Development and Validation of the Emotion and Mood Components of Anxiety Questionnaire

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Introduction

Mood and emotion research in sport psychology is typically conducted using single-adjective checklists such as the Profile of Mood States. A limitation of single adjective checklists is that they assess the intensity of the affective response but not the context, and thus cannot reliably distinguish mood from emotion. Recent research has emphasized the importance of distinguishing mood from emotion both theoretically (Lane & Terry, 2000) and practically (Jones, 2003).

The purpose of the present research was to develop a self-report measure that distinguishes mood from emotion. No such method currently exists, despite an extensive literature attesting to theoretical distinctions between the two (see Ekman & Davidson, 1994). Theoretically, emotion is brief, intense and focused on, and about, a specific object. Mood is enduring, diffuse and is neither focused on nor about anything in particular. Perhaps of most significance to research and practice in sports psychology is the proposal that emotion and mood have both different antecedents and effects on performance. However, despite such apparently clear conceptual distinctions, demonstrating clear psychometric distinctions between emotion and mood is problematic, as states such as anger and anxiety may occur as both (Lazarus, 1994). Beedie, Lane and Terry (2001) proposed that mood and emotion can be distinguished empirically. Their proposal was made on the basis of content analyses of 65 published papers addressing distinctions between emotion and mood, and of interview data from 106 participants relating to the same question (Beedie, Terry, & Lane, in press). The present study reports the development and validation of the measure: The Emotion and Mood Components of Anxiety Questionnaire (EMCA-Q).

Method

Analysis of criteria proposed to distinguish emotion from mood.

The practical utility of the 16 criteria proposed to distinguish between emotion and mood identified by Beedie et al. (2004) was explored. The process involved analysis of the feasibility of demonstrating clear empirical distinctions between emotion and mood via each distinguishing criterion. By a process of elimination it was demonstrated that the most promising criterion was *subjective context*; that is, the subjective processes used by an individual to distinguish emotion from mood. This criterion posits that if an individual perceives that the state is caused by a specific object, is focused on that object (that is, it is *about* the thing that appeared to cause it) and seems to have potential behavioural consequences, then the individual is more likely to label the feeling an emotion. However, if an individual perceives that the state is neither caused by nor is focused on a specific object, and seems to influence cognitions in a way consistent with the feeling state, then they are more likely to label the feeling a mood.

Scale development.

The construct of anxiety was chosen as an appropriate phenomenon to examine in the current research. Individuals prior to sport competitions or academic examinations frequently experience anxiety. Anxiety is also purported to occur as both emotion and mood. Rigorous content validity procedure as detailed by Murphy and Davidshoffer (1998) were employed to ensure that items accurately represented their hypothesised factor. Anxiety adjectives were derived through use of three questionnaires and stimulus lists assessing pre-competition

feelings on a sample of student athletes (N = 206). Items were subsequently developed to assess contextual factors relating to perceptions of the context in which the anxiety occurs. Items such as "I feel nervous when I think about this event" and "I am worried that the pressure of this event will make me perform poorly" represented anxiety that is caused by and focused on a specific object and may have behavioural consequences; that is, an emotion. Items such as "At the moment I seem to be worried about a lot of things", "At the moment I keep remembering occasions when I failed to achieve my goals" and "I feel anxious at the moment, but not for any one particular reason" represent states that have no specific cause, are general and diffuse, and ones that bias thoughts (e.g., memory or expectations about the future success or failure); that is, mood.

Sample 1: Student athletes. Participants were 190 student athletes (M = 21.9 yr., SD = 3.8) studying for degrees in Sport Sciences at a London university. All athletes were representative at county level or above, and included several international and Olympic athletes. The EMCA-Q was administered to the participants, who were instructed to recall an event in which they had competed in the last three months. Empirical support for a retrospective recall approach has been published (Raglin & Hanin, 2000).

Sample 2: Students athletes prior to end of year examinations. Participants were 300 students at a London university (Age*: M* = 34.7 yr., SD = 2.4). Students were asked to complete an exam-specific version of the EMCA-Q immediately (<20 mins.) prior to their exams.

Sample 3: Professional rugby players prior to competition. Participants were 102 professional, male rugby players (Age: M =26.1 yr., SD = 4.0), who played for one of four English Premiership teams. Participants were issued with the EMCA-Q and were requested to complete the questionnaires approximately 2 hours before competition.

Data analysis.

Confirmatory factor analysis (CFA) using EQS V5 (Bentler, 1995) was used to test three competing models of the hypothesised factor structure. First, a single-factor model specifying that all items loaded onto one single anxiety factor was tested. This tested the hypothesis that individuals are *not* able to discriminate between the emotion of anxiety and an anxious mood. Second, a two-factor model was tested which specified that items were related to their hypothesised factor and factors were allowed to correlate. This model tested the hypothesis that individuals are able to distinguish between the emotion of anxiety and an anxious mood, but that emotion and mood states co-occur. The third model tested was a two-factor model specifying that items were related to their hypothesised factor, but that they were not correlated. This model tested the hypothesis that individuals are able to distinguish between the emotion of anxiety and an anxious mood but that these two states are independent.

Results

Hu and Bentler (1999) recommend a two-index criterion for assessing model fit – the Comparative Fit Index (CFI) and the Standard Root Measure of Approximation (RMSEA). As assumptions of normal distribution were not met, the Satorra-Bentler Maximum Likelihood estimation method was used. The two-factor correlated model showed adequate fit whereas the two-factor uncorrelated model show poor fit across all three samples. The single-factor model showed adequate fit in the rugby sample only (see Table 1).

Discussion

Results indicated that the fit between the data and the correlated two-factor model was adequate in each sample, whereas the single-factor model showed poor fit in samples 1 and 2. There are a number of possible explanations. Lane and Terry (2000) argued that prior to sports competition distinctions between emotion and mood may become blurred, and sample 3 is the only case that represents real life sports competitions. It is also possible that

retrospective emotions might be a meta-experience; that is, the memory of emotions and moods are reported, rather than emotions and moods *per se*. In relation to sample 2, it could be argued that an examination is not sufficiently stressful to blur mood-emotion distinctions. However, the hypothesised correlated two-factor structure of the EMCA-Q was replicated via CFA in three distinct populations and situations, suggesting promising factorial validity. Results also suggested that emotion and mood can be distinguished psychometrically, although it could be argued that a two-factor solution would always be likely to emerge because the items clearly address two types of anxiety. However, this argument is negated by the rigorous content validation procedures used in the development of the EMCA-Q, which ensured that the test items were highly representative of the constructs under examination.

Table 1. Summary of CFA Fit Indices for samples 1, 2, and 3

	Model 1 Single-factor	Model 2 Two factor-correlated	Model 3 Two factor-uncorrelated
Sample 1			
RCFI	.886	.923	.738
RMSEA	.067	.061	.222
Sample 2			
RCFI	.866	.923	.784
RMSEA	.070	.064	.249
Sample 3			
RCFI	.953	.944	.634
RMSEA	.060	.060	.200

Conclusions and future directions

It was demonstrated that, on the basis of contextual information, athletes distinguish between emotion and mood components of anxiety. Given these results, it is suggested that questionnaires with single-word items should be used with caution, as they provide no such contextual information. The construct validity of such questionnaires is questionable, as an intentional state (emotion) of anxiety may have different causes and different consequences to a non-intentional (mood) state of anxiety. Use of such questionnaires may not allow the researcher or practitioner to make a practically useful measurement or diagnosis. It is also suggested that researchers working within the affective domain use the terms *emotion* and *mood* more precisely, in keeping with the scientific ethos that underlies the study of human thought and behaviour. Future research should seek to test similar context-based models of emotion and mood across a variety of other emotion and mood states.

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