

Intensity and direction of competitive anxiety as a function of sport type and experience

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Using Jones' (1995) model of control, intensity (level) and direction (interpretation) of symptoms associated with competitive trait anxiety were examined as a function of sport type and competitive experience. Participants from gross explosive and fine motor-skill sports ($n = 162$) completed a trait version of the Competitive State Anxiety Inventory-2 (Martens et al., 1990a) including intensity and direction subscales (Jones & Swain, 1992). Main effects for experience and sport type were reported with gross explosive sports indicating symptoms associated with competitive anxiety as more facilitative to performance than fine motor-

skill sports. Experienced performers also reported more-facilitating interpretations of symptoms than their less-experienced counterparts. The findings provide support from a dispositional context to suggest that sport type and the level of competitive experience influence interpretation of symptoms usually experienced in pressure situations. Implementation of activation, relaxation or restructuring interventions contingent upon the nature of the sport is recommended with consideration of the development of confidence-building strategies in less-experienced performers.

The development of the Competitive State Anxiety Inventory-2 (CSAI-2; Martens et al., 1990a) has led to a wealth of literature measuring the intensity of the multidimensional response (see Burton, 1998; Woodman & Hardy, 2001 for a full review). However, the CSAI-2, like many other state anxiety scales, essentially measures the "intensity" of the cognitive and perceived physiological symptoms experienced which are purported to signify the presence of anxiety. The original inventory therefore fails to measure the nature of the individual's directional interpretation of the symptoms in relation to upcoming performance (Jones & Swain, 1992; Jones et al., 1993). Specifically, "Directional Perceptions" refer to the extent to which individuals interpret the intensity of symptoms associated with precompetition anxiety as either facilitating or debilitating to performance (Jones, 1995; Jones & Hanton, 2001). Employing a directional version of the modified CSAI-2 (Jones & Swain, 1992), interpretation of reported symptoms has received considerable attention in the recent sport psychology literature. At a state level, directional perceptions have been examined as a function of both situation and individual difference variables (for a review see Hanton & Mellalieu, in press). In a trait context, however, only gender differences (Perry & Williams, 1998), the personality trait of hardiness (Hanton et al., 2003) and the relationship with state

anxiety symptoms (Hanton et al., 2002a) have been investigated. Collectively, these studies provide support for the value of distinguishing between the intensity and direction of symptoms associated with competitive anxiety. In addition, despite some recent conceptual and methodological issues (cf., Burton & Naylor, 1997; Burton, 1998; Lane et al., 1999), the literature also suggests that "direction" may actually be a more-sensitive variable in distinguishing between-group differences in anxiety when compared with the intensity of the response (Jones & Hanton, 2001; Mellalieu et al., 2003).

Understanding of the mechanisms by which the direction of symptoms is moderated has been furthered by Jones' (1995) control model of facilitative and debilitating anxiety. Preliminary support for the model's predictions has been provided in both empirical and qualitative investigations (e.g., Jones & Hanton, 1996; Ntoumanis & Jones, 1998; Hanton & Connaughton, 2002; Hanton et al., 2002c). Although the importance of individual differences within Jones' model has been highlighted (i.e., Perry & Williams, 1998), it has also been suggested that the study of the interaction between individual differences (e.g., gender, skill level) and different stressors within the model's framework are critical to its development (Jones, 1995; Jones & Hanton, 1996; Hanton et al., 2002c). Two such variables that have been suggested

to moderate interpretation of symptoms associated with anxiety are the nature of the sport and the experience level of the athlete (Jones, 1995; Hanton et al., 2002c).

During the original construct validation of the CSAI-2, Martens et al. (1990a) generated several predictions regarding sport type and the anxiety response. Performers competing in individual, subjectively scored, or contact sports were proposed to report greater intensity of cognitive anxiety symptoms and less self-confidence than those performers competing in team, objectively scored, or noncontact sports. The level of somatic anxiety experienced was suggested to reflect the specific activation and arousal requirements of the task demands of the sport. Accuracy-dependent sports such as shooting or golf were reported to illicit lower somatic anxiety intensities than those sports requiring high arousal and explosive activity such as rugby. A meta-analysis of over 50 empirical studies by Kleine (1990) found support for several of Martens et al.'s (1990a) predictions. However, while contact sports were found to be higher in symptoms associated with competitive anxiety than noncontact sports, Kleine (1990) observed a weaker relationship in relation to the differences between individual and team sports. Further, no significant differences were observed between open and closed motor skills. More recently, in the context of directional interpretation of precompetition symptoms, Jones (1995) hypothesized that high symptom intensities would be interpreted as facilitative to performance for short duration, explosive sports but debilitating for longer duration, more-fine motor skills. Examining these predictions, Hanton et al. (2000) compared a fine motor-skill sport (pistol shooting) with a gross explosive skill sport (rugby league). The authors found that while no significant differences were evident in the intensity of symptom responses, rugby league participants interpreted both cognitive and somatic states as facilitative to performance and were higher in self-confidence than the pistol shooters. The findings of this initial study suggest that the nature of the sport is an important variable that researchers should consider when examining the performers' interpretation of their precompetitive experiences.

Another variable that has received more attention in sport psychology than any other, particularly in the direction literature, is that of skill level. Existing studies have observed that while elite and nonelite athletes do not differ between the intensity of symptoms experienced, elite performers report significantly more-facilitative interpretations of symptoms than the nonelite group (Jones et al., 1994; Perry & Williams, 1998). Although skill-level findings (both qualitative and quantitative) have been generally consistent, a related variable that has received little

or no empirical examination in the anxiety direction literature is the amount of experience an individual possesses in their respective sport. Indeed, studies infer that higher skilled performers will usually be those of greater experience. However, while skill can be viewed as an objective individual ability and performance (Martens et al., 1990a) at a certain sporting level (i.e., National, International), the concept of sport experience is additionally associated with the familiarity or unfamiliarity of the environment to the individual (Cerin et al., 2000). According to the existing classification system, therefore, it is feasible that a performer may be classed as highly skilled yet be very low on experience due to a sudden rise in performance in their particular sport or event.

Investigations of sport experience and competitive stress have been limited due to the conceptualization of anxiety as an undimensional construct (i.e., Gould et al., 1984; Donzelli et al., 1990), the examination of only the intensity of the response (Matheson & Mathes, 1991; Krane & Williams, 1994; Perkins & Williams, 1994) and the classification of the absolute age of the participants as an indicator of the experience rather than years in sport, or, more importantly, the number of years at the higher levels of competitive sport (Martens et al., 1990a; Hammermeister & Burton, 1995). The equivocal findings from the examination of the intensity of anxiety responses suggest that clearer understanding may be gleaned from the study of performers' directional interpretations of symptoms. Although no studies have directly examined the influence of sport experience upon interpretation of symptoms, a recent qualitative study by Hanton and Jones (1999a) investigating the development of facilitative symptom interpretation in elite performers revealed that the development of cognitive skills and strategies underlying the interpretation of facilitating symptoms were acquired via natural learning experiences and various educational methods. The authors suggested that competitive experience might be a more-sensitive individual difference variable than skill level, as mental skill acquisition appears to be a gradual progression over athletes' careers. These findings would appear to suggest therefore that the causality between psychological skill development and elite status cannot necessarily be assumed (cf., Hanton & Jones, 1999a; Fletcher & Hanton, 2001).

Further explanation for the underlying mechanisms of directionality may also be found in the athletes' predispositions to experience symptoms associated with anxiety (Jones & Swain, 1995; Perry & Williams, 1998; Jones & Hanton, 2001; Hanton et al., 2002a). Indeed, Hardy et al. (1996) suggest the study of trait anxiety is essential to understanding the state response. Hardy et al. (1996) challenged the existing assumption of multidimensional anxiety

theory that purports the only influence of trait anxiety upon performance is via changes in state anxiety (Martens et al., 1990b) and suggested that an interaction between state and trait levels influence interpretation of symptoms with trait anxiety considered as an individual difference variable itself. From an applied perspective understanding of athletes' dispositional traits is also important in order to aid the practitioner to assess the client away from the competitive environment in a manner, which is relatively unobtrusive, quick, and effective (cf., Hardy et al., 1996; Jones & Hanton, 2001; Hanton et al., 2002a, b).

The existing literature examining directional perceptions of symptoms associated with competitive anxiety suggests several areas that require further investigation. First, situation and individual difference variables such as sport type and competitive experience have only been examined in isolation with no investigation of the potential influence of the interaction of such variables upon the anxiety- and competition-related symptoms (Jones, 1995; Hanton et al., 2002c). Second, no studies have empirically examined how the level of competitive experience of the participant in their respective sport may effect the direction of the anxiety response, particularly in an elite or professional sport context. Third, the proposed influences of individual difference and situation variables have not been fully examined in a dispositional context (Hanton et al., 2002a–c). Finally, existing studies into sport experience have tended to compare collegiate to high-school athletes, without considering how elite athletes may differ in their interpretation of symptoms associated with competitive anxiety (Matheson & Mathes, 1991; Krane & Williams, 1994; Perkins & Williams, 1994). The current investigation examined the distinction between intensity and direction of symptoms associated with competitive trait anxiety as a function of sport type and experience in a sample of high-performance athletes from a contact sport of a gross explosive nature (rugby union) and that of an individual noncontact activity requiring fine motor control (golf). Based upon existing examinations of the intensity of the competitive anxiety response as a function of sport type (i.e., Martens et al., 1990a), it was hypothesized that performers in the contact sport would experience greater levels of cognitive and somatic anxiety intensity and lower self-confidence than those participating in a noncontact sport. Second, for anxiety direction, based upon on Jones' (1995) predictions and the findings of Hanton et al. (2000), it was hypothesized that high-intensity anxiety symptoms would be interpreted as facilitative for the short duration, explosive sport of rugby union, but debilitative for the longer duration, more-fine motor skill of golf. Finally, with regard to the experi-

ence of the participants, based upon the findings of Hammermeister and Burton (1995) and Hanton and Jones (1999a), it was suggested that the more-experienced performers would report lower intensity levels of symptoms associated with competitive anxiety than their less-experienced counterparts would. Further, experienced performers would view these reported symptoms as more facilitating to performance. Due to the exploratory nature of the study, no specific predictions were made for the interaction of the variables of sport type and competitive experience.

Materials and methods

Participants

Data for the study were obtained from participants ($N = 162$) comprising British male competitive athletes of elite status from the sports of professional rugby union ($n = 87$) and professional golf ($n = 75$). The ages of the participants ranged from 19 to 32 years ($M = 26.34$, $SD = 5.67$). Criteria for "elite" status was based upon previous classifications that stated participants had to be currently competing or have competed in both national and international competition (cf., Hanton et al., 2002b). Rugby football union players were sampled at convenience from the professional leagues of National-level competition while golfers were selected from the National and European professional golf circuit. In line with the previous investigation of Hanton et al. (2000), the two sports were selected on the basis that they were representative of activities at two different ends of the motor-skill continuum. For an explosive motor-skilled sport, rugby football union was chosen as it is characterized by intervals of very-high-intensity maximal exercise. For a fine motor-skilled sport, golf was selected as it is characterized by activity of a relatively low intensity. This conceptual framework was deemed important, as the nature of the situation is a key variable in relation to the control model of competitive anxiety and the concept of interpretation of symptoms associated with competitive anxiety (cf., Jones, 1995; Hanton et al., 2000). Prior to taking part in the study, all participants provided informed written consent to the researcher. At the time of completing the study, all participants were in competition or training for competition.

Instrumentation

Measurement of competitive trait anxiety

The CSAI-2 (Martens et al., 1990a) was originally employed to measure the intensity of preperformance cognitive anxiety, somatic anxiety and self-confidence, with nine items in each subscale. The response scale asked the participants to rate the intensity with which each symptom was being experienced on a continuum from 1 ("not at all") to 4 ("very much so"). Thus, possible intensity scores on each subscale ranged from 9 to 36. Cronbach's alpha coefficients demonstrating internal consistency for the intensity responses have been reported ranging from 0.79 to 0.90 (Martens et al., 1990a). In addition, a direction scale developed by Jones and Swain (1992) was included for the cognitive and somatic anxiety items and in this each participant rated the degree to which the experienced intensity of each symptom was either facilitative or debilitative to subsequent performance on a scale from -3 ("very debilitative") to $+3$ ("very facilitative"). Thus, possible direction scores on each subscale ranged from -27 to $+27$, where a positive score represented a state of facilitation, and a

negative one debilitation. A score of zero was deemed an interpretation that intensity levels were unimportant to performance. Internal consistency for the direction scale has been reported with coefficients ranging from 0.80 to 0.89 for cognitive anxiety and 0.72 to 0.84 for somatic anxiety (Jones & Hanton, 1996, 2001; Swain & Jones, 1996). Although essentially a measure of state anxiety, the modified CSAI-2 test instructions have been successfully adapted by previous researchers to assess intensity and direction of trait anxiety (i.e., Jones & Swain, 1995; Ntoumanis & Jones, 1998; Perry & Williams, 1998). Each item is converted in terms of how the participant *usually* feels so that a general or trait measure is created. Similar procedures have been successfully employed by a number of other developers of state-trait measures (e.g., McNair et al., 1971; Vealey, 1986; Albrecht & Feltz, 1987). Internal consistency for the trait scale has been reported with coefficients of 0.78, 0.84, and 0.84 for cognitive anxiety intensity, somatic anxiety intensity, and self-confidence intensity, respectively, and between 0.79 and 0.85 for cognitive anxiety direction and 0.73 and 0.83 for somatic anxiety direction (Perry & Williams, 1998; Mellalieu et al., 2003).

Procedure

Participants were contacted and informed of the nature of the study and invited to take part. Demographic information and written informed consent regarding the study objectives was obtained from those individuals who agreed to participate. A suitable time and venue for the collection of the data was then arranged. In addition, permission was sought and granted from the relevant coaches and organizers of the respective performers (where appropriate) to involve the participants. All questionnaires were administered by the lead researcher who possessed over 10 years experience in the administration of psychometric instruments to sports performers. Specific verbal and written instructions regarding the content of the questionnaires or scales were then provided. In accordance with previous trait investigations (i.e., Perry & Williams, 1998) participants completed the CTAI-2 scale away from the competitive environment in order to avoid any contextual influences (e.g., audience effects). All responses were completed within the time frame of the participants' competitive season. In order to counter any cognitive bias or judgment effects no questionnaires were completed directly prior to or after major competitions. Before completing responses, performers were presented with respective anti-social desirability instructions based upon the recommendations of Martens et al. (1990a). These directions emphasized the confidentiality of the responses at an individual level, the need for honesty, and an indication of the thoughts and feelings the performer would *usually* experience just prior to competing in an important competition.

Data analysis

Employing a moderate effect size of 0.2, the sample size used gave a statistical power of 0.84 that exceeded the required value of 0.80 (Cohen, 1988). Data analysis was then divided into four stages. First, data screening procedures were conducted to investigate the accuracy of the data and the assumptions of normality, linearity, multicollinearity and homogeneity of variance-covariance matrices, using frequency and scatter plots, and Box's *M* test. Second, internal consistencies and correlation coefficients among the CTAI-2 intensity and direction subscales were calculated for this sample. For stage three of the analysis, the post hoc median-split method was employed to dichotomize participants into

"high" and "low" groups based upon their competitive experience, defined as the number of years at the elite level in the sport (Martens et al., 1990a; Hammermeister & Burton, 1995). Finally, in accordance with previous anxiety-direction studies (i.e., Fletcher & Hanton, 2001; Jones & Hanton, 2001; Mellalieu et al., 2003), separate two-way multiple analyses of variance (MANOVA) were conducted in order to examine differences in both the intensity and direction of symptoms associated with competitive trait anxiety scores as a function of sport type and experience. In the first MANOVA, cognitive and somatic anxiety intensity and self-confidence acted as the dependent variables, and experience (i.e., high vs. low) and sport type (gross or fine motor skill) as the independent variables. In the second MANOVA, cognitive and somatic anxiety direction scores as the dependent variables, and experience and sport type again as the independent variables. Follow-up factorial analyses of variance (ANOVA) with the Bonferroni adjustments ($P < .01$) were conducted in the cases of all significant MANOVAs. Post-hoc Tukey tests were then applied to explore significant effects between groups.

Results

Preliminary data analysis

Participants' scores on the CTAI-2 scale were examined for accuracy of data entry, missing values and fit between their distribution and the assumptions of multivariate analysis. No missing values were recorded and there were no univariate or multivariate within-cell outliers at $P = 0.001$. In accordance with the recommendations of Tabachnick and Fidell (1996), the assumptions of normality, linearity and multicollinearity, and homogeneity of variance-covariance matrices, $F(12, 454) = 0.88$, $P > 0.05$, were also observed to be satisfactory. Internal consistency analyses were conducted on the CTAI-2 direction subscales with coefficients of 0.76 for cognitive anxiety direction and 0.75 for somatic anxiety direction. These values were similar to results previously reported (Perry & Williams, 1998; Mellalieu et al., 2003). Correlation coefficients were then calculated among the CTAI-2 intensity and direction subscale scores. A correlation coefficient of 0.24 was observed between scores for cognitive and somatic anxiety intensity, representing less than 5.7% common variance. Correlations between cognitive anxiety intensity and direction, and somatic anxiety and direction scores were -0.27 and -0.18 , respectively, representing less than 7.3% common variance. These findings further support the multidimensional nature of cognitive and somatic anxiety components and the separate measurement of intensity and direction dimensions of the response (cf., Jones & Hanton, 2001; Mellalieu et al., 2003).

Competitive trait anxiety scores as a function of experience and sport type

Prior to analysis, participants were dichotomized into "high" and "low" groups for the numbers of

years experience in their respective sports via the median-split method. Median values were calculated by rank ordering the participants' years of experience in their respective sport. Scores above the median split were allocated to the "high" group whilst those below were allocated to the "low" group. For rugby union, the median split ($Mdn = 10$) for experience resulted in 42 participants in the high group ($M = 13.59$, $SD = 2.57$) and 45 in the low group ($M = 6.88$, $SD = 2.26$). For golf ($Mdn = 7$), the median split resulted in 40 ($M = 11.87$, $SD = 1.03$) and 35 ($M = 5.88$, $SD = 2.15$) participants to the high and low groups, respectively. Separate two-way MANOVAs were then conducted to establish if any overall significant differences were evident between sport type and experience groups and intensity and direction subscales of the CTAI-2, respectively. Experience (i.e., high vs. low) and sport type (gross-explosive vs. fine motor-skill) groups acted as the independent variables in both MANOVAs with cognitive, somatic anxiety intensity and self-confidence as the three dependent variables in the first analysis, and cognitive and somatic anxiety direction scores as the two dependent variables in the second analysis.

Intensity

The MANOVA for intensity (sport type $\times$ experience) revealed no significant interaction for sport type and experience, Wilks' $\lambda = 0.82$, $F(3, 158) = 1.12$, $P = 0.21$, $\eta^2 = 0.05$ (see Table 1). However, significant main effects for sport type Wilks' $\lambda = 0.62$, $F(3, 158) = 16.41$, $P < .01$, $\eta^2 = 0.20$ and for experience, Wilks' $\lambda = 0.53$, $F(3, 158) = 22.16$, $P < .01$, $\eta^2 = 0.08$, were found. Specifically, golfers reported significantly lower levels of symptoms associated with cognitive anxiety ($M = 19.71$, $SD = 5.41$) and higher levels of self-confidence ($M = 26.41$, $SD = 7.05$) than rugby players (cognitive anxiety, $M = 24.83$, $SD = 5.11$; self-confidence, $M = 22.18$,

$SD = 5.54$). For competitive experience, significant effects revealed lower levels of cognitive anxiety ($M = 19.01$, $SD = 4.75$) and higher levels of self-confidence ($M = 26.43$, $SD = 5.92$) for the high-experience group when compared with those low in experience (cognitive anxiety, $M = 23.33$, $SD = 4.53$; self-confidence, $M = 22.13$, $SD = 5.52$).

Direction

The second MANOVA for direction (sport type $\times$ experience) revealed no significant interaction for sport type and experience, Wilks' $\lambda = 0.94$, $F(2, 159) = 0.67$, $P = 0.51$, $\eta^2 = 0.12$ (see Table 1). Significant main effects were found for sport type (Wilks' $\lambda = 8.66$, $F(2, 159) = 21.84$, $P < .01$, $\eta^2 = 0.14$) and experience (Wilks' $\lambda = 0.52$, $F(2, 159) = 31.58$, $P < .01$, $\eta^2 = 0.24$). Specifically, for sport-type, golfers reported significantly lower interpretations of symptoms associated with cognitive and somatic anxiety (cognitive anxiety direction, $M = -1.24$, $SD = 9.12$; somatic anxiety direction, $M = -1.16$, $SD = 9.34$) than rugby players (cognitive anxiety, $M = 5.64$, $SD = 8.19$; somatic anxiety direction, $M = 4.9$, $SD = 7.68$). For competitive experience, the high-experience group reported significantly greater interpretations of cognitive and somatic anxiety symptoms (cognitive anxiety, $M = 8.01$, $SD = 9.03$; somatic anxiety direction, $M = 2.73$, $SD = 5.71$) when compared with those low in experience (cognitive anxiety, $M = 0.04$, $SD = 8.07$; somatic anxiety direction, $M = -1.11$, $SD = 8.85$).

Discussion

The purpose of this study was to examine the distinction between intensity and direction of symptoms commonly associated with competitive trait anxiety as a function of both sport type and competitive experience. Despite the fact that no significant

Table 1. Means, standard deviations and F ratios for CTAI-2 scores as a function of sport type and experience

	Rugby		Golf		df	F	P	η^2
	High experience	Low experience	High experience	Low experience				
	M (SD)	M (SD)	M (SD)	M (SD)				
Cognitive anxiety								
Intensity	22.26 (2.33)	26.20 (3.65)	16.14 (2.17)	21.42 (4.34)	3, 158	0.83	0.15	0.03
Direction	8.20 (5.39)	2.27 (2.08)	5.02 (6.51)	-2.18 (4.70)	3, 158	2.76	0.09	0.15
Somatic anxiety								
Intensity	18.40 (3.22)	19.32 (5.90)	15.14 (6.98)	18.20 (5.12)	3, 158	0.37	0.73	0.06
Direction	7.41 (5.43)	2.40 (2.56)	4.19 (6.09)	-4.71 (5.22)	3, 158	1.92	0.12	0.17
Self-confidence	25.79 (3.55)	21.07 (3.61)	27.29 (6.87)	23.53 (2.11)	3, 158	2.59	0.10	0.24

Note. Rugby (high experience $n = 42$; low experience $n = 45$), golf (high experience $n = 40$; low experience $n = 35$). CTAI-2, Competitive State Anxiety Inventory-2.

interaction effects were reported partial support was provided for all three of the primary hypotheses under investigation. For the symptom-intensity levels, it was predicted that the rugby players (contact sport) would experience greater levels of cognitive and somatic symptoms and lower self-confidence than golfers (noncontact sport). The results indicated that rugby players (contact sport) reported higher intensity levels of cognitive symptoms than their golfing counterparts (noncontact sport). Although no significant differences emerged between groups for the intensity of the somatic response, golfers reported higher levels of self-confidence in comparison with the rugby players. These findings provide some support for the predictions of Martens et al. (1990a) who suggested that participants in contact sports will elicit higher levels of cognitive anxiety intensity due to increased threat arising from personal confrontation. The performers from the contact sport were also suggested to experience lower levels of self-confidence than those from the noncontact sport due to an increased threat from personal evaluation (Martens et al., 1990a). For the intensity of the somatic response, rugby players (contact sport) were predicted to experience higher levels of symptom intensity than golfers (noncontact sport). This was suggested to be due to the rugby players being more likely to have a greater probability of having acquired conditioned state anxiety responses that were a reaction to the performance environment, such as changing room routines and the impending physical contact in the match (Borkovec, 1976). Despite this prediction, however, no significant difference emerged between the groups for the levels of symptoms associated with somatic anxiety. One reason for the lack of differences in the somatic responses may have been due to the use of a trait-based assessment, as opposed to a more-“sensitive” state version. Jones and Swain (1995) suggested that requesting participants to recall the intensity of their somatic responses may be more difficult, and hence, potentially less accurate, than reporting the actual experience of the symptoms at the time they occur. However, as the current study found differences in the interpretation of responses, similar to those reported in other direction studies (i.e., Swain & Jones, 1996; Jones & Hanton, 2001; Mellalieu et al., 2003), it would appear that interpretation (i.e., direction) of symptom intensity may be a more-sensitive predictor of somatic experiences than merely the level of the response.

For the direction responses, based upon Jones’ (1995) predictions, and the findings of Hanton et al. (2000), it was hypothesized that high-intensity symptoms associated with competitive anxiety would be interpreted as facilitative for explosive motor-skill sports, but debilitating for more-fine motor-skill

sports. Support was found for these predictions in the current investigation from a dispositional context. Rugby players therefore viewed their increased cognitive symptoms as more facilitative to performance than their golf counterparts. In addition, while intensity of somatic responses did not differ, rugby players also viewed their somatic symptoms as more facilitative to performance. One potential explanation for this finding may be that the sports require different levels of activation states for optimal performance. Martens et al. (1990a) suggested that task variables (task complexity) may mediate the relationship between somatic responses and performance. In motor behavior terms, golf is a fine motor-skill sport compared with rugby union, which can be deemed relatively gross in nature. As somatic anxiety is known to have a large influence on performance of fine neuromuscular tasks such as pistol shooting (e.g., Gould et al., 1987) even relatively small levels of symptoms may seriously affect the fine neuromuscular control mechanisms. Subsequently, the mere presence of somatic symptoms may therefore be viewed as negative to performance by golfers. In addition, Martens et al. (1990a) suggested that the somatic anxiety pattern of change should influence competitions or events of short duration, such as a singular golf shot, more than those performances of a longer duration (i.e., rugby). This was suggested to be due to somatic state anxiety being classically conditioned to environmental cues associated with the onset of competition. Long-duration sports therefore have more time to dissipate somatic manifestations, further lessening the potential impact of somatic anxiety on performance. More significantly, Martens, Burton, et al. hypothesized that performance in discontinuous tasks, involving short-duration performances and significant intervals between trials, are more influenced by somatic symptoms than continuous tasks such as rugby that allow somatic reactions to return to stable levels as players become more involved in the activity (i.e., as the game progresses). For participants in rugby it could therefore be hypothesized that the somatic manifestations experienced are dissipated at the onset of competition, leading to symptoms being viewed as signifying action, increased effort, or readiness for competition and forthcoming contact (cf., Eysenck & Calvo, 1992). For golf performers, however, the level of symptoms associated with competitive anxiety may be maintained or “repeated” for each shot. Somatic symptoms may therefore be perceived as more of a debilitating influence for golfers’ forthcoming performance, subsequently leading them to be viewed as harmful or debilitating.

The final hypothesis of the study was generated in relation to the competitive experience of the participants in their respective sports and the reported

intensity and direction of symptoms commonly associated with competitive anxiety. Based upon previous preliminary investigations (i.e., Hammermeister & Burton, 1995), it was suggested that the more-experienced performers would report lower intensity levels of reported symptoms than the less-experienced performers, and view these symptoms as more facilitating to performance. These predictions were supported in the current study with the highly experienced performers reporting lower intensities of symptoms associated with competitive trait anxiety and more-facilitating interpretations of these responses in relation to forthcoming performance than the less-experienced participants. This finding would appear to provide some support for the suggestion that the experience level of the performer may influence how individuals interpret competitive symptoms (cf., Hanton & Jones, 1999a). Indeed, in a qualitative investigation of elite swimmers preparation for competition, Hanton and Jones (1999a) found that mental skill acquisition appeared to be a gradual progression over athletes' careers with initial experiences of cognitive and somatic symptoms associated with competitive anxiety viewed invariably as debilitating to performance. Later, however, the development of cognitive skills and strategies underlying the facilitative interpretation of symptoms were acquired via natural learning experiences and various educational methods. The observations of Hanton and Jones (1999a) would therefore seem to indicate that experience might be a more-sensitive indicator of psychological skill development than solely the achievement of elite status (i.e., skill level).

Several practical implications arise as a result of the present study. First, the findings confirm the utility of assessing trait measures of multidimensional anxiety, in particular, those of highly anxious performers (Hanton et al., 2002a, b). The predictive utility of the CTAI-2 scale will therefore greatly enhance the practitioner in the screening, diagnosis and intervention with performers who suffer potentially debilitating effects from symptoms. Such a tool is relatively unobtrusive, enabling the practitioner to assess the client away from the competitive environment in a quick and effective manner when access to "state" information may not be available. Second, in addition to selecting appropriate cognitive or somatic interventions for symptoms associated with high levels of competitive anxiety that adhere to the principles of the matching hypothesis (Davidson & Schwartz, 1976), the findings of the current study highlight the need to consider performers' directional interpretations of symptoms reported as a function of different experience levels in sports with different activation and arousal demands. Caution should be taken therefore when applying stress management strategies with performers who view such symptoms

as debilitating in sports as reducing the intensity levels of the symptoms experienced may have the effect of decreasing the performer's arousal and activation state, and subsequent mental and physical readiness for competition. Indeed, it may not be possible, or desirable, to reduce such symptoms, via stress management techniques, due to the relative high levels of activation states required for gross explosive skill sports (Hanton & Jones, 1999b; Hanton et al., 2000). In these circumstances, practitioners should attempt to initiate an appropriate intervention strategy that restructures debilitating cognitive interpretations of competitive state anxiety, rather than reducing symptom intensity *per se*. Stress management strategies employed in these sports should develop skills that focus upon cognitive restructuring of the perceived anxiety response from negative or debilitating, to a more-positive or facilitative response (Hanton & Jones, 1999b). It may also be desirable to lower the response so that the performer feels more comfortable, and then raise the intensity of the symptoms to an appropriate level for the task demands for optimal performance in the sport (Jones et al., 1994). In contrast, for fine motor-skill sports such as golf, experienced symptoms appear to be viewed as debilitating to performance as they are associated with levels of activation that are inappropriate for the task demands. Suitable anxiety reduction techniques that aim to reduce or remove the symptom intensity and the subsequent activation state of the individual such as those based on progressive muscular relaxation (cf., Ost, 1988) should therefore be employed. Several studies have successfully employed such techniques to reduce anxiety levels and change performers' interpretations of state symptoms, with more-facilitative perceptions of anxiety-associated symptoms observed (e.g., Maynard et al., 1995a, b). Finally, the current findings suggest that less-experienced performers may report problems with lower levels of self-confidence when compared with their more-experienced counterparts. This lack of confidence appears to contribute to a debilitating view of symptoms experienced in stressful situations (cf., Hanton & Jones, 1999a). Practitioners should therefore encourage less-experienced performers to develop a robust armory of mental skills that will facilitate suitable confidence management strategies to assist in protecting performers against debilitating symptom interpretation (Hanton et al., *in press*).

The results of this investigation provide several areas for future study in relation to the examination of individual difference variables and cognitive and somatic symptoms. First, it is recommended that investigations develop a more-robust standard form of sport-type classification system in order to remove any difficulty or confusion that may arise from using

different or overlapping classification models. As Hanton et al. (2000) acknowledged, current classifications of sport cannot be considered mutually exclusive, presenting researchers with problems for hypothesis generation. For example, in the current investigation while rugby union participants (contact sport) were predicted by Martens et al.'s (1990b) classification system to experience greater levels of cognitive and somatic anxiety than golf (noncontact sport), the same sport, but classified as a team sport would also be suggested to experience lower levels of cognitive anxiety intensity than that of the individual sport of golf. This paradox, however, does provide further evidence to support the examination of the performers directional interpretations of symptoms associated with competitive anxiety as a more-sensitive measure than merely the intensity of the response (Jones & Hanton, 2001; Mellalieu et al., 2003). From the current study, therefore, it would appear that sports should be classified on several criteria including, the complexity of the task, the decision-making requirements, together with the specific activation demands and arousal levels required in relation to the physical nature of the task, i.e., contact or noncontact, team vs. individual, etc.

The findings of the study have also shown that the level of competitive experience is a potential factor in influencing the directionality of competitive symptoms. Hanton and Jones (1999a) qualitative investigation of elite swimmers suggested that psychological skills were developed via natural learning experiences and various educational methods. Further investigation is therefore required to corroborate and detail these experiences across other sport types and classifications. The findings also suggest that competitive experience is a variable to be considered both with and without a skill-level criterion. Of particular interest is the time scale and amount of competitive experience required in order for a performer to develop the skills to interpret cognitive and somatic symptoms as facilitative even in the most stressful of environments. Finally, although no significant inter-

actions were reported in the current investigation, the potential interaction of other variables, in addition to sport type and competitive experience, as suggested in Jones' (1995) model, also requires further investigation. These include the impact of perceptions of control upon the directional interpretations of symptoms associated with competitive anxiety, the related positive and negative affective consequences (Rotter, 1966; Borkovec et al., 1986) and the interactive effects of state and trait anxiety (Hardy et al., 1996).

Perspectives

The findings of the current investigation provide support from a dispositional context to suggest that sport type and the level of competitive experience influence interpretation of symptoms usually experienced in pressure situations. Implementation of activation, relaxation or restructuring interventions contingent upon the nature of the sport is recommended with emphasis upon consideration of development of confidence-building strategies in less-experienced performers. Future research should consider the nature of the sport-type classification system in order to remove any difficulty or confusion that may arise from using diverse or overlapping classification models. Investigation is also needed to establish the time scale and amount of experience required for a performer to develop the necessary skills to interpret precompetitive symptoms in a facilitative manner. Finally, in addition to sport type and competitive experience, the study of interaction of other individual difference variables upon Jones' (1995) model of facilitative and debilitative anxiety is also needed, including perceptions of control and the subsequent positive and negative affective consequences.

Key words: competitive trait anxiety, intensity, direction, experience, sport type.

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