

Negative Self-Talk During Sport Performance: Relationships with Pre-Competition Anxiety and Goal-Performance Discrepancies

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The present investigation examined relationships between pre-competition anxiety, goal-performance discrepancies, and athletes' negative self-talk while performing. Two studies were conducted with athletes who took part in middle-distance cross-country events. The first ($N = 38$) focused on the relationships between negative self-talk and the intensity and direction of anxiety. Cognitive anxiety intensity had a stronger relationship with negative self-talk ($r = .34$) than somatic anxiety intensity ($r = .23$). Furthermore, it was revealed that individuals experiencing anxiety symptoms as facilitative reported less negative self-talk than those experiencing anxiety symptoms as debilitating. The second study ($N = 36$) examined anxiety components and discrepancies between performance-goals and performance as predictors of negative self-talk. Regression analysis revealed that cognitive anxiety direction and goal-performance discrepancies were significant predictors of negative thoughts ($R^2 = .41$, $p < .01$), with discrepancies being a stronger predictor ($\beta = .55$) than cognitive anxiety direction ($\beta = -.32$). The results of the study indicate that quality of performance in relation to pursued goals is a more potent factor determining negative self-talk athletes experience while performing.

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Inner speech is a characteristic of human kind (Fields, 2002). Thoughts in the form of inner conversation deluge our mind and cognitive theorists have long emphasized the link between what people say to themselves and how they behave, suggesting that a person's thinking can affect emotional and behavioral outcomes (Ellis, 1994; Meichenbaum, 1977). Meichenbaum (1977) viewed self-statements as indices of individual's beliefs which may play a mediational role in behavioral performance.

In the sport psychology literature, the study of inner speech has been receiving increasing attention in the last two decades. Self-talk (ST) has been described as a "multidimensional phenomenon concerned with athletes' verbalizations that are addressed to themselves" (Hardy, Hall, & Hardy, 2005, p. 905). Such verbalizations allow individuals to interpret feelings and perceptions, regulate cognitions and give themselves instructions and reinforcement (Hackfort & Schwenkmezger, 1993).

Two research paradigms have been mainly used for the study of ST in sport (Moran, 1996), and both have primarily focused on the effects of positive and negative ST on performance. On one hand, field studies have examined ST as content of thoughts athletes experience. In such studies, athletes' reports of ST during competitions have been related to performance (e.g. Hatzigeorgiadis & Biddle, 2001; Van Raalte, Brewer, Rivera, & Petipas, 1994). On the other hand, experimental research has investigated ST as a cognitive strategy, where specific cues are employed. In such studies, athletes are asked or trained to use specific ST cues during task execution and effects on performance are recorded (e.g. Hatzigeorgiadis, Theodorakis, & Zourbanos, 2004; Van Raalte et al., 1995). Generally, the beneficial effects of positive and the detrimental effects of negative ST on performance have been supported in the sport literature (Van Raalte, et al., 1994; Van Raalte et al., 1995; Wrisberg & Anshel, 1997); even though in some field studies negative ST was not associated with impaired performance (e.g. Dagrou, Gauvin, & Halliwell, 1991; Van Raalte, Cornelius, Brewer, & Hatten, 2000). In contrast to the plethora of studies examining the relationships between ST and performance, research in sport psychology investigating antecedents of ST is sparse (Van Raalte et al., 2000), urging Conroy and Metzler (2004) to suggest that determining the origins of ST should become a priority in sport psychology research.

In contrast to the sport literature, a great deal of research concerning the antecedents of ST, and in particular negative thoughts in the form of worries, has been conducted in educational psychology. This interest initiated when researchers tried to explain the relationship between test anxiety and performance on cognitive tasks. Wine (1971) suggested that interfering negative thoughts are a result of test anxiety, and mediate the relationship between test anxiety and performance. Considerable amounts of research have examined the relationship between test anxiety and worries during task performance. Overall, results have shown moder-

ate but consistent relationships between pre-task anxiety and worrying thoughts (Sarason, Pierce, & Sarason, 1996). Furthermore, numerous studies in non-sport contexts have supported the relationship between trait anxiety and negative ST (e.g., Ronan & Kendall, 1997; Treadwell & Kendall, 1996).

Investigating thought processes during task performance, Carver and Scheier (1988) based on research conducted for over a decade (Carver & Scheier, 1981, 1984, 1986) proposed a control process model of behavior. They suggested that human behavior is regulated in a system of feedback control. People establish goals in relation to certain values and use these goals as reference points. When intentional behavior is displayed they monitor themselves with regard to the goals and accordingly adjust their actions in the direction of the reference value, i.e., the behavioral standard. When, during this process, discrepancies between intended and actual behavior (i.e., between goals and performance) are detected, individuals experience cognitive interference, particularly in the form of self-defeating thoughts and negative self-evaluation. In brief, with regard to the interests of the present study, the process control model postulates that negative thoughts in the form of worry are a function of self-generated feedback information individuals obtain while performing a task. Summarising the above literature it can be identified that negative ST during task performance relates to pre-task anxiety, but more importantly to the progress of the performed task.

In the sport psychology literature, Conroy and Metzler (2004) in a study with students participating recreationally in physical activity reported that trait sport anxiety could predict a tendency to experience negative ST ($\beta = .37, p < .01$). In a performance context, Van Raalte et al. (2000) in a field study with tennis players found that game circumstances predicted negative ST during sport performance. In particular, they reported that negative ST followed lost points and bad serves. Even though the study of Van Raalte et al. (2000) assessed ST through observational measures, the results provide indirect support for the idea that the progress of the competition influences the thought patterns of athletes, thus supporting Carver and Scheier's propositions. In another study examining the role of discrepancies between goal and performance, Gaudreau, Blondin, and Lapierre (2002) reported that such discrepancies were positively associated with in-competition negative affect ($r = .50, p < .01$) and negatively associated with in-competition positive affect ($r = -.69, p < .01$).

Stemming from the literature in test anxiety, the control process theory, and the preliminary findings in the sport context, the present investigation aimed to examine the relationship between pre-competition anxiety, goal-performance discrepancies and athletes' negative ST while performing. Two studies were conducted. The first focused on the relationship between pre-competition anxiety and negative ST athletes experience while performing. The second examined pre-competition anxiety and goal-performance discrepancies as predictors of negative ST athletes while performing.

Study 1

The purpose of this study was to explore relationships between pre-competition anxiety and athletes' negative ST during competition. Early test anxiety research suggested that anxiety hinders performance because individuals high in test anxiety spent part of their time ruminating over self-evaluating, self-defeating thoughts, which are not relevant to the execution of the task (Wine, 1971). In accordance to findings in test anxiety (Sarason et al., 1996), intensity of anxiety symptoms was expected to have moderate relationships with frequency of athletes' negative ST.

Research in sport anxiety has identified the need to move beyond the intensity of anxiety symptoms. Led from findings supporting that pre-competition anxiety is not necessarily detrimental to performance Parfitt, Jones, and Hardy (1990) proposed that in addition to intensity of anxiety, researchers should also consider the direction of anxiety. Direction of anxiety refers to the way athletes perceive anxiety symptoms, and in particular whether athletes perceive these symptoms as facilitative (helpful to performance) or debilitative (detrimental to performance). Research has provided support for the distinction between intensity and direction of anxiety, indicating that anxiety symptoms can be perceived by athletes either as facilitative or debilitative (Jones, Hanton, & Swain, 1994). Furthermore, the direction dimension has shown greater sensitivity in identifying differences in individual and situational variables than the intensity dimension (Hanton, Thomas, & Maynard, 2004). More closely related to the purposes of the present study, Jones and Hanton (2001) examined the relationship between direction of pre-competition anxiety and pre-competition feeling states. The results revealed that swimmers perceiving their anxiety symptoms as facilitative reported more positive ($p < .01$) and less negative ($p < .01$) feelings than athletes perceiving their anxiety symptoms as debilitative. Therefore, anxiety direction was considered along with intensity of anxiety symptoms.

As stated above, the purpose of this study was to explore the relationship between pre-competition anxiety intensity and direction and athletes' negative ST during sport performance. Two hypotheses were tested. First, in accordance to findings in test anxiety and cognitive interference, it was hypothesized that pre-competition anxiety intensity will be positively related to negative ST during performance, and this relationship will be larger in magnitude for cognitive anxiety intensity rather than somatic. Second, considering findings regarding the dimension of anxiety direction, it was hypothesized that athletes perceiving anxiety symptoms as facilitative will experience less negative ST than those perceiving anxiety symptoms as debilitative.

Method

Participants

Thirty eight athletes (27 males, 11 females) who took part in a middle-distance (2.5 miles) cross-country event participated in the study. Their mean age was 22.02 (± 2.33) years, with an average of 6.17 (± 3.99) years of competitive experience.

Instruments

The modified version of the Competitive State Anxiety Inventory-2 (CSAI-2; including the anxiety direction scale; Jones & Swain, 1992) was used to assess intensity and direction of pre-competition cognitive and somatic anxiety. The questionnaire comprised 18 items which assessed intensity and direction of cognitive (e.g. "I have self-doubts", "I am concerned about performing poorly"), and somatic anxiety (e.g. "I feel nervous", "My body feels tense") symptoms. Anxiety intensity was measured on a 4-point scale (1 = not at all, 4 = very much so). Anxiety direction was measured on a 7-point scale (-3 = debilitating, 0 = neutral, +3 = facilitative). The CSAI-2 is a well established and widely used instrument. In a relevant review, Burton (1998) reported substantial evidence regarding the validity and the reliability of the intensity scale. Even though the direction scale has not been extensively validated, previous studies have reported adequate reliability and evidence of discriminant and predictive validity (Jones et al., 1994; Jones & Swain, 1992; Swain & Jones, 1996). The self-confidence subscale despite being part of the CSAI-2 was not considered. Self-confidence is closely related to anxiety, but still remains an independent construct (Parfitt & Pates, 1999). Considering that the study aimed to focus on anxiety symptoms, and following Jones and Hanton's (1996) protocol, the self-confidence subscale was not included in the analyses.

Negative ST during sport performance was assessed retrospectively, after the conclusion of the competition. Considering that this was a field study, *in vivo* thought assessment could not be applied and therefore a retrospective assessment was employed despite the limitations such an approach may contain. The 'performance worries' subscale from the Thought Occurrence Questionnaire for Sport (TOQS; Hatzigeorgiadis & Biddle, 2000) was used to retrospectively assess negative ST athletes experienced during the race. The choice of this TOQS subscale only was due to our purpose to assess negative ST in the form of worries, and not other forms of interfering thoughts. The 6-item scale (with the stem "During the race I had thoughts ...") assessed frequency of negative ST (e.g., "... that I am not going to achieve my goals", "... that other runners are better than me") on a 7-point scale (1 = never, 7 = very often). Hatzigeorgiadis and Biddle (2000) provided adequate support for the factorial structure of the instrument through confirmatory factor analysis (CFI: .94; SRMR: .06) and evidence of dis-

criminant and concurrent validity. Further evidence regarding the validity of the TOQS has been provided by Lane, Harwood, and Nevill (2005). Previous studies have revealed satisfactory internal consistency with Cronbach's alphas ranging from .77 to .90 (Hatzigeorgiadis & Biddle, 2002; Lane, et al., 2005).

Procedures

Permission was obtained from the race organisers to conduct the data collection. Athletes were informed about the study on registration for the race and were asked to volunteer. Those who agreed to participate were given instructions regarding the data collection and completed a form including informed consent and demographic characteristics. Participants were asked to come to the start/finish line where the research team's desk was situated before beginning their warm-up routine. The modified CSAI-2 was completed before athletes started warming-up, approximately thirty minutes before the start of the race. Once each athlete had completed his/her race, he/she was immediately asked to complete the TOQS.

Results

Descriptive statistics, internal consistency coefficients and correlations between the variables are displayed in Table 1. A one-way MANOVA revealed that there were no differences in anxiety intensity and direction and negative ST between males and females, $F(6, 31) = 1.08, p = .40$, therefore subsequent analyses were calculated for the total sample. Pre-competition cognitive anxiety intensity correlated moderately with negative ST ($r = .34, p < .05$). A weaker and non-significant correlation was found for pre-competition somatic anxiety intensity and negative ST ($r = .23, p = .16$). Partial correlations were subsequently calculated. The analysis was performed to detect the degree to which covariance between cognitive and somatic anxiety intensity influenced the identified Pearson's correlations between anxiety intensity and negative thoughts. When controlling for somatic anxiety intensity the correlation between cognitive anxiety intensity and negative ST dropped slightly and became non-significant (partial $r = .28, p = .09$), whereas when controlling for cognitive anxiety intensity the correlation between somatic anxiety intensity and negative ST dropped more emphatically (partial $r = .11, p = .49$).

Subsequently, participants were divided into anxiety direction groups. Following the recommendations of Jones and Swain (1995), athletes having positive scores in both cognitive and somatic anxiety direction were included in the facilitative group ($n = 16$) while those having negative scores in both cognitive and somatic anxiety were included in the debilitating group ($n = 14$). Mean scores in anxiety direction for the two direction groups are reported in Table 2.

Table 1. *Study 1: Descriptive statistics and correlations*

	Descriptive statistics		Cronbach's alpha	Pearson's Correlations			
	<i>M</i>	<i>SD</i>		1	2	3	4
1. Cognitive anxiety intensity	17.61	5.72	.85	--			
2. Somatic anxiety intensity	16.47	3.24	.70	.38 *	--		
3. Cognitive anxiety direction	-8.2	8.97	.85	-.25	-.06	--	
4. Somatic anxiety direction	1.00	7.61	.81	-.31	-.01	.77 **	--
5. Negative self-talk	2.97	1.39	.79	.34 *	.23	-.34 *	-.32 *

* $p < .05$, ** $p < .01$

Table 2. *Study 1: Mean scores in anxiety intensity and direction and negative self-talk for the two anxiety direction groups.*

	Anxiety direction	
	Facilitative ($n = 16$)	Debilitative ($n = 14$)
Cognitive anxiety intensity	15.50 $\pm$ 4.89	19.14 $\pm$ 5.82
Somatic anxiety intensity	15.81 $\pm$ 2.61	16.36 $\pm$ 2.98
Cognitive anxiety direction	6.38 $\pm$ 5.12	-7.71 $\pm$ 7.60
Somatic anxiety direction	6.50 $\pm$ 4.60	-6.21 $\pm$ 6.54
Negative self-talk	2.30 $\pm$ 1.15	3.61 $\pm$ 1.55

Analyses of variance were subsequently conducted to test for differences in pre-competition anxiety intensity and negative ST during performance between the two groups. Anxiety direction was the independent variable whereas pre-competition anxiety intensity and negative ST during competition were the dependent variables. The analyses were conducted to explore (a) differences in negative ST during performance and (b) whether such differences could be attributed to differences in pre-competition anxiety intensity. One-way MANOVA was calculated to test for differences in pre-competition cognitive and somatic anxiety intensity between the facilitative and debilitative anxiety direction groups. The analysis showed that the two anxiety direction groups did not differ significantly in anxiety intensity, $F(2, 27) = 1.68, p = .21$. Subsequently, one-way ANOVA was calculated to test for differences in negative ST. The analysis revealed significant differences between the two groups, $F(1, 28) = 6.95, p < .05, \eta^2 = .20$. In particular, athletes in the facilitative group reported less negative ST than those in the debilitative group. Mean scores in pre-competition anxiety intensity and negative ST during the race for the two anxiety direction groups are displayed in Table 2.

Discussion

Similarly to findings in educational psychology, pre-competition anxiety was related to negative ST athletes experienced during competition. Sarason, Sarason, Keefe, Hayes, and Shearin (1986) suggested that in an evaluative situation anxiety symptoms are likely to generate thoughts that reflect fears of failure and comparison with others, and reported low to moderate correlations between test anxiety and interfering negative thoughts (from .10 to .41). In the sport domain, Bird and Horn (1990) examined the relationship between cognitive anxiety and mental errors in softball players. After dividing participants into high and low groups on the basis of mental errors, they reported that the group displaying more errors scored significantly higher on cognitive anxiety compared to the low mental errors group. Furthermore, Hatzigeorgiadis and Biddle (2000), in testing the psychometric properties of the TOQS, reported cognitive anxiety to be moderately related to performance worries during performance ($r = .40$). However, in that study the analyses involved trait symptoms. In the present study, both cognitive and somatic pre-competition anxiety intensity were moderately correlated with negative ST, however the relationship for somatic anxiety was weaker. Nevertheless, the relationship between somatic anxiety and negative ST was higher compared to results from educational psychology (Sarason et al., 1986), where cognitive tasks are used, suggesting that in contrast to academic settings, in sport the somatic condition is more strongly associated with cognitive activation during performance.

In order to examine the role of anxiety direction, participants were divided into groups according to their interpretation of cognitive and somatic anxiety symptoms. Important in terms of effect size differences between the two anxiety directions groups were detected in negative ST reported during competition suggests that for athletes perceiving their anxiety state as debilitating, pre-competition worries were sustained during the event, whereas for negative ST during the competition, which were reported retrospectively. The fact that the two anxiety direction groups did not differ in pre-competition anxiety intensity, but did differ in athletes perceiving anxiety symptoms are facilitative such worries ceased once the competition started.

Summarising, the results showed that cognitive anxiety had a moderate relationship with interfering negative thoughts athletes experience while competing. Furthermore, it was revealed that even though there were no differences in anxiety intensity between the two anxiety direction groups, athletes perceiving their anxiety symptoms as facilitative reported less negative ST than athletes perceiving their anxiety symptoms as debilitating. The moderate only relationship between pre-competition anxiety intensity and negative ST while performing suggests that thought patterns are likely to change once competition is under way. Based on this finding, the purpose of the second study was to explore whether the progress of performance, and in particular goal-performance discrepancies, is a more important determinant of negative athletes' ST.

Study 2

To explain the relationships between test anxiety, negative ST in the form of worrying thoughts, and performance, Carver and Scheier (1988) proposed the control process model of behavior. The model identifies two major issues. The first issue is that worries are a result of discrepancies between goals and performance individuals identify while performing a task. The second issue is that the way individuals react to such performance discrepancies depends on their expectancies of goal attainment. The principles of the control process model were adapted by Jones (1995) to accommodate advances in the sport anxiety literature. Jones (1995) suggested that athletes' expectancies of goal attainment may determine the way anxiety symptoms are perceived. In particular, Jones suggested that athletes with positive goal attainment expectancies will perceive anxiety symptoms as facilitative, whereas athletes with negative goal attainment expectancies will perceive anxiety symptoms as debilitating. In a subsequent investigation, Jones and Hanton (1996) reported that with regard to performance goals swimmers with positive expectancies towards goal attainment interpreted their cognitive anxiety levels as facilitative (scored positively on the anxiety direction scale; mean = 8.04), whereas uncertain swimmers and swimmers with negative expectancies towards goal attainment inter-

puted their cognitive anxiety levels as debilitating (scored negatively on the anxiety direction scale; mean = $-.3.00$). Jones and Hanton's results provide preliminary support for the validity of the adapted control process model and encourage further research towards this direction.

Having examined the relationship between pre-competition anxiety and negative ST, the purpose of the second study was to examine anxiety and goal-performance discrepancies as predictors of athletes' negative ST while performing. In accordance to Carver and Scheier's (1988) framework, it was hypothesized that goal-performance discrepancies will be a stronger predictor of negative ST.

Method

Participants were 36 athletes (24 males, 12 females) who took part in a different middle distance (2.7 miles) cross-country event (none of them had participated in the first study). The mean age of participants was 23.14 (± 6.46) years with an average competitive experience of 6.76 (± 3.69) years. Instruments and procedures identical to those in Study 1 were used. However, in addition, participants were asked before the beginning of their warm-up routine to indicate their time-goal for the upcoming race. Moreover, finishing times for each athlete were obtained from the official results of the race. Discrepancy scores between time-goal and race-time were calculated after subtracting time-goal from finishing time (the higher the score, the higher the discrepancy between goal and performance).

Results

Descriptive statistics, internal consistency coefficients and correlations between the psychometric variables are displayed in Table 3. All indices were comparable to those obtained in Study 1. A one-way MANOVA revealed that there were no differences in anxiety intensity, anxiety direction and negative ST between males and females, $F(5, 30) = .87, p = .51$, therefore subsequent analyses were calculated for the total sample.

Hierarchical regression analysis was subsequently conducted to reveal the degree to which negative thoughts could be predicted from pre-competition anxiety intensity and time discrepancy. Two regression models were tested with the two sets of independent variables (anxiety and goal-performance discrepancies) entering the equation first interchangeably. This method was selected to assess the relative contribution of the independent variables in explaining variance of negative ST after accounting for variance explained by each set of independent variables (Edwards & Hardy, 1996; Tabachnick & Fidell, 1996). A summary of the analysis is presented in Table 4. When anxiety components entered the regression before time

Table 3. Study 2: Descriptive statistics and correlations

	Descriptive statistics		Cronbach's alpha	Pearson's Correlations			
	<i>M</i>	<i>SD</i>		1	2	3	4
1. Cognitive anxiety intensity	18.53	3.08	.70	--			
2. Somatic anxiety intensity	16.86	3.13	.72	.37 *	--		
3. Cognitive anxiety direction	4.89	8.39	.80	-.26	-.17	--	
4. Somatic anxiety direction	5.11	8.00	.90	-.25	.07	.67 **	--
5. Negative self-talk	2.06	.84	.70	.34 *	.29	-.37 *	-.24

* $p < .05$, ** $p < .01$

Table 4. Study 2: Summary of the hierarchical stepwise regression analyses on negative self-talk

	<i>Beta</i>	<i>t</i>	<i>F</i>	<i>R</i> ² change
<i>Analysis 1</i>				
Step 1			5.40*	.12
cognitive anxiety direction	-.38	-2.32 *		
Step 2			12.56**	.29
cognitive anxiety direction	-.32	-2.37 *		
performance discrepancies	.55	4.13 **		
<i>Analysis 2</i>				
Step 1			17.05**	.33
performance discrepancies	.59	4.13 **		
Step 2			12.56**	.08
performance discrepancies	.55	4.13 **		
cognitive anxiety direction	-.32	-2.37 *		

* $p < .05$, ** $p < .01$

discrepancy, cognitive anxiety direction was a significant predictor of negative ST (adjusted $R^2 = .12$). The addition of time discrepancy in the second step raised the prediction significantly (R^2 change = .29; total adjusted $R^2 = .41$). When discrepancy was entered first in the regression (adjusted $R^2 = .33$), cognitive anxiety direction (entering at the second step along with somatic anxiety) could still account for a significant amount of variance in negative ST (R^2 change = .08; total adjusted $R^2 = .41$).

Discussion

Correlation analysis confirmed the moderate relationships between anxiety intensity and direction and negative ST found in the first study. The identification of moderate relationships between pre-competition cognitive anxiety and negative thoughts during performance in both studies indicates that the cognitive state of athletes is changeable. In accordance with Carver and Scheier's (1988) propositions, discrepancies between goals and performance were found to be a stronger predictor of negative ST. However, it is noticeable that despite the relatively large amount of variance explained by goal-performance discrepancies in the second analysis ($R^2 = .33$), pre-competition cognitive anxiety direction could contribute to the prediction (R^2 change = .08), suggesting that the two predictors accounted for different parts of the variance of negative ST. Thus, regardless of performance quality in relation to the goal, interpretation of cognitive anxiety symptoms before the race was associated with negative ST during the race. Furthermore, considering that part of the variance was shared between the predictors, it appears that in accordance with theoretical conceptualisations of anxiety (Martens, Burton, Vealey, Bump, & Smith, 1990) cognitive anxiety partly reflects anticipation of poor performance.

Nevertheless, the quality of performance in relation to the expectations is the factor that mainly predicted the levels of negative ST athletes experienced. This finding supports Carver and Scheier (1988) control process model of behavior, suggesting that when athletes' performance does not reflect their expectations, or when unexpected difficulties arise during the competition, athletes tend to ruminate over performance-related, self-evaluative thoughts. Comparable findings have been reported in another study examining cognitive and affective responses during sport performance. Gaudreau et al. (2002) calculated discrepancies between goal and performance in golf players by subtracting the scoring goal on an 18-hole stroke play competition from the actual score after the conclusion of the competition. They reported that goal-performance discrepancies could positively predict in-competition negative affect ($R^2 = .23, p < .01$) and negatively predict in-competition positive affect ($R^2 = .46, p < .01$).

Somatic anxiety components, despite being moderately correlated with negative ST, did not contribute to the prediction. Considering the size of the sample, the lack of significant contribution should be cautiously interpreted. Nevertheless, the results from the partial correlations in Study 1 seem to confirm this finding. Considering that the correlation between somatic anxiety intensity and negative ST dropped when controlling for cognitive anxiety intensity, the results suggest that the variance shared between somatic anxiety intensity and negative thoughts is part of the covariance between cognitive and somatic anxiety intensity. That is, the size of the relationship that emerged between somatic anxiety intensity and negative ST can be attributed to the relationship between cognitive and somatic anxiety intensity.

General Discussion

The purpose of the present investigation was to examine the relationships between the intensity and direction of anxiety with athletes' negative ST while performing, and to assess pre-competition anxiety components and discrepancies between goal and performance as predictors of negative ST. Overall, the results indicated that regardless of pre-competition anxiety levels, performance feedback information becomes an important determinant of ST during the event.

Considering the evidence supporting the detrimental effects of negative ST on performance (Van Raalte et al., 1995; Wrisberg & Anshel, 1997) the present findings have some important practical implications with regard to the reduction of negative ST. The results of the first study showed that athletes interpreting their pre-competition anxiety symptoms as facilitative reported less negative ST during competition. Athletes should understand that anxiety symptoms are a normal reaction to competition. They should become familiar with such responses and not solely concentrate on how to reduce anxiety symptoms. In that way athletes are likely to reduce their negative ST during competition. The results of the second study revealed that discrepancies between goals and performance predicted athletes' negative ST, suggesting that such discrepancies should be anticipated. To minimize the possibility of large discrepancies and subsequently the occurrence of negative ST athletes should strive for goals that are within their reach.

At this point certain limitations of the present investigation should be addressed. A first limitation is the methodological weakness of self-reported ST. This limitation is not specific to this investigation, but rather global when it comes to assess cognitions, because thought sampling methods rely on self-reports. Retrospective recall of thoughts has been criticised as dependent to memory and the ability of individuals to be aware of the several thoughts they experience. Nevertheless, as Moran (1996) noticed one cannot disregard individuals' account

of their own thought processes. Considering that the purpose of the investigation was to explore relationships in field, without interfering in the competitive environment, retrospective recall was the most appropriate method. In attempting to minimize relevant threats, in-competition ST was assessed immediately after the conclusion of the competition.

Another shortcoming is the lack of methodological strength to support timely the direction of causality in the identified relationships. According to Carver and Scheier's (1988) model, performance discrepancies which are responsible for the occurrence of negative ST are detected by the individuals during task execution. Individuals monitor performance in relation to the desired goal. The assessment of perceived performance discrepancies during task performance was not possible in this field study. Therefore, objective discrepancies were assessed based on actual performance, assuming that athletes were able to perceive such discrepancies. Once again, considering the purposes of the investigation methodological designs to examine causality were not applicable. Thus the identified effects can only be supported through the theoretical assumptions of the control process theory.

Finally, the results of the present investigation need replicating and expanding due to the limited sample size. Field studies in which pre- and post-competition assessments are administered are difficult to implement and therefore rare in the sport psychology literature. However, the consistency of the relationships between anxiety and ST in the two studies strengthens the reliability of the results, at least for this particular relationship.

Despite the identified limitations the present investigation provides valuable evidence with regard to the antecedents of athletes' negative ST. The present findings suggest that pre-competition anxiety and most importantly the quality of performance in relation to pursued goals are important predictors of negative ST athletes experience while performing. Based on the present field results, further studies could explore in more depth the identified relationships and experimental research could help support causal mechanisms regarding the antecedents of negative ST.

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