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### If I want to perform better, then how should I feel?

**Abstract** Research indicates that emotions are predictive of sports performance. The application of emotion research to practice is that intervention strategies can be used to change emotions to enhance performance. The present study examined emotional profiles associated with successful performance. A review of studies indicate that there are general trends, that is, high activation emotions such as excitement and vigor tend to associate with good performance and low activation unpleasant emotions such as depression and dejection tend to associate with poor performance. Studies show mixed results for high activation unpleasant emotions (anger and anxiety). Athletes like to feel emotions that can be functional, and so some athletes will seek to increase or sustain relatively high levels of anger or anxiety if they believe they are helpful for performance. It is proposed that practitioners identify individual emotion-performance relationships and examine underlying beliefs associated with each emotion.

**Key words:** emotion, affect, mood, self-regulation, psychological skills

Emotions have powerful effects on thoughts and behaviors (Baumeister, Vohs, DeWall, & Zhang, 2007; Hanin, 2010; Lane & Terry, 2000; Lazarus, 1991, 2000; Lench, Flores, & Bench, 2011; Nesse & Ellsworth, 2009). One situation to study emotion is sports competition. Athletes tend to hold success in competition as an important goal (Crocker & Graham, 1990). Evidence demonstrates that athletes experience intense emotions before, during and after competition (Hanin, 2003; Terry & Lane, 2000). Meta-analytic evidence indicates emotions are predictive of performance (Beedie, Terry, & Lane, 2000; Craft, Magyar, Becker, & Feltz, 2003; Hanton, Neil, & Mellalieu, 2008; Jokela, & Hanin, 1999). Qualitative data suggest the ability to regulate emotions is an important psychological skill (Connaughton, Hanton, & Jones, 2002; Harmison, 2011), a perspective shared by many practitioners (Gould & Maynard, 2009; Harmison, 2011). If emotions influence performance, then athletes and practitioners alike need to know which emotions to target, and decide whether to increase or reduce the intensity of these emotions. The aim of the present paper is to examine a question central to the examination of emotion-performance relationship and one that athletes commonly ask; "If I want to perform better, then how

should I feel?" The present study will review evidence on emotional states associated with athletic success. The article begins by briefly addressing conceptual and definitional issues surrounding examining emotions and mood in sport. It then examines literature that has investigated emotion-performance relationships. Evidence is drawn mainly from the sport psychology literature but examples are offered on how this might apply to other areas of application.

#### Conceptual and definitional issues

It is commonly agreed that conceptual clarity is at the bedrock of science. A clear definition of a construct helps inform researchers and practitioners of not only what a construct is, but also, what it is not. That said; given the volume of research conducted on emotion, it might be reasonable to assume that a clear definition of emotion would exist (Campos, Walle, Dahl, & Main, 2011). However, this is not the case, particularly when sport psychology is considered in isolation of other sub-disciplines of psychology. Emotion has proven to be a difficult term to define with multiple definitions existing (see Campos et al., 2011), a process further complicated when related concepts such

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as mood are considered. In the sport psychology literature, the terms' mood and emotion have been used interchangeably (see Lane & Terry, 2000; Lane, 2007). Prior to the definition offered by Lane and Terry (2000), sport psychology researchers rarely provided a definition of either mood or emotion. Lane and Terry (2000) argued that measurement issues make drawing distinctions between the two concepts difficult (Beedie, Terry, & Lane, 2005; Beedie, Terry, Lane & Devonport, 2011). In the present study I use definitions that are arguably the most commonly used and in doing so, am ensuring a degree of consistency with previous work (Lane, Beedie, & Stevens, 2005; Lane, 2007).

Lazarus (2000) offered the following definition of emotion as *“an organized psychophysiological reaction to ongoing relationships with the environment...what mediates emotions psychologically is an evaluation, referred to as an appraisal, of the personal significance for the well-being that a person attributes to this relationship (...relational meaning), and the process”* (p. 230). Parkinson et al. (1996) proposed that *“mood reflects changing non-specific psychological dispositions to evaluate, interpret, and act on past, current, or future concerns in certain patterned ways”* (p.216). As Beedie et al. (2011) noted, an emotion is where the individual has a clear idea of what the causes of her feelings whereas a mood is where the individual is aware of her feelings (i.e., sad, happy) but does not know the cause. For example, an athlete who is angry because her coach has told her that she is not working hard enough and an athlete who is generally angry and does not know the reason why. The former example is an angry emotion and regulating this emotion could be about re-appraising what the coach has just said. In the latter example, the angry athlete does not have a specific reason ascribed to the feelings and so the starting point to regulation will differ.

Although it is possible to distinguish mood from emotion theoretically, in terms of measurement, this is more difficult (Beedie et al., 2005, 2011; Lane & Terry, 2000). In the present paper, we are referring to feelings experienced before, during and after competition and therefore, we will use the term emotion. We recognize some of the limitations of this approach. On one hand, as feelings are assessed close to competition, the implication is that such responses are emotions as they are related to a specific event, but this might not be the case. It is possible for an athlete to be experiencing intense feelings, for example, feel anxious, but unable to attribute these feelings to a specific factor. The practical implications for attempts to regulate mood or emotion could differ. For example, a boxer might feel anxious when he sees his opponent for the first time and says to himself “he looks huge”, and as such, this thought might make him feel anxious as he believes he will lose the contest, but re-appraise this belief via perspective taking and say to himself “he is the same weight as me.” If the athlete is experiencing a mood, then he will not be aware of factors that are causing these feelings, and so regulatory attempts would be different.

Given the proposed influence of measurement issues on how emotions and mood states are defined, some comment is needed. A great deal of research has examined emotion-performance relationships has used two different measures. One line of research that has used the Profile of Mood States (McNair, Lorr, & Droppleman, 1971), and another has used the Competitive State Anxiety Inventory-2 (Martens, Vealey, & Burton, 1999) which assesses cognitive anxiety, somatic anxiety and self-confidence. The POMS assesses 5 unpleasantly-toned states; anger, confusion, depression, fatigue, and tension and one pleasant toned one, vigor. For a discussion on mood-emotion differences using the POMS see Lane and Terry (2000). The CSAI-2 examines pre-competition anxiety, making distinctions between cognitive and somatic anxiety. The CSAI-2 also assesses self-confidence.

### Profile of Mood States and performance

Research predicting performance from mood using the POMS initially focused on examination of the iceberg profile (Morgan, 1980). An iceberg profile is a graphical representation of scores on the POMS and characterized by above-average vigor coupled with below average anger, confusion, depression, fatigue and tension, with average representing normative scores from students (McNair et al., 1971). Morgan (1980) reported that an iceberg profile associated with successful sports performance, to the extent that the POMS was called the “test of champions”. The practical implication is that increasing or sustaining a high intensity of vigor and reducing anger, confusion, depression, fatigue and tension is a useful approach in preparation for performance. Further, that the POMS is a suitable tool to use to assess athletes before competition. However, the strength of this claim is dependent on whether there is supportive evidence. Subsequent reviews found that the iceberg profile was a poor predictor of performance. In a meta-analysis, Rowley, Landers, Kylo, and Etnier (1995) found that the iceberg accounted for 1% of the variance in performance. Further, Terry and Lane (2000) produced normative data for athletes and found that the iceberg was the normal profile for athletes to experience.

Beedie et al. (2000) conducted a subsequent meta-analysis in which they examined effect sizes for each POMS factor. Previous research had found anger and tension associated with successful performance in some studies and unsuccessful performance in other studies; hence if the two studies are contained in a single analysis, the effect sizes cancel themselves out. Beedie et al. found a moderate effect size for vigor, and fatigue with ones for confusion and depression. When Beedie et al. examined the effect of anger and tension, that is, they ignored the direction of relationships, the results showed that the two states had a strong relationship with performance. Therefore, a key finding from Beedie et al.'s work is the notion that anger and tension

could be helpful for performance, and if an athlete reported feeling tense or angry before competition, he might wish to remain feeling tense/angry. As a consequence, subsequent research has sought to explain why supposedly unpleasant emotions might be helpful for performance (Hanin, 2010; Hanton et al., 2008; Lane & Terry, 2000; Tamir, 2009).

Lane and Terry (2000) developed a conceptual model for use with the POMS. They proposed that depressed-emotion, characterized by negative self-schema that influences cognitive processes which in turn influence the interpretation of emotional responses is central to examining emotional responses. They argued that depressed-emotion moderates performance relationships for anger and tension. They proposed that when an individual experiences depression and anger and/or tension simultaneously, anger and /or tension will debilitate performance. The rationale for this approach is that the nature of depression, which has an action-tendency of withdrawal and seeking to conserve resources, will lead to anger and tension being associated with self-blame and low self-efficacy to accomplish tasks (Lane, 2001, 2007; Lane & Terry, 2005). By contrast, when an individual experiences anger in the absence of symptoms of depressed mood, anger should associate with successful performance. When an individual experiences anger and/or tension in the absence of tension, the same two emotions are accompanied by also feeling vigorous; that is the athlete feels excited, anxious, and ready to perform (Lane, 2001). It is suggested that when experienced independently of depression, anger and tension act as a warning signal to increase effort and mobilize personal resources in order to cope with the demands of the task (Lane & Terry, 2000).

Subsequent tests of Lane and Terry's (2000) model have found supportive evidence in a range of different areas of application including sport (see Lane, 2007; Lane & Terry, 2005), exercise (Lane & Lovejoy, 2001), concentration tasks (Lane, Terry, Beedie, & Stevens, 2004), endurance performance (Lane, 2001) and academic performance (Lane, Whyte, Terry, & Nevill, 2005). One of its strengths is that studies have investigated emotional states in naturally-occurring phenomena and therefore, findings have ecological validity. However, there are several limitations. The first limitation is that it is argued that the model should be tested more rigorously using appropriate control groups and manipulation of emotional state. It is not known whether the process of becoming depressed then associates with activating other unpleasant emotional states as suggested (Lane & Terry, 2000). It could be that people who are angry, confused, fatigued and tense also feel depressed and that feeling depressed is activated by the intensity of these other emotional states. A study that manipulated emotional states over time would go some way to elucidate such as suggested.

A second limitation is that the depression and no-depression groups are created from arbitrary metrics from the Brunel Mood Scale (BRUMS: Terry, Lane, Lane, & Keo-

hane, 1999, 2003). Lane and Terry (2000) have used a zero-1 dichotomy to separate data; that is someone who reports zero, or "not at all" to all four items on the depression scale is classified as being part of a no-depression group. Participants reporting 1 or more on the 4 items are classified into the depression group. Clearly, someone in the depression group is showing minimal signs of depressed emotion. The practical implication of Lane and Terry's (2000) work emphasizes the importance of examining scores on the BRUMS (Terry et al., 1999, 2003), particularly the depression scale. However, it seems that too much reliance is placed on this approach. However, Lane (2007) argued that the depression scale should be complemented with a happiness scale and researchers and practitioners should look at relationships between depression, happiness, tension and anger. In a study of emotional states associated with optimal performance, Lane, Devonport, and Beedie (2012) found that athletes reporting anxiety was helpful of performance also found anxiety correlated with feeling happy. Anxiety is associated with high arousal and subsequently high action tendencies. It is plausible if the person feels suitably aroused, then he might also feel happy. People in the no-depression group in Lane and Terry's model could be feeling happy; however, without a happiness scale, there is no way of determining whether this is the case. Therefore, it is argued that further research is needed to investigate not only the central tenets of Lane and Terry's model, but also the revised model proposed by Lane (2007). A third limitation is that research has shown that emotion-performance relationships are highly individualized (Lane & Chappell, 2001). Lane and Chappell found that there were strong emotion-performance relationships in some individuals but not others. When Lane and Chappell analyzed their data in the whole sample, relationships were cancelled out. An explanation for the absence of a significant relationship could be due to measurement issues. Hanin (2010) has long argued the advantages of using individually developed measures and has found evidence to show emotions influence performance accordingly. Hence, a starting point to intervention work is to identify the emotion-performance relationships are an individual level.

In summary, Lane and Terry (2000) developed a conceptual model and subsequent tool (BRUMS, Terry et al., 1999, 2003) to assess the central hypotheses pertaining to their model. Studies have found supportive evidence that people who report 1 or more on the depression scale report an unpleasant overall emotional profile, and that depression appears to have a moderating effect on performance relationships for anger and tension. Practitioners, therefore, should look at scores on the BRUMS to see if participants reported 1 or more for depression items before interpreting scores for anger and tension. However, from scores on the BRUMS, practitioner would not know what the athlete is feeling emotional about, and also, whether the athlete perceived feeling this way was helpful or harmful for perfor-

mance. Research that has investigated appraisals of emotions has typically focused on anxiety and performance.

### **Anxiety and performance relationships**

A line of research that has been studied intensively is the examination of anxiety-performance relationships (Hanton Neil, & Mellalieu, 2008; , Neil, Mellalieu, & Hanton, 2011). Researchers initially used the CSAI-2 (Martens et al., 1990) which assesses three subcomponents of anxiety. First, cognitive anxiety, that is, anxiety expressed as negative expectations and beliefs that performance will be poor. It was proposed that intense feelings of cognitive anxiety lead to poor performance. The second is somatic anxiety, characterized by physical expressions such as increased heart rate. Scores on the somatic anxiety scale should show curvilinear relationship with performance. The third factor is self-confidence which is positive beliefs that you will perform to expectation. Self-confidence is proposed to have a positive relationship with performance. However, as noted in meta-analysis results (Craft et al., 2003), results indicate cognitive anxiety and somatic anxiety show weak relationships with performance.

It appears that researchers using the CSAI-2 were aware of its limitation shortly after it was published (Jones, 1995; Jones & Hanton, 1996; Jones, Swain, & Hardy, 1993). Researchers began examining whether anxiety could be perceived as either facilitative or debilitating of performance; that is, when an individual reports experiencing a high intensity of cognitive anxiety, whether he believes that these feelings will be helpful or harmful of performance. Studies have found that when the directional scale is considered, the variance predicted by anxiety increases; that is, scores on the directional scale appear to be effective predictors of performance.

Possibly, the more significant work in anxiety direction can be found in studies that used qualitative methods and intervention focused work (see Wagstaff et al., 2011 for a review, 2011). The CSAI-2 was criticized for lacking validity, particularly surrounding the terms "concerned" as an indicator of cognitive anxiety (Lane, Sewell, Terry, Bartram, & Nesti, 1999). Researchers and practitioners wishing to examine the potential influence of measurement issues on anxiety research and its application should read the debate between Mellalieu and Lane (2009) (it should be noted that I took an extreme position in this debate so that issues were discussed thoroughly rather than seeking agreement). Qualitative work involves asking people to freely express their thoughts and feeling when experiencing intense anxiety before competition (see Wagstaff et al., 2011 for a review). Equally, intervention focused work is concerned with changing psychological states to improve performance and / or well-being. Studies using a qualitative methodology illustrate athletes develop beliefs surrounding the effects of emotions experienced before and during

competition (see Hanin, 2003, 2010; Neil, Hanton, & Mellalieu, 2009; Ruiz & Hanin, 2004). Research has focused on changing interpretations of anxiety from debilitating to facilitative rather than down-regulating the intensity of the initial response (Hanton & Jones, 1999). Based on their summary of the anxiety literature on sport, Hanton et al. (2008) reported that evidence suggests that many athletes maintain high levels of performance when they reported feeling intense anxiety, but tended to see anxiety as helpful of performance.

The practical application of directional anxiety work is influenced by difficulties in having a valid measurement tool. Researchers using the CSAI-2 have routinely been tripped by definitional issues; if cognitive anxiety is defined by negative expectations, then how can people have positive expectations when they experience it? The solution would seem to be to revise the definition of cognitive anxiety and describe it in terms of cognitive concerns surrounding performance. Scores on the CSAI-2 cognitive anxiety scale represent concerns and whether these are anxious will depend on their beliefs; that is, the directional scale would provide an insight into such beliefs. Alternatively, practitioners might want to use qualitative approaches and identify the intensity of anxiety experienced before competition and examine its attendant impact. Practitioners should heed to research evidence that shows optimal performers do not differ in the intensity of anxiety, that is, some people perform optimally when experiencing high levels of anxiety, whereas other people perform well when experiencing low levels of anxiety. Further, evidence suggests that it is the interpretation of anxious states that is important. It should be noted that although anxiety might seem unpleasant in many social settings, in goal-focused behavior, it might be functional and therefore, it is plausible that people might want to experience intense unpleasant emotions (Tamir, 2009).

### **Individual Zones of Optimal Functioning**

It is proposed that practitioners investigate the intensity of emotions and beliefs regarding their direction using qualitative methods. One such method is through the use of the Individual Zones of Optimal Functioning approach (IZOF: Hanin, 2000). It is suggested that there are large inter-individual differences in optimal emotional states. For example, an athlete has optimal emotional state that he believes helps performance. In the IZOF model, the functional impact of emotions on performance is explained using the resources matching hypothesis (Hanin, 2000). Optimal pleasant and unpleasant emotions reflect the availability of resources, recruitment and utilization. Optimal emotional states lead to producing increased effort and organizing enhanced skill effects, which result in high-quality performance and the achievement of individually successful performance outcomes. On the contrary, dysfunctional unpleasant and pleasant emotions usually reflect a lack



of resources, ineffective recruitment and poorly utilized. These lead to reducing effort and disorganizing decreased skill effects. There has been a great deal of support for the IZOF model (Jokela & Hanin, 1999; Hanin, 2010; Robazza, Bortoli, & Hanin, 2006; Robazza, Pellizzari, & Hanin, 2004; Ruiz & Hanin, 2004). Evidence from IZOF studies can be used to further challenge the notion that pleasant emotions such as happiness and vigor always help performance and unpleasant emotions such as anxiety and anger harm performance. Because the IZOF approach is not restricted to standardized scales, it overcomes many of the problems with fixed-content scales. However, a consistent finding between approaches is that high-activation unpleasant emotions associate with optimal performance.

Hanin (2003) argued that if an individual associated feeling angry or any emotional state with positive efforts to pursue goals, then a connection is made between anger and goal-achievement. Where he experiences anger in similar situations, it is likely that situational cues will trigger beliefs that anger can be helpful. Indeed, according to Baumeister et al. (2007), emotions provide learning rules for subsequent behavior. Therefore, where an athlete associates goal attainment with specific emotions, this influences how an individual responds to them when he or she experiences them in the future. If an individual feels angry, and feeling angry associates with motivated behavior and potential goal accomplishments, it is possible that feeling angry would correlate with pleasant emotions also.

As the IZOF approach is practically focused, we suggest that researchers can use this to identify emotional states associated with optimal performance, and then assess beliefs surrounding these emotions. Once such emotional states and beliefs have been identified, the next stage should be to examine strategies that athletes will use if they wish increase or decrease the intensity of their emotions. A key aspect of the IZOF approach is that individuals identify emotional states associated with optimal performance. However, Harmison (2011) argued that many athletes are not aware of their emotional states experienced with optimal performance. Harmison (2011) argued that a key role of sport psychologists is to develop self-awareness of optimal states associated with variations in performance. The method of identifying optimal emotional states used within the IZOF approach is arguably an effective method of achieving this outcome. In the IZOF process, an individual is asked to identify how he felt at a number of different times around performance. For example, how he felt before, during, and after performance. Emotions are clearly transient states, evidence demonstrate athletes experience different emotions before competition than after (Hanin, 2000, 2010). Pre-competition emotions are anticipatory, and as such, emotions such as anxiety and anger might have a function in preparing the individual for action. Post-competition emotions are more evaluative and related closely to the outcome of competition. Hanin (2010) points out that

an emotion such as happiness might be a more functional emotion to experience after competition than before rather than before. After competition, feeling happy and the associated signal from happiness that "all is well" might imply that performance met expectation, whereas Hanin argued that happiness before competition might be associated with complacency and under-estimation of task difficulties, which could be detrimental to task performance. Terry (1995) argued that assessing pre-competition mood one day before competition could leave a practitioner enough time to implement interventions if needed. Therefore, it is proposed that asking individuals to reflect on what emotional states they experienced before best and worst represents a useful starting point.

### Conclusions and recommendations

In the present paper I have sought to examine research evidence on emotion-performance relationships. Evidence shows that emotions influence performance and this should be the starting point to applied work with individuals. I suggest seeking to identify emotional states that athletes experience in best and worst performance. Athletes could complete self-report scales along with providing written accounts of their thoughts and feelings. Once an individual has identified an emotional state that he believes helps performance, or an emotional state he would like to be in when performing, the practitioner should look to examine underlying beliefs related to this emotional profile. Practitioners can be guided by evidence showing that high-action focused emotions such as excitement and vigor tend to associate with best performance and athletes tend to wish to feel such emotions before competing. However, some athletes also wish to experience high-action unpleasant emotions such as anxiety and anger and hold beliefs that these emotions will help performance. As indicated, studies that have examined the emotional and cognitive profile of athletes who believe anxiety helps performance, they tend to also indicate that they are happy (Lane et al., 2012). We suggest intervention led studies should be the primary drivers of applied research. We also suggest that there is a need for suitably controlled experimental research designed to examine the mechanisms underpinning emotions influence of sports performance.

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