

Interpretation of Competitive Anxiety Symptoms and Goal Attainment Expectancies

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Using Jones's (1995) control model of debilitating and facilitative competitive anxiety, competitive swimmers ($N = 91$) were assessed on the intensity and direction of their cognitive anxiety and somatic anxiety responses one hour before an important race, and they completed scales examining outcome, performance, and process goals. It was hypothesized that there would be no difference in intensity of cognitive and somatic anxiety but that swimmers with positive expectancies of goal attainment would report their symptoms as being more facilitative. Forty-five swimmers who had set all three types of goal were divided into positive and negative/uncertain goal attainment expectancy groups for analysis. MANOVA supported the hypothesis in the case of cognitive anxiety and provided partial support in the case of somatic anxiety across all three goal types. Cognitive and somatic anxiety direction scores were the largest contributors to the significant multivariate effects. Eta-squared calculations showed that the predictions of Jones's model were best supported in the case of performance goals.

Key words: cognitive anxiety, somatic anxiety

Competitive anxiety has received a considerable amount of research attention in the sport psychology literature. This is not surprising considering that top level sport is characterized by a demand to perform to optimum levels in often intense pressure situations. Due to the relative infancy of sport psychology as an academic discipline, early researchers tended to borrow heavily from mainstream psychology. Competitive anxiety researchers have been particularly interested in conceptual and methodological developments in the clinical and test anxiety literatures. A particularly significant development was the conceptualization of anxiety as a multidimensional construct (Davidson & Schwartz, 1976; Liebert & Morris, 1967) in which the anxiety response is separated into cognitive and somatic components. Although emerging rather belatedly in the sport psychology literature, the multidimensional perspective has been increasingly adopted by researchers in the area of competitive anxiety. This development was largely stimulated by the work

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of Martens, Burton, Vealey, Bump, and Smith (1990) who developed a questionnaire, the Competitive State Anxiety Inventory-2 (CSAI-2), which also measures self-confidence. Subsequent competitive anxiety research using the CSAI-2 has provided evidence to support the separation of cognitive and somatic components in studies that show them to have different antecedents (Gould, Petlichkoff, & Weinberg, 1984; Jones, Swain, & Cale, 1990, 1991), different temporal characteristics (Gould et al., 1984; Jones et al., 1991; Martens et al., 1990), different performance consequences (Burton, 1988; Gould, Petlichkoff, Simons, & Vevera, 1987; Jones & Cale, 1989; Parfitt & Hardy, 1993; Swain & Jones, *in press*), and also to respond differently to interventions (Burton, 1990).

It has recently been argued by some investigators, however, that this research suffers from limitations in terms of the actual measurement of anxiety (Jones, 1991, 1995). The CSAI-2, like many other state anxiety scales, essentially measures only the "intensity" of symptoms purported to signify the presence of anxiety. In this form, the inventory fails to measure what has been referred to by Jones and co-workers as the "directional perceptions" of the symptoms; that is, the nature of the individual's interpretation of those symptoms in terms of whether they are positive or negative in relation to upcoming performance (Jones & Swain, 1992; Jones, Swain, & Hardy, 1993). The intensity-alone approach to measuring competitive anxiety has prevailed in the sport psychology literature because anxiety has largely been viewed as negative and detrimental to performance. However, some early (Mahoney & Avenier, 1977) and more recent research findings suggest that this is not necessarily always the case and that anxiety can have positive effects (Jones & Cale, 1989, *in press*; Jones et al., 1993; Parfitt & Hardy, 1993).

The existence of debilitating and facilitating dimensions of the anxiety response is a notion that has circulated the test anxiety literature for a number of years. Alpert and Haber (1960) distinguished between debilitating and facilitating anxiety and found that a scale which measured both types of anxiety (the Achievement Anxiety Test) accounted for more of the variance in academic performance than a conventional debilitating anxiety scale. Embracing this line of enquiry, a number of researchers (e.g., Carrier, Higson, Klimoski, & Peterson, 1984; Couch, Garber, & Turner, 1983) have reported findings that endorse the value of distinguishing between debilitating and facilitating anxiety. Wine's (1980) bidirectional model of test anxiety further supports the notion of positive and negative dimensions and argues for this greater specificity of the state anxiety response.

Support for the distinction between "intensity" (i.e., level) and "direction" (i.e., debilitating/facilitative) of competitive anxiety symptoms has been provided in a growing body of empirical investigations in the sport psychology literature. An early study in this area by Jones et al. (1993) examined relationships between performance and intensity and direction dimensions of competitive state anxiety. Specifically, their study of female gymnasts who competed in a beam competition showed no differences between "good" and "poor" performance groups on cognitive and somatic anxiety intensity scores, or on somatic anxiety direction scores. However, the good performance group reported their cognitive anxiety intensity as being more facilitating and less debilitating to performance than did the poor performance group. Swain and Jones (*in press*) extended this work by comparing the relative contributions of the intensity and direction dimensions of cognitive and somatic anxiety to predicting basketball performance. Their findings showed that cognitive anxiety direction was a better predictor of performance than cognitive anxiety intensity, and

also that somatic anxiety direction was a better predictor than somatic anxiety intensity.

Some other work has focused on differences between elite and nonelite athletes. Jones, Hanton, and Swain (1994) found that no differences emerged between elite and nonelite swimmers in terms of the intensity of cognitive state and somatic state anxiety symptoms one hour prior to an important race, but that elite performers interpreted both anxiety states as being more facilitative to performance than did the nonelite performers, as well as reporting higher levels of self-confidence. These findings were in the context of state anxiety, but recent findings reported by Jones and Swain (1995) on trait anxiety suggest that such differences may reflect predispositions in elite and nonelite performers to experience debilitating and facilitative anxiety.

A line of future research in this area is to further examine those factors that predict debilitating and facilitative anxiety states in sports performers. As in other areas of competitive anxiety, the study of individual difference variables offers some interesting avenues. As described above, the elite/nonelite distinction has already been shown to be an important variable among sports performers. Jones et al. (1993) proposed that performers' directional interpretations of their anxiety symptoms might also be predicted by trait positive-negative affect (Watson & Clarke, 1984; Watson & Tellegen, 1985), with individuals high on negative affect consistently perceiving their symptoms, irrespective of intensity, as debilitating, and performers high on positive affect interpreting them as more facilitative. Indeed, initial findings have provided some support for these proposals (Jones, Swain, & Harwood, *in press*).

A further variable that is likely to be an important source of variance in directional interpretations is perception of control. It is hypothesized that it is those performers who have least confidence in their ability to control both themselves and the environment (i.e., their behavior and performance) in order to achieve their goals who will experience debilitating anxiety symptoms (cf. Borkovec, Metzger, & Prusinsky, 1986; Carver & Scheier, 1988, 1992; Eysenck, 1992). The work of Carver and Scheier is particularly important in this context. Their proposals are based upon the view that human behavior is regulated in a system of feedback control in which individuals continually establish goals for themselves that they then use as reference points. Carver and Scheier postulated that the critical variable influencing whether anxiety is debilitating or facilitative is the individual's expectancy (favorable vs. unfavorable) of being able to cope with the anxiety being experienced and being able to complete the action being attempted. Individuals who expect to be able to cope and who are confident of being able to complete the action will respond to the anxiety with a self-focus on task engagement, resulting in renewed effort, enhanced persistence and even enhanced performance. On the other hand, individuals who are not confident of being able to cope and who have negative expectancies will experience debilitating anxiety in the form of a self-deprecatory self-focus (Carver & Scheier, 1988, 1992).

Rich and Woolever's (1988) findings provide empirical support for these predictions. Their study involved the experimental manipulation of highly test anxious participants' expectancies of performance on a test. Those who were led to be doubtful about their performance were impaired by self-focus; those who were led to be confident about their performance, on the other hand, were facilitated by self-focus.

Much of the empirical work testing the predictions of Carver and Scheier has been conducted in the area of test anxiety in relation to test (i.e., cognitive)

performance. Consequently, the predictions are lacking empirical investigation in the motor performance domain. Responding to this situation, Jones (1995) has recently modified and adapted Carver and Scheier's model to accommodate predictions for the competitive anxiety response in sporting situations. In the model (Figure 1), control is broadly conceptualized as the cognitive appraisal of the degree of control the performer is able to exert over both the environment and the self (Eysenck, 1992); that is, over behavior and performance. Performers who perceive themselves to be able to cope and to be able to achieve their goals are predicted to interpret their anxiety symptoms as facilitative; performers who perceive themselves not to be in control and who have negative expectancies regarding goal attainment are predicted to interpret their symptoms as debilitating.

The central focus of Jones's (1995) model is clearly on behavior in competitive sport being directed toward attaining goals, and their expectancies of goal attainment. Although in its relative infancy in sport psychology, there is a huge research literature on goal setting spanning several other areas of psychology. Space precludes a review of this literature (for recent reviews in the area of sport psychology, see Burton, 1993; Weinberg, 1994), but it is important at this point to distinguish between at least three different types of goal that have been identified in the sport psychology literature: outcome, performance, and process goals (Burton, 1989, 1993; Hardy & Jones, 1994; Hardy, Jones, & Gould, in press). Outcome goals focus upon the outcomes of particular events and usually involve interper-

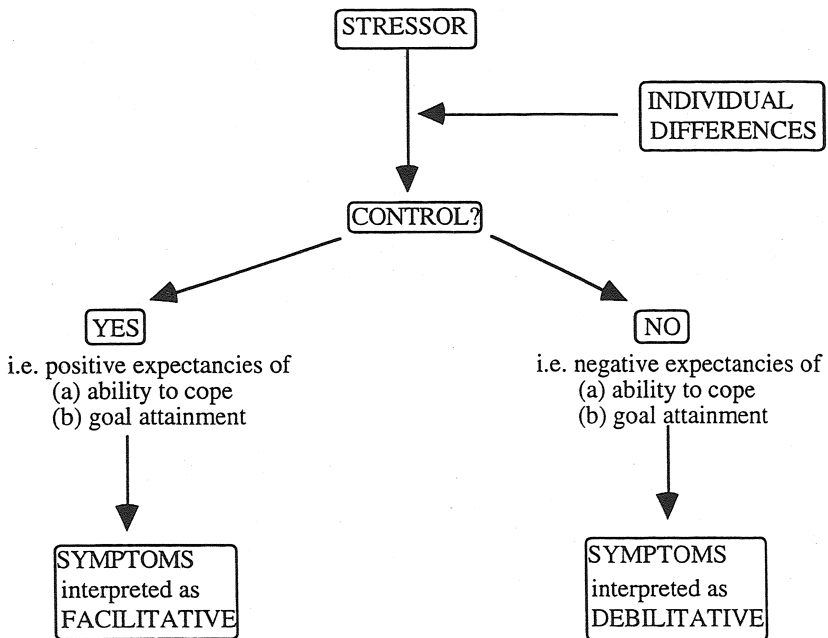


Figure 1 — A control model of debilitating and facilitative competitive state anxiety. *Note.* From "More Than Just a Game: Research Developments and Issues in Competitive Anxiety in Sport," by G. Jones, 1995, *British Journal of Psychology*, 86, p. 466. Copyright 1995 by British Psychological Society. Reprinted with permission.

sonal comparisons of some kind; for example, finishing a race in first place. Performance goals specify an end product of performance that is easily measurable and will be achieved by the performer relatively independently of other performers; for example, running the race in a certain time. Process goals specify the processes in which the performer will engage during the performance. Examples might include staying focused or relaxed, or perhaps maintaining an even pace during the race.

In the context of Jones's (1995) model, the link between different goal type and interpretation of anxiety symptoms as being debilitating or facilitative lies in the degree of (perceived) control the performer is able to exert over goal achievement. The attainment of an outcome goal, because it is the result of interpersonal comparison, is not totally within the performer's control. Performance and process goal attainment, on the other hand, is independent of other performers, and within the performer's control. Consequently, outcome goals are associated with higher anxiety than performance and process goals (Burton, 1988). Thus, a link has already been established between goal type and intensity of anxiety symptoms, but no research has examined the debilitating and facilitative dimensions of anxiety as a function of goal type.

Due to the important differences in "controllability" across the three types of goal, it cannot be assumed that the predictions of Jones's model will be supported to the same degree in all three cases. It could be speculated that performers who have positive expectancies of attaining outcome goals do not have the same level of perceived control due to the inherent uncertainty, as in the case of positive expectancies regarding performance and process goals. Therefore, the level of facilitation of anxiety symptoms associated with positive expectancies of attaining outcome goals may be less than for performance and process goals. Thus, the study reported here was exploratory in this respect, testing the general hypothesis that performers with positive expectancies of goal attainment would not differ on intensity of anxiety symptoms but would report their symptoms as being more facilitative than those who had negative or uncertain expectancies. This hypothesis was examined using a sample of competitive swimmers during the period preceding a race. The swimmers were measured on the intensity and direction of their multidimensional anxiety responses one hour before a race, and also responded to scales examining their level of expectancy about achieving the outcome, performance, and process goals they had set for the race.

Method

Participants

The participants were 91 competitive swimmers (45 males and 46 females), whose ages ranged from 14 to 28 years ($M = 18.98$, $SD = 2.84$), from a wide range of swimming events. The standard of the swimmers ranged from those who had represented their region (approximately equivalent to state) to those who had represented their country. The swimmers had been involved in competitive swimming for an average of 8 years and trained for 10 months of the year, with an average of seven training sessions per week.

Measures

Modified Version of the CSAI-2. The CSAI-2 was used to measure preperformance cognitive and somatic anxiety. The scale also includes a self-confidence subscale, which was excluded for the purpose of this study. The scale therefore comprised 18 items, with 9 items in each subscale. Examples of cognitive anxiety items included, "I am concerned about this competition" and "I am concerned about performing poorly." Somatic anxiety items included "I feel nervous" and "My body feels tense." The response scale asked each participant to rate the intensity with which each symptom was being experienced on a scale from 1 (*not at all*) to 4 (*very much so*). Thus, possible intensity scores on each subscale ranged from 9 to 36.

In addition, a "direction" scale developed by Jones and Swain (1992) was included in which each participant rated the degree to which the experienced intensity of each symptom was either facilitative or debilitating to subsequent performance on a scale from -3 (*very debilitating*) to +3 (*very facilitative*), with the midpoint of 0 representing *unimportant*. Thus, possible direction scores on each subscale ranged from -27 to +27. Internal reliability coefficients of this scale were reported by Swain and Jones (in press) as .83 for cognitive anxiety and .72 for somatic anxiety.

The format of the questionnaire was such that, for each item, participants first indicated the intensity of the thought/feeling. Then they indicated the extent to which the intensity was either debilitating or facilitative before moving on to the next item. The instructions accompanying the direction response scale were as follows:

Indicate the extent to which this thought/feeling is negative (debilitative) or positive (facilitative) in relation to your upcoming performance. NB, if you score 1 (*not at all*) on the first scale, then respond in relation to that thought/feeling; e.g., if your response is *not at all* to Item 4, then respond as if you had no self-doubts.

Goal Attainment Expectancy Scale. The written instructions provided to the swimmers on the Goal Attainment Expectancy Scale were as follows:

Goal setting is about setting targets for performance. There are essentially three different types of goals that performers may set themselves for a race. These are: (1) outcome goals (the position you aim to achieve in the race); (2) performance goals (the time you aim to swim for the race); (3) process goals (e.g., achieving a fast start, streamlined turns, efficient stroke technique, etc.). For this study refer to the goals that may have been set for the next race. Please note that it is possible to set more than one type of goal.

The scale was then divided into three sections that asked about outcome (i.e., position), performance (i.e., time), and process goals (e.g., starts, turns, stroke technique), respectively. Within each section, participants were asked to specify the goal (if applicable) they had set for the race. For each goal that had been set, participants then responded to the question, "To what extent do you think you will achieve the goal?" The response scale ranged from -4 (*definitely no*) to +4 (*definitely yes*), with the midpoint of 0 representing *uncertain*.

Procedure

The sample was drawn from four different swim meets during the 1993 and 1994 seasons. Permission was sought and granted from the swim meet organizers to approach coaches and swimmers at the meets. The modified CSAI-2 and the goal attainment expectancy scale were administered approximately one hour prior to their competitive events. This time frame was employed by Jones et al. (1990) and was regarded as an acceptable time to complete the questionnaire since it did not interfere with the swimmers' warm-up routines. Prior to completion of the modified CSAI-2, each swimmer was presented with standardized instructions based upon the recommendations of Martens et al. (1990). These emphasized the confidentiality of responses at an individual level, the need for honesty, and an indication of their thoughts and feelings "right now." The completion times for the two questionnaires ranged from 10 to 15 minutes and were completed without any external interference. The second author was present at all times to ensure that the participants were not sampled more than once across different swim meets.

Data Analysis

The analysis of the data was divided into three stages. The first stage involved analyzing the internal reliabilities of the cognitive and somatic anxiety direction scales for this sample, the correlations among the intensity and direction subscales, and descriptive data in terms of the means and standard deviations for each of the cognitive and somatic anxiety intensity and direction scores. The second stage involved the simple calculation of the frequency of the various types of goal, and their combinations, set by the swimmers.

The third stage in the analysis involved dividing participants into "negative/uncertain" and "positive" groups based on their expectancies of goal attainment. Specifically, participants who responded with a positive score to the question, "To what extent do you think you will achieve the goal?" made up the positive group, and those with a negative score and a score of 0 made up the negative/uncertain group. These groups were created for each of the outcome, performance, and process goals. Separate multivariate analyses of variance (MANOVAs) within each of the three goal types were then conducted with cognitive and somatic anxiety intensity and direction scores as the dependent variables and with group (i.e., negative/uncertain vs. positive) as the independent variable. These analyses were conducted only on those participants who had set goals in all three categories so that the same sample was analyzed across the different goal types. Follow-up univariate ANOVAs were conducted in the cases of significant MANOVA effects. Finally, standardized discriminant function coefficients (SDFC) were calculated.

Results

Reliability Analyses, Correlations, and Descriptive Data

Internal reliability analyses were conducted on the cognitive and somatic anxiety direction subscales since these have been reported in only one previous study of basketball players (Swain & Jones, in press). The coefficients for the present sample of swimmers was .89 for cognitive anxiety direction and .81 for

somatic anxiety direction. These values are acceptable, and are actually higher than those reported by Swain and Jones (in press).

The correlation coefficient between the intensity scores for cognitive and somatic anxiety was .52, a magnitude similar to that found in previous studies (e.g., Gould et al., 1984; Martens et al., 1990). The correlations between cognitive anxiety intensity and direction and somatic anxiety intensity and direction scores were $-.35$ and $-.29$, respectively. These values demonstrate less than 13% common variance at best, and support the separate measurement of intensity and direction dimensions of the competitive anxiety response.

Mean scores for intensity of cognitive and somatic anxiety were 19.20 ($SD = 4.57$) and 16.9 ($SD = 4.73$), respectively. When compared to CSAI-2 norms for swimmers reported by Martens et al. (1990), the somatic anxiety intensity score equates approximately to the 50th percentile, while the cognitive anxiety intensity score for the sample of swimmers in this study equates approximately to the 70th percentile. Mean scores for direction were 2.96 ($SD = 9.24$) for cognitive anxiety and 5.05 ($SD = 7.49$) for somatic anxiety.

Frequency of Goals Set by the Participants

Table 1 shows the frequency of the various types of goal, and their combinations, set by the swimmers. The vast majority of the sample set at least two types of goal, with nearly half setting a combination of all three types. None of the swimmers set outcome goals only. Interestingly, a third of the swimmers ($n = 31$) reported that they did not set outcome goals at all. In contrast, only 12 of the swimmers did not set a goal in each of the performance and process goal types. Examples of outcome goals set by the swimmers included winning the race and achieving a top three finish. Performance goals included achieving personal best times, a season's best time, and achieving qualifying times for future competitions such as the National Championships. Finally, the types of process goals set by the swimmers included fast turns, staying focused and relaxed during the race, and streamlining.

Table 1 Frequency of Types of Goals Set by the Swimmers ($N = 91$)

Goal Type	Frequency
No goals	0
Outcome only	0
Performance only	6
Process only	3
Outcome and performance only	6
Outcome and process only	9
Performance and process only	22
Outcome, performance, and process	45

Table 2 Means, Standard Deviation, and *F* Ratios for One-Way Analyses of Variance on Outcome, Performance and Process Goals (*n* = 45)

	Negative/ uncertain <i>M</i> (<i>SD</i>)	Positive <i>M</i> (<i>SD</i>)	<i>df</i>	<i>F</i>	<i>p</i>	SDFC
<i>Outcome goals</i>						
<i>n</i>	12	33				
Cognitive anxiety						
Intensity	22.17 (4.02)	19.52 (4.83)	1, 43	2.88	n.s.	.39
Direction	-2.92 (6.39)	5.67 (9.59)	1, 43	8.21	<.01	.86
Somatic anxiety						
Intensity	17.83 (5.64)	17.82 (5.15)	1, 43	0.001	n.s.	-.09
Direction	1.58 (6.23)	7.58 (7.70)	1, 43	5.85	<.05	-.58
<i>Performance goals</i>						
<i>n</i>	19	26				
Cognitive anxiety						
Intensity	21.74 (4.78)	19.12 (4.47)	1, 43	3.56	n.s.	.48
Direction	-3.00 (5.28)	8.04 (9.39)	1, 43	21.26	<.01	.80
Somatic anxiety						
Intensity	19.11 (5.90)	16.89 (4.55)	1, 43	2.04	n.s.	-.18
Direction	2.26 (5.17)	8.70 (8.26)	1, 43	8.93	<.01	-.62
<i>Process goals</i>						
<i>n</i>	11	34				
Cognitive anxiety						
Intensity	20.18 (4.58)	20.24 (4.85)	1, 43	0.001	n.s.	.27
Direction	-3.91 (7.08)	5.74 (9.16)	1, 43	10.17	<.01	.82
Somatic anxiety						
Intensity	19.27 (4.15)	17.35 (5.49)	1, 43	1.13	n.s.	-.09
Direction	0.73 (5.29)	7.68 (7.70)	1, 43	7.71	<.01	-.63

Note. SDFC = standardized discrimination function coefficient.

Multivariate Analyses of Variance (MANOVA)

Separate analyses were carried out for each goal type. Only those participants who had set goals in each goal type (*n* = 45; 20 males, 25 females) were used in these analyses.

Outcome (Position) Goals. Of the 45 swimmers who set all three types of goals, 33 had positive and 12 had negative/uncertain attainment expectancies regarding outcome goals. The MANOVA was significant, Wilks's lambda = 0.75, $F(4, 40) = 3.26$, $p < .05$. Means, standard deviations and *F* ratios for the univariate analyses, together with SDFCs, for outcome goals are presented in Table 2. Specifically,

the groups did not differ on levels of cognitive anxiety and somatic anxiety intensity. However, the positive group was higher on direction of both cognitive and somatic anxiety. The mean scores for cognitive anxiety direction show clear facilitation (+5.67) for the positive group and debilitation (−2.92) for the negative/uncertain group. In the case of somatic anxiety direction, both groups reported facilitation, but the degree of facilitation was perceived as greater in the positive group. The SDFCs showed cognitive anxiety direction to contribute the most to the overall multivariate effect, with somatic anxiety direction making the second largest contribution.

Performance (Time) Goals. In the case of performance goals, 19 of the 45 swimmers under investigation had negative/uncertain attainment expectancies, with the remaining 26 having positive expectancies of goal attainment. The MANOVA was significant, Wilks's lambda = 0.65, $F(4, 40) = 5.44$, $p < .01$. Means, standard deviations, and F ratios for the univariate analyses, together with SDFCs, for performance goals are presented in Table 2. Cognitive anxiety and somatic anxiety intensity scores did not differ between the two groups, but both cognitive anxiety and somatic anxiety direction scores were lower in the negative/uncertain group. Inspection of the mean scores reveals that, as in the case of outcome goals, cognitive anxiety was clearly debilitative (−3.00) in the negative/uncertain group and facilitative (+8.04) in the positive group. Mean scores for the direction of somatic anxiety, on the other hand, again showed differing degrees of facilitation in the two groups. As was the case for outcome goals, the two direction variables contributed most to the significant multivariate effect, with cognitive anxiety direction making the larger contribution.

Process Goals. Positive goal attainment expectancies were reported by 34 of the 45 swimmers, with the remaining 11 reporting negative/uncertain expectancies. The MANOVA was significant, Wilks's lambda = 0.76, $F(4, 40) = 3.09$, $p < .05$. Means, standard deviations, and F ratios for the univariate analyses, together with SDFCs, for process goals are presented in Table 2. Again, the groups did not differ on cognitive and somatic anxiety intensity scores, whereas the positive group were higher on direction scores for both modes of anxiety. The mean scores on direction for the two groups again mirror the findings for the outcome and performance goals. Somatic anxiety responses only differed on the degree of perceived facilitation, while cognitive anxiety was facilitative for the positive group but debilitative for the negative/uncertain group. The SDFCs again showed cognitive anxiety direction to be the largest and somatic anxiety direction to be the second largest contributors to the significant multivariate effect.

Discussion

The findings from this investigation add to the growing body of literature which shows that competitive anxiety is not necessarily debilitative to sports performers. Indeed, both cognitive and somatic anxiety were experienced as facilitative by nearly half of the original sample of 91, with only 23% experiencing both modes of anxiety as debilitative. Such a high proportion of "facilitators" in this particular sample is probably due to the relatively high skill level of the swimmers who participated in the study. It has been shown in three previous studies that successful sports performers interpret their anxiety symptoms as being more fa-

cilitative than less successful ones (Jones et al., 1994; Jones & Swain, 1995; Jones et al., 1993). The fact that some sports performers clearly experience positive emotions prior to competing has important measurement implications for future research in this area. Researchers have largely assessed negative preperformance states and examined their relationship with performance. The equivocal findings that have characterized these investigations may be partly due to the lack of assessment of positive states which may be better predictors of performance (cf. Jones, 1995). This is clearly a question to be addressed in future research activity.

Turning to the central focus of the study, it is first of all interesting to observe at a descriptive level the frequency of the types of goals set by the swimmers. Not surprisingly, all swimmers set at least one type of goal, but the vast majority set more than one type. The fact that none of the swimmers set solely outcome goals means that all of them set at least one goal type (performance or process) that could be achieved independently of other swimmers, and could be perceived as being within their control. The 45 swimmers who set all three types of goal may have been "hedging their bets" and providing themselves with an effective coping strategy should one of the goals, particularly the outcome goal, not be realized.

When considering the extent to which the findings from this investigation support the predictions of Jones's (1995) model, it is first important to note that cognitive and somatic anxiety intensity levels did not differ between the two goal attainment expectancy groups across all three types of goals. It is therefore striking to also note the anxiety direction scores for each goal type; in each case, both cognitive and somatic anxiety were perceived as more facilitative by swimmers who had positive expectancies of goal attainment than by the swimmers who had negative or uncertain expectancies. Thus, the same intensities of the cognitive and somatic responses were interpreted as having different consequences as a function of goal attainment expectancies.

Despite these findings, the predictions of Jones's (1995) model are not totally supported. Inspection of the mean scores for the two goal attainment expectancy groups shows that both groups interpreted their levels of somatic anxiety as being facilitative in the case of all three types of goals. Jones's model predicts, however, that performers with negative expectancies of goal attainment should interpret their anxiety levels as being debilitating. On the other hand, the mean scores for cognitive anxiety direction provide unequivocal support for Jones's model; in the cases of all three goal types, the positive goal attainment expectancy group interpreted their cognitive anxiety symptoms as being facilitative, whereas the negative/uncertain group interpreted them as being debilitating.

There are at least two possible interpretations of these findings, which are not mutually exclusive. First, the nature of the sport under investigation is important. Swimming is a sport that requires, among other things, strength, speed, power, and endurance. In other words, increased physiological arousal is a prerequisite for good performance. Somatic anxiety, as measured by the CSAI-2, essentially represents perceptions of physiological arousal, so that increases are likely to be interpreted by the vast majority of swimmers, regardless of goal attainment expectancies, as necessary and facilitative. This would explain the interpretation of somatic anxiety as being facilitative, although to differing degrees, by both groups. Second, it has been proposed that individuals who have least control in their ability to control themselves and the environment are particularly prone to worry or cognitive anxiety (Borkovec et al., 1986; Eysenck, 1992). This would help to explain

why Jones's (1995) predictions received greater support from the cognitive anxiety than the somatic anxiety direction findings. This is supported by the results from the standardized discriminant function coefficients. For each type of goal, cognitive and somatic anxiety direction were the biggest contributors to the significant multivariate effects, but cognitive anxiety direction consistently made the larger contribution.

A further factor to consider regards the support for Jones's (1995) predictions offered by the results for the different goal types. The percentage of variance in the dependent variables that can be attributed to group differences can be inferred by calculating eta-squared ($1-\lambda$). Thus, group differences accounted for 25% of the variance in anxiety intensity and direction scores, 35% in the case of performance goals, and 24% in the case of process goals. Therefore, the predictions of Jones's model are best supported by perceptions of control over performance goals, with a negligible difference between outcome and process goals. Performance goals are those that are independent of other performers and that allow a greater degree of perceived control than outcome goals. And the fact that performance goals are generally easily measurable and observable may account for their greater predictive value in the context of the model under investigation than process goals. This may be the result of less uncertainty involved in perceiving control over something tangible rather than the often subjective nature of process goals.

Future research in this area should examine the generalizability of the findings of this study. Swimming is largely an individually oriented, closed skill sport in which the environment is relatively constant. Open skill, team sports, in which outcome is the product of interactive performances in a constantly changing environment, represent a different context in which the nature of the goals that are set and the perceptions of control may differ from those of the swimming environment. Further, goal importance is a key factor in understanding emotional or affective experience (Carver & Scheier, 1992; Locke & Latham, 1990) and should be investigated in future related research.

In conclusion, this investigation has generated interesting findings that serve to further understanding of the relationship between goal attainment expectancies and debilitating and facilitative competitive anxiety. The findings also have important practical implications for achieving appropriate preperformance states via goal-setting strategies. They emphasize, in particular, the importance of setting goals that are perceived as attainable and within the performer's control.

References

- Alpert, R., & Haber, N.N. (1960). Anxiety in academic achievement situations. *Journal of Abnormal and Social Psychology*, **61**, 207-215.
- Borkovec, T.D., Metzger, R.L., & Pruzinsky, T. (1986). Anxiety, worry and the self. In L.M. Hartman & K.R. Blankenstein (Eds.), *Perception of self in emotional disorder and psychotherapy* (pp. 261-312). New York: Plenum.
- Burton, D. (1988). Do anxious swimmers swim slower? Reexamining the elusive anxiety-performance relationship. *Journal of Sport & Exercise Psychology*, **10**, 45-61.
- Burton, D. (1989). Winning isn't everything: Examining the impact of performance goals on collegiate swimmers' cognitions and performance. *The Sport Psychologist*, **3**, 105-132.

- Burton, D. (1990). Multimodal stress management in sport: Current status and future directions. In G. Jones & L. Hardy (Eds.), *Stress and performance in sport* (pp. 171-201). Chichester, U.K.: Wiley.
- Burton, D. (1993). Goal setting in sport. In R.N. Singer, M. Murphey, and L.K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 467-491). New York: Macmillan.
- Carrier, C., Higson, V., Klimoski, V., & Peterson, E. (1984). The effects of facilitative and debilitating achievement anxiety on notetaking. *Journal of Education Research*, *77*, 133-138.
- Carver, C.S., & Scheier, M.F. (1988). A control-process perspective on anxiety. *Anxiety Research*, *1*, 17-22.
- Carver, C.S., & Scheier, M.F. (1992). Confidence, doubt and coping with anxiety. In D.G. Forgas, T. Sosnowski, & K. Wresniewski (Eds.), *Anxiety: Recent developments in cognitive, psychophysiological and health research* (pp. 13-22). London: Hemisphere.
- Couch, J.V., Garber, T.B., & Turner, W.E. (1983). Facilitating and debilitating test anxiety and academic achievement. *The Psychological Record*, *33*, 237-244.
- Davidson, R.J., & Schwartz, G.E. (1976). The psychobiology of relaxation and related states: A multiprocess theory. In D.I. Mostofsky (Ed.), *Behavioral control and modification of physiological activity* (pp. 399-442). Englewood Cliffs, NJ: Prentice Hall.
- Eysenck, M.W. (1992). *Anxiety: The cognitive perspective*. Hillsdale, NJ: Erlbaum.
- Gould, D., Petlichkoff, L., Simons, J., & Vevera, M. (1987). Relationships between Competitive State Anxiety Inventory-2 subscale scores and pistol shooting performance. *Journal of Sport Psychology*, *9*, 33-42.
- Gould, D., Petlichkoff, L., & Weinberg, R.S. (1984). Antecedents of, temporal changes in and relationships between CSAI-2 components. *Journal of Sport Psychology*, *6*, 289-304.
- Hardy, L., & Jones, G. (1994). Future directions in performance-related research in sport psychology. *Journal of Sports Sciences*, *12*, 61-92.
- Hardy, L., Jones, G., & Gould, D. (in press). *Understanding psychological preparation for sport: Theory and practice of elite performers*. Chichester, U.K.: Wiley.
- Jones, G. (1991). Recent developments and current issues in competitive state anxiety research. *The Psychologist*, *4*, 152-155.
- Jones, G. (1995). More than just a game: Research developments and issues in competitive anxiety in sport. *British Journal of Psychology*, *86*, 449-478.
- Jones, G., & Cale, A. (1989). Relationships between multidimensional competitive state anxiety and cognitive and motor subcomponents of performance. *Journal of Sports Sciences*, *7*, 129-140.
- Jones, G., & Cale, A. (in press). Goal difficulty, anxiety and performance. *Ergonomics*.
- Jones, G., Hanton, S., & Swain, A.B.J. (1994). Intensity and interpretation of anxiety symptoms in elite and non-elite sports performers. *Personality and Individual Differences*, *17*, 657-663.
- Jones, G., & Swain, A.B.J. (1992). Intensity and direction dimensions of competitive state anxiety and relationships with competitiveness. *Perceptual and Motor Skills*, *74*, 467-472.
- Jones, G., & Swain, A.B.J. (1995). Predispositions to experience debilitating and facilitative anxiety in elite and non-elite performers. *The Sport Psychologist*, *9*, 202-212.
- Jones, G., Swain, A.B.J., & Cale, A. (1990). Antecedents of multidimensional competitive state anxiety and self-confidence in elite intercollegiate middle-distance runners. *The Sport Psychologist*, *4*, 107-118.
- Jones, G., Swain, A.B.J., & Cale, A. (1991). Gender differences in precompetition temporal patterning and antecedents of anxiety and self-confidence. *Journal of Sport & Exercise Psychology*, *13*, 1-15.

- Jones, G., Swain, A.B.J., & Hardy, L. (1993). Intensity and direction dimensions of competitive state anxiety and relationships with performance. *Journal of Sports Sciences*, **11**, 533-542.
- Jones, G., Swain, A.B.J., & Harwood, C. (in press). Positive and negative affect as predictors of competitive anxiety. *Personality and Individual Differences*.
- Liebert, R.M., & Morris, L.W. (1967). Cognitive and emotional components of test anxiety: A distinction and some initial data. *Psychological Reports*, **20**, 975-978.
- Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Mahoney, M.J., & Avenier, M. (1977). Psychology of the elite athlete: An exploratory study. *Cognitive Therapy and Research*, **1**, 135-141.
- Martens, R., Burton, D., Vealey, R.S., Bump, L.A., & Smith, D.E. (1990). Development and validation of the Competitive State Anxiety Inventory-2 (CSAI-2). In R. Martens, R.S. Vealey, & D. Burton, *Competitive anxiety in sport* (pp. 117-213). Champaign, IL: Human Kinetics.
- Parfitt, C.G., & Hardy, L. (1993). The effects of competitive anxiety on memory span and rebound shooting tasks in basketball players. *Journal of Sports Sciences*, **11**, 517-524.
- Rich, A.R., & Woolever, D.K. (1988). Expectancy and self-focused attention: Experimental support for the self-regulation model of test anxiety. *Journal of Social and Clinical Psychology*, **7**, 246-259.
- Swain, A.B.J., & Jones, G. (in press). Explaining performance variance: The relative contributions of intensity and direction dimensions of competitive state anxiety. *Anxiety, Stress and Coping*.
- Watson, D., & Clarke, L.A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin*, **96**, 465-490.
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, **98**, 219-235.
- Weinberg, R.S. (1994). Goal setting and performance in sport and exercise settings: A synthesis and critique. *Medicine and Science in Sports and Exercise*, **26**, 469-477.
- Wine, J.D. (1980). Cognitive-attentional theory of test anxiety. In I.G. Sarason (Ed.), *Test anxiety: Theory, research, and applications* (pp. 349-385). Hillsdale, NJ: Erlbaum.

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