

Test of a Conceptual Model of Mood-Performance Relationships with a Focus on Depression: A Review and Synthesis Five Years On

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Lane and Terry (2000) defined mood as “*a set of feelings, ephemeral in nature, varying in intensity and duration, and usually involving more than one emotion*” (p.16). They proposed a conceptual framework for predicting performance from mood states assessed by the Profile of Mood States (McNair, Lorr, & Droppleman, 1971) or its derivatives. The conceptual model indicated that depressed mood influences the intensity of other mood states, and determines the functional impact of anger and tension on performance. The aim of the present paper is to summarise studies that have tested Lane and Terry’s conceptual model.

Seventeen published studies were located that have tested assumptions forwarded by Lane and Terry (2000). All studies investigated differences in anger, confusion, fatigue, tension and vigour between depressed mood and no-depression groups. Of these, nine studies investigated mood-performance relationships (Fazackerley, Lane, & Mahoney, 2004; Janover & Terry, 2002; Lane & Terry, 1998, 1999a; Lane, Terry, Beedie, & Stevens, 2004; Lane, Terry, Beedie, Curry, & Clark, 2001; Lane, Terry, Karageorghis, & Lawson, 1999; Owens, Lane, & Terry, 2000; Lane, Whyte, Terry, & Nevill, in press). Three studies investigated relationships between mood and other psychological states (Hall, Lane, & Devonport, 2002; Lane, 2001; Lane & Levitt, 2002). Another three studies investigated the influence of depressed mood on changes in other mood states over time (Lane & Lovejoy, 2001; Lane, Whyte, Shave, & Wilson, 2003; Lane, Whyte, George, Shave, Barney, & Terry, 2004). Of the remaining two studies, one compared the covariance of tension and depression with other mood dimensions (Lane & Terry, 1999b) and the final study investigated post-competition mood and performance satisfaction (Lane, Lane, & Firth, 2002).

Associations between Depressed Mood and Other Mood States

To test the model, Lane and Terry (2000) suggested that participants should be grouped into depressed mood and no-depression groups on the basis of responses to the four depression items on the Brunel Mood Scale (Terry, Lane, & Fogarty, 2003; Terry, Lane, Lane, & Keohane, 1999), a 24-item derivative of the original POMS. Participants reporting zero for all items form the no-depression group, whereas those scoring one or more form the depressed mood group. Given the 0 – 16 point range of this scale, the latter group would potentially be quite heterogeneous in reporting symptoms of depressed mood. Lane and Terry hypothesised that participants in the depressed mood group would simultaneously report higher scores for anger, confusion, fatigue, and tension but lower vigour scores. All 17 studies provided evidence to support this hypothesis. Among the studies reviewed, the mean effect sizes (Cohen’s *d*) for these mood dimensions were in the moderate to large categories – Anger: $M = .85$, $SD = .25$; Confusion: $M = .93$, $SD = .25$; Fatigue: $M = .79$, $SD = .37$; Tension: $M = .61$, $SD = .27$, and Vigour: $M = .51$, $SD = .34$.

Mood-Performance Relationships

The central proposition of the Lane and Terry model is that depressed mood moderates mood-performance relationships for anger and tension. Specifically, they hypothesised that anger and tension would tend to facilitate performance when experienced independently of depressed mood, whereas they would tend to debilitate performance when

experienced in conjunction with depressed mood. Lane and Terry hypothesised that depressed mood would not moderate mood-performance relationships for vigour, fatigue and confusion, with vigour being associated with better performance and confusion and fatigue being associated with poorer performance.

Data from studies that tested these assumptions using structural equation modelling (i.e., Lane & Terry, 1998, 1999a; Lane et al., 2001, 2004) were re-examined and subjected to further analysis. Structural equation modelling requires large samples and so these studies reflected the major tests of the model thus far. Also, the results of structural equation modelling are provided in standardized coefficients, thereby making results directly comparable. Overall, a summary analysis showed that when comparing results for depressed mood and no-depression groups, mood-performance relationships essentially remained constant for confusion, fatigue, and vigour, whereas the direction of the relationship switched for anger and tension (see Table 1). Average standardised coefficients showed that anger and tension were positively related to performance in the no-depression group and negatively related to performance in the depressed mood group. The switching effect was significant for both anger and tension but was clearly greater for anger. Vigour showed a moderate positive relationship with performance in both groups, whereas confusion and fatigue showed weak negative relationships. These findings support the notion that depressed mood moderates relationships with performance for anger and tension but not for confusion, fatigue and vigour, as hypothesized by Lane and Terry.

Table 1. Standardized Coefficients for Mood-Performance Relationships in No-depression and Depressed Mood Groups

	No-depression		Depressed mood		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Anger	0.15	0.14	-0.31	0.12	5.62*
Confusion	-0.10	0.24	-0.09	0.30	-.02
Fatigue	-0.01	0.10	-0.07	0.08	1.11
Tension	0.16	0.13	-0.06	0.20	2.12*
Vigour	0.23	0.20	0.27	0.12	-.37

* $p < .05$ (one-tailed)

Conclusions and Suggestions for Future Research Directions

When viewed collectively, studies testing Lane and Terry's model offer reasonable support for the central hypotheses. Thus, the model may represent a plausible theoretical explanation for the apparently contradictory findings highlighted in previous reviews of the mood-performance research. Secondly, the model provides testable hypotheses relevant to the POMS, a measure that despite much controversy is still widely used by researchers and applied sport psychologists.

However, it is suggested that future research could extend the model in several ways. Firstly, the nature of depressed mood should be investigated more thoroughly. All tests of the model have clearly pointed out that depressed mood is a different construct to clinical depression, and hence future research could help to provide a better understanding of the depressed mood construct by corroborating POMS-based assessments using clinically-validated measures such as the Hospital Anxiety Depression Scale (Zigmond & Snaith, 1983). Secondly, the potential performance benefits of positive mood have not been thoroughly investigated. Given the generally negative orientation of the POMS scales, there is considerable scope for expanding the model, using additional measures, to include the effects of positive mood states such as happiness and calmness. Thirdly, considering that the

model has been tested primarily by research groups associated with its original development, there is a need for more independent scrutiny of the model's propositions.

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