Mood states, self-set goals, self-efficacy and performance in academic examinations

Richard Thelwell
University of Portsmouth, UK

Andrew M. Lane
University of Wolverhampton, UK

Neil Weston
University of Portsmouth, UK

Running Header: Mood and performance
Abstract

The present study investigated relationships between mood, performance goals, and both written and oral examination performance. Fifty-seven undergraduate students completed a mood measure that assessed the subscale anger, calmness, confusion, depression, fatigue, happiness, tension and vigour, indicated the grade set as a goal for the examinations, and rated their confidence to achieve this goal. These measures were completed approximately 30 minutes before each examination. Structural equation modelling results indicated that mood states, self-efficacy and self-set goals predicted 20% of oral examination performance and 7% of written examination performance. In both samples, findings indicate that positive mood states are associated with self-efficacy to achieve self-set goals. We suggest that future research should look at the extent to which intervention strategies designed to enhance mood states are associated with enhanced performance.

Key words: Emotion, performance, self-efficacy, cognition, applied psychology.
Mood states, self-set goals, self-efficacy and performance in academic examinations

There has been an increase in the amount of empirical research suggesting that psychological states such as mood are predictive of performance in situations that have a high degree of personal importance. Examples of such situations include athletic competition (Beedie, Terry, & Lane, 2000) and academic examinations (Catanzaro, 1996; Lane, Whyte, Terry, & Nevill, 2005; Totterdell & Leach, 2001). A theoretical position forwarded to explain these effects are the notion that the moods experienced by the individual serve in an informational manner. The ‘mood as information’ hypothesis suggests that the affective content of mood states provide information on personal resources to cope with task demands, and it is believed that the predictive effects of mood states are especially salient when the outcome of the activity is uncertain (Bless, 2001; Gendolla & Krusken, 2002). With this in mind, it is likely that negative or unpleasant moods will identify a difficult or problematic situation where information regarding the self, task and strategies employed to cope would be negatively phrased are therefore be associated with low self-efficacy (Bandura, 1990). In contrast, positive moods are more likely to provide functional information for the individual regarding the situation (Clore, et al., 2001), and relate to high self-efficacy.

With the knowledge that the ‘situation’ often influences the mood states held by the individual, one must be aware that when the situation is one of importance, the mood states experienced may influence performance in both a positive or negative manner. Whilst individuals may wish to experience positive moods prior to a difficult or uncertain event, it is often the case that individuals will experience negative moods due to the discrepancy between the demands of the task and the resources that the individual has at their disposal to cope with the situation (Carver & Scheier, 1990; Martin & Tesser, 1996). As a result, individuals who experience negative moods may attend to specific information in greater
detail to reduce the discrepancy that may be present for the task (Cervone, Kopp, Schaumann, & Scott, 1994). If that is the case then it may be the goals set within the task that are more appropriate to examine, rather than global performance. For example, in an examination, a student may have a very negative mood because they perceive task demands outweigh personal resources need to achieve a high grade. As a result, they may use the negative mood state to help them mobilize their effort in a functional manner towards the goal of achieving a threshold pass. Alternatively, the negative mood may act in a dysfunctional manner and disable any mobilization of effort due to the attainability of the goal (task demands) being too high (Gendolla & Krusken, 2002). Thus, as argued by Bandura (1990), individuals with low self-efficacy expectations before doing a personally important task could result in experiencing feelings of despondency, especially if they anticipate failure.

Taking the theoretical suggestions for the relationships between mood states, self-efficacy and performance forward, recent research (e.g., Lane et al., 2005) has found that pre-examination mood states are not only predictive of performance but are also related to the difficulty of self-set goals and self-efficacy estimates to achieve these goals. Specifically, Lane et al. reported significant positive intercorrelations between vigour, self-efficacy, self-set goals and examination performance among a sample of 50 undergraduate students for a practical examination. Whilst an insight to the potential influence of depressed mood on mood states, goals and performance within an academic context was provided, Lane et al. indicated that before the findings could be used in applied settings, replication was needed. They also commented that future research should seek to explore the predictive effectiveness of mood on different forms of assessment, given that their findings were limited to practical forms of summative assessment. To develop the knowledge and understanding to this area of research, it is therefore appropriate to gain a
more detailed understanding to whether similar findings are evident within alternative forms of summative assessment.

The aim of the present study is to further the research by Lane et al. (2005) to incorporate alternative forms of academic assessment. The two forms of assessment included a) the traditional written examination, and, b) the contemporary oral (viva-style) examination. For both forms of examination, the purpose was to examine relationships between pre-examination mood states, goals, self-efficacy and actual examination performance. The present study tested the notion that mood states predicted cognitive states (goals and self-efficacy) and that mood states and cognitive states predict performance. The hypothesised model is depicted graphically in Figure 1.

Methods

Participants

Volunteer participants were 57 (Male n = 32, Female n = 25; Age range 18-28 years) undergraduate sport students studying for a degree in Sports Science at the University of the first author.

Measures

Mood was measured using the Brunel Mood Scale-32 (BRUMS-32) that has been recently developed (see Lane & Jarrett, 2005) from two previously validated scales (Matthews, Jones, & Chamberlain, 1990; Terry, Lane, Lane, & Keohane, 1999; Terry, Lane, & Fogarty, 2003). The original Brunel Mood Scale (BRUMS: Terry et al., 1999, 2003) is a 24-item mood state scale based on the Profile of Mood States (McNair, Lorr, & Droppleman, 1971). The BRUMS assesses the mood states of anger, confusion,
Mood and performance

depression, fatigue, tension, and vigour. The current 32-item scale was formed by adding the items that assess the subscales of happiness and calmness from the UWIST (Matthews et al., 1990) to the 24-items from the BRUMS. The argument for including a greater number of positive mood states was in response to the frequently cited limitation that the POMS has an excessively negative orientation. To this end, it has been suggested in recent literature (e.g., Hanin, 2000) that positive mood dimensions, such as happiness and calmness, may also influence performance. With the addition of the two new subscales, the BRUMS-32 is suggested to provide a more balanced assessment of positive mood and negative mood.

Each of the eight subscales within the BRUMS-32 has four items. Examples of Anger items include “Annoyed” and “Bitter”, Confusion items include “Muddled” and “Confused”, Depression items include “Miserable” and “Unhappy”, Fatigue items include “Exhausted” and “Sleepy”, Tension items include “Nervous” and “Worried”, and Vigor items include “Active” and “Lively”. Calmness items include “Restful” and “Composed” and Happiness items include “Contended” and “Satisfied”. All items within the BRUMS-32 are rated on a 5-point scale where a response of 0 equals “not at all” and 4 equals “extremely”. Alpha coefficients for each subscale in the present study were over .70.

Academic goals and goal-confidence

Prior to each of the examinations, participants were asked to indicate the grade that they are setting as a goal for the examination. They were asked to rate the confidence that they have for achievement of the goal. Goal-confidence was rated on a 9-point scale where 1 = no confidence at all, and 9 = very confident.

Examination Performance

The two methods for assessing examination performance included traditional written examination performance and a more contemporary oral examination. The written
examination (“Introduction to Sport and Exercise Psychology”) was 1.5 hours in length and comprised two sections where section one had 45 multiple-choice questions that had to be answered. Section 2 had a total of 5 essay titles where students are required to answer 1. The overall grade for the examination took into account performance in both sections. Following the examination, all students work was marked and a total of 10% of the examination scripts were subjected to blind second marking by a subject specialist. All double marked work will then be stored in a unit file and made available for the Subject External Examiner to comment upon within their reports.

The oral assessment (“Introduction to Sports Physiology”) was a new form of assessment within the curriculum (see Oakley, 2004 for a full review). The oral examinations lasted for 30 minutes where students were examined in three’s by two members of staff. Although there were three students in each oral assessment, only the student to whom the question was directed was able to respond. Each student was required to answer a total of 6 questions, with 2 questions relating to each learning outcome being assessed. To enable variety in the questions posed, the unit coordinator was required to prepare a question-bank of 10-20 questions for each learning outcome. A pro-forma marking sheet was used to grade student responses to each question on a 0-5 scale, using the written marking criteria, which enabled an overall mark to be given.

Although two members of staff examined the students in the oral assessment (thus providing double marking), having gained consent from the students, some of the oral assessments were tape recorded to enable commentary from the Subject External Examiner. For both forms of assessment, confirmed student grades were made available following the Examination Board. The marking system employed ranges from 0-100% where marks of 70%+ equated to a 1st class pass, marks between 60-69% equated to an upper second class
pass, marks between 50-59% equated to a lower second class pass, marks between 40-49% equated to a third class pass, and, marks of 39% or below equated to a fail.

Experimental Procedures

Prior to the study commencing, participants completed written informed consent forms having been provided with detailed participant information sheets outlining the nature and methodology of the study. Having ensured confidentiality, participants completed a BRUMS-32 approximately 30 minutes prior to their written and oral examinations. The study had ethical approval from the institution of the first author.

Data analysis

A repeated measures Multivariate Analysis of Variance (MANOVA) was employed to examine the differences in pre-examination mood, the performance goal set pre-examination, the confidence to achieve the performance goal, and, the actual examination performance before the written examination and oral examination.

Structural equation modelling (SEM) techniques were used to assess the moderating influence of examination type on the strength and direction of performance relationships. The structural model specified that relationships would be equal for both examinations. Therefore, poor fit of the model to the data would be interpreted as support for the suggestion that hypothesised relationships varied according to the type of examination.

Scott-Lennox and Scott-Lennox (1995) recommended that a fully recursive model with equality constraints on all hypothesized relationships should be used.

Results

Repeated measures MANOVA results indicate that there was no multivariate effect between psychological state variables by examination type. However, and importantly, results indicate that participants produced significantly higher grades in the oral examination (Wilks' Lambda $= .71$, $p = .16$, Eta2 = .29). Structural equation modelling...
Mood and performance results indicate support for the hypothesised model in the oral examination condition (Comparative Fit Index: CFI = .97) and the written examination (CFI = .98). As Figure 2 indicates mood, self-efficacy and self-set goals predicted 20% of performance variation for the oral examination and 7% of the variance in written examination. Predictive paths for the oral examination involved setting a difficult goal, self-efficacy, low confusion, depression and tension and vigor. A difficult goal for the oral examination was associated with feeling calm and happy and low tension and fatigue. Self-efficacy for the oral examination was associated with feeling calm and happiness coupled with low depression, tension and fatigue. For written performance, results indicated confusion and tension significantly hampered performance. A difficult goal was associated with tension and vigor. Self-efficacy was associated with low confusion, calmness, depression and tension.

Results indicated strong support for the multisample analysis (CFA = .98). With multisample CFA, the statistics derive from the Lagrange Multiplier Test (LMT), which test the equality of relationships between samples (in this instance assessment format). LMT results indicate that there were no significant differences in the strength of relationships between the two assessments. It is important to recognize that although some variables were significant predictors in one assessment and not the other, relationships were generally weak to moderate.

Discussion

The present study examined relationships between mood and two forms of examination performance by testing the notion that mood states would predict cognitive states prior to examinations, which in turn would predict performance. Although there were two forms of examinations within the present study, there was little difference between the findings for each. In fact, other than the difference in the amount of variance that the mood and cognitive states collectively contributed to between the examinations, the
Mood and performance

predictive values of mood states on cognitive states, and cognitive states on performance were similar. In short, the findings generally supported the hypothesized model depicted in Figure 1 where higher positive moods (e.g., happiness) and lower negative moods (e.g., tension) are suggested to be associated with higher self-efficacy and goal difficulty, which in turn were associated with higher performance levels. This is of particular interest given that positive moods are often associated with a positive perception of the situation (Clore et al., 2001) and that self-efficacy is continually reported to be a major predictor of performance in a variety of settings (Bandura, 1990; Wise & Trunnell, 2001). Also, given that positive moods often suggest the individual to have the appropriate personal resources to cope with the task in hand, it is important to report that in the main they were associated with setting a higher goal, thus supporting the notion that the individuals perceived themselves to have the requisite resources to achieve in situations where the outcome is uncertain (Gendolla & Krusken, 2002).

Despite the present study furthering that of Lane et al. (2005) to alternative methods of summative assessment, there is a fundamental difference between the studies. For example, whilst the present study examined the extent to which mood states related cognitive states pre-examination, and in turn how they, related to examination performance, Lane et al. examined the extent to which depressed mood influenced the mood-performance relationship in accord with the conceptual model of mood forwarded by Lane and Terry (2000). Despite the differences in the aims of the studies, there are some consistencies between the findings reported across them. Firstly, Lane et al. reported that irrespective to whether individuals experienced depressed mood, positive mood states influenced cognitive states pre-examination and successful examination performance. This supports the finding within the present study that positive mood states appear to be related to the attainment of high levels of self-efficacy and the setting of difficult goals. Secondly, both studies
highlight the potential concerns associated with negative moods, and in particular to how
they may provide negative information on the forthcoming task (Gendolla & Krusken,
2002), which may lead to lower levels of self-efficacy being experienced, and lower, or
inappropriate goals being set prior to the examination (Comunion, 1989; Lane, 2001).

Given the consistent findings across the present study and that conducted by Lane et al. (2005), we suggest that whilst the findings could be used to inform practice,
practitioners need to be aware of some of the limitations across the studies. Firstly,
although the present study extended the work of Lane et al. to an alternative sample and
method of assessment, it remains that the results across both studies provide associative,
rather than causative links. Secondly, the two studies employed cross-sectional research
designs, which reduce the applied impact of the findings due to a lack of intra-individual
examination of the mood, cognitive state and performance relationships. As a consequence,
we suggest that future research should follow a more applied research design and examine
mood states associated with functional cognitive states and successful performance levels
via idiographic methods. This notion has been reinforced further by Hanin (2000) who
suggested emotion-performance relationships to be highly individualised and as a result,
worthy of intra-individual study. On this point, the present study did not seek to intervene
among participants reporting negative mood states and low levels of self-efficacy and
dysfunctional goals prior to examinations. Instead, it sought to test mood-performance
relationships in the two examinations rather than seeking to conduct an intervention to
alleviate symptoms of inappropriate moods and other unpleasant cognitive states.
Therefore, future research should seek to identify individual mood-profiles associated with
high levels of self-efficacy, functional goals and examination success across different types
of examinations, and develop interventions that can be used to bring about modifications in
mood states so that participants are in their ideal cognitive state and performance states before examinations.

A second, but related line of further research should investigate relationships between mood state changes before, during and after taking an important examination. His may be even more salient given that it is possible for mood states to change upon commencing the examination, thus making the relationship between pre-examination mood and performance questionable. Also, researchers may wish to consider examining the relationships between mood throughout performance and emotional intelligence (Goleman, 1995; Schutte, et al., 1998), especially seeing that recent research (e.g., Parker, Summerfeldt, Hogan, & Majeski, 2004) has found links between emotional intelligence and academic performance. Should such work be conducted, it would be expected that individuals who have high levels of emotional intelligence would be aware of the potentially facilitating effects of mood states and be able to regulate their mood to appropriate states to maximize performance.

In conclusion, results of the present study found some relationship between mood states, cognitive states and performance. Irrespective of examination type, positive mood states were associated with more facilitative cognitive states and performance with negative mood states hampering performance. Finally, future research examining the relationships between mood states and performance is required from an idiographic approach.
References


Table 1.

Repeated measures comparison of Mood Scores, Goals, and Goal-confidence between the Oral and Written Examinations

<table>
<thead>
<tr>
<th></th>
<th>Written</th>
<th></th>
<th>Oral</th>
<th></th>
<th>F</th>
<th>P</th>
<th>Eta2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger</td>
<td>0.26</td>
<td>0.46</td>
<td>0.20</td>
<td>0.36</td>
<td>1.46</td>
<td>0.23</td>
<td>0.03</td>
</tr>
<tr>
<td>Confusion</td>
<td>1.10</td>
<td>0.95</td>
<td>1.11</td>
<td>0.96</td>
<td>0.42</td>
<td>0.52</td>
<td>0.01</td>
</tr>
<tr>
<td>Calmness</td>
<td>1.52</td>
<td>0.68</td>
<td>1.53</td>
<td>0.62</td>
<td>0.00</td>
<td>0.97</td>
<td>0.00</td>
</tr>
<tr>
<td>Depression</td>
<td>0.53</td>
<td>0.83</td>
<td>0.44</td>
<td>0.75</td>
<td>1.06</td>
<td>0.31</td>
<td>0.02</td>
</tr>
<tr>
<td>Fatigue</td>
<td>1.00</td>
<td>0.95</td>
<td>0.96</td>
<td>0.91</td>
<td>0.28</td>
<td>0.60</td>
<td>0.01</td>
</tr>
<tr>
<td>Happiness</td>
<td>1.69</td>
<td>0.74</td>
<td>1.64</td>
<td>0.70</td>
<td>0.23</td>
<td>0.63</td>
<td>0.00</td>
</tr>
<tr>
<td>Tension</td>
<td>2.08</td>
<td>1.07</td>
<td>2.04</td>
<td>1.08</td>
<td>0.10</td>
<td>0.76</td>
<td>0.00</td>
</tr>
<tr>
<td>Vigour</td>
<td>1.90</td>
<td>0.82</td>
<td>1.94</td>
<td>0.79</td>
<td>0.08</td>
<td>0.78</td>
<td>0.00</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>5.69</td>
<td>1.31</td>
<td>5.79</td>
<td>1.16</td>
<td>0.01</td>
<td>0.92</td>
<td>0.00</td>
</tr>
<tr>
<td>Goal</td>
<td>58.08</td>
<td>11.08</td>
<td>56.35</td>
<td>9.61</td>
<td>2.15</td>
<td>0.15</td>
<td>0.04</td>
</tr>
<tr>
<td>Performance</td>
<td>56.42</td>
<td>11.08</td>
<td>62.06</td>
<td>13.43</td>
<td>7.34</td>
<td>0.01</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Wilks’ Lambda $_{11,41} = .71$, $p = .16$, Eta2 = .29
Figure 1. Hypothesized model for relationships between mood states, self-set goals, self-efficacy and performance
Figure 2. Significant paths predicting Oral examination performance from self-efficacy, goals and mood states between different assessment methods.

* $p < .05$
Figure 3. Significant paths predicting Written performance from self-efficacy, goals and mood states between different assessment methods

* $p < .05$