

Pre-competitive feeling states and directional anxiety interpretations

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In this study, we assessed differences in feeling states indicated by performers who reported being facilitated or debilitated by symptoms associated with competitive anxiety before competition. A sample of high-standard swimmers ($n = 190$) completed a modified version of the Competitive State Anxiety Inventory-2, including both intensity and direction subscales, and an exploratory checklist of feeling state labels, which comprised positive and negative feeling state labels. Our findings supported the general hypothesis that 'facilitators' report significantly more positive feelings than 'debilitators', who report significantly more negative feelings. Descriptive frequency counts of the largest percentage differences between 'facilitators' and 'debilitators' resulted in the selection of the 'confident' feeling state label on the positive subscales, with it being identified most frequently by the 'facilitators'. Furthermore, of the negative feelings, the groups indicated the label 'anxious' most frequently. This study has extended previous research into the notion of positive and negative anxiety and has revealed individual differences in the combination of feeling states experienced by performers during competition.

Keywords: anxiety, confidence, debilitators, facilitators, feeling states.

Introduction

Recent research developments in multidimensional competitive anxiety have challenged the traditional assumption that anxiety is always negative and detrimental to sports performance. Because of limitations in measuring the 'intensity' of the construct exclusively through the Competitive State Anxiety Inventory-2 (CSAI-2; Martens *et al.*, 1990), Jones (1991, 1995) introduced the notion of 'directional perceptions'. Directional perceptions refer to how individuals interpret the extent to which the intensity of anxiety experienced before competition facilitates or debilitates performance. Directional perceptions are assessed on a bipolar scale ranging from -27 to $+27$ (Jones and Swain, 1992). The direction scale, when used in conjunction with the original CSAI-2 intensity scale, has been successful in distinguishing empirically between certain variables of individual differences. Studies have revealed a consistent pattern of findings in their comparisons

between elite and non-elite performers on both state and trait responses (Jones *et al.*, 1994; Jones and Swain, 1995), good and poor performers (Jones *et al.*, 1993), high and low competitive individuals (Jones and Swain, 1992) and positive and negative goal expectancy groups (Jones and Hanton, 1996). Specifically, although no significant differences were found in the intensity of symptoms between groups, the elite performers, good performers, highly competitive individuals and members of the positive goal expectancy group reported significantly more facilitative interpretations of symptoms associated with competitive anxiety than their comparison groups. Furthermore, the intensities of symptoms interpreted as facilitative towards performance by the elite and good performance groups were accompanied by significantly higher self-confidence than the non-elite and poor performers respectively (Jones *et al.*, 1993, 1994; Jones and Swain, 1995). Although some research has demonstrated significant negative correlations between anxiety intensity and confidence (e.g. Martens *et al.*, 1990), Jones and associates' findings suggested the possibility that self-confidence may in some way protect against debilitative anxiety

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interpretations. Specifically, no significant differences were established in intensity components between groups (e.g. elite and non-elite; good and poor performance), but facilitative interpretations of these intensities were associated with significantly higher confidence.

Highlighting further the value of examining performers' anxiety interpretations, the direction dimension of the CSAI-2 emerged as the main contributor to significant multivariate analysis of variance effects (eta-squared) in studies by Hanton *et al.* (2000) and Jones and Hanton (1996), where the intensity subscales of the CSAI-2 acted as the other dependent variables in the analysis. Directionality has also been addressed recently with reference to the antecedents and temporal patterning of the anxiety response (Hanton and Jones, 1997; Wiggins, 1998), the nature of the competitive sport (Hanton *et al.*, 2000), trait anxiety as a function of the performer's sex and skill (Perry and Williams, 1998) and the use of psychological skills (Fletcher and Hanton, in press). In these studies, interpretation of symptom intensity (direction) emerged as a predictor of the coach's influence before competition; direction dimensions remained stable over a pre-competition period where intensity conformed to theoretical predictions (Martens *et al.*, 1990); interpretation of symptoms differed between participants in fine motor skill and explosive natured sports; males reported more facilitative trait anxiety interpretations than females; and performers who reported a high use of psychological skills displayed more facilitative interpretations than those who reported a low use of such skills. Therefore, it would appear that not only is there value in examining the interpretation of responses, but also that 'direction' appears to be more sensitive in distinguishing between individual difference groups when compared with the intensity of responses.

Despite these recent findings, Jones (1995) had earlier recognized the potential contradiction regarding the notion of what has been referred to as 'positive anxiety' in the direction literature and suggested that:

It is likely, of course, that a state in which cognitive and physiological symptoms, however intense, are perceived as being facilitative to performance does not represent a state of 'anxiety' at all. Instead, it will probably be labelled by the performer as 'anticipatory excitement' or being 'psyched up'. For the most part, they represent merely a measure of the intensity of certain cognitive and physiological symptoms which have been labelled as anxiety by the individuals who developed them (p. 464).

This potential paradox has recently stimulated considerable debate among anxiety researchers (Burton and Naylor, 1997; Hardy, 1997, 1998). Hardy (1997) offered experiential (e.g. Mahoney and Avenier,

1977) and empirical evidence (e.g. Hardy and Parfitt, 1991; Edwards and Hardy, 1996; Woodman *et al.*, 1997) to uphold the contention that a myth exists that high cognitive anxiety is invariably detrimental to sporting performance. Specifically, findings supported catastrophe model predictions that elevated cognitive anxiety may be associated with good or poor performance depending upon the individual's physiological arousal (Hardy, 1990, 1997; Hardy and Parfitt, 1991). Also, evidence from processing efficiency theory (Eysenck, 1982; Eysenck and Calvo, 1992) suggests that cognitive anxiety may exert a positive motivational influence on performance in both cognitive and motor skill tasks when information-processing resources are taxed, if the performer feels moderately confident of success. In response, Burton and Naylor (1997) argued that Hardy confounded the labelling of anxiety with other positive emotions. Drawing upon Lazarus' (1991) model, Burton and Naylor contended that negative expectations of goal achievement and coping resulted in 'anxiety', which is detrimental to performance; however, positive expectancies led to positive emotions such as 'challenge' or 'excitement', which are beneficial for performance, and not 'facilitative anxiety'. Therefore, Burton and Naylor were reiterating Jones' earlier position that competitive state anxiety symptoms have been the subject of conceptual and measurement flaws that have only recently come to light. Hardy (1998) also agreed with Jones (1995) that researchers need to revisit the conceptual definition of competitive anxiety and refine measurement approaches, but reiterated that considerable evidence still exists that elevated anxiety may be advantageous for sporting performance.

From this debate, it emerged that the labelling of thoughts and feelings is important in advancing the understanding of pre-competitive positive and negative states, including that of anxiety. Jones (1995) discerned that the examination of the anxiety response alone may be too amorphous to explain in full the affective experiences of athletes before competition, and called for research addressing the performer's own idiosyncratic labelling of the experienced symptomatology (cf. Gould and Udry, 1994; Hanin, 1997). Similar to the problems of definition that are ingrained within anxiety research, the literature examining affect has also been hindered by a lack of conceptual clarity over terms such as 'mood', 'affect', 'emotion' and 'feeling' (e.g. Diener *et al.*, 1995; Gauvin and Spence, 1998). The work of Clore *et al.* (1987) may be of help in this respect and in relation to the variables examined in the present study. These authors describe affect in terms of 'feeling states', in that how an individual feels will impact upon the resulting emotions and mood. Research in exercise psychology has successfully adopted this approach

using, for example, the Subjective Exercise Experiences Scale (McAuley and Courneya, 1994) and the Exercise Induced Feeling Inventory (Gauvin and Rejeski, 1993). Specifically, this research has demonstrated that, although feeling states are not directly representative of emotions, they are representative of an experience from which emotional states may result (see Gauvin and Spence, 1998). Also, the use of feeling states embraces athletes' perceptions of physical states, which is not the case within the emotional literature.

In summary, although there are commonalities of opinion within the recent 'positive anxiety' debate, essentially researchers either accept that a 'positive anxiety' state for performance exists or reject this in favour of another affective state previously mislabelled as 'anxiety'. The aim of this study was to shed further light on these issues by assessing feeling states experienced by performers before competition and the relationship with the interpreted cognitive and perceived physiological symptoms (i.e. directional interpretations). Specifically, the initial identification of performers' individual labelling of pre-event feeling states was examined as a function of whether they reported their direction of cognitive and physiological symptoms associated with competitive anxiety as either facilitative or debilitating towards performance.

For this study, it is necessary to define the key constructs being examined. Based on interactional definitions from Lazarus (1966) and Jones (1990), anxiety is defined as a negative cognitive and perceived physiological response to uncertain appraisals of coping with stressful demands (e.g. competition). Feeling states are defined as 'those human experiences that include bodily reactions, cognitive appraisals, actual or potential instrumental responses, or some combination thereof' (Gauvin and Spence, 1998, p. 326).

In accordance with Jones (1995), we hypothesized that performers who interpreted symptoms associated with anxiety as facilitative would identify more positive and less negative feeling state labels than those who perceived these symptoms as debilitating towards performance. To address this hypothesis, we studied a sample of swimmers during preparation for competition.

Methods

Participants

Informed consent was obtained from 190 competitive swimmers (94 males, 96 females) aged 17–28 years (20.3 ± 3.0 years; mean $\pm$ s). The participants performed at regional, national and international standard, with most ($n = 150$) competing at national level. To

achieve as large a sample as possible, four different long-course (50 m) competitions were sampled between 1995 and 1998. No performers were tested on more than one occasion and every competition was held at the end of a training and competition cycle, ensuring that the swimmers were in a similar state of training. For the purposes of comparison, competitive swimming was chosen to continue the detailed examination of an individual sport previously adopted by Jones *et al.* (1994) and Hanton and Jones (1995, 1997, 1999a,b).

Measures

Modified Competitive State Anxiety Inventory-2. The CSAI-2 was used to measure pre-performance cognitive anxiety, somatic anxiety and self-confidence, with nine items in each subscale. The response scale asked each participant to rate the intensity with which each symptom was being experienced from 1 ('not at all') to 4 ('very much so'). Thus, the possible intensity scores on each subscale ranged from 9 to 36. Cronbach's alpha coefficients demonstrating internal consistency for the intensity responses have previously been reported to range from 0.79 to 0.90 (Martens *et al.*, 1990).

In addition, the direction scale developed by Jones and Swain (1992) was included for the cognitive and somatic anxiety items, on which each participant rated the extent to which the experienced intensity of each symptom was either facilitative or debilitating of subsequent performance on a scale from -3 ('very debilitating') to $+3$ ('very facilitative'). Thus, the possible direction scores on each subscale ranged from -27 to $+27$, where a negative score denoted a state of debilitation, a positive score a state of facilitation and a score of zero that intensity was unimportant to performance. The direction dimension of self-confidence was not examined because of previous high correlations between the intensity and direction scales, suggesting the measurement of essentially the same state (see Jones *et al.*, 1993). Internal reliability for the direction scale has been reported in three previous studies (Jones and Hanton, 1996; Swain and Jones, 1996; Hanton *et al.*, 2000), yielding coefficients of 0.80–0.89 for cognitive anxiety and 0.72–0.84 for somatic anxiety.

Checklist of feeling state labels. This checklist comprised 22 labels deemed to reflect pre-competition positive and negative feeling states. These were divided into 11 labels that were reported to represent a positive state (confident, excited, focused, relaxed, composed, psyched-up, active, energetic, lively, determined, motivated) and 11 that were deemed to reflect a negative state (doubtful, tense, anxious, upset, scared,

lethargic, jittery, nervous wreck, lazy, distressed, depressed). The labels were generated from an extensive pilot study with 120 performers from a range of disciplines, including individual and team sports, contact and non-contact sports, and objectively and subjectively judged categories. These participants (70 males, 50 females) were aged 18–26 years (21.3 ± 4.2 years) and were of regional to international standard.

The pilot study was divided into three sections. First, 30 performers were individually interviewed and asked to identify the thoughts and feelings they most frequently experienced in an important pre-competition period. Once these were identified, they were required to label the feelings as representing either a positive or negative state. Each interview was carried out by the second author and lasted 30–45 min. Secondly, a series of focus group discussions (three groups of 20 performers each) was carried out with the aim of verifying the results generated from the interviews (i.e. that the identified feelings are commonly present pre-competition). The most frequently experienced feelings were verbally established and documented by the researcher. This stage resulted in consensus on 11 feeling state labels in each of the positive and negative subscales. Finally, the instrument was pilot tested for ease of understanding and completion, resulting in minor modifications to the instructions ($n = 30$ performers). The instructions on the feeling state labelling checklist therefore directed participants to indicate any number of feelings from the randomly ordered list of 22 that best described how they were feeling 'overall' at the time of completion. Scores for this scale were derived by separately summing the total number of positive and negative labels highlighted by the performers, with possible scores on each subscale ranging from 0 to 11.

Procedure

The modified CSAI-2 and the checklist of feeling state labels were completed, in random order across participants, within 1 h of competition. The average time before racing was 33.3 min ($s = 5.5$; range = 30–52 min). This time-frame has been used consistently in anxiety research and was regarded as acceptable since it did not interfere with the swimmers' preparation routines. The participants were asked to indicate those labels that best described their overall feelings on the checklist of feeling state labels at the time of completing the modified CSAI-2. Each competitor was provided with standardized instructions based on the recommendations of Martens *et al.* (1990), which emphasized honesty, an indication of feelings 'right now' and confidentiality of the responses.

Data analysis

The analysis of the data was divided into five stages. First, internal reliabilities and correlations for this sample were calculated. Secondly, because the sample comprised performers of varying ability and of both sexes, one-way multivariate analysis of variance (MANOVA) was used to determine possible group differences and therefore potential covariate influences. Thirdly, a descriptive frequency count of the identified feeling state labels was carried out for those performers facilitated by pre-competition symptoms ('facilitated' groups) and those debilitated by these symptoms ('debilitated' groups). To examine the results from a more detailed perspective than in previous direction research (e.g. Jones *et al.*, 1994; Hanton and Jones, 1999a,b), this frequency count was conducted not only for the combined cognitive and somatic anxiety direction scores ('combined' group), but also separately for the cognitive and somatic anxiety direction scores ('cognitive' and 'somatic' groups respectively). Stage four involved examination of the total number of positive and negative feeling state labels indicated by the anxiety interpretation groups (facilitated and debilitated) by MANOVA and univariate analysis of variance (ANOVA) for significant MANOVA effects. Finally, the CSAI-2 intensity scores were examined by MANOVA and ANOVA for the facilitated and debilitated groups. Assumptions underlying all statistical tests were met at each stage of the analysis.

Results

Reliability and correlational analyses

Internal reliability analyses were conducted on the CSAI-2 direction subscales. The coefficients were 0.82 ($P < 0.001$) for cognitive anxiety direction and 0.86 ($P < 0.001$) for somatic anxiety direction. These values are comparable to those reported previously (Jones and Hanton, 1996; Swain and Jones, 1996; Hanton *et al.*, 2000).

The correlation coefficient of 0.31 ($P < 0.001$) between the intensity scores for cognitive and somatic anxiety was lower than previously reported (Gould *et al.*, 1984; Martens *et al.*, 1990; Jones and Hanton, 1996). Although statistically significant, this demonstrates less than 10% common variance and supports the multi-dimensional conceptualization of separate cognitive and somatic sub-components. Correlations between the cognitive anxiety intensity and direction scores and the somatic anxiety intensity and direction scores were -0.19 ($P < 0.05$) and -0.23 ($P < 0.01$) respectively, indicating at best 5.3% shared variance. This provides

support for the separate measurement of intensity and direction dimensions of the response.

Group differences

Separate one-way multivariate analyses of variance were conducted to determine the possible effects of skill and sex on the modified CSAI-2 scores. In accordance with Jones *et al.* (1994), elite and non-elite performers were distinguished on the basis of their achievement or not of the qualifying time set by the Amateur Swimming Association for participation in the National Swimming Championships. Skill and sex acted as the independent variables and cognitive anxiety intensity and direction, somatic anxiety intensity and direction, and self-confidence intensity acted as the five dependent variables in each analysis. The results indicated that neither MANOVA was significant ($P > 0.05$).

Feeling state labels as a function of facilitation and debilitation

Following the procedure initially used by Jones *et al.* (1994) and used in recent studies examining 'facilitators' and 'debilitators' (Hanton and Jones, 1999a,b), an independent variable was created that was derived from each participant's scores on the cognitive anxiety and somatic anxiety direction scales. Specifically, the participants were dichotomized into those who had positive scores on both direction variables (combined 'facilitated' group, $n = 83$; mean cognitive direction $+9.29 \pm 6.47$; mean somatic direction $+9.3 \pm 6.08$) and those who had negative scores on both scales (combined 'debilitated' group, $n = 51$; mean cognitive anxiety direction -7.31 ± 5.26 ; mean somatic direction -5.08 ± 4.73). Those swimmers who had a combination of a positive score and a negative score ($n = 57$) were omitted from this analysis. To examine the general hypothesis in more detail than in previous studies, this procedure was also repeated for separate cognitive and somatic anxiety direction scores: cognitive 'facilitated' group ($n = 97$; mean cognitive direction $+9.0 \pm 6.2$), cognitive 'debilitated' group ($n = 86$; mean cognitive direction -6.5 ± 5.0), somatic 'facilitated' group ($n = 116$; mean somatic direction $+8.0 \pm 5.76$) and somatic 'debilitated' group ($n = 63$; mean somatic direction -4.8 ± 4.37).

Descriptive frequency count of feeling state labels

Table 1 shows the positive and negative feeling states identified by the participants in the combined, cognitive and somatic interpretation groups, the frequency with which each was identified, the percentage difference between the groups (facilitated and debilitated) and the direction of the variability. On the positive subscale, the

members of the combined 'facilitated' group identified more strongly than the members of the combined 'debilitated' group with 7 of the 11 labels; on the negative subscale, the combined 'debilitated' group identified more strongly with 9 of the 11 labels. Of the positive adjectives, 'confident' was cited most frequently by the facilitated group (83.1%) and also showed the greatest percentage difference between the two groups (+69.4%). On the positive subscale, the debilitated group indicated most frequently 'psyched-up' (52.9%), which was also experienced by 72.3% of the facilitators (+19.4%). On the negative subscale, both the facilitated (48.2%) and debilitated (70.6%) groups indicated 'anxious' most frequently (-22.4%). The largest percentage difference between groups (-40.3%) was for the feeling state 'doubtful', with 4.8% of facilitators but 45.1% of debilitators indicating it.

The cognitive 'facilitated' group identified more strongly than the cognitive 'debilitated' group with 8 of the 11 positive feeling states; on the negative subscale, the cognitive 'debilitated' group identified more strongly with 9 of the 11 labels. This was also the trend for the somatic 'facilitated' and 'debilitated' groups, which identified more strongly with 6 of 11 positive and 7 of 11 negative feeling states respectively. For both the cognitive and somatic groups, 'confident' was the most frequently cited positive feeling state by the facilitated performers (85.6% and 59.5% respectively); this compares with 8.1% and 27.0% of the debilitated athletes respectively. On the negative subscale, both the cognitive and somatic 'facilitators' and 'debilitators' chose the 'anxious' label most frequently (cognitive: facilitated 52.6%, debilitated 74.4%; somatic: facilitated 56.9%, debilitated 71.4%).

Multivariate analysis of variance

Three one-way multivariate analyses of variance were conducted to establish if there were any overall significant differences between the debilitated and facilitated groups' scores on the mean number of positive and negative feeling states using the checklist of feeling state labels. The debilitated and facilitated groups acted as the independent variables and the total scores on positive and negative feeling state subscales as the dependent variables in each MANOVA. All analyses were significant (combined group: Wilks' lambda = 0.74, $F_{2,131} = 20.0$, $P < 0.001$; cognitive group: Wilks' lambda = 0.70, $F_{2,180} = 38.1$, $P < 0.001$; somatic group: Wilks' lambda = 0.94, $F_{2,176} = 5.5$, $P < 0.05$).

Analysis of variance

Separate one-way analyses of variance were carried out for the positive and negative feeling state subscales to

Table 1. Frequency of feeling state labels indicated by the directional interpretation groups

	Combined			Cognitive			Somatic		
	Facilitated	Debilitated	% Diff.	Facilitated	Debilitated	% Diff.	Facilitated	Debilitated	
	(<i>n</i> = 83) Frequency (%)	(<i>n</i> = 51) Frequency (%)		(<i>n</i> = 97) Frequency (%)	(<i>n</i> = 86) Frequency (%)		(<i>n</i> = 116) Frequency (%)	(<i>n</i> = 63) Frequency (%)	
Positive labels									
Confident	69	7	+69.4	83	7	+77.5	69	17	+32.5
Excited	56	6	+55.7	64	11	+53.2	61	11	+35.1
Focused	39	6	+35.2	47	7	+40.4	40	11	+17.0
Relaxed	30	4	+28.3	34	9	+24.6	35	6	+20.7
Composed	36	9	+21.3	40	14	+24.9	41	11	+17.8
Psyched-up	60	27	+19.4	66	31	+31.9	64	30	+7.6
Active	18	18	-13.6	28	29	-4.8	29	26	-16.3
Energetic	20	19	-13.2	24	32	-12.5	33	21	-4.8
Lively	21	18	-10.0	27	31	-8.3	34	22	-5.6
Determined	40	25	-0.8	53	27	+23.2	41	35	-20.3
Motivated	33	20	+0.6	46	23	+20.7	36	30	-16.6
Negative labels									
Doubtful	4	23	-40.3	6	41	-41.5	21	25	-21.6
Tense	9	18	-24.5	10	26	-19.9	16	19	-16.4
Anxious	40	36	-22.4	51	64	-21.8	66	45	-14.5
Upset	6	14	-20.3	6	16	-12.4	7	15	-17.8
Scared	9	15	-18.6	9	19	-12.8	13	15	-12.6
Lethargic	11	2	+9.4	12	2	+10.1	11	3	+4.7
Jittery	6	8	-8.5	7	12	-6.8	10	9	-5.7
Nervous wreck	3	5	-6.2	3	8	-6.2	6	5	-2.7
Lazy	9	3	+4.9	10	3	+6.8	9	4	+1.5
Distressed	2	2	-1.5	2	6	-4.9	6	2	+2.0
Depressed	2	2	-1.5	2	4	-2.6	5	1	+2.7

examine specific differences between the facilitated and debilitated groups. The means, standard deviations, *F*-ratios and effect sizes for these analyses are shown in Table 2. The results show that the combined 'facilitated' group scored significantly higher on the number of positive feeling state labels that they indicated than the performers debilitated by both 'anxiety' components. Similarly, the combined 'debilitated' group reported significantly more negative feeling state labels than the facilitated group. Both analyses of variance reached the 0.001 level of significance. The cognitive 'facilitated' group indicated significantly more positive feeling state labels than the cognitive 'debilitated' group ($P < 0.001$), who reported more negative feeling states than the facilitated group ($P < 0.001$). For somatic anxiety, there was no significant difference between the groups on positive feeling state labels, but the somatic 'debilitated' group reported significantly more negative feeling state labels than the facilitated group ($P < 0.05$).

CSAI-2 intensity scores as a function of facilitation and debilitation

The MANOVA to establish any overall significant differences in the cognitive anxiety, somatic anxiety and self-confidence intensity scores in the combined group was significant (Wilks' lambda = 0.69, $F_{3,130} = 19.5$, $P < 0.001$). The multivariate analyses of variance for the cognitive and somatic groups were also significant (Wilks' lambda = 0.76, $F_{3,179} = 18.7$, $P < 0.001$ and Wilks' lambda = 0.84, $F_{3,175} = 10.4$, $P < 0.001$ respectively).

Specific differences were examined by follow-up univariate analyses. Table 3 illustrates that there were no significant differences between the combined 'facilitated' and 'debilitated' groups on the intensity scales of cognitive anxiety or somatic anxiety. However, the performers within the facilitated group

reported significantly greater intensities of self-confidence ($P < 0.001$) than those individuals in the debilitated group. For the cognitive group, there were no differences between the intensity scores for cognitive and somatic anxiety but a significant difference for self-confidence at the 0.001 level. Significant differences did emerge between the facilitated and debilitated somatic groups between cognitive intensity ($P < 0.05$), somatic intensity ($P < 0.05$) and self-confidence ($P < 0.001$).

Discussion

The aim of this study was to extend previous research on facilitative and debilitative anxiety by examining associated pre-competition feeling states. This was achieved by the administration of a modified CSAI-2 and an exploratory checklist of feeling state labels, which included positive and negative feeling state labels, during the pre-competition period. In accordance with Jones (1995), we predicted that the performers who experienced their pre-competitive symptoms as facilitative on the direction scale of the CSAI-2 would identify with more positive and fewer negative feeling states than those individuals who perceived their symptoms as debilitative to performance, who were predicted in turn to identify with more negative and fewer positive feeling states than their comparison group. In general, this hypothesis received strong support across combined cognitive and somatic, separate cognitive and separate somatic anxiety groups. One exception was that statistical significance was not reached by the somatic group for positive labels despite the facilitators identifying with more positive labels than the debilitators. Generally, however, the consistent hypothesized trend across all the groups demonstrated convergent validity and robustness of the findings.

Table 2. One-way analyses of variance of feeling state labels

	Facilitated (mean $\pm$ s)	Debilitated (mean $\pm$ s)	d.f.	<i>F</i>	<i>P</i>	Effect size
Combined	<i>n</i> = 83	<i>n</i> = 51				
Positive labels	5.08 $\pm$ 2.49	3.12 $\pm$ 2.39	1,132	20.7	< 0.001	0.15
Negative labels	1.22 $\pm$ 1.45	2.51 $\pm$ 1.86	1,132	20.2	< 0.001	0.14
Cognitive	<i>n</i> = 97	<i>n</i> = 86				
Positive labels	5.28 $\pm$ 2.57	2.57 $\pm$ 2.11	1,181	59.7	< 0.001	0.25
Negative labels	1.21 $\pm$ 1.33	2.33 $\pm$ 1.79	1,181	23.5	< 0.001	0.11
Somatic	<i>n</i> = 116	<i>n</i> = 63				
Positive labels	4.16 $\pm$ 2.61	3.48 $\pm$ 2.67	1,177	2.78	0.10	0.02
Negative labels	1.47 $\pm$ 1.54	2.27 $\pm$ 1.76	1,177	10.1	< 0.05	0.05

Table 3. One-way analyses of variance of CSAI-2 intensity scores

	Facilitated (mean $\pm$ s)	Debilitated (mean $\pm$ s)	d.f.	F	P	Effect size
Combined	<i>n</i> = 83	<i>n</i> = 51				
Cognitive intensity	19.42 $\pm$ 4.46	20.98 $\pm$ 4.59	1,132	3.67	0.06	0.03
Somatic intensity	17.12 $\pm$ 4.88	18.67 $\pm$ 5.75	1,132	2.77	0.09	0.02
Self-confidence	25.18 $\pm$ 4.67	18.45 $\pm$ 5.18	1,132	59.0	< 0.001	0.31
Cognitive	<i>n</i> = 97	<i>n</i> = 86				
Cognitive intensity	19.59 $\pm$ 4.65	20.44 $\pm$ 4.36	1,181	1.63	< 0.2	0.008
Somatic intensity	17.05 $\pm$ 4.94	17.60 $\pm$ 5.10	1,181	0.53	< 0.47	0.003
Self-confidence	25.05 $\pm$ 4.99	19.59 $\pm$ 5.07	1,181	53.7	< 0.001	0.23
Somatic	<i>n</i> = 116	<i>n</i> = 63				
Cognitive intensity	19.37 $\pm$ 4.49	20.97 $\pm$ 4.77	1,177	4.95	< 0.05	0.02
Somatic intensity	16.86 $\pm$ 4.67	18.40 $\pm$ 5.84	1,177	3.68	< 0.05	0.02
Self-confidence	24.11 $\pm$ 4.86	19.51 $\pm$ 5.92	1,177	31.3	< 0.001	0.15

In addition to the examination of the total number of labels indicated, the descriptive frequency counts, deemed to represent an overall positive or negative feeling state at the time of competing, allow a more detailed insight into the findings. Interestingly, in all three independent variable groups (combined, cognitive and somatic), both the facilitated and debilitated performers indicated 'anxious' most frequently of the 11 negative labels. This finding received partial empirical support from the CSAI-2 results, which revealed no significant differences in both the combined and cognitive direction groups between the intensity of both cognitive and somatic anxiety (i.e. both groups reported statistically equivalent values). Caution is advised here, since differences in both cognitive and somatic anxiety intensity did approach significance. Furthermore, the trend for the combined and cognitive groups was not followed by the somatic group, where the facilitators reported significantly lower intensities of anxiety ($P < 0.05$). This was unexpected and contrary to previous findings, which found no differences in intensity between facilitators and debilitators on state and trait anxiety (e.g. Jones *et al.*, 1994; Jones and Swain, 1995). However, previous research adopted the combined model used in this study and clearly there is a need to examine the separate sub-components of cognitive and somatic anxiety in greater detail in future research.

The results for the facilitated groups could suggest that many of the performers examined interpreted pre-performance thoughts and feelings as facilitative of performance, while simultaneously experiencing a state of anxiety deemed to be negative. Indeed, it has been suggested that anxiety researchers had previously

been mislabelling other positive emotions, such as 'excitement' and 'challenge', as 'facilitative anxiety' (Jones, 1995; Burton and Naylor, 1997). From the present study, it is clear that some performers may label their overall psychological state as 'excited' or 'motivated' or a combination of these (cf. Gould and Udry, 1994; Hanin, 1997), but simultaneously may also experience negative anxiety symptoms during a stressful competition. One possibility is that the negative anxiety symptoms experienced by these individuals may be overridden by the positive feelings. Furthermore, because both the facilitators and debilitators reported being anxious before competition, anxiety by itself may not be the central variable that researchers assume it to be (Jones, 1995). Again, caution is advised because the facilitated groups' overall feeling state was significantly more positive than that of the debilitated groups. This does not detract from the finding that some individuals experience a highly complex state before competition, which may predominantly be positive but also includes negative aspects. Interestingly, Hanton and Jones' (1999a) qualitative study found that world-class swimmers felt a fine line existed between 'anxiety' and 'excitement' and that optimum athletic performance occurred when the individual was very close to the line and potentially experiencing both (Apter, 1982). Therefore, these individuals may need to be 'on the edge' or 'on the limit' while still remaining in control to perform at their best (Carver and Scheier, 1986, 1988; Jones and Hanton, 1996; Hanton and Connaughton, in press).

The conceptual paradox of experiencing facilitative interpretations of symptoms and 'anxiety' concurrently may in part be explained by the self-confidence findings

of this study, where all analyses of variance reached significance between the interpretation groups. Indeed, the 'confident' feeling state label was selected most frequently by all three facilitated groups and resulted in the largest percentage difference for the combined (+69.4%) and cognitive groups (+77.5%). These findings support previous research that has suggested self-confidence as a moderating factor in the interpretation of pre-competition symptoms, where high confidence in some way protects against or overrides debilitating interpretations (Jones *et al.*, 1994). Indeed, high confidence may facilitate coping resources (e.g. rationalization of thoughts and feelings) to deal with competitive anxiety, resulting in performers perceiving that they can remain in control in the pressure environment of competition (Carver and Scheier, 1986, 1988; Jones and Hanton, 1996; Hanton and Connaughton, *in press*). Therefore, it is possible that participants who experience high anxiety and confidence simultaneously may still perform successfully. Conversely, performers who experience high anxiety without the accompanying feelings of confidence may suffer performance decrements. The absence of self-confidence during stressful competition may be the critical factor, owing to its additional motivational properties along with experiencing anxiety symptoms (Eysenck and Calvo, 1992). The interaction between self-confidence and anxiety raises some interesting questions; indeed, the butterfly catastrophe model proposed by Hardy (1990) tried to explain the role of self-confidence in the anxiety-performance relationship. According to Hardy (1990), self-confidence moderates the effects of cognitive anxiety and physiological arousal upon performance by increasing the probability that cognitively anxious performers will be able to tolerate greater arousal before experiencing a decrement in performance. The identification of the underlying protection mechanisms by which this may occur, although conceptually challenging, is an avenue for future research.

What is also interesting from the frequency counts is that feeling states such as 'confident' and 'determined' were identified with more often by the cognitive group than feeling states of a more somatic nature, such as 'energetic' and 'lively'. This trend was not followed within the somatic group, who also reported cognitive labels more frequently than physical labels. This suggests that, irrespective of the physiological symptoms experienced, performers may be primarily concerned with the cognitive state. This also reiterates the anxiety-performance literature that supports the contention that the mental component is the dominant influence on performance (Hardy *et al.*, 1996a,b).

Returning to the issues debated within the applied literature, these results are congruent with certain contentions raised by Hardy (1997, 1998), who argued

that anxiety may result in positive performance consequences if the performer is moderately confident of success in the upcoming task (Eysenck and Calvo, 1992). Specifically, some individuals can interpret thoughts and feelings as facilitative but also experience anxiety, and these can be felt simultaneously and perceived as helpful to performance. A more suitable label, such as 'confident coping', may be proposed for this psychological state. Therefore, at present, certain issues raised by both sides of the debate can be supported; specifically, the beneficial effects of anxiety from Hardy's viewpoint and the mislabelling of positive anxiety from Burton and Naylor's counterpoint. Importantly, in the context of the present study, the beneficial effects referred to by Hardy were only the individual perceptions of the effect on performance. To suggest that both sides are supported is not particularly helpful in clarifying the knowledge base, but it does highlight some clear avenues for future research.

It is important to recognize that researchers have in the past primarily assessed negative pre-competition states and examined their relationship with performance. The equivocal findings that have characterized these investigations may be due to the non-examination of positive states, which may be better predictors of performance (Jones, 1995). Specifically, both cognitive and somatic anxiety as measured by the direction scale of the CSAI-2 were experienced as facilitative by nearly half of the sample (43.7%) in the present study, with only 26.8% experiencing both modes of anxiety as debilitating. Such a high proportion of 'facilitators' is probably due to the consistently high level of skill of the sample. The make-up of the sample also helps to explain why no significant differences in skill were found throughout the study. Previous research has demonstrated that elite sports performers interpret their anxiety symptoms as being more facilitative than their less skilled counterparts (Jones *et al.*, 1994; Jones and Swain, 1995). Therefore, that some sports performers clearly experience a very positive pre-competition state, and also report that they feel 'anxious', has important measurement and applied implications for future developments within this body of research. In summary, the central tenets of our position are as follows:

- Anxiety is by definition a negative feeling state.
- The CSAI-2 does not measure competitive anxiety directly, only the symptoms associated with the response. To clarify, we believe that if a negative score on the direction scale is revealed, then this signifies a state of anxiety. If a positive direction score is found, this points to another state previously mislabelled as anxiety.

- Finally, but importantly, experiencing competitive anxiety can result in positive performance consequences if the individual remains in control and 'on the edge'. We acknowledge that, although performance data were not directly collected in this study, the participants did indicate their perceptions of symptoms' effects on performance.

The practical implications highlight that the same intensity of thoughts and feelings may be interpreted very differently by individual performers, particularly when accounting for the overall labelling of the psychological state as positive or negative. Also, perceived feelings of self-confidence appear to play a central role in stressful conditions. Individualized cognitive restructuring programmes, as opposed to anxiety reduction interventions, may be beneficial for performers who clearly do not interpret pre-event symptoms as facilitative. For example, Hanton and Jones (1999b) found that restructuring debilitating thoughts and feelings through an intervention using goal-setting, imagery and self-talk was accompanied by considerable increases in self-confidence and improvements in swimming performance.

Although the findings of the present study are interesting and thought-provoking, we do acknowledge several limitations that can be rectified by methodological refinements in future research. First, the feeling state instrument was simplistic in nature. A checklist format was used primarily to facilitate completion as near as possible to competition. However, we recognize that the approach adopted fails to take into account the intensity and individual interpretation of feeling states (Watson and Tellegen, 1985; Hanin and Syrja, 1995, 1996) and that some labels (e.g. 'excited') may be interpreted as either cognitive or somatic symptoms by different individuals. Indeed, incorporating the implications of this study may allow a more 'fine-grained' approach to this concept. Future research should also subject such scales to psychometric rigour; this is part of a research programme currently being undertaken. Many of the issues raised within this paper relate to individuals' perceptions of what is facilitative or debilitating of sporting performance. That performance data were not collected is acknowledged as a limitation and should be paramount in future study designs. The construction of an accurate and sensitive multidimensional performance measure is important. Future research should also address whether individuals possess dispositions to experience the pre-competitive experience as positive or negative during both preparation and the competitive performance. Finally, a detailed programme of validation research is required on positive affective scales, including the direction scale of the CSAI-2.

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