sport. This systematic approach should target strategies to regulate and manage emotions amongst participants. However, continued issues regarding validity and reliability must be addressed, as any threat to theory testing normally leads to poor measures (Lane, 2007; Perez et al., 2005). The construct of emotional intelligence is useful because it can benefit both the participant and practitioner. Indeed, as researchers have established that emotional intelligence can be useful to sports performance, the next stage is to assess the direction of relationships against other constructs through longitudinal studies. In addressing this, longitudinal studies would also be helpful in understanding the nature and direction of emotional intelligence within sports performance (Lane et al., 2009).

In consideration of these findings, it comes as no surprise that interest in emotional intelligence will continue to expand and evolve. Therefore, future research must offer consistency in examining emotional intelligence. In consideration of this view, it is pertinent that future research tackles concerns outlined

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Appendix A:

Study 3: Validity of the Emotional Intelligence Scale for use in Sport

Abstract

This study investigated the factorial validity of the 33-item self-rated Emotional Intelligence Scale (EIS: Schutte et al., 1998) for use with athletes. A sample of 1,681 athletes completed the EIS and confirmatory factor analysis (CFA) was used to assess two competing models: a single factor model, which is the typical way the EIS is used in research and a 6-factor model. A six-factor model was developed by distinguishing items assessing emotions related to oneself from items assessing emotional experiences focused on others, and then in terms of awareness, regulation, and utilization of emotions. While the CFA results showed poor fit indices for the single factor model, acceptable fit indices were identified for the 6-factor model. A revised five-factor and 19-item model demonstrated improved model fit. Although the six-factor EIS demonstrates promising degrees of factorial validity for use in sport, it has limitations. First, the EIS contains items with limited affective content. Second, the theoretical position of optimism in emotional intelligence is questionable. Despite encouraging results, we suggest further validation work is desirable.

Keywords: Mood, psychometric, regulation, construct validity, measurement

8.1 Introduction

Emotional intelligence (EI) has emerged as a key concept by researchers (Mayer & Ciarrochi, 2006) and practitioners alike (Goleman, 1995), and is subject to growing interest in sport psychology (Meyer & Zizzi, 2007; Meyer & Fletcher, 2007; Thelwell et al., 2008; Zizzi et al., 2003). Further to this, meta-analysis results indicate positive relationships between emotional intelligence and health-related variables (Schutte et al., 2007) and performance variables (Van Rooy & Viswesvaran, 2004). To date, only a few studies have examined emotional intelligence in sport but these early studies point to encouraging results. Zizzi et al. found emotional intelligence was associated significantly with sport performance, whereas Thelwell et al. (2008) found that emotional intelligence related with perceptions of coaching effectiveness.

Despite increased interest by sport psychologists to investigate the effects of emotional intelligence, it is imperative to establish that measures of emotional intelligence are valid for use in sport. Schutz (1994) argued that demonstrating existing measures are valid and reliable should be the first stage in the research process. To date, no published study has provided a comprehensive analysis of the validity of an emotional intelligence measure for use in sport.

Emotional intelligence can be defined as *"the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought"* (p. 111). It is argued, that the primary focus of the construct is to do with *"reasoning about emotions and the use of emotions to enhance thought"* (Mayer et al., 2008, p 111). The construct of emotional intelligence can be assessed through either an objective performance-based measure (Mayer-Salovey-Caruso Emotional Intelligence Test [MSCEIT: Mayer et al., 2002]) or a subjective self-report measure (Emotional Intelligence Scale [EIS: Schutte et al., 1998] (see Meyer & Zizzi, 2007 for a

review). In a performance test, individuals are asked to answer questions for which there are correct or wrong answers (Ciarrochi, 2006; Petrides, Furnham, & Fredickson, 2004). To demonstrate their *ability* in a self-report test, individuals are asked to reflect on emotional experiences across different situations and report their subjective perceptions. These perceptions are indicative of an individual's predispositions or *traits.*

Evidence suggests that self-report and performance measures demonstrate low to moderate correlations (Cairrochi, 2006; Meyer & Zizzi, 2007). Self-report measures of emotional intelligence tend to correlate more strongly with personality than performance measures (see Bracket & Mayer, 2003; Meyer & Fletcher, 2007). Performance tests tend to predict objective measures of performance and cognitive ability (such as job performance) better than self-report tests (Van Rooy & Viswesvaran, 2004). As illustrated above and discussed in detail elsewhere (Meyer & Fletcher, 2007; Meyer & Zizi, 2007; Petrides, Furnham, & Mavrovelli, 2007; Petrides, Pita, & Kokkinaki, 2007) confusion/disagreement exists with regard to the most appropriate way to assess the construct generally. Presupposing that emotional intelligence can validly be assessed using both self-report and performance tests, evidence showing weak correlations between self-report and performance tests suggest they assess different concepts (Derksen, Kramer, & Katzko, 2002; Engelberg & Sjöberg, 2004; Newsome, Day, & Catano, 2000; Petrides, Frederickson, & Furnham, 2004; O'Connor & Little, 2003; Warwick & Nettelbeck, 2004)**.** Decisions regarding use of a performance or self-report measure should be informed by the relative contribution of each to the variables of interest (i.e., how strongly do beliefs about emotional intelligence scores relate to mood vs. how strongly do performance test scores relate to mood). This is in contrast to viewing one as inherently superior to the

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other. With this in mind, it should be noted that self-report is the typical method of construct-assessment of trait emotional intelligence (Kirk, Schutte, & Hine, 2008). In relation to sport psychology literature generally (see Vealey & Garner-Holman, 1998), and in the sport psychology-emotional intelligence literature specifically (Lane, Thewell, Lowther, & Devonport, 2009; Thelwell et al., 2008; Zizzi et al., 2003) self-report is also a typical method of assessment.

The EIS is a commonly used measure of self-reported emotional intelligence (Austin et al., 2004). The EIS is a 33-item measure designed to assess an individual's *perceptions* of the extent to which s/he can identify, understand, harness, and regulate emotions in self and others. Schutte et al. (1998) reported adequate internal consistency reliability and moderate test-retest reliability. While Schutte et al. conceptualized the EIS as a unidimensional measure, Petrides and Furnham (2000) identified four dimensions (i.e., Optimism/Mood Regulation, Appraisal of Emotions, Social Skills, and Utilization of Emotions). Similarly, Saklofske, Austin and Minski (2003) subjected the EIS to confirmatory factor analysis (CFA), obtaining moderate fit indices for the four-factor model. With the view of reducing socially desirable responses by including a greater number of reverse scoring items, Besharat (2007) found support for a 41-item four-factor model among a population of Iranian students.

A limitation of a single factor score for emotional intelligence stems from the importance of distinguishing emotions relevant to self from emotions related to others. This limitation also applies to multi-factorial models of the EIS such the four dimensional model proposed by Petrides and Furnham (2000). To illustrate the importance of distinguishing emotion regulation in self and others, consider the following hypothetical example. Two athletes from the same team are feeling equally anxious before competition. Each athlete is aware that he/she is feeling anxious before

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competition, and aware of the motivational implications of these feelings. Awareness of anxiety means that he/she can decide on what strategies are needed to regulate these feelings. In terms of emotional intelligence focused on the self, one of the athletes (athlete A) experiencing high anxiety believes it is good for performance continues to re-iterate the importance of the competition as a means of maintaining anxiety. In contrast, the other athlete (athlete B) experiencing high anxiety believes anxiety is harmful to performance is engaging in relaxation strategies. The process of assessing one's own feelings requires introspecting and once we have identified how we feel, we can decide whether these feeling warrant action in terms of regulation. The assessment of others emotions and beliefs on the impact of emotions on performance requires interpersonal skills and interaction with others, hence, information that is not immediately accessible. Theoretically and practically it is relevant to distinguish emotional intelligence related to the self from emotional intelligence related to others. In the example given above, it would be helpful for team preparation if each athlete could assess the other athlete's emotional state.

In summary, emotional intelligence could be an important construct in sport and exercise psychology (Meyer & Fletcher, 2007; Meyer & Zizzi, 2007). No published study has investigated the factorial validity of either a performance test of self-report measure of emotional intelligence. Given the tradition of using self-report in sport and exercise psychology, it is argued that this represents a worthwhile starting point. The purpose of this study was to investigate the validity of the EIS. Factorial validity was investigated by testing two competing models of the EIS. The first model tested was the single factor model, a model used in the majority of published studies (see Schutte et al., 2007; Zizzi et al., 2003) and the second model was one developed through careful scrutiny of items in line with emotional intelligence theory.

The research process involved two stages. In stage 1, the aim was to investigate the content validity, through asking a panel of experts, to assess the suitability of items in the EIS. In stage 2, the aim was to investigate factorial validity. Two hypothesized models were tested using confirmatory factor analysis on a sample of athletes. A revised model that considered modifications from stage 1 and stage 2 was also tested.

8.2 Stage 1 Content validity

Anastasi and Urbina (1997) argued that construct validity should be built in from the very earliest stages of questionnaire development. This proposal guided the examination of the validity of the EIS whereby items were placed into factors based on a rational-empirical approach, theoretically derived items in contrast, are evaluated empirically via confirmatory factor analysis.

Methods

Nine researchers scrutinized each item on the EIS independently and then proposed what they felt each item assessed in relation to emotional intelligence theory. Each participant had published research in peer refereed academic journals, or presented papers at academic conferences on subjects including emotion, mood, emotional intelligence, and psychological skills. Participants categorized each item as to whether it assessed emotional intelligence in terms of self or emotional intelligence in terms of others. Once there was agreement on the meaning of items, participant's classified items under the heading appraisal of emotions, regulation of emotions, and utilization of emotions.

Results and Discussion

It was possible to list items under all three headings for emotions related to self and two headings for emotions related to others (awareness of others emotions and regulation of others emotions). However, none of the items in the EIS assessed the

ability to utilize the emotions in others. Further, five items related to emotional experiences in self-focused optimism. This process produced a six-factor model. Four factors describing aspects of emotional intelligence related to emotional experiences to oneself: Appraisal of own emotions, regulation of own emotions, utilization of emotions, and optimism. Two factors describing aspects of emotional intelligence in relation to others: social skills (regulation of others emotions) and appraisal of others emotions. Items in the six-factor model are listed in Table 3.

In terms of the six-factor model, the factor *'appraisal of others' emotions'* should assess the ability to appraise the emotional states experienced by others which is clearly an important concept for team athletes, coaches, and sport psychologists alike. Content analysis identified seven items that could be included under this heading, although two items focused on non-verbal messages, which do not necessarily have emotional content. Previous research has demonstrated that intense emotions such as fear have distinctive facial expressions (Ekman, 1993) and therefore an item such as *"By looking at their facial expressions, I recognize the emotions people are experiencing"* distinctive facial expressions would appear to capture this aspect of emotional intelligence.

The factor *'appraisal of one's own emotions'* is central subcomponent of emotional intelligence (Salovey & Mayer, 1990) and the notion that athletes develop an awareness and appraisal of emotional states is central to many sports psychology practices. Jones (1995) argued that the ability to appraise situations that elicit intense anxiety, yet still interpret anxiety symptoms as helpful for performance was a key psychological skill. Several examples exist in the literature demonstrating how athletes can learn to reinterpret emotional states experienced before competition, thereby

supporting intervention studies to enhance the ability to appraise emotions (see Hanton & Jones, 1999a, 1999b).

The factor '*regulation of own emotions*' assesses strategies that may be used to alter emotional states including reflection and re-evaluation of emotions in important situations, perceptions of emotional stability, and utilization of strategies such as imagery and seeking support from others.

Social skills is characterized by the ability to change the emotions of other people by general strategies such as being complimentary of and helping others, showing empathy towards others, and organizing social events. The factor '*utilization of emotion*' is concerned with awareness of the influence of emotions on a range of different performance outcomes.

The factor '*optimism*' is characterized by positive beliefs regarding the future toward general outcomes (e.g., improved happiness, good things to happen, doing well). It is questionable whether optimism should form part of the emotional intelligence construct. Although optimism is considered a part of emotional intelligence in the EIS, it has been conceptualized as a personality trait (Scheier & Carver, 1985) and an explanatory style (Seligman, 1990). Optimism is also a factor on the meta-mood experience scale (Mayer & Gaschke, 1988) in which it assesses beliefs in relation to mood regulation. There is sufficient evidence to demonstrate that optimism is associated with positive affective responses (see Scheier & Carver, 1985). However, optimism is trait-like and we argue that it is an antecedent of beliefs in emotional intelligence, rather than being part of the construct per se.

We suggest that future research is required to tease out relationships between optimism and beliefs in being able to appraise, regulate and utilize emotions in self and others. We contend that optimists are likely to believe that they have effective

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emotional intelligence skills, although at present, an acknowledged limitation is that we do not have data to test this proposal.

The process of scrutinizing each item led to the identification of 13 items that lacked a direct assessment of any emotional experiences or strategy that could used to alter emotions in self or others.

These items include:

1. "I find it hard to understand the non-verbal messages of other people"

2. "I am aware of the non-verbal messages other people send"

3. "I am aware of the non-verbal messages I send to others"

4. "When I am faced with obstacles, I remember times I faced similar obstacles and overcame them"

5. "Some of the major events of my life have led me to re-evaluate what is important and not important"

6. "I motivate myself by imagining a good outcome to tasks I take one"

7. "I know when to speak about my personal problems to others"

8. "Other people find it easy to confide in me"

9. "I compliment others when they have done something well"

10. "I present myself in a way that makes a good impression on others"

11. "When I am faced with a challenge, I give up because I believe I will fail"

12. "I expect that I will do well on most things I try"

13. "I expect good things to happen"

However, despite some reservations on the content of these items, it was felt that a 33-item and six-factor model would go through to stage 2. If assumptions on

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limitations on items identified above were detected in the results, the data would be re-analyzed on a smaller item-pool.

8.3 Stage 2-Test of factorial validity

Factorial validity is a form of construct validity that is established through factor analysis.

Methods

Participants

Volunteer athletes (N = 1681) completed the 33-item EIS. Participants were university student-athletes (N = 1072, Age: M = 21.12, SD = 6.7 years), exercisers (N = 275, Age: M = 22.23, SD = 9.23 years), runners (N = 80, Age: M = 27.34, SD = 15.42 years), and judo players (N = 254, Age: 34.62, SD = 15.10 years). Participants represented a heterogeneous sample of athletes who competed at levels ranging from elite/professional sport to recreational sport, as well as those for whom the primary goal was health and fitness.

Measures and model testing

Emotional Intelligence. The Emotional Intelligence Scale (EIS: Schutte et al., 1998) consists of 33-items which are rated on a 5-point scale anchored by 1 = strongly agree to 5 = strongly disagree.

Procedure

Following institutional ethical approval from the institution of the first author, athletes were recruited via a number of different approaches (e.g., e-mail invitations, invitations in lectures, and invitations on on-line learning modules). Student-athletes could complete an online version of the EIS or they could complete a pencil-paper version of the survey. Student-athletes completed the measure either before or after

formal lectures, while other participants (i.e., marathon runners, judo players, and exercisers) completed the measure at their respective training sessions. It should be noted that Internet-based surveys have become a popular method of data collection in psychology, with evidence suggesting that online research is equivalent to traditional offline (i.e., paper-pencil [PP]) methods (Lonsdale et al., 2006).

Data analysis

Confirmatory factor analysis using EQS V6 (Bentler & Wu, 1995) was used to test the hypothesized models. As there was evidence of multivariate non-normality in the data, the model was tested using the Robust Maximum Likelihood method that has been found to effectively control for overestimation of X^2, under-estimation of adjunct fit indexes, and under-identification of errors (see Hu & Bentler, 1995).

Two models were tested. The first model was a single factor first-order model. Research has typically summed EIS scores to produce a single score. The second model tested was a 6-factor model that sought to distinguish appraisal, awareness, and utilization of emotions in self and others. The 6-factor measurement models for EIS specified that items were related to their hypothesized factor with the variance of the factor fixed at 1. Factors were allowed to freely inter-correlate.

In terms of assessing model fit, there has been a long standing debate on which fit indices to employ. It is generally agreed that incremental fit indices should be greater than .90 with the standardized root mean error of approximation below .08. Hu and Bentler (1999) indicated that incremental fit indices such as the CFI should be greater than .95, which is the criterion used in the present study.

8.4 Results and Discussion

Confirmatory factor analysis results for the single factor model results were:

Normative Fit Index (NFI) = .82; Non-Normative Fit Index (NNFI) = .83; Comparative

Fit Index (CFI) = .84; and Root Mean Error of Approximation (RMSEA) = .05.

Incremental values indicate poor fit with all values being lower than the .95 criterion

suggested by Hu and Bentler (1999). The RMSEA was within acceptable levels. When

seen collectively, the single-factor model demonstrates a poor fitting model to the data.

Fit indices for the six-factor were: NFI = 92; NNFI = 95; CFI = .95; and RMSEA = .03

within acceptable value other than the NFI that was marginally below the .95 criterion.

Factor loadings for the items on both models are contained in Table 3.

Table 3. Factor loadings for the 33-item Emotional Intelligence Scale for a single-factor and 6-factor model.

Items	Single-factor Model		Six-factor Model	
	Factor Loading	Error Variance	Factor loading	Error variance
Appraisal of others emotions				
I find it hard to understand the non-verbal messages of other people*	0.32	0.95	0.47	0.88
By looking at their facial expressions, I recognize the emotions people are experiencing	0.48	0.88	0.69	0.73
I am aware of the non-verbal messages other people send*	0.46	0.89	0.67	0.74
When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself	0.37	0.93	0.48	0.88
I know what other people are feeling just by looking at them	0.46	0.89	0.65	0.75
It is difficult for me to understand why people feel the way they do	0.28	0.96	0.38	0.92
I can tell how people are feeling by listening to the tone of their voice	0.45	0.89	0.64	0.77
Appraisal of own emotions				
I am aware of my emotions as I experience them	0.42	0.91	0.63	0.78
I am aware of the non-verbal messages I send to others*	0.45	0.90	0.64	0.77
I know why my emotions change	0.41	0.91	0.62	0.79
I easily recognize my emotions as I experience them	0.50	0.87	0.72	0.70
When I am faced with obstacles, I remember times I faced similar obstacles and overcame them*	0.51	0.86	0.67	0.74
Regulation				
Some of the major events of my life have led me to re-evaluate what is important and not important*	0.38	0.93	0.50	0.87
I have control over my emotions	0.40	0.92	0.51	0.86
I motivate myself by imagining a good outcome to tasks I take on*	0.60	0.80	0.78	0.62
I know when to speak about my personal problems to others*	0.37	0.93	0.50	0.87
I seek out activities that make me happy	0.43	0.90	0.66	0.72
Social Skills				
Other people find it easy to confide in me*	0.40	0.92	0.56	0.83
I like to share my emotions with others	0.31	0.95	0.44	0.89
I arrange events others enjoy	0.39	0.92	0.52	0.86
I compliment others when they have done something well	0.52	0.86	0.66	0.75
I help other people feel better when they are down*	0.55	0.83	0.70	0.71
Utilization of emotions				
When my mood changes, I see new possibilities	0.44	0.90	0.51	0.86
When I experience a positive emotion, I know how to make it last	0.41	0.91	0.47	0.88
I present myself in a way that makes a good impression on others*	0.45	0.90	0.54	0.84
When I am in a positive mood, solving problems is easy for me	0.50	0.87	0.59	0.80
When I am in a positive mood, I am able to come up with new ideas	0.51	0.86	0.58	0.81
When I feel a change in emotions, I tend to come up with new ideas	0.42	0.91	0.49	0.87
I use good moods to help myself keep trying in the face of obstacles	0.59	0.81	0.67	0.74
Optimism				
Emotions are one of the things that make my life worth living	0.31	0.95	0.51	0.86
When I am faced with a challenge, I give up because I believe I will fail*	0.39	0.92	0.60	0.80
I expect that I will do well on most things I try*	0.38	0.93	0.64	0.77
I expect good things to happen*	0.35	0.94	0.58	0.82

* Item lacks emotional content and is removed from the revised model.

As Table 3 indicates, factor loadings for the single-factor model range from .28 to .60 with a mean factor loading of .43 and standard deviation of .07. The reverse score items demonstrate weak loading items *("I find it hard to understand the non-verbal messages people send"*, *"It is difficult for me to understand why people feel they way they do"*, and *"When I am faced with a challenge, I give up because I believe I will fail"*). As Table 3 indicates, factor loadings for items are stronger for the six-factor model (*M* = .58, *SD* = .09) with all 33-items demonstrating a higher factor loading in comparison to those found in the single-factor model. The three reverse scoring items demonstrated the weakest factor loadings in both models. A contributing factor to explaining poor fit indices in the single-factor model could be due to the influence of reverse scored items. Many self-report measures include some items worded in the direction opposite to that of other items. Woods (2006) argued that there is ample evidence that confirmatory factor analysis finds poor fitting one-factor models. CFA on instruments produce better fitting results when reverse scored items are contained on the same factor. Woods extended this examination by looking at the influence of respondent-carelessness. Woods demonstrated that as few as 10% of careless respondents can result in the rejection of a good fitting unidimensional scale. In the present study, two of the three reverse score items clearly focused on assessing aspects of emotional control and have a positively worded item that conveys almost identical meaning that showed an acceptable factor loading. Therefore, it is plausible that low factor loadings for two of the three reverse the scoring items could be attributed to a method factor. However, it should be noted that reverse score items are often perform poorly on athletic samples. For example, Lane, Terry et al. (1999) showed reverse scoring items on the Competitive State Anxiety Inventory-2 (Martens et al., 1990). It is possible that athletic samples magnify limitations of reverse of scoring items. Clearly

future research following the methodology adopted by Woods (2006) using athletic samples is desirable.

Given the reservations on the suitability of thirteen items for assessing emotional intelligence, confirmatory factor analysis procedures were repeated on the single factor scale and a 19-item and five-factor model with optimism being discarded. Results indicated a marginal fit for the single factor model NFI = 89; NNFI = 90; CFI = .91; and RMSEA = .06 and enhanced fit indices for the five factor model: NFI = 93; NNFI = 96; CFI = .96; and RMSEA = .04. Optimism was discarded because four out of the five items demonstrated a lack of emotional focus.

Research has commonly used a unidimensional conceptualization of emotional intelligence, although theoretically the concept comprises a number of different dimensions, namely the appraisal, regulation and utilization of emotions in self and others (Mayer et al., 2008; Meyer & Zizzi, 2007; Petrides, Furnham, & Mavrovelli, 2007; Petrides, Pita, & Kokkinaki, 2007). The use of a unidimensional conceptualization of scores for the EIS is arguably based on the notion that subcomponents interrelate (Keele & Bell, in press). In the present study, results demonstrate acceptable fit indices for a six-factor solution and poor fit indices for a single-factor model for the original 33-items. With these items removed, both the single factor and five-factor (optimism discarded) results provided some support for the validity of both models.

Findings of the present study differ considerably to those reported in the literature that has employed the EIS. We argue that a limitation with the validation process of the original EIS and subsequent validation studies is that the original factor structure was established using exploratory factor analysis techniques, which is a data driven approach (see Thompson & Daniel, 1996). Although subsequent validation

studies have used confirmatory factor analysis, they tested models developed through exploratory procedures, and therefore retain the mathematically driven model. An example of how exploratory factor analysis can produce a theoretically unclear factor is exemplified by examining the Optimism/Mood Regulation factor produced by Petrides & Furnham (2000). By combining Optimism and Mood Regulation into a single factor, this precludes examining the extent to which optimistic beliefs are associated with regulatory behaviours, particularly among individuals with an unrealistic sense of optimism (Colvin, Block & Funder, 1995). An extreme optimist should see the positive aspects of situations, and therefore should not anticipate needing self-regulatory skills, and may not develop such skills. However, over optimism has been associated with self-enhancement and unrealistic perceptions of task difficulties, and exaggerated perceptions of control (Colvin et al., 1995). Following this logic, extreme optimists are unlikely to anticipate needing to manage intense emotions experienced before important competition. By contrast, a pessimist might develop effective mood-management strategies as anticipatory coping efforts to manage potentially stressful situations. A pessimist might anticipate experiencing high anxiety and have developed strategies to manage these feelings. Whilst the assumptions suggested above contain a great deal of speculation, they indicate the difficulty of including items that might be assessing different concepts. It is worth remembering that researchers and practitioners will calculate factor scores by summing all items in the factor, and therefore it is an imperative that items assess a similar underlying concept.

It is proposed that the present study makes an important contribution to research in emotional intelligence by identifying a factor structure based on theory and removing items with limited emotional content. As indicated in a pertinent review by Mayer et al. (2008), emotional intelligence is a popular topic to research, with the emphasis being

on the relationships between the construct and behaviour. Whilst such an approach is logical, it assumes that the emotional intelligence scales are valid and reliable. However, as indicated by the findings of the present study, emotional intelligence scales often comprise items and /or scales comprising no emotional focus. If a scale does not contain relatively independent markers of a construct, it is not possible to identify its antecedents and consequences with any sufficient degree of clarity.

In conclusion, given the incumbent link between the validity of methods and theory testing, the present study sought to investigate the validity of the EIS for use in sport. As a research impetus into emotional intelligence among athletes grows, the need for a measure that has demonstrated validity is imperative. Notwithstanding the debate on the nature of emotional intelligence, and the extent to which the construct can be assessed through self-report or through ability tests, findings from the present study suggest that researchers could use the EIS to assess perceptions of (or self-reported) emotional intelligence in athletes. Given the inherent link between construct measurement and theory testing, it is imperative for researchers to pay close attention to measurement issues that showed poor fit indices. The present study investigated a self-report emotional intelligence measure for use in sport. Results indicate that a single-item model shows poor fit with acceptable fit indices for a six-factor model. A revised five-factor and 19-item model showed improved model fit. Despite encouraging results, we suggest further validation work is needed.

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Appendix B:

Study 4: Anger, emotional intelligence, performance and interventions

Abstract

This investigation examines the nature of anger in sports settings and assesses the role of emotional intelligence. It is acknowledged that there is scant literature on anger and sports performance (Maxwell, 2004), yet athletes commonly experience anger in competition and training. Consequently, anger management and the ability to utilise effective coping strategies could be pivotal in delivering successful athletic performance. Research indicates (Hanin, 1997, 2000) that anger can be beneficial to effort and lead to enhanced performance when associated with confidence and accompanied by positive emotions. With this consideration in mind, a review of anger and its theoretical interpretation is outlined. Following this review, two short studies were carried out to investigate anger and emotional intelligence. In study 1, an investigation of the relationships between anger, emotional intelligence, and performance was explored. In study 2, qualitative techniques were utilised to explore anger in a case study approach. In reviewing the two studies, it was pertinent to suggest a number of interventions that could support participants to combat anger. A conclusion is offered to inform the reader of implications in designing effective interventions.

9.1 Introduction

Sport is an inherently emotional activity from which intense episodes of anger can be experienced. Examples of anger in sport are numerous, and include the outward expression of anger by players such as John McEnroe, renown for intense outbursts at line calls he perceived as inaccurate. Other examples include Eric Cantona's kung fu kick directed at a rival fan after he perceived hearing abuse (http://news.bbc.co.uk/onthisday/hi/dates/stories/January/27/newsid) and the head butt by Zinedine Zidane in the World Cup Final following antagonistic behaviour from an opposing player (http://news.bbc.co.uk/sport1/hi/football/world_cup). Anger is not limited just to participants, it is also expressed by coaches and managers. Anger can be expressed in various forms and to differing degrees. For example, anger expressed by participants, coaches and managers could arguably differ and depends on the situation each individual is involved in. Another group that can be identified with anger are spectators, as arguably violence in sport can be because of fans anger following defeat or due to the anticipation of defeat.

Theoretically, anger is an intense emotional state varying in intensity from mild annoyance or aggravation to fury and is associated with arousal of the autonomic nervous system (Spielberger, 1991). Spielberger (1991) proposed that anger can be suppressed inwards and expressed towards the ego. Alternatively, anger can be directed externally toward other individuals or objects. Anger, which is directed inward, is proposed to be associated with depression. As these feelings of anger become engulfed with feelings of depression, there is a tendency to attempt to repress the anger, which leads to low self-confidence and poor performance. Contrastingly, anger, which is expressed outwardly, is directed specifically at the source of the frustration, which can be channelled to enhance effort and improve performance accordingly (Spielberger,

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1991). Anger tends to vary in intensity as a function of perceived injustice or frustration from goal-directed behaviour (Lazarus, 1991a, 1991b). There are a number of different outcomes to experiencing anger. Anger can be associated with highly motivated behaviour (Lazarus, 2000), for example reaching pre-determined goals. A consequence of anger can be linked to participants becoming aggressive having focused their emotions externally and they lose control. The negative consequence of anger can be associated with self-blame, misery and be part of the process leading to depression. Taken together, anger as a process can elicit emotions, actions and thoughts.

Research on the nature of anger in sport has been equivocal. Studies have shown that anger can be attributed to poor performance (Morgan, 1980) and overtraining (Morgan, Brown, Raglin, O'Connor, & Ellickson, 1987) in contrast, anger is also linked to successful performance (Cockerill, Nevill, & Lyons, 1991; Hanin, 1997, 2000; Terry & Slade, 1995). Studies have also shown that anger can raise self-confidence (Lane, Terry, & Lane, 1996; Prapavessis & Grove, 1994a, 1994b).

In consideration, that anger reflects both positive and negative states it would be important to explore studies, which identify with anger. For example, Lane (2001) found anger associated with goal-confidence that was experienced simultaneously with vigour and when athletes report very low or no detectable unpleasant mood states such as depression. Lane (2001) also found that when individuals feel angry and depressed, low confidence to achieve difficult goals exacerbates anger. In a closer examination, Ruiz and Hanin (2004) identified both facilitative and/or debilitative effects of anger, which can vary during competition. Ruiz and Hanin (2004) indicated that anger could be associated with enhanced motivation, self-confidence, and performance whilst debilitating affects is associated with feelings of tension, low self-confidence and a perception of inability.

Lane (2007) meta-analysed the proposed switching effect for anger on performance, and found stronger support for the debilitating effect of anger when accompanied with depression. Lane (2007) provided a summary of the studies that have tested the proposed moderating effect of depressed mood on anger-performance relationships. Lane (2007) argued that emotional intelligence could provide useful additional information on the nature of anger-performance relationships. High emotional intelligence is proposed to reduce the likelihood of athletes experiencing depressed mood.

In sum, the wealth of observational data on anger in sport is not matched by a plethora of studies, and research into anger in sport is a relatively under-investigated area (Cerin & Barnett, 2006; Hanin, 2000; Maxwell, 2004). Of available evidence, researchers agree that anger can be a powerful emotion in sport, although different explanations of anger-performance are offered on the proposed switching effect of anger-performance relationships. The first study presented addresses relationships between emotional intelligence and anger in sport. If anger control is linked to emotional intelligence as theory suggests, this could provide an evidence-base on which to develop interventions.

9.2 Study 1 Anger and emotional intelligence in sport

Research in general psychology has emphasized the utility of emotional intelligence (Austin, 2004; Parker, et al., 2004; Zeidner, et al., 2004). Defined as *'the ability to monitor one's own and others' feelings and emotion, to discriminate among them and to use this information to guide one's thinking and actions'* (Salovey and Mayer, 1990, p. 189), emotional intelligence has been linked to performance in a number of different domains, including academia (Parker, et al., 2004), business (Zeidner, et al., 2004) and health (Pau & Crocker, 2003). Meta-analysis results have

found significant relationships between emotional intelligence and work related performance (Van Rooy & Viswesvaran, 2004) and health related variables (Schutte, et al., 2008). Recent research in sport has offered some support for emotional intelligence and performance relationships in sport (Lane, et al., 2007; Lane, et al., 2008; Thelwell, et al., 2008; Zizzi, et al., 2003). Although Lane (2007) proposed that depression moderates the relationship between anger and performance, it could be argued that emotional intelligence provides a better explanation. Emotionally intelligent people are proposed to be better able to understand and identify the impact of anger on performance, and develop strategies to control emotions in important situations. As such, individuals high in emotional intelligence should be able to manage anger and control symptoms of depression.

Methods

A total of 748 student athletes (Male: $N = 400$, Age: $M = 21.61$, $SD = 3.00$; Female: $N = 348$, $M = 20.63$, $SD = 2.39$) from a range of different sports, completed the Brunel Mood Scale (Terry, Lane, and Fogarty, 2003; Terry, Lane, Lane, and Keohane, 1999). Although the BRUMS assesses six mood states, in the present study we focus on data from the anger scale. The anger scale has four items "Angry", "Annoyed", "Bad-tempered" and "Bitter". Participants rate items on a 5-point scale anchored by "not at all" (0) to "extremely" (4). Participants were asked to recall a competition where they performed well and were successful and to report how angry they felt shortly before competing. Participants were asked to repeat the process, but rate how angry they felt before competing in a performance in which they performed poorly and were unsuccessful.

Participants also completed the Emotional Intelligence Scale (EIS; Schutte, et al., 1998). The 33-item EIS (where items are rated on a 5-point scale anchored by 1 = strongly agree to 5 = strongly disagree).

Results and Discussion

Results indicated that anger scores differed significantly by performance outcome (t_{757} = 3.82, $p < .001$) with higher anger being associated with poorer performance. Results for relationships between anger and emotional intelligence in each condition and multiple regression analysis for best and worst performance are contained in table 4. Results of the present study lend support to the hypothesised relationship between emotional intelligence and anger management. The appraisal of own emotions, regulation and optimism emerged as key factors contributing towards anger management. Anger-performance results lend support to the notion that high anger scores are debilitative of performance. However, significant differences between anger by performance are largely attributed to the large sample size, as a closer perusal of descriptive statistics indicates that some participants reported high anger scores before successful performance.

Table 4-Correlation and Multiple Regression Analysis	M	SD	Appraisal of others emotions	Appraisal of own emotions	Optimism	Regulation of emotions	Social Skills	Utilisation of emotions
Best performance	1.49	2.35	-0.07	-0.34*	-0.10*	-0.02	-0.07	-0.03
Worst performance	1.78	2.81	-0.05	-0.33*	-0.01	0.01	-0.04	-0.03

Model	Predictor (Best Performance)	R	Adj R^2
1	Appraisal of own emotions	.36	.11
2	Regulation of emotions	.34	.12
Model	Predictor (Worst Performance)	R	Adj. R^2
1	Appraisal of own emotions	.33	.11
2	Regulation of emotions	.35	.12

MANCOVA was used to investigate the extent to which emotional intelligence mediated the difference in changes in anger between best and worst performance. Results indicated significant interactions for anger and the appraisal of own emotions (Wilks' Lambda $_{1,751}$ = 0.99, F =7.62, p = 0.01, Partial Eta^2 = 0.01) and anger and optimism (Wilks' Lambda $_{1,751}$ = 0.99, F =8.60, p < 0.001, Partial Eta^2 = 0.01). Relationships indicated that high emotional intelligence was associated with smaller differences of anger scores between the two conditions, thereby lending support to the notion that emotional intelligence might protect against the debilitative effects of anger. No other significant differences (anger: Wilks' Lambda $_{1,751}$ = 1.00, F =0.36, p = 0.55, Partial Eta^2 = 0.00; anger x appraisal of others emotions: Wilks' Lambda $_{1,751}$ = 1.00, F =0.64, p = 0.42, Partial Eta^2 = 0.00; anger x regulation: Wilks' Lambda $_{1,751}$ = 1.00, F =1.75, P = 0.19, Partial Eta^2 = 0.00; anger x social skills: Wilks' Lambda $_{1,751}$ = 1.00, F =0.09, P = 0.76, Partial Eta^2= 0.00; anger x utilisation: Wilks' Lambda $_{1,751}$ = 1.00, F =1.00, P = 0.32, Partial Eta^2 = 0.00) between anger and emotional intelligence were found, and therefore within the sample assessed, appraisal of own emotions appears to be the salient aspect of emotional intelligence.

Discussion and Conclusion on Study 1

Results of the present study lend support to the notion that variations of anger are associated with variations in performance (see Beedie et al., 2000). Findings also show that emotional intelligence is linked to changes in anger between successful and unsuccessful performance, as might be predicted by the nature of emotional intelligence. Emotional intelligence is proposed to link with psychological health and performance (Schutte et al., 2008; Van Rooy & Viswesvaran, 2004), and the present study indicates that appraisal of emotions, optimism and the regulation of emotions are

the salient EI factors. With these findings in mind, the next study used a qualitative research design to explore anger-performance in a case study.

9.3 Study 2: Case Study

A case study investigated a seventeen-year-old female who has been playing tennis for seven years. Kirsty (pseudonym) is ranked twelfth in the country in the under seventeen-age group, and is currently national champion in the girls under eighteen doubles. She was referred to a sport psychologist, by her coach, because of the impact her emotions, in particular anger, were having during tennis performance.

In order to explore the impact of emotions on Kirsty's tennis performance, and to review the effectiveness of ongoing interventions, a semi-structured interview was completed. This interview was completed eighteen months into a working relationship with a sport psychologist. Examples of questions include, *'can you describe the type of emotions you experienced when playing tennis eighteen months ago?'* and *'when you became aware of emotions that had a negative effect on your performance, what did you do to try and manage them?'* Once completed, the interview was transcribed verbatim.

The presentation of these results and subsequent discussion is in chronological order. In reporting these findings, extracts taken from the semi-structured interviews will be outlined. Therefore, the impact of emotions on her performance prior to the completion of any intervention work will first be presented. Having described her pre-intervention profile, Kirsty's descriptions of the techniques she has accrued in an effort to manage these emotions will be explored. Finally, the impact of these techniques on her emotional control, and consequently tennis performances will be summarised.

In reviewing the semi-structured interview carried out with Kirsty a number of key themes were evident. Based on these themes, it is possible to chart the

psychological profile of Kirsty and assess how through emotional intelligence she was able to become aware of and recognise her emotions. Initially, Kirsty was quick to point out that she was negative during competition and training when things were going against her. This negativity arose to both internal (outcome goals) and external pressures (parental expectations). Thus, through this negativity a theoretical link can be established between goal failure and negative mood. Following this, Kirsty was asked about her emotions and the effect they had on her game. Kirsty pointed that she thought she was aware of her emotions, but did not understand how to control these emotions. However, Kirsty was able to identify that anger was an emotion that had a noticeable effect on her performance. Characteristics related to anger included poor body language and verbal outbursts.

Once these issues were reviewed and given the detrimental effect on Kirsty's performance, an intervention was implemented. In a response to this, it was decided that intervention work was required for Kirsty to recognise different emotions. Therefore, it was prescribed that a mood diary would be maintained. A rationale for maintaining an emotion diary allows participants to reflect on their emotions and through this to recognise and become aware of these emotions. In sum, increasing Kirsty's awareness of her emotions directly addressed, and sought to enhance her emotional intelligence, specifically her awareness of her own emotions. Once Kirsty was better able to identify emotions, the next stage was to address her ability to manage these emotions. The ability to regulate one's own emotions forms a core component of emotional intelligence. Enhancing emotional intelligence in this way offers a number of benefits for Kirsty's tennis performance. When exploring mood states and performance, emotionally intelligent athletes appear more capable of attaining desirable emotional states before competition (Lane, Thelwell, et al., 2005; Lane, Soos, et al., 2005). In

such challenging situations, emotional intelligence competencies influence the selection and control of coping strategies directed towards the immediate situation (Matthews, et al., 2004; Mayer, et al., 2000). Furthermore, significant relationships have also emerged between emotional intelligence and psychological skills usage including imagery, goal setting and positive self-talk (Lane et al., 2009). Theoretically, developing Kirsty's emotional intelligence would enhance her ability to apply interventions, including psychological skills, intended to help manage her emotions.

Through the effective use of emotional intelligence, it was apparent that Kirsty was able to recognise and become aware of her emotions and especially of her anger. To support herself, Kirsty started to modify her goals, for example, by setting more performance goals over outcome goals. Setting performance goals allows participants to be in control. A further psychological improvement related to her ability to manage her attentional control and focus of attention to specific tasks. Concerning emotional intelligence, Kirsty was able to demonstrate enhanced interpersonal skills. Theory has outlined that emotionally intelligent individuals cope more successfully in perception of and appraisal of their own emotions (Salovey, Bedell, Detweiler, & Meyer, 1999). It could also be argued that through emotional intelligence, Kirsty started to utilise other skills. Therefore, evidence clearly identifies the use of psychological skills, especially imagery and the use of music to support regulating mood. Another support mechanism that Kirsty developed was social support, which she utilised through developing interpersonal skills. It is clear that experience supported Kirsty with her interpersonal skills, for example, she had more respect for her opponents and became more comfortable in their company.

An important aspect of emotional intelligence resonates with self-regulation. Kirsty was able to self-regulate her emotions according to each situation that she was

involved in. For example, she remained positive in the face of adversity and through enhanced emotional control, she started to regulate her mood and subsequently her anger. In summary, the benefits of carrying out a qualitative case study investigation was pertinent. Qualitative data provides the reader with raw data that is useful because it elicits information from the participant. The case study provided an opportunity to assess the working model of emotional intelligence. The success of the model came through her recognition and awareness of her anger and in addition psychological strategies allowed her to regulate mood and anger.

Conclusion to Study 2

Qualitative data presented demonstrates the transactional nature of anger. For example, the way in which behavioural responses, such as outward expression of anger, can reinforce anger. Having identified a need to equip Kirsty with strategies to better manage her moods, consideration was given to emotional intelligence as a factor mediating the success of interventions. A longitudinal intervention programme sought to enhance her ability to recognise emotions, their impact, and develop strategies to manipulate mood. It also sought to enhance her ability to communicate emotions and utilise social support. This intervention ultimately conditioned a different mindset, helping Kirsty to manage anger via enhanced emotional intelligence.

9.4 Interventions

In sum, developing effective interventions strategies to combat anger is worthy of consideration. Therefore, in addition to interventions highlighted above, it would be purposeful to examine other plausible strategies that could hep combat anger. Interventions designed to control anger have virtually been ignored in the sports domain (Isberg, 2000; Brunelle et al., 1999). Those that have explored the potential to

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control anger have applied cognitive-behavioural techniques such as anger awareness training and role-playing. Anger awareness training is a popular method used to help individuals cope with distressful emotions by enhancing awareness of conditions that surround the typical occurrence of the emotion (Nay, 1995). Role-playing facilitates behavioural change through interactive rehearsal of anger provoking situations (Novaco, 1977). Jones (1993) examined the effect of an anger control regimen that included role-playing in an elite racquet player. Results indicated that that over a 6-month period of time, the athlete effectively transferred anger control from simulated situations to the actual competitive environment. In addition to a role-playing intervention, Brunelle et al. (1999) explored the relative effectiveness of anger awareness training in controlling competitive anger in soccer players. Results indicated that five one-hour sessions of role-playing interventions were more effective than anger awareness interventions in reducing ratings of angry behaviour (anger-out), however, both interventions were more effective than a control. It appears that by enacting common anger-provoking situations, role-playing enables persons to simultaneously act, feel, and think through alternative responses, allowing participants to essentially practice the skill of anger-control (Brunelle et al., 1999). Anger awareness educates athletes to the negative consequences of anger and directs organised and objective awareness of their own feelings reducing levels of competitive anger (Brunelle et al., 1999). It could be further argued that role-playing could be a salient aspect within emotional intelligence. For example, through role-playing participants can became aware of their own emotions and recognise the importance of utilising appropriate strategies to combat the effects of anger.

As different forms of anger expression are related to various types of consequences, specific information may provide relevant treatment planning

(Deffenbacher et al., 1996). For example, social communication skills interventions might be most appropriate for athletes who express anger verbally (Deffenbacher, 1995). Social skills training increases a persons repertoire of effective communication and conflict resolution skills, therefore an athlete would no longer have to rely on verbally abrasive and intimidating tactics for communicating anger, thereby lowering the probability of verbal fights and subsequent consequences. On the other hand, athletes who physically assault people and express anger on inanimate objects such as tennis rackets may respond better to interventions that involve over learning of arousal reduction techniques, use of time out and response disruption strategies, as well as cognitive restructuring of themes that engender and justify physical aggression (Deffenbacher, 1995). The high level of emotional and physiological arousal associated with anger-in, suggests that interventions focusing upon general strategies for the control of negative emotions, including the control of both anger and anxiety, might be appropriate (Deffenbacher, 1995). The relationship between modes of anger expression and the ability to identify those most likely to express anger allows interventions to be tailored for individuals needs. Clearly, future research should focus on anger-control interventions in sport and exercisers.

In addition to research on coping and anger, studies have explored how anger relates to strategies individuals use to self-regulate emotion. In a study on how athletes regulate anger, Stevens and Lane (2001) found that seven strategies were used by 20% or more of the sample to regulate anger. The strategies included 'listening to music' (44.86%), 'exercise' (37.38%), 'try to be alone' (30.82%), 'control thoughts' (29.91%), 'change location' (22.43%), 'avoid the cause' (22.43%), and 'call, talk to, or be with someone' (22.43%). Hewston, Lane, Nevill, and Karageorghis (2005) found further

support for the notion that athletes use music to alter anger. Further, Solanki and Lane (2007) found exercise was an affective strategy to alter anger among regular exercisers.

9.5 Discussion

The aim of this chapter was to investigate the nature of anger and emotional intelligence in sport settings. Examination of data indicates that emotional intelligence related with anger with the appraisal of own emotions and the ability to regulate emotions being important subcomponents. The second study comprised a case study outlining circumstances in which anger was raised and the cognitions that accompanied anger. Following this an exploration of plausible interventions were identified. It then explored the impact of interventions intended to enhance emotional regulation. When viewed collectively, it is argued that future research investigates the effects of intervention strategies designed to enhance the use of self-regulatory behaviours and target developing emotional intelligence.

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Appendix C: Mental Toughness Questionnaire and Rankings Rank

Measure of Mental Toughness

Top level sports performance requires athletes to overcome a number of psychological challenges. We know that some athletes cope better than others. This measures asks you to rate your mental toughness. The following statements were taken from elite athletes on mental toughness. Using the scale below, indicate to what extent each of the following statements describes a characteristic that applies to you. Please be sure to answer every item and try to be as honest and accurate as possible in your responses. Your answers will be kept in the strictest confidence.

Statement	Extremely uncharacteristic of me	Somewhat uncharacteristic of me	Neither characteristic nor uncharacteristic of me	Somewhat characteristic of me	Extremely characteristic of me
Q1. "I have an unshakable self-belief in my ability to achieve competition goals".	1	2	3	4	5
Q2. "I want to be the best in the world and am strong enough to believe I am capable of that".	1	2	3	4	5
Q3. "Negative comments or poor performances result in increased determination because I don't want to be classed as a failure".	1	2	3	4	5
Q4. "All performers have setbacks, I do not let them affect me; I use them to motivate myself".	1	2	3	4	5
Q5. "Poor performance is difficult to get over, but you have to come back, and stronger".	1	2	3	4	5
Q6. "I have an unshakable self-belief that I possess unique qualities and abilities that make me better than my opponents".	1	2	3	4	5
Q7. "I believe that I am better than other performers by a long way because I have something that sets me apart from other performers".	1	2	3	4	5
Q8. "I have a strong self-belief in my ability to know that I am making the right decisions".	1	2	3	4	5
Q9. "I want to be the best in the world to satisfy myself my own ambition".	1	2	3	4	5
Q10. "When things are happening around you, whether they be positive or negative, you just keep your eye on the *ball*, on what you are doing."	1	2	3	4	5
Q11. "If you want to be the best, you have got to be totally focused on what you are doing."	1	2	3	4	5
Q12. "There are inevitable distractions and you just have to be able to focus on what you need to focus on."	1	2	3	4	5
Q13. "Even when you think things are against you, like abandoned matches, the weather, I am able to compose himself and come back and still win".	1	2	3	4	5
Q14. "I can control my emotions in stressful situations".	1	2	3	4	5
Q15. "It's mind over matter, just trying to hold your technique and perform while under this distress and go beyond your limits".	1	2	3	4	5
Q16. "Anxiety is inevitable and you have to cope with it."	1	2	3	4	5
Q17. "I accept that I'm going to get nervous, particularly when the pressure's on, but keeping the lid on it and being in control is crucial".	1	2	3	4	5
Q18. When I see good performance in others, I see it in a motivational way. I say to myself: "I can perform as well as that."	1	2	3	4	5
Q19. "When I see a good performance in others I see it in a motivational way. I say to myself: "well, he/she is no better than me, so I'm going to go out there and beat that."	1	2	3	4	5
Q20. "I believe I can raise my game when the occasion demands it, no matter what has happened".	1	2	3	4	5
Q21. "I believe I have the capacity to approach the pressure of competition by "taking it in my stride,"	1	2	3	4	5
Q22. "I thrive on the pressure of competition".	1	2	3	4	5
Q23. "I believe I can block out personal problems when I need to".	1	2	3	4	5
Q24. "I believe I can "turn personal problems round in some way as some sort of motivation for himself."	1	2	3	4	5
Q25. "I believe that it doesn't matter what has happened to you, you can't bring the problem into the performance arena".	1	2	3	4	5
Q26. "There are times when I just want to relax and just not think about my sport at all".	1	2	3	4	5
Q27. "There are other important things in my life that deserve my attention. It's important I discipline myself to give them the time."	1	2	3	4	5

Mental Toughness Attributes and Importance Rankings

Rankings Rank

1. Having an unshakable self-belief in your ability to achieve your competition goals
2. Having an unshakable self-belief that you possess unique qualities and abilities that make you better than your opponents
3. Having an insatiable desire and internalized motives to succeed
4. Bouncing back from performance set-backs as a result of increased determination to succeed
5. Thriving on the pressure of competition
6. Accepting that competition anxiety is inevitable and knowing that you can cope with it
7. Not being adversely affected by others' good and bad performances
8. Remaining fully-focused in the face of personal life distractions
9. Switching a sport focus on and off as required
10. Remaining fully-focused on the task at hand in the face of competition-specific distractions
11. Pushing back the boundaries of physical and emotional pain, while still maintaining technique and effort under distress (in training and competition)
12. Regaining psychological control following unexpected, uncontrollable events (competition-specific)