

Moderating Effects of Self-Confidence and Sport Self-Efficacy on the Relationship between Competitive Anxiety and Sport Performance

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The aim of this study was to examine moderating effects of self-confidence and sport self-efficacy on the relationship between competitive anxiety and sport performance in a sample of Iranian athletes. A total of 246 volunteer athletes (149 males, 97 females) were included in this study. All participants were asked to complete Multidimensional Competitive Anxiety Questionnaire and Sport Self-Efficacy Scale. To measure the athletes' sport performance, their coaches were asked to complete the Sport Achievement Scale. The results revealed that self-confidence and sport self-efficacy moderated the relationship between competitive anxiety and sport performance. Analysis of the data revealed that moderating effects of self-confidence for the association of cognitive and somatic dimensions of competitive anxiety with sport performance were partial. On the other hand, the moderating effects of sport self-efficacy for the association of cognitive and somatic dimensions of competitive anxiety with sport performance were full.

Keywords: Emotion, Stress, Anxiety, Self-Regulation

Introduction

Competitive anxiety and its effect on the sport performance is one of the important subjects of sport psychology (Hanton, Neil, & Mellalieu, 2008; Mellalieu, Hanton, & Fletcher, 2006). High level of anxiety symptoms (intensity of anxiety) usually is debilitating and has negative effect on the performance (Burton, 1998; Mellalieu et al., 2006; Woodman & Hardy, 2001). On the other hand, research findings have challenged this assumption that anxiety always blocks the sport performance (e.g., Hanin, 1986; Hardy, 1990, 1996; Hardy et al., 2004; Raglin & Hanin, 2000). Limitations related to measuring pure intensity of anxiety lead researchers to perceive anxiety direction including debilitating and facilitative effects of anxiety.

Several studies on sport psychology have investigated debilitating and facilitative effects of competitive anxiety symptoms on sport performance. Jones (1995) proposed a debilitating and facilitative anxiety model based on Carver and Scheier's (1988) control-process theory of stress and coping. This model tries to explain how symptoms related to players' experienced anxiety in relation to match stressors could be met as facilitative or debilitating anxiety. If individual's expectancies of ability for achievement and coping are desirable, anxiety will be facilitative, and if these expectancies are undesirable, anxiety will be perceived debilitating (Hanton & Connaughton, 2002; Hanton, O'Brien, & Mellalieu, 2003; Jones, 1995; Jones & Hanton, 2001; Ntoumanis & Jones, 1998). Therefore, interpretation of anxiety symptoms is determined based on individuals' cognitive appraisal of ability to control environment and themselves (Jones, 1995; Jones & Hanton, 2001). In this direction and based on cognitive activation theory of stress, Ursin and Eriksen (2004) believe that positive coping expectancy reduces likelihood of sport anxiety. Before this, Lazarus (1999, 2000) had also confirmed the moderating role of coping strategies on the relationship between emotions and stressful situations like sport competitions.

Three distinct dimensions are determined in competitive anxiety experience: cognitive anxiety, somatic anxiety and self-confidence (Hardy, 1990, 1996; Hardy et al., 2004; Martens, Vealey, & Burton, 1990). Cognitive anxiety is the mental component of anxiety and is determined by negative expectations and cognitive concerns about oneself, situation and possible outcomes (possibility of failure). Somatic anxiety is the physical component of anxiety and shows individual's perception of physiological responses and negative appraisal. Self-confidence refers to individuals' belief in ability to control themselves and environment (Burton, 1998; Martens et al., 1990; Woodman & Hardy, 2001). Research findings have showed that the association of cognitive anxiety with performance is negative, whereas the association of self-confidence with performance is positive (e.g., Martens et al., 1990; Robazza & Bortoli, 2007). Further, the butterfly catastrophe model (Hardy, 1996) revealed that self-confidence moderated the interaction between cognitive anxiety and physiological arousal in a sample of male golfers. Hardy et al. (2004) found interactions upon actual golf performance. The evidence supports the notion of moderating models for predicting sport performance rather than linear models of anxiety-performance.

Self-confidence as one of the most important variables related to sport performance (Robazza & Bortoli, 2007) increases perceived ability to emotion management and provides possibility for athlete to control negative emotions more effectively. Empirical research has shown that in athletes, high levels of self-confidence are associated with perceived useful ability (e.g., Martens et al., 1990; Robazza & Bortoli, 2007). Self-confidence also moderates competitive anger symptoms (Hanton & Connaughton, 2002; Hanton et al., 2003), facilitates coping resources for encountering anxiety (Jones, & Hanton, 2001; Hanton, & Connaughton, 2002; Robazza & Bortoli, 2007), and causes to maintenance and continuation of control during the match. Self-confidence before and during the match determines lower level of competitive anxiety and often corre-

lates with better performance (Craft, Magyar, Becker, & Feltz, 2003). One aim of the present study was to examine the moderating effect of self-confidence on the relationship between competitive anxiety and sport performance in a sample of Iranian athletes.

Self-efficacy refers to individual's belief in his/her ability to perform particular behaviors for gaining desired outcomes (Bandura, 1997). Based on the foundations of social-cognitive theory, individuals with higher levels of self-efficacy are less vulnerable to severe emotional arousal and are more susceptible to adaptive coping with emotional arousal compared to individuals with lower levels of self-efficacy (Bandura, 1997, 2001). Social-cognitive theory has conceptualized self-efficacy as a general or global construct. However, empirical evidence suggests that a domain-specific conceptualization of self-efficacy should be considered. For example, studies on computer self-efficacy (Compeau & Higgins, 1995) and internet self-efficacy (Hsu & Chiu, 2004; Papastergiou, 2010; Torkzadeh, Chang, & Demirhan, 2006) revealed significant differences between individuals with high computer self-efficacy and individuals with low computer self-efficacy in terms of learning and utilizing computer-related skills. Given that sport self-efficacy refers to how confident an individual is in his/her capability to perform specific sport tasks, it might have a different effect on the relationship between competitive anxiety and sport performance in comparison to general self-confidence. Therefore, the second goal of the present study was to examine the moderating role of sport self-efficacy on the association of competitive anxiety and sport performance in a sample of Iranian athletes.

Method

Participants and Procedure

The participants were Iranian professional athletes of different sport fields at national and international levels. Two hundred and sixty three athletes from different sport federations including wrestling, taekwondo, basketball, football, volleyball, track and field, swimming, gymnastic and weight lifting participated in this study voluntarily. Seventeen participants were excluded from statistical analysis because they did not complete the questionnaires. Therefore, research sample was reduced to 246 athletes (149 males, $M_{age} = 23.5$ years, age range: 18 - 33 years, and 97 females, $M_{age} = 22.30$ years, age range: 18 - 29 years). To measure the athletes' sport performance, their coaches were asked to answer questions about the athletes' achievement in sport. In coordination with sport federations authorities, athletes were asked to complete the research questionnaires. There was no time limitation, but the maximum time did not exceed 30 minutes. The aim was that athletes answer to the questionnaires relaxed and precise without the pressure of time limitation in order to increase accuracy and reliability of the answers. The questionnaires were distributed, completed and gathered the day before the match. The protocol was approved by Department of Psychology, University of Tehran. All participants signed an informed consent document prior to performing the research procedure.

Measures

Multidimensional Competitive Anxiety Questionnaire (MCAQ). This is a 15-item questionnaire which has been derived from previous measures of competitive anxiety (Jones & Swain, 1992; Martens et al., 1990; Swain & Jones, 1993) and validated

for the purpose of measuring dimensions of competitive anxiety in samples of Iranian athletes (Besharat, 2009). The items measure three dimensions of competitive anxiety including cognitive anxiety, somatic anxiety and self-confidence in a five-point Likert-type scale from 1 (very little) to 5 (very much). Maximum and minimum scores of subject would be 5 and 25, respectively. Psychometric properties of MCAQ have been examined and confirmed (Besharat, 2009). Based on preliminary findings in a sample of 133 athletes from different levels and fields of sport, calculated Cronbach's alpha coefficients for the three subscales were .90, .83, and .89, respectively. This is indicative of adequate internal consistency of the questionnaire. Content validity of the MCAQ was examined according to judgment of 10 experts in psychology and physical education and calculated Kendall's tau-t coefficients for every subscale of the questionnaire were .79, .81, and .82, respectively. Convergent and discriminant validity of the MCAQ was calculated and confirmed through simultaneous application of measures of positive perfectionism, negative perfectionism, sport achievement, and mental health indices for the participants (Besharat, 2009). For the present study, internal consistency coefficients of .93, .87, and .91 were obtained for cognitive anxiety, somatic anxiety and self-confidence, respectively.

Sport Self-Efficacy Scale (SSES). This is a 10-item scale and measures sport self-efficacy from 0 to 100. Higher score is indicative of higher level of self-efficacy and skills related to this construct. This scale has been developed based on theoretical model of self-efficacy and questionnaires related to this construct (e.g., Bandura, 1997, 2001, 2006; Llewellyn, Sanchez, Asghar, & Jones, 2008) for measuring specific sport self-efficacy (Besharat, 2008). Psychometric properties of the SSES have been examined and confirmed (Besharat, 2008). Based on preliminary findings in a sample of 236 athletes from different levels and fields of sport, calculated Cronbach's alpha coefficient for this scale was .93. Test-retest correlation coefficients among the scores of 111 participants were calculated in two occasions with a time duration of 2 - 4 weeks. It was .78 and confirmed test-retest reliability of the SSES at $p < .001$. Content validity of the SSES was examined and confirmed according to judgments of 6 experts in psychology and physical education with calculated Kendall's tau-t coefficient of .87. Convergent and discriminant validity of the SSES calculated and was confirmed through simultaneous application of measures of sport achievement, self-esteem, and mental health indices for the participants (Besharat, 2008). The results of exploratory factor analysis also confirmed a single factor of sport self-efficacy for this scale (Besharat, 2008). For the present study, internal consistency coefficients of .94 was obtained for the SSES.

Sport Achievement Scale (SAS). This is a 16-item instrument which measures the sport achievement based on a five-point Likert-type scale from 1 (very little) to 5 (very much). The results of content validity, based on the judgments of sport coaches and judges have shown Kendall's tau-t coefficients of .54 and .44 for coaches and judges, respectively. Chi-square results for testing significance of above coefficients revealed that calculated correlations for coaches ($\chi^2 = 163.18$, $df = 15$, $p < .001$) and for judges ($\chi^2 = 106.64$, $df = 15$, $p < .001$) was statistically significant (Besharat, Abbasi, & Sadreldin, 2002). Calculated Cronbach's alpha coefficient for the SAS in a sample of wrestlers and football players (Besharat, et al., 2002) for coaches' and judges' scores were .97 and .98, respectively. This confirms a high internal consistency for the SAS.

Results

Mean scores and standard deviations for all scales are presented for males, females, and the total sample in Table 1.

Results of Pearson correlations showed that there are significant correlations between competitive anxiety, self-confidence, and sport self-efficacy with sport achievement scores (see Table 2).

Then, a series of two steps regression analyses were conducted in order to examine the moderating effect of self-confidence on the association of cognitive and somatic anxiety with sport performance. The results of these analyses are shown in Table 3. These results revealed that with entering self-confidence as a moderating variable in regression equation, the β coefficient for cognitive anxiety decreased from $-.32$ to $-.18$. The Sobel test showed that this rate of variation is significant ($t = 2.79, p < .006$) and cognitive anxiety also remained significant ($t = -2.33, p < .021$). The results also revealed that with entering self-confidence as a moderating variable in regression equation, the β coefficient for somatic anxiety decreased from $-.30$ to $-.17$. The Sobel test showed that this rate of variation is significant ($t = 3.47, p < .001$) and somatic anxiety also remained significant ($t = -2.38, p < .018$). These results reveal that self-confidence could affect the relationship between competitive anxiety and sport performance partially.

A series of two steps regression analyses were also conducted in order to examine the moderating effect of sport self-efficacy on the association of cognitive and somatic anxiety with sport performance. The results of these analyses are shown in Table 4. These results revealed that with entering sport self-efficacy as a moderating variable in regression equation, the β coefficient for cognitive anxiety decreased from $-.32$ to $-.06$. The Sobel test showed that this rate of variation is significant ($t = 15.92, p < .001$) whereas cognitive anxiety lost its

Table 1.
Mean scores and standard deviations on each scale of the competitive anxiety, self-confidence, sport self-efficacy, and sport achievement variables for males, females, and the total sample.

Variable/Scale	Males M (SD)	Females M (SD)	Total M (SD)
Cognitive Anxiety	12.16 (3.00)	13.41 (2.92)	12.65 (3.03)
Somatic Anxiety	15.17 (3.09)	16.42 (2.61)	15.66 (2.96)
Self-Confidence	18.86 (3.50)	17.75 (3.86)	18.42 (3.68)
Sport Self-Efficacy	719.59 (107.98)	695.25 (121.72)	719.00 (113.98)
Sport Achievement	65.79 (7.18)	64.20 (8.18)	65.16 (7.61)

Table 2.
Pearson product moment correlations between measures of competitive anxiety, self-confidence, sport self-efficacy, and sport achievement.

Measures	1	2	3	4	5
1. Cognitive Anxiety	-				
2. Somatic Anxiety	.54	-			
3. Self-Confidence	-.67	-.54	-		
4. Sport Self-Efficacy	-.37	-.31	.40	-	
5. Sport Achievement	-.32	-.30	.34	.74	-

All p values $< .001$.

Table 3.
Summary of regression analysis for moderation effect of self-confidence between competitive anxiety and sport performance.

Variable	B	SEB	β	t	P
<i>Step 1</i>					
Cognitive Anxiety ($R^2 = .10$)	-.823	.152	-.328	-5.42	.001
<i>Step 2</i>					
Cognitive Anxiety	-.462	.198	-.184	-2.33	.021
Self-Confidence ($R^2 = .14, \Delta R^2 = .03$)	.457	.163	.221	2.79	.006
<i>Step 1</i>					
Somatic Anxiety ($R^2 = .09$)	-.784	.156	-.306	-5.01	.001
<i>Step 2</i>					
Somatic Anxiety	-.435	.183	-.170	-2.38	.018
Self-Confidence ($R^2 = .14, \Delta R^2 = .04$)	.512	.148	.248	3.47	.001

Table 4.
Summary of regression analysis for moderation effect of sport self-efficacy between competitive anxiety and sport performance.

Variable	B	SEB	β	t	P
<i>Step 1</i>					
Cognitive Anxiety ($R^2 = .10$)	-.823	.152	-.328	-5.42	.001
<i>Step 2</i>					
Cognitive Anxiety	-.150	.115	-.060	-1.30	.193
Sport Self-Efficacy ($R^2 = .56, \Delta R^2 = .46$)	.049	.003	.726	15.92	.001
<i>Step 1</i>					
Somatic Anxiety ($R^2 = .09$)	-.784	.156	-.306	-5.01	.001
<i>Step 2</i>					
Somatic Anxiety	-.212	.114	-.083	-1.86	.064
Sport Self-Efficacy ($R^2 = .57, \Delta R^2 = .47$)	.048	.003	.723	16.27	.001

significance ($t = -1.30, p < .193$). These results also revealed that with entering sport self-efficacy as a moderating variable in regression equation, the β coefficient for somatic anxiety decreased from $-.30$ to $-.08$. The Sobel test showed that this rate of variation is significant ($t = 16.27, p < .001$) whereas somatic anxiety lost its significance ($t = -1.86, p < .064$). These results reveal that sport self-efficacy could effect the relationship between competitive anxiety and sport performance fully.

Discussion

The present study was undertaken to gain a better insight into the relationship between competitive anxiety and sport performance in a sample of Iranian athletes. In particular, this study examined the moderating effects of self-confidence and sport self-efficacy on the relationship between competitive

anxiety and sport performance. Results of the present study showed that self-confidence had a significant negative correlation with cognitive and somatic dimensions of competitive anxiety and a significant positive correlation with sport achievement. The results of the present study also revealed that self-confidence had a moderating effect on the association of competitive anxiety with sport performance. Statistical analysis of the data indicated that high levels of self-confidence can decrease the negative association of cognitive and somatic anxiety with sport performance. These findings are in line with the results obtained in previous studies (e.g., Craft et al., 2003; Hanton & Connaughton, 2002; Hanton et al., 2003; Hardy, 1996; Hardy et al., 2004; Jones & Hanton, 2001; Robazza & Bortoli, 2007) and are explained based on the following possibilities.

Self-confidence, means individuals' belief in ability to control environment and themselves (Burton, 1998; Martens et al., 1990; Woodman & Hardy, 2001), reinforces athlete's perceived ability to manage stress and anxiety during sport competition and leads athlete to be less under the effect of competitive anxiety. In addition to control and reduce negative emotions, this sense of capability helps athlete to do his/her sport tasks with more success and has a better performance. This explanation is consistent with evidence that has confirmed the association of self-confidence with perceived ability in athletes (e.g., Martens et al., 1990; Robazza & Bortoli, 2007). Craft et al. (2003) has also shown that self-confidence before and during the match determines low competitive anxiety and often correlates with better performance.

Research findings have revealed that self-confidence activates coping resources in order to encounter competitive anxiety (Hanton & Connaughton, 2002; Jones & Hanton, 2001; Robazza & Bortoli, 2007). Based on this, one can explain that self-confidence helps athlete with appropriate usage of coping strategies to manage and control competitive anxiety and through this improve his/her sport performance. Based on Carver and Scheier's (1988) control process theory on stress and coping, and consistent with findings related to facilitative and debilitating anxiety (Jones, 1995) it is possible that self-confidence through positive appraisal and interpretation of symptoms related to player's experienced anxiety, helps athlete to perceive this anxiety as facilitative and cope with it in a better way (Hanton & Connaughton, 2002; Hanton et al., 2003; Ntoumanis & Jones, 1998; Jones, 1995; Jones & Hanton, 2001). This explanation is consistent with the idea of "positive coping expectancy" in the cognitive activation theory of stress. Ursin and Eriksen (2004) believe that athlete's positive coping expectancy means the feeling of ability to control situation with existing coping resources, reduce the likelihood of sport anxiety.

Research findings have also revealed that athlete's self-confidence moderates negative experienced emotions in sport competition and helps continuity of managing and controlling situation during the match (Hanton & Connaughton, 2002; Robazza & Bortoli, 2007). The ability to moderate negative emotions and control situation during the match helps athlete to rule over the game with more relaxation and effective management, puts into action his/her sport skills, and gains more desirable consequences. This is also in line with the butterfly catastrophe model (Hardy, 1996; Hardy et al., 2004).

The results dealing with association of sport self-efficacy with competitive anxiety and sport performance showed that sport self-efficacy had a significant negative correlation with cognitive and somatic dimensions of anxiety and a significant

positive correlation with sport achievement. The results of the present study also revealed that sport self-efficacy had a moderating effect on the association of competitive anxiety with sport performance. Statistical analysis of the data indicated that increasing levels of sport self-efficacy decreases negative association of cognitive and somatic anxiety with sport performance. These are in line with previous empirical evidence concerning domain-specific influence of self-efficacy (Compeau & Higgins, 1995; Hsu & Chiu, 2004; Papastergiou, 2010; Torkzadeh et al., 2006).

Sport self-efficacy, means athlete's belief in ability to perform his/her sport tasks and specific skills, effects athlete's emotional and behavioral reactions in stressful and anxious situations of the match. Bandura (1997, 2001) compared two groups with high self-efficacy and low self-efficacy and showed that the first group was less vulnerable and expressed more adaptive behaviors. One possible reason for the moderating effect of sport self-efficacy on the association of competitive anxiety with sport performance is that sport self-efficacy can help athlete to be less under the effect of competitive anxiety during the match and has a better performance.

Like self-confidence, sport self-efficacy prepares athlete for active encountering with competitive anxiety through reinforcing efficient coping strategies. Using efficient coping strategies for competitive anxiety helps athlete to control and manage stressful situation better and through this improve his/her sport performance. Association of self-efficacy with coping strategies has also been confirmed in other studies (e.g. Lombardo, Tan, Jensen, & Andeson, 2005; Bandura, 1997, 2001; Nicholas, 2007; Turk & Okifuji, 2002; Turner, Ersek, & Kemp, 2005). Positive appraisal and interpretation of symptoms related to anxiety is another explanation that can be stated based on control process theory (Carver & Schiere, 1988) and anxiety direction theory (Jones, 1995). Sport self-efficacy through positive appraisal of symptoms related to player's anxiety, helps athlete to perceive that anxiety as facilitative, and cope with it better (Hanton & Connaughton, 2002; Hanton et al., 2003; Jones, 1995; Jones & Hanton, 2001; Ntoumanis & Jones, 1998). This explanation is also in agreement with the idea of "positive coping expectancy" in cognitive activation theory of stress (Ursin & Eriksen, 2004). Ursin and Eriksen (2004) argue that athlete's positive coping expectancy reduces the likelihood of sport anxiety. Sport self-efficacy with high probability has the power to increase positive coping expectancy in athlete; the probability which has been confirmed in the present study.

The effect of self-efficacy on control and decrease negative emotions has been confirmed in different studies (e.g. Bandura, 1997, 2001; Lombardo et al., 2005; Turk & Okifuji, 2002). Based on this, one possibility is that sport self-efficacy helps athlete to control and decrease negative emotions specific to sport competition like competitive anxiety. This capability reinforces athlete's sense of dominance and merit during the match and improves his/her sport performance. Self-efficacy also through reinforcing stamina (Turk & Okifuji, 2002) helps to maintenance of control and management of stressful condition of the match. As a result of such strength, negative emotions including competitive anxiety would be decreased. This situation increase better performance and sport achievement.

Results of the present study showed that sport self-efficacy effects the relationship between competitive anxiety and sport performance fully, whereas self-confidence effects this relationship partially. One of the possible reasons for this difference can be stated in this way that self-confidence expresses individual's belief in his/her general ability to control condi-

tions and situations, but sport self-efficacy expresses athlete's belief in his/her ability to perform specific sport tasks and skills. This means that belief in just general ability might have a weak effect on control and decrement of stress and negative emotions in particular situation (sport competition), whereas belief in specific ability would have a decisive effect on that particular behavior. One can conclude from this probable explanation that although self-confidence and self-efficacy are in the same direction (Hardy, 1996; Hardy et al., 2004), they are different in the intensity of their effects. Self-efficacy in a specific field cause to a decisive effect on behaviors related to that specific field and its accompaniment and coordination with self-confidence reinforces this effect. Based on this, it can be said that athlete's self-confidence provides general framework for control and management of stress and sport self-efficacy particularly helps athlete in specific field related to management and control of sport stresses, better performance, and sport achievement. In other words, self-confidence is a general construct and self-efficacy is a specific construct.

The present findings may have important theoretical and practical implications. At the practical level, research findings can suggest the importance and necessity for noticing to moderating variables such as self-confidence and sport self-efficacy as effective factors on competitive anxiety-sport performance in athletes. Understanding these psychological constructs as moderating variables in athletes can be considered as an effective step in preventing undesirable consequences of sport competition. Formulating training and intervention programs in order to increase self-confidence and sport self-efficacy, particularly in national and international competitions, is another action that can be applied to moderate levels of competitive anxiety and improve sport performance. At the theoretical level, the results of the present study can be at the service of theories related to emotions, emotion regulation, coping strategies and stress management particularly in the field of sport psychology.

The findings of this study have several limitations. The cross-sectional design of this study does not allow us to draw conclusions about the directions of causality between variables investigated. These data were based upon a sample of volunteer athletes. This further undermines the generalizability of the results. It must be pointed out that self-confidence and sport self-efficacy might have different effects through their interactions with other variables, such as type of sport (e.g., individual-team, contact-noncontact), to produce positive or negative consequences. Future research needs to address this issue.

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