



Anxiety symptom interpretation and performance expectations in high-anxious, low-anxious, defensive high-anxious and repressor individuals



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ABSTRACT

To date, no research has investigated score predictions and anxiety interpretation in high-anxious, low-anxious, defensive high-anxious and repressor individuals. This study examined Eysenck's (1997) predictions for cognitive biases on future performance expectations in all four groups. This study was conducted in an ecologically-valid sporting environment. Competitive shooters completed the Marlowe–Crowne Social Desirability Scale and the Sport Anxiety Scale prior to a major competition. Percentile splits identified the four defensiveness/anxiety groups. The modified Competitive Sport Anxiety Inventory-2 was used to assess the intensity and direction of anxiety prior to competition. Participants predicted their expected shooting score. The hypothesis that repressors would interpret their anxiety as more facilitative to performance compared to low-anxious individuals was partially supported. Repressors were more optimistic in their performance prediction in contrast to defensive high-anxious performers who, in turn, were more pessimistic compared to the other two groupings. High-anxious performers, contrary to predictions, demonstrated optimism in their future performance. The findings of this study corroborate the theoretical predictions and the evidence from previous studies with sport performers. Future research should continue to investigate the influence of cognitive biases on performance predictions in sporting environments using Weinberger et al.'s classifications.

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1. Introduction

The effect of anxiety on sporting performance has been investigated widely over the years (e.g., Moore, Vine, Freeman, & Wilson, 2013; Wilson, Smith, & Holmes, 2007). Limited research, however, has considered the individual differences that influence anxiety and associated cognitive factors, or the effect of social desirability. Situational or state anxiety has been proposed to have both an intensity and directional component (Jerome & Williams, 2000), and both symptoms are important in understanding the multidimensional effect of anxiety in sporting situations. Anxiety intensity reflects the severity of symptoms whereas the directional component of anxiety reveals the way cognitive and somatic anxiety symptoms are interpreted as either facilitative or debilitating to performance.

Over the past 20 years, researchers have used the modified version of the CSAI-2 to assess anxiety symptoms (e.g., Hanton, Neil, Mellalieu, & Fletcher, 2008). There is, however, limited research examining what may cause different interpretations of these symptoms. Anxiety interpretation can be influenced by coping styles linked to cognitive defense mechanisms that are the characteristic of different personalities. Weinberger, Schwartz, and Davidson (1979) were the first to identify four personality profiles from trait anxiety and defensiveness scores: high-anxious individuals who score high on trait anxiety and low defensiveness; defensive high-anxious individuals who score high on trait anxiety and defensiveness; low-anxious individuals who score low on trait anxiety and defensiveness; and repressor individuals who score low on trait anxiety and high defensiveness. These different personality profiles have been predicted to show different coping behaviors. For example, Weinberger et al. (1979) reported that repressors report low levels of anxiety, whilst their physiological response to anxiety displays a profile similar to high-anxious individuals. In contrast, low-anxious individuals did not appear to demonstrate any separation between self-report measures and physiological measures of anxiety. These findings suggest cognitive

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factors, such as defensiveness, may moderate the anxiety response. Weinberger (1990) concluded that repressors report low levels of anxiety because they believe they are not experiencing a negative affect. Data for defensive high anxious individuals is typically absent from most research populations.

Following Weinberger et al.'s identification of these personality types, Eysenck (1997) proposed a four-factor theory suggesting that the emotional experience of anxiety depended on the processing of four sources of information: (i) the cognitive appraisal of the situation; (ii) an individual's interpretation of their physiological activity; (iii) perceived level of behavioral anxiety; and (iv) an individual's own cognitions, e.g., worries about the future. Eysenck also proposed that the four personality groups differed in dispositional anxiety as a result of their cognitive biases. The operation of cognitive biases has been assumed to be influenced by schemas stored within long-term memory. These cognitive biases operate on all four factors and cause individuals to either magnify or minimize threat. It is assumed that both attentional and interpretive biases influence the four sources of information, and depend on processes operating below a level of conscious awareness. High-anxious individuals are predicted to demonstrate both attentional and interpretive biases, which can lead them to amplify threat and interpret ambiguous stimuli as threatening. Defensive high-anxious individuals were suggested to have a similar cognitive bias to high-anxious performers. In contrast, repressors were proposed to have opposite interpretive and attentional biases causing them to avoid and minimize threat and interpret ambiguous stimuli as non-threatening. Low-anxious performers were proposed not to demonstrate any cognitive bias. The influence of cognitive biases has been assumed to be mediated by state-anxiety intensity, being most evident when state-anxiety is high. Furthermore, Eysenck's (1997) proposed that the cognitive biases exhibited by high-anxious and repressor individuals also influence their cognitions about future events. Specifically, repressors are more optimistic in performance expectations as a result of their opposite cognitive biases to avoid threat. In contrast, high-anxious individuals are more pessimistic in performance predictions due to their interpretive biases, which lead them to interpret ambiguous stimuli as threatening.

Numerous studies have examined the interpretation of anxiety as either facilitative or debilitating to performance (Lundqvist, Kentta, & Raglin, 2011). Only three research studies have examined Weinberger et al.'s (1979) classification of personality groupings in a sporting environment (Jones, Smith, & Holmes, 2004; Mullen, Lane, & Hanton, 2009; Williams & Krane, 1992). Jones et al. (2004) considered Eysenck's four-factor model and sought to establish differences in the interpretation of cognitive and somatic anxiety as either facilitative or debilitating to performance in an ecologically-valid competitive golf study. Jones et al.'s findings partially supported the predictions of Eysenck (1997) that repressors' cognitive biases led them to be optimistic in their performance predictions. No discrepancy was found between the actual and predicted performance for the high-anxious group. Unfortunately, a limitation to this study, was the lack of a defensive high-anxious group due to low participant numbers. To address this omission, Mullen et al. (2009) increased participant numbers to enable the inclusion of a defensive high-anxious group. Mullen et al.'s (2009) findings supported the original hypothesis that high intensity somatic anxiety was more debilitating to performance for high-anxious and defensive high-anxious groups. There were also several limitations to this study. First, the modified CSAI-2 state anxiety questionnaires were completed away from the competition setting and after reading an imagery script. The authors designed this imagery-based script to re-create the competition setting rather than using real sporting environments or allowing the student participants to create their own imagery

script. Further, sporting performance was not measured and a wide variety of sports were used. This is of concern since performers in explosive, contact sports may interpret somatic anxiety intensity as more facilitative compared to athletes in fine control sports such as rifle shooting where high somatic anxiety intensity is typically interpreted as debilitating to performance (Hanton, Jones, & Mullen, 2000).

To date, therefore, no research has investigated score predictions and anxiety interpretation in all four personality groups and in an ecologically-valid, single sport environment. The aim of the study was to investigate how anxiety is interpreted in high-anxious, low-anxious, defensive high-anxious and repressor rifle shooters. We also aimed to investigate differences in performance predictions between the four groups. In line with Jones et al. (2004), it was predicted that repressors would perceive anxiety to be more facilitative to performance compared to high-anxious, low-anxious, and defensive high-anxious shooters. In addition, we hypothesized that the defensive high-anxious and high-anxious groups would be more pessimistic in their performance predictions, whereas the repressors would be more optimistic in their performance predictions.

2. Method

2.1. Participants

185 fullbore rifle shooters (161 males and 23 females; mean age of 44 years; SD: ± 16.5) competing in the National Rifle Association's Imperial Meeting participated in the study. Participants completed a written informed consent form, and were assured of confidentiality and their right to withdraw at any time. The protocol was approved by the local Institutional Ethics Committee.

2.2. Measures

The 10-item short form of the Marlowe–Crowne Social Desirability Scale (MC-SDS; Strahan & Gerbasi, 1972) was used to assess defensiveness and to discriminate repressor individuals from low-anxious individuals, and defensive high-anxious from high-anxious individuals. This questionnaire has been used consistently with research investigating Weinberger et al.'s personality types and has been characterized as a measure of defensiveness (Weinberger et al., 1979). A correlation coefficient of $r = 0.9$ has been reported between the 10 item MC-SDS and the original 33 item MC-SDS with an internal consistency alpha coefficient of 0.66 (Reynolds, 1982).

The Sport Anxiety Scale (SAS; Smith, Smoll, & Schutz, 1990), a sport specific multidimensional measure of trait anxiety was used. The SAS contains 21 items and consists of three subscales, including five concentration disruption items, seven cognitive anxiety items and nine somatic anxiety items. Respondents rate each item on a four point Likert scale ranging from 1 (not at all) to 4 (very much so). A retest reliability of 0.77 has been reported (Smith et al., 1990) with a Cronbach alpha of 0.86 for the cognitive subscale. Shooters were given Smith et al.'s (1990) instructions for completion of the form.

The Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Burton, Vealey, Bump, & Smith, 1990) was used to measure pre-competitive state anxiety intensity and direction. The questionnaire comprises 27 items for anxiety intensity and direction with three subscales equally weighted: cognitive anxiety; somatic anxiety; and self-confidence. The intensity scale includes items rated on a four point Likert scale, ranging from 1 (not at all) to 4 (very much so). The direction scale indicates the degree to which participants perceive their anxiety symptoms as either facilitative

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