Choking under Pressure: Mechanisms and Individual Differences

By

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Thesis submitted to the University of Wales in fulfilment of the requirements for the degree of Doctor of Philosophy at the School of Sport, Health, and Exercise Sciences, University of Wales, Bangor.

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DECLARATION

This work has not been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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## CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>ix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>xi</td>
</tr>
<tr>
<td><strong>Chapter 1</strong></td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Conceptualisation of 'choking under pressure'</td>
<td>1</td>
</tr>
<tr>
<td>Explanations of the choking process: Theoretical and design issues</td>
<td>7</td>
</tr>
<tr>
<td>A dispositional perspective of choking: Theoretical and design issues</td>
<td>20</td>
</tr>
<tr>
<td>Rationale for theoretical approaches pursued in this research</td>
<td>28</td>
</tr>
<tr>
<td>Structure of thesis</td>
<td>32</td>
</tr>
<tr>
<td><strong>Chapter 2</strong></td>
<td></td>
</tr>
<tr>
<td>A test of the conscious processing hypothesis as an explanation for choking under pressure</td>
<td>34</td>
</tr>
<tr>
<td>Abstract</td>
<td>34</td>
</tr>
<tr>
<td>Introduction</td>
<td>35</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>42</td>
</tr>
<tr>
<td>Method</td>
<td>43</td>
</tr>
<tr>
<td>Participants</td>
<td>43</td>
</tr>
<tr>
<td>Task</td>
<td>43</td>
</tr>
<tr>
<td>Design</td>
<td>44</td>
</tr>
<tr>
<td>Measures</td>
<td>45</td>
</tr>
<tr>
<td>Procedure</td>
<td>47</td>
</tr>
<tr>
<td>Results</td>
<td>49</td>
</tr>
<tr>
<td>Discussion</td>
<td>58</td>
</tr>
</tbody>
</table>
Chapter 3  Two studies examining the interaction between narcissism and
trait self-consciousness upon a dispositional measure of
choking............................................................ 73
Abstract........................................................... 73
Introduction...................................................... 74
Study One........................................................ 83
Method............................................................ 84
  Participants.............................................. 84
  Measures................................................. 84
  Procedure................................................ 86
  Data Analysis.......................................... 86
Results........................................................... 88
Discussion...................................................... 93
Study Two....................................................... 97
Method........................................................... 98
  Participants............................................. 98
  Measures................................................ 98
  Procedure............................................... 101
  Data Analysis........................................... 103
Results........................................................... 104
Discussion...................................................... 119

Chapter 4  Interactive effects of narcissism and trait self-consciousness upon
dispositional choking, and the role of confidence...... 135
Abstract.......................................................... 135
Introduction........................................................ 136
Research Questions.............................................. 143
LIST OF TABLES

Table 2.1 CSAI-2 scores for both novice and expert groups at pre-
control and pre-competition (mean ± s).

Table 2.2 Primary Task Performance Measures (successful putts) for 
both novice and expert groups in the control and 
competition conditions (mean ± s).

Table 3.1 Inter-item correlations, Means, and Standard Deviations 
for Full-Scale Dispositional Choking (DCS-I).

Table 3.2 Descriptives for all test variables (Males N = 45; Females 
N = 45).

Table 3.3 Correlation Matrix of standardised values (Z scores) for all 
test variables (N = 90).

Table 3.4 Model summary table for multiple hierarchical regression 
analysis: Three analyses performed on the criterion 
variable Dispositional Choking, (N = 90).

Table 3.5 Inter-item correlations, Means, and Standard Deviations 
for Full-Scale Dispositional Choking (DCS-SR).

Table 3.6 Inter-item correlations, Means, and Standard Deviations 
for Section One of the Retrospective State Choking 
Inventory (RSCI).

Table 3.7 Descriptives for all test variables (Males: N = 24; Females:
90).

Table 3.8 Correlation Matrix of standardised values (Z scores) for all 
test variables (N = 114) except for TDCS-I (N = 108), and 
TRSCI (N = 82).

Table 3.9 Model summary table for simple regression analysis on the 
criterion variable: state choking – full scale measure 
(RSCI).

Table 3.10 Model summary table for simple regression analysis on the 
criterion variable: state choking – past performance one 
only (PP1).

Table 3.11 Model summary table for multiple hierarchical regression 
analysis for narcissism and private self-consciousness: 
analyses one (criterion variable DCS-SR) and two 
(criterion variable RSCI) results.
Table 3.12  Model summary table for multiple hierarchical regression analysis for narcissism and public self-consciousness: analyses one (criterion variable DCS-SR) and two (criterion variable RSCI) results.

Table 3.13  Model summary table for multiple hierarchical regression analysis for narcissism and social anxiety: analyses one and two results.

Table 3.14  Model summary table for multiple hierarchical regression analysis on the criterion variable: state choking – past performance one, with narcissism, public self-consciousness and the interaction product term as predictor variables, (N = 114).

Table 4.1  Descriptives for all test variables (Males: N=163; Females: N=109).

Table 4.2  Correlation Matrix of standardised values (Z scores) for all test variables (N = 272).

Table 4.3  Model summary table for multiple hierarchical regression analysis on the criterion variable dispositional choking, for analyses one (narcissism and private self-consciousness) and two (narcissism and public self-consciousness), (N = 272).

Table 4.4  Descriptives for all test variables (Individual Sports: N=80; Team Sports: N=192).

Table 4.5  Model summary table for multiple hierarchical regression analysis on the criterion variable: dispositional choking, for analyses one (narcissism and private self-consciousness) and two (narcissism and public self-consciousness), comparing individual sports (N = 80) to team sports (N = 192).

Table 4.6  Model summary table for multiple hierarchical regression analyses testing for the mediation of confidence on the interactive effects of narcissism and public self-consciousness on dispositional choking, (N = 80).

Table 4.7  Model summary table for multiple hierarchical regression analysis on the criterion variable: dispositional choking, for analyses one (confidence and private self-consciousness) and two (confidence and public self-consciousness), comparing individual sports (N = 80) to team sports (N = 192).
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Mean number of successful putts in the skill acquisition phase – Total 300 putts split into 12 blocks of 25 trials, (N = 33).</td>
<td>50</td>
</tr>
<tr>
<td>2.2</td>
<td>Mean Absolute Error scores for both the novice and expert groups in the control and competition conditions.</td>
<td>53</td>
</tr>
<tr>
<td>2.3</td>
<td>Mean Mental Effort (RSME Ratings) for both the novice and expert groups in the control and competition conditions.</td>
<td>55</td>
</tr>
<tr>
<td>3.1</td>
<td>Nature of the interaction between narcissism and private self-consciousness on dispositional choking – DCS-SR (N = 114).</td>
<td>111</td>
</tr>
<tr>
<td>3.2</td>
<td>Nature of the interaction between narcissism and private self-consciousness on state choking - RSCI (N = 82).</td>
<td>112</td>
</tr>
<tr>
<td>3.3</td>
<td>Nature of the interaction between narcissism and public self-consciousness on state choking - RSCI (N = 82).</td>
<td>114</td>
</tr>
<tr>
<td>3.4</td>
<td>Nature of the interaction between narcissism and public self-consciousness on state choking – PP1 (N = 114).</td>
<td>117</td>
</tr>
<tr>
<td>4.1</td>
<td>Nature of the interaction for narcissism and public self-consciousness on dispositional choking for the individual sport sample (N=80).</td>
<td>157</td>
</tr>
</tbody>
</table>
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This thesis examined determinants and processes that are proposed to explain the mechanisms underpinning choking under pressure. The thesis is written as a series of three research papers, which are preceded by a general introduction in Chapter 1. An overview of the anxiety-performance literature is provided, within which specific areas that warrant further investigation are highlighted. Two approaches to the study of choking under pressure are adopted within this thesis. The first attempts to understand the mechanisms underpinning the choking process, in which previous research has identified the Conscious Processing Hypothesis as one likely mechanism. The study in Chapter 2 reports an experiment that was designed to test the conscious processing hypothesis as an explanation for choking. Results revealed unexpected findings with regard to performance and the individual difference variables effort and confidence. These unexpected findings stimulated a re-assessment of previous literature from an individual difference perspective. An imbalance between the two approaches was identified, resulting in the three subsequent studies of the thesis adopting an individual difference perspective. Chapter 3 consists of two studies that introduce choking as a personality disposition. A dispositional choking scale is developed in the first study, in conjunction with initial investigation into the influence of narcissism and trait self-consciousness. Study two reveals that dispositional choking predicts retrospectively reported state choking, and that narcissism moderates the relationship between trait self-consciousness and choking. The final study in Chapter 4 further examines the precise nature of the interaction between narcissism and trait self-consciousness upon dispositional choking due to former contradictions, revealing support for previous theoretical perspectives (Baumeister, 1984; Wallace & Baumeister, 2002). Evidence also supports the argument that confidence does not fully explain the effects of narcissism. Theoretical and applied implications derived from this research are discussed, and recommendations for future research directions are presented to conclude.
CHAPTER 1

Introduction

Conceptualisation of ‘choking under pressure’

Being able to perform well under pressure is a vital skill for the competing athlete (Gould, Jackson, & Finch, 1993; Scanlan, Stein, & Ravizza, 1991). Performance pressure is typically linked to heightened arousal, and generally associated with increased levels of stress and anxiety (Speilberger, 1966; Woodman & Hardy, 2001). The influence of stress and anxiety on performance has traditionally been regarded as negative and debilitating (Martens, Vealey, & Burton, 1990b). This belief is based on the undesirable feelings that are experienced when under pressure, like cognitive and somatic anxiety (Morris, Davis, & Hutchings, 1981); and the interference these factors can have on the physical processes of skill performance (Jones & Hardy, 1989). Decrement in performance associated with the debilitating effects of stress and anxiety form an integral part of research within sport psychology (Hardy & Jones, 1994). The sometimes devastating impact that pressure can have on performance has been termed ‘choking’. Choking is used as a metaphorical term to represent decrements in performance that occur in pressurised situations (Baumeister, 1984). Numerous perspectives have attempted to explain the choking phenomenon, of which, the key approaches will be discussed.

Cognitive learning perspectives

Early theorists of learning and attention offered explanations for the process underpinning the breakdown in automatic performance (Adams, 1971; Fitts & Posner, 1967; Schneider & Fisk, 1983). These can essentially be inferred as potential explanations for choking. The basic premise of such cognitive learning theories is
that the process of learning a new skill progresses through developmental stages. Fitts and Posner (1979) presented a three-stage model for motor learning. A learner starts at the cognitive stage where novice skill acquisition requires cognitive thought and is characterised by inherent errors and problems. Moving on to the associative stage where the skill is consciously processed requiring effort and conscious control to refine the motor skill. Finally reaching the autonomous stage where processing is effortless, expert and reliable, characterised by little variability in performance, representative of automatic processing (Fitts & Posner, 1979). Movement through these stages is gradual, with changes in the learner’s characteristics being evidence of progression (Magill, 2001).

To be more explicit, there are notable differences between a novice and a skilled performer characterising the stage of learning that has been reached. A novice performance requires conscious attention; will be jerky and appear segmented due to ‘freezing’ of limb movement and coordination; is unpredictable due to constant error correction, and will appear less confident. As learning progresses through the stages, performance becomes more consistent and automatic explained by the process of chunking. Chunking of movement output refers to a process that re-organises movements into larger procedures or a single unit — a chunk. These chunks of movement output can then be automatically activated allowing performance to be consistent and more fluent. Chunking enables serial chunks of movement output to be produced, with few corrections, greater efficiency and coordination; showing a more effective pattern of functional synergy and confidence (Magill, 2001; Schmidt, & Wrisberg, 2000).
It is also possible to regress back through these developmental processing stages, as previously suggested in the progression-regression hypothesis (Fitts, Bahrick, Noble, & Briggs, 1961). Regression results in a reinvestment of conscious control, which has otherwise been termed 'deautomatisation' (Deikman, 1969). Regression from an automatic stage of processing to a conscious processing stage, which requires reinvestment of explicit rules and effort, leads to a breakdown in performance. This is based on the inferior and less efficient mode of controlled processing that is experienced as a learner at this stage (Fitts & Posner, 1979; Schmidt, 1982; Schneider & Fisk, 1983).

Self-focus perspective

Baumeister (1984) used the term choking under pressure 'to describe the occurrence of inferior performance despite individual striving and situational demands for superior performance' (Baumeister, 1984, p. 610). The two key factors that are evident in the use of this term are performance decrements and pressure, which are both commonly associated with competitive scenarios. However, Baumeister (1984) stressed that choking is not restricted to competition. He posited that any particular trial, in which an individual is required to perform to the best of their ability at that time, can induce impaired performance as a result of pressure. Pressure has been defined as 'any factor or combination of factors that increases the importance of performing well on a particular occasion' (Baumeister, 1984, p. 610).

Baumeister (1984) discussed the processes of choking under pressure on the basis of a regression explanation, but from a self-focus perspective. Baumeister presented his explanation based on early self-awareness literature that proposed a model describing
how self-directed attention influenced performance (Carver & Scheier, 1978; Langer & Imber, 1979; Wegner & Giuliano, 1980). The model proposed that high pressure conditions lead to increased self-directed attention (Carver & Scheier, 1978; Duval & Wicklund, 1973). This self-focus of attention increases self-consciousness, which in turn emphasises to the individual the need for a good performance. Upon this realisation, the individual attempts to consciously control the skill production process to ensure a good performance. However, due to consciousness not containing the procedural knowledge used to control movements during the previously reached level of automaticity, performance suffers interruption and breaks down (Baumeister, 1984). Procedural knowledge is the knowledge that enables an individual to know how to do a skill, as opposed to knowing what to do (Magill, 2000). Explicit or declarative knowledge increases with expertise, due to the expert developing a wealth of knowledge with regard to what you should and should not do to perform the skill correctly. Whereas procedural knowledge cannot be verbalised and is formed through automatisation of a skill developed through practise. This automatisation requires minimal attention, being controlled by real time procedural knowledge (Beilock & Carr, 2001; Magill, 2000). Beilock and Carr (2001) contend that tasks reliant on procedural knowledge are more susceptible to breakdown under pressure due to their development of automaticity.

*Anxiety-performance perspectives*

The significance of pressure is commonly accepted throughout the various perspectives that have studied choking. Within the anxiety-performance literature the Catastrophe Model designed by Hardy and Fazey (1987) attempts to describe the occurrence of dramatic losses in performance as a result of anxiety and physiological
arousal (Hardy, 1990, Hardy & Mullen, 2001). Choking is inferred in the model as a sudden loss of performance. This is caused by high cognitive anxiety interacting with high physiological arousal and at a critical point, exceeding levels of which the individual can continue to perform. Once a catastrophic effect in performance has occurred, performance recovery takes time and requires a reduction in anxiety and arousal levels to enable performance to resume at its previous level (Hardy, 1996a). It is suggested that the critical point at which a sudden loss in performance occurs is individually determined, and can be biased by other factors; for example, self-confidence. Self-confidence, as a positive bias factor, is predicted to enable performers to experience higher levels of cognitive anxiety and physiological arousal, before experiencing a catastrophic effect on performance (Hardy, 1996b; Hardy & Mullen, 2001).

The physiological and psychological effects of choking, as predicted by the catastrophe model, have been supported by empirical evidence from qualitative studies investigating individual's experiences of choking through 'catastrophic performances' (Edwards, Kingston, Hardy & Gould, 2002), and the 'yips' (Bawden & Maynard, 2001; Smith, Adler, Crews, Wharen, Laskowski, Barnes, Valone Bell, Pelz, Breennan, Smith, Sorenson, & Kaufman, 2003). The 'Yips' phenomenon, is most commonly cited in sports that require performance of fine controlled motor skills like golf (Smith et al., 2003), and cricket (Bawden & Maynard, 2001). The 'Yips' specifically, is defined as 'involuntary movements that occur throughout the execution of a skill' (Bawden & Maynard, 2003, p. 937). This deterioration in motor performance is exacerbated by severe performance anxiety and is regarded as a psychological disorder (Smith et al, 2003).
Within this perspective the psychological disorder of choking supports the argument that 'performance anxiety such as trait and high-state anxiety probably combine with self-focused attention and over-analysis to cause the 'yips'.' (Smith et al., 2003, p. 19). Deterioration in performance is referred to as well as sudden incapacities to perform (Bawden & Maynard, 2001; Smith et al., 2003), which links to the sudden loss of performance described by the catastrophe model (Hardy, 1990, 1996a), and inferior performance inferred by Baumeister (1984). Qualitative evidence is consistent in determining that there is a significant difference between choking and skill failure. This has been demonstrated by individuals' clear discrepancy in distinguishing situations when they have experienced choking in their performance, in comparison to recognition of a poor performance (Bawden & Maynard, 2001; Edwards et al., 2002; Smith et al., 2003).

*Choking under pressure defined*

At this point it is deemed necessary to conceptualise the term 'Choking under pressure' as it has specifically been adopted within the subsequent research. Based on the definitions previously discussed, it is proposed that choking can be defined as: a loss of performance between a low pressure and high pressure situation that can take the form of a sudden drop, deterioration, or a suboptimal level; all of which are a result of severe performance pressure. It is stressed; the key feature of choking is that the resultant low performance is due to pressure for a high performance, this is commonly seen by heightened anxiety and arousal levels. It does not represent a lower level of performance, or skill failure, caused by other factors like injury, illness, and weather, as examples.
Explanations of the choking process: Theoretical and design issues

Self-focus Model

Baumeister's (1984) self-focus model has received empirical support for its contention that an increase in self-focused attention is one mechanism by which breakdown in performance occurs. Preceding self-awareness literature provided evidence for decrements in performance, being a result of manipulated situations in which self-directed attention was increased (Carver & Scheier, 1978; Duval & Wicklund, 1973; Langer & Imber, 1979). Wegner and Giuliano (1980) reported arousal induced self-focused attention, and Leary (1982) demonstrated increased self-focus as a result of self-presentational concerns. Support for the self-focus model of choking has been seen in studies reporting performance decrements as a result of increased attention to one's performance, and through situational manipulations of pressure (Baumeister, 1984; Lewis & Linder, 1997).

A similar contention to that of the self-focus perspective is seen in the motor learning and attention literature, in the form of explicit monitoring perspectives. Explicit monitoring refers to focusing one's attention on the execution of a skill (Beilock & Carr, 2001; Masters, 1992). Earlier discussion of deautomatisation (Deikman, 1969), progression-regression through the stages of learning (Fitts & Posner, 1979), and characteristics of controlled and automatic processing (Schmidt, 1982; Schneider & Fisk, 1983), form a basis for development of the explicit monitoring perspective. A key contender of this perspective is Masters (1992) in proposal of the Conscious Processing Hypothesis.
Conscious Processing Hypothesis

The Conscious Processing Hypothesis is based on the regression explanation of conscious processing resulting in performance decrements, when performers are subjected to high pressure situations. More specifically, Masters (1992) identified increased state anxiety levels as the trigger for performers to focus their attention inward, and attempt to reinvest conscious control through the use of explicit rules. The reinvestment of explicit rules results in an inferior level of performance as would be expected from a conscious processing stage of learning. In a golf putting study, Masters tested this basic premise of the conscious processing hypothesis by subjecting novice golfers to different learning conditions. One group practiced the putting task with explicit instruction on skill performance. The second learned implicitly, being constrained from producing explicit rules by a secondary task that demanded attention. Results supported the conscious processing hypothesis revealing a significant decrease in performance for the explicit learners in a stress condition, but continued improvement in performance for the implicit learners in the same stress condition. This finding was interpreted as evidence that performers who attempted to reinvest conscious control through explicit rules of the putting skill were more likely to experience deterioration in performance, when under pressure, than individuals who had no previous knowledge of explicit rules to reinvest. This proposition provides support for an earlier approach to learning and performance known as the 'Inner Game' (Gallwey, 1974).

The inner game approach based on cognitive and information-processing models, contended that learning should not take a technical orientation or be focused on performance analysis. But, should be encouraged to occur naturally, relying on
innate learning ability to develop movement skill. This way, performance is governed by the feeling of the movement as a whole, and is less susceptible to interference from attempts to employ technical rules to control performance, as these are not developed during the learning process (Gallwey, 1974).

The conscious processing hypothesis (Masters, 1992) stimulated further research in the form of a substantial number of golf putting studies testing the theory (e.g., Hardy, Mullen, & Jones, 1996b; Jackson & Wilson, 1999; Mullen & Hardy, 2000). Consistent findings have supported the conscious processing hypothesis reporting that, under pressure, the golfers who had learnt the task explicitly, attempted to reinvest their explicit knowledge of the putting task, and in turn experienced a decrease in performance. Implicit learners however, displayed continuous improvement in performance under pressure, explained by a lack of explicit knowledge to reinvest (Hardy et al., 1996b; Jackson & Wilson, 1999). Further evidence was reported in similar studies that used a performance paradigm to test the conscious processing hypothesis. Findings revealed that novice performers improved performance when under pressure due to explicit monitoring benefiting their conscious processing stage of learning. Whereas the experts who had reached an autonomic stage, suffered performance decrements due to a reinvestment of explicit monitoring under pressure (Beilock & Carr, 2001; Mullen & Hardy, 2000).

**Theoretical and design issues**

A common criticism or weakness of laboratory based experiments is the question of ecological validity. Ecological validity can be confounded by numerous factors including; the artificial laboratory setting, and the effectiveness of experimental
manipulations of cognitive, emotional, and behavioural responses. For example; manipulating anxiety, confidence, and motivation, ego involvement in the task, task importance, motivation, and the effectiveness of the task used to represent a real life situation. The experimental studies previously discussed, incorporated the use of evaluative instructions to manipulate pressure situations. Ecological validity concerns for the effectiveness of these instructions in manipulating pressure, mainly through increased cognitive anxiety, can be questioned (Mullen & Hardy, 2000). However, consistent evidence has offered support for the use of evaluative instructions to induce heightened cognitive anxiety (e.g., Hardy et al., 1996b; Masters, 1992; Mullen & Hardy, 2000; Mullen, Hardy, & Tattersall, 2005). These studies report increased anxiety levels in pressure conditions as manipulated by evaluative instructions. Although, acknowledgement is given to the fact that the anxiety levels reported are lower than would be expected in actual competition (Martens et al., 1990a). In conclusion, it is regarded as a cautionary note, but also argued, that the levels being consistently reported have resulted in performance deficits suggesting effective manipulation (Mullen & Hardy, 2000; Mullen et al., 2005).

Timing of self-report measures of anxiety for example, are also criticised for either being too invasive, too early and not effective, or confounded by experience if retrospectively completed. This resulting in concern over the reliance given to these measures to indicate valid measurement of cognitive and behavioural variables (Smith, Bellamy, Collins, & Newell, 2001). Finally, the measurement of learning and performance are liable to criticism. Skill learning by set trials to reach a level of performance representative of an advanced stage of learning is arbitrary. Transfer
and retention tests are used to infer a level of learning has occurred. However, the extent to which automatic processing can be reached in an experimental setting to represent that of an expert performer is subjective, and posed as a limitation of the learning paradigm.

Two further explanations have presented equivocal interpretation of results reported by learning paradigm studies. Mullen and Hardy (2000) highlighted that results produced from a learning paradigm may be explained by a desensitisation hypothesis. Essentially this suggests that individuals subjected to a secondary attention demand during the learning phase, to inhibit production of explicit rules (implicit learners), are potentially desensitised to this secondary attention demand. So, upon being subjected to the demand once again in the pressure condition, it is feasible that the implicit learners are less affected by the demand compared to the explicit learners being subjected to the secondary attention demand for the first time. As a result, a performance paradigm was adopted in further study so that the clarity between novice and skilled performers was less susceptible to design interpretation (Hardy, Mullen, & Martin, 2001; Mullen & Hardy, 2000). The second confound of the learning paradigm highlighted by Hardy et al. (2001) and Mullen and Hardy (2000) was based on an attentional threshold explanation. This suggested that the performance decrements as explained by the conscious processing hypothesis might actually be explained by individuals exceeding their attentional capacity threshold. In other words, combination of the anxiety attentional demand and the secondary attention demand may have overwhelmed the individual’s attentional capacity threshold, and resulted in reduced task performance due to attentional capacity
depletion. This explanation is seen in the predictions of the Processing Efficiency Theory (Eysenck & Calvo, 1992).

**Processing Efficiency Theory**

The Processing Efficiency Theory (Eysenck & Calvo, 1992) makes two predictions: (1) an increase in cognitive anxiety, or worry, reduces processing capacity available for the task, and causes performance decrements; (2) worry has the potential to increase effort assigned to the task in an attempt to maximise performance but, in so doing, reduces processing efficiency. The major distinction made in the theory is the difference between performance effectiveness and processing efficiency, which in turn allows anxiety to influence performance differently internally and externally. The external quality of performance is inferred through performance effectiveness. Whereas, the internal relationship between the amount of effort or processing resources used in the task, relative to performance effectiveness, is referred to as processing efficiency. On this basis it is expected that anxiety has greater potential to impair processing efficiency than performance effectiveness, due to an increase in effort being employed in the task (Eysenck, 1992).

An increase in effort and its influence on performance is viewed differently by the processing efficiency theory compared to the conscious processing hypothesis. The former theory proposes that an increase in effort will impair processing efficiency, but performance effectiveness will be maintained. If performance effectiveness is diminished, the processing efficiency theory would explain this by task demands exceeding attentional threshold capacity (Eysenck & Calvo, 1992). The later hypothesis predicts that increased effort results in transference of task control from
automatic processing, to controlled processing, causing detriments in performance (Masters, 1992). However, Mullen and Hardy (2000) proposed that increased mental effort would only result in decreased task performance, if the secondary attention demand was relevant to the task. This was based on the notion that a relevant secondary attention demand would focus performer's attention to task performance. In comparison, if the attention demand is irrelevant to the task then it was suggested attention would be focused away from performance, discouraging reinvestment of controlled processing. Evidence was reported by Mullen and Hardy (2000) to support an increase in self-reported effort as predicted by the processing efficiency theory. Greater reduction in performance for the task relevant group compared to the task irrelevant group when put under pressure was reported; offering support for the conscious processing hypothesis. This also offers potential support for the self-focus perspective rather than the distraction hypothesis, which suggests that any cognitive or physical form of distraction will increase cognitive load and reduce performance, similar to the premise of processing efficiency theory.

**Focussed attention**

The study of focused attention within motor learning and performance literature, offers further corroboration to aspects of the conscious processing explanation and the processing efficiency theory. Nideffer (1976a, 1995) suggests that attentional style might hinder performance in a competitive situation if the athlete does not match the demands of the situation with the correct attentional style. Attentional style is depicted as being variable along two dimensions: width (broad to narrow) and direction (internal to external). So for example, where focus is on a single target, a correct attentional style would be narrow-external. It is also proposed that individuals
have a preference for a certain attentional style, which may or may not hinder performance depending on the attentional style the situation demands. A Test of Attentional and Interpersonal Style (TASI; Nideffer, 1976b) was designed, however, has received little support and marked criticism in its validity and predictive accuracy of sport performance (Boutcher, 1992; Hardy et al., 1996a).

In relation to the processing efficiency theory it might be assumed that the appropriateness of attentional style adopted in a situation will influence the processing efficiency of a task. Although, a criticism of Nideffer’s approach is that it did not allow for the requirements of many sports, which have complex and variable attentional demands that essentially require movement between the classified foci with rapid flexibility (Hardy et al., 1996a). So based on the notion that arousal induces attentional narrowing (Easterbrook, 1959; Nideffer, 1976a), it might be assumed that processing efficiency will be hindered by a restricted attentional capacity to use and move between required attentional styles. Boutcher (1992) levels criticism at the attempt to measure attention by means of self-report, including questionnaire format and retrospective recall through interview. He based this criticism on the notion that it is presumed athletes are able to assess their attention, which is potentially automatic, so occurs absent of conscious monitoring.

This has led to the trial of alternative methods to measure focus of attention and the resulting influence on learning and performance. Wulf and colleagues (Wulf, Hob, & Prinz, 1998; Wulf, Lauterbach, & Toole, 1999; Wulf, McNevin, Fuchs, & Toole, 2000; Wulf, Shea, & Park, 2001) have produced evidence that suggests an external focus of attention results in greater motor learning measured by resultant
performance on retention tests. Essentially their findings reported that focusing on external features of the task rather than internal feelings, produced more effective learning (Wulf et al., 1998; Wulf et al., 1999). Also more specifically, focusing on external movement effect related to technique, rather than outcome, showed more effective learning (Wulf et al., 2000). In a follow up study evidence revealed individual differences in preference for internal or external focus of attention, as previously suggested by Nideffer (1976a). Showing that after a sufficient period of learning (practice of task over two days) a preference for external focus of attention was apparent, and consistent with better performance scores, than individuals reporting to have used internal focus of attention during learning.

There is an evident link between the findings of focused attention and the contentions of Masters (1992). Masters (1992) argues implicit learning is more beneficial than explicit learning in pressurised performance situations, due to implicit learning essentially limiting the amount of focused attention directed towards the task, as argued is beneficial to performance by Wulf and colleagues. So in turn, this limits the liability for reinvestment of conscious control to interfere with automatic processing. The ‘constrained action hypothesis’ proposed by Wulf and colleagues offers support for the conscious processing hypothesis in its indication that, attempts to consciously control movements will interfere with automatic processing. Whereas an external focus of attention on movement effects, allows a more holistic automatic organisation of processing that is not restricted by conscious control (Wulf et al., 2001). However, once again measurement of attentional focus was attained through self-report retrospective methods, which have been criticised by Boutcher (1992).
Theoretical and design issues

Attempts to measure attention have alternatively adopted a physiological approach, including such measures as electroencephalogram (EEG), and heart rate variability (Boutcher, 1992). Inference of directed attentional capacity and conscious processing has also been attempted through dual-task conditions and biomechanical kinematic analysis. In direct relation to testing the predictions of the conscious processing hypothesis while attempting to control for a processing efficiency explanation, a self-report measure of mental effort was employed in addition to kinematic analysis of a golf putting task (Mullen & Hardy, 2000). Performance decrements of better golfers in the high anxiety condition supported the conscious processing hypothesis; increased mental effort ratings by anxious golfers supported the processing efficiency theory. The kinematic findings presented evidence for the re-freezing of degrees of freedom in movement process; however the degree to which this could be positively be interpreted as evidence for reinvestment of conscious control is equivocal (Mullen & Hardy, 2000).

In a follow-up study Mullen et al. (2005) included a measure of spectral heart rate variability. Findings were interpreted based on an attentional threshold explanation, with no evidence supporting reinvestment of conscious control through increased mental effort. The heart rate variability increase under high anxiety dual task conditions was explained by an increase in attentional demand, compared to the lower heart rate levels reported in the single task condition. The fact that there was no difference in spectral heart rate between the two dual task (relevant and irrelevant) conditions ruled out evidence to support task relevancy encouraging a shift from automatic to controlled processing. So, based on the findings mentioned so
far it is apparent there is still a lot of progress to be made in establishing an accurate method of measuring the effects of conscious processing; whether that is through effort and attentional demands, or via kinematic analysis to indicate expected re-freezing of degrees of freedom, to indicate a reinvestment of conscious control indicative of an earlier stage of learning.

Upon review of the theoretical and design issues relative to the use of learning and performance paradigms to test for explanations of the choking process, it is argued these methodologies offer greater potential than other research designs. For example, it might be suggested that qualitative design methods would be an alternative research approach offering a number of different design structures, including; interview, intervention, and observation methods, as examples. However, it is argued that these non-experimental approaches would limit research potential to being descriptive and weak in their ability to draw conclusions. Cause and effect relationships could not be tested for significance, so conclusions drawn from data would be largely based on interpretation, and greatly open to criticism on this basis. In contrast, experimental based research designs have the advantages of being able to control for confounding variables and alternative explanations once recognised, and are able to directly test hypothesised predictions. As a consequence, results produced by these research methods present statistically significant or non-significant findings, enabling direct evidence to be sort for cause and effect relationships. On this basis it is concluded that the use of learning and performance paradigms are advantageous in this line of research, compared to alternative qualitative methods that are limited in the type of data produced.
Recent developments have recommended that a combination of the conscious processing hypothesis and the processing efficiency theory may offer a more comprehensive explanation for the processes underpinning choking (Mullen & Hardy, 2000). There is growing support for the contentions of the conscious processing hypothesis from some direct tests of Masters, and Hardy and colleagues, and in associated learning and attention perspectives of Wulf and associates. In addition, the potential for individual difference variables to influence the processes explained, by the conscious processing hypothesis and the processing efficiency theory, has been raised as an area for further investigation (Mullen & Hardy, 2000).

Confidence

Confidence is a reoccurring factor within the anxiety-performance literature with regard to its potential influence on the processes that underpin stressful performance. Confidence emerged as an independent factor to cognitive anxiety in the multidimensional anxiety theory of stress and performance (Martens et al., 1990a), and was predicted to have a positive linear relationship with performance. This is the opposite to that of cognitive anxiety, and has become widely accepted as the nature of the relationship between confidence and performance (Woodman & Hardy, 2001, 2003). The positive relationship between confidence and performance has been interpreted from a number of perspectives, some of which will be briefly summarised.

First, confidence has been considered as a factor that influences the appraisal of a situation and may determine whether a performer increases effort or gives up when under pressure (Bandura, 1977; Eysenck, 1982). Second, Jones, Hardy and associates
more recently, have developed this idea in the form of interpretation. A theoretical perspective has been provided in which it is explained how self-confidence can potentially have a positive effect on an individual's interpretation of anxiety. It is proposed that high confidence encourages the performer to view or interpret anxiety as facilitative to performance, thus reducing negative anxiety effects (Hardy, 1990, 1996b; Jones, 1991, 1995; Jones & Swain, 1992, 1995; Swain & Jones, 1996). The notion that self-confidence acts as a buffer against the negative effects of anxiety, can potentially be explained through interpretation, as previously mentioned, or through a third perspective (Hardy & Mullen, 2001). The third perspective to be considered is the view of Moore and Stevenson (1991, 1994). This presents the argument that self-confidence allows a performer to trust their body to perform as required, without the need for conscious control; thus, enabling the performer to deliver a reliable, automated performance without interference.

Amongst the empirical evidence that supports the positive relationship between confidence and performance, there have also been a handful of studies that have shown a negative relationship in some form. As examples; Gould, Petlichkoff, Simons, and Veevera, (1987), and Akehurst (2001) both reported a negative relationship between confidence and performance, revealing decreases in confidence being associated with increases in performance. Hardy et al. (2004) also obtained lower performance scores from high confident golfers compared to low, even though the overall results offered support for self-confidence as a bias factor in the butterfly catastrophe model, previously mentioned. That self-confidence has a role to play in the anxiety performance relationship is not being questioned (Woodman & Hardy, 2003). However, inconsistencies in the findings warrant further investigation in order
to gain a clearer understanding of how the individual difference variable exerts its influence, and what factors may impact on confidence itself, including possible interactive effects (Hardy et al., 2004).

It is apparent that research into the anxiety-performance relationship and in particular the processes underpinning choking has seen theoretical progress. However, preliminary investigation into the influence of individual difference variables, like effort and self-confidence, has started to reveal interesting findings that may potentially affect the processes explained by established theories (Hardy & Mullen, 2001). It is suggested that the investigative approach towards choking is imbalanced. Measurement of choking consists of performance discrepancies based on state measures between situations, focusing on the processes that occur in choking. And variables like confidence, motivation and effort only being considered as potential mediating factors (Eysenck, 1982; Hardy, 1996a; Mullen & Hardy, 2000). There is little research evident that approaches choking directly from an individual difference approach, considering the possibility that personality traits might influence an individual's liability to choke. The nearest approach reported to have considered this perspective is that of the potential for 'reinvestment' to be a dimension of personality (Masters, Polman, & Hammond, 1993).

A dispositional perspective of choking: Theoretical and design issues

Dispositional reinvestment

On the basis of research evidence that had investigated the influence of conscious processing and attention on performance under pressure, Masters et al. (1993) argued that previous research had not considered the prospect that some individuals may be
more predisposed than others to reinvest conscious processing when under pressure, as determined by a dimension of their personality. A reinvestment scale was constructed using items selected from previous questionnaires, mainly the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975) and the rehearsal subscale of the Emotional Control Questionnaire (Roger & Nesshoever, 1987). With particular relevance to the conscious processing hypothesis Masters et al. predicted that a high level of trait self-consciousness may be a component of the predisposition to reinvest on the basis that an individual who is habitually self-conscious is most likely to think about their actions and therefore reinvest conscious processing. Immediately there is apparent confusion in Masters et al.'s reference to self-consciousness as a component of dispositional reinvestment, when actually their explanation of the relationship between trait self-consciousness and a predisposition to reinvest, presents self-consciousness as an antecedent of choking, not a sub-component. Masters et al. (1993) revealed preliminary evidence in two studies reporting that a high reinvestment score related to greater performance failure under pressure. However, upon close scrutiny of the scale items and referral to original research based on the self-consciousness scale itself (Baumeister, 1984; Fenigstein et al., 1975), a number of conceptual and measurement issues were apparent. However before these are discussed, the original work of Fenigstein et al. (1975) is discussed.

**Trait self-consciousness**

Fenigstein et al. (1975) introduced the notion of trait self-consciousness, defined as 'the consistent tendency of persons to direct attention inward or outward' (p. 522). The construct was formulated within the realms of self-awareness theory (Duval & Wicklund, 1973), in which the process of self-focused attention was identified as a
factor that influences situational responses in behaviour. However, Fenigstein et al. (1975) criticised the theory for failing to consider the effect of individual differences. It was upon this argument that the construct of trait self-consciousness was developed, suggesting that some individuals are constantly thinking about themselves, whilst others have little self-awareness. It was proposed that an individual’s habitual level of trait self-consciousness would determine resultant behaviour in a situation of heightened self-focused attention. Upon design and analysis of a scale to measure self-consciousness three components emerged; private self-consciousness, public self-consciousness, and social anxiety. Private self-consciousness was concerned with the attention given to one’s inner self and public self-consciousness defined as individuals’ awareness of themselves as a social object. The third factor, social anxiety, was regarded as a potential reaction to the process of self-consciousness, and defined as ‘a discomfort in the presence of others’ (Fenigstein et al., 1975, p.523).

Baumeister (1984), in relation to the self-focus explanation of choking, presented some interesting findings with regard to the potential of trait self-consciousness to influence the ability of an individual to deal with heightened situational self-awareness. Based on findings from four consecutive experiments Baumeister (1984) reported that individuals who were habitually high in trait self-consciousness performed worse than their counterparts in low pressure situations, but were less affected by high pressure situations; suggesting individuals habitually low in self-consciousness were more susceptible to choking under pressure. The explanation offered, suggested that individuals who were habitually self-conscious were less
affected by heightened situational self-awareness due to them being more accustomed to self-directed attention.

*Theoretical and measurement issues*

When the proposals made by Masters et al (1993) are considered in relation to the conceptualisation of trait self-consciousness (Fenigstein et al., 1975) theoretical contradictions are evident. In the same way as there is apparent contradiction in the findings reported by Masters et al (1993) and Baumeister (1984), regarding the facilitative or debilitative influence of high trait self-consciousness on the ability to perform well under pressure (Maxwell, Masters, & Eves, 2000). It is suggested that Masters et al. have interpreted the concept of trait self-consciousness inaccurately; inferring the concept’s influence as that expected from situational self-directed attention, not an habitual disposition that will influence an individual’s response in a situation of heightened self-focus, as suggested by Baumeister (1984). The reinvestment scale is also criticised for its validity and predictive properties. Discussion of the limitations and criticisms that have been levelled against the reinvestment scale will be addressed in chapter two, and further discussion of the contradictory perspectives and findings in relation to trait self-consciousness and dispositional reinvestment will be reported in chapter three.

It is suggested that the notion of a predisposition to reinvest being a dimension of personality that predicts choking under pressure, warrants further investigation. However it is posed that a more direct measure of ‘dispositional choking’ would be more appropriate to do this, rather than a dispositional reinvestment scale. This is based on the argument that dispositional reinvestment may not be the only factor that
determines choking. The contradictory perspectives and findings in relation to the influence of trait self-consciousness on an individual’s performance under pressure are also of significant interest, due to its theoretical proximity to the conscious processing hypothesis and potential to enhance theoretical understanding.

\textit{Narcissism}

Finally, and of most recent interest, is the narcissistic personality and performing under pressure. Wallace and Baumeister (2002) adopted an individual difference approach to the investigation of rises and falls in performance under pressure situations, with specific reference to the narcissistic personality. Narcissism is a well established personality disposition that has been extensively researched within the field of psychoanalysis and mental disorders (Akhtar & Thomson, 1982; Bach, 1977). The narcissistic personality, at its extreme, has been classified as a mental disorder by the \textit{Diagnostic and Statistical Manual of Mental Disorders} (DSM-IV; American Psychiatric Association, 1994). Narcissists are self-absorbed individuals with grandiose views of self-importance, greatness and beauty; exuding characteristic traits like self-focus, exhibitionism, exploitativeness, entitlement, and lack of empathy (Morf & Rhodewalt, 2001). The Narcissistic Personality Inventory (NPI-40; Raskin & Hall, 1979; Raskin & Terry, 1988) provided a sub-clinical measure of narcissism that facilitated research into the influence of narcissism on other individual difference variables and individual behaviour (Emmons, 1987; Robins & John, 1997; Tschanz, Morf & Turner, 1998).

Based on the characteristic traits of the narcissistic personality and literature on performing under pressure, Wallace and Baumeister (2002) predicted that narcissists’
performance depends on the perceived opportunity for glory. It was hypothesised that the motivational factor of perceived self-enhancement opportunity would moderate performance. Essentially, high narcissists crave the opportunity to show their superiority and be admired. They were predicted to be highly motivated to perform well in situations of high pressure that had high potential for admiration in comparison to situations offering limited self-enhancement. Results supported the predictions, revealing that high narcissists demonstrated enhanced performance under conditions of high pressure, challenge and public evaluation, in comparison to low narcissists who produced decrements in performance in the manipulated conditions. These results suggest that narcissists seem to be less prone to choking under situations of heightened pressure, for which effect the motivational factor of perceived opportunity for self-enhancement has been offered as an explanation (Wallace & Baumeister, 2002).

In discussion of their research findings, Wallace and Baumeister (2002) highlighted the constructs of effort and self-confidence as variables warranting future investigation. Effort was suggested as a mediator, acting as a potential mechanism by which narcissists improved performance under pressure. If this suggestion is compared to contentions of the conscious processing hypothesis and the processing efficiency theory, there is apparent contradiction in the perceived facilitative and debilitating effects of increased effort on performance under pressure (e.g. Eysenck & Calvo, 1992; Hardy & Mullen, 2001; Mullen & Hardy, 2000). Second, self-confidence was discussed in relation to its motivational influence on perceptions of success and its positive relationship with the personality construct of narcissism (Wallace & Baumeister, 2002). Campbell, Goodie, and Foster (2004b) reported that
high narcissism was significantly related to confidence and overconfidence and that overconfidence mediated the relationship between narcissism and performance, with a significant relationship between narcissism and confidence. Due to the inconsistent findings with regard to the relationship between confidence and performance, it is proposed that research examining the potential for personality to influence such variables as confidence, effort, and performance, may provide greater understanding of the processes underpinning choking.

**Research design issues**

Once again, and as seen previously in discussion of the experimental based studies in the process approach literature, there are a number of design issues in individual difference research. Social learning theorists saw the incorporation of self-report measures, of which have become established methods of investigation withstanding validity and reliability if tested with scientific rigour (Vealey, 1992). Anti-social desirability instructions have been established to reduce response bias (Martens, Vealey, & Burton, 1990b), and their ability to measure constructs that would otherwise be limited, is a benefit that is recognised in combination with potential limitations. Inventories and measurement scales are open to complex analysis testing for reliability and validity, in an aim to substantiate their scientific standing (Vealey, 1992). As a result of the quantitative assessment of results from this form of self-report data, causal and predictive relationships can be inferred and tested, and there is greater scope for large sample sizes aiding generalisability of findings.

In comparison, self-report data collected via qualitative methods, for example, interviews have other limiting factors. It is suggested that open ended questioning
and personal probing of individual’s thoughts, feelings and experiences that can be achieved through interview (restricted through closed-item questionnaires), are potentially advantageous (Patton, 2000). However, it is proposed that this method also has its limitations; mainly, inability to generalise across population due to constrained samples employed in qualitative based research; the restricted ability to test for prediction and causality relationships due to the nature of data; and finally the remaining potential for self-report bias in a setting where this is potentially enhanced for individuals who want to appear socially desirable, impression manage, and inflate their ego.

In specific relation to the personality traits of narcissism and trait self-consciousness, it is recognised that these design issues are of potential influence. Previous research has revealed evidence that high trait self-conscious individuals are potentially more accurate in self-report (Fenigstein et al., 1975), and that situational manipulations can influence individual’s self-directed attention (Carver & Scheier, 1978; Duval & Wicklund, 1973). With regard to narcissism, research has shown that a characteristic trait of narcissism is to self-enhance in any perceived opportunity for ego inflation (John & Robins, 1994; Morf & Rhodewalt, 2001; Robins & Beer, 2001; Wallace & Baumeister, 2002). Based on these findings it is suggested that an interview situation would present a greater opportunity for self-enhancement and ego inflation than a private completion of a questionnaire. It is impossible to eradicate self-report bias by any means, however it is emphasised that both the narcissistic personality inventory (Emmons, 1987; Raskin & Hall, 1979; Raskin & Terry, 1988) and the self-consciousness scale (Fenigstein et al., 1975) have received validity and reliability tests in previous research.
Rationale for theoretical approaches pursued in this research

In reviewing the individual difference perspectives that have previously been investigated, it is apparent that personality traits may play a significant role in the anxiety-performance relationship, and have the potential to influence the processes that are proposed to explain choking under pressure. Just within the constructs of self-confidence, effort, reinvestment, trait self-consciousness and narcissism, it has been shown that each significantly impacts on performance under pressure in some form, but the highlighted cases have also revealed contradictions and inconsistent findings that warrant further investigation. On this basis, it was proposed that an individual difference approach to the investigation of choking under pressure was justified for three reasons: 1) to build upon previous findings and enhance understanding of the processes underpinning choking; 2) to investigate several relatively new constructs and learn how they influence each other within the processes of choking; and 3) to approach the construct of choking directly as a dispositional construct, through the individual difference perspective. The theoretical approach taken to investigate choking under pressure in the present thesis represents a path of theoretical and personal development, and incorporates two salient research perspectives.

At the outset of this research, a cognitive process approach was adopted to investigate the processes of choking under pressure. Having reviewed the various mechanisms proposed to explain the underpinnings of the choking process and the empirical evidence available in support and contradiction of these theories, it was evident that a vast majority of the findings offered support for the conscious processing hypothesis in some way. Perspectives including, deautomatisation
(Deikman, 1969; Fitts & Posner, 1979), self-focus (e.g., Baumeister, 1984; Duval & Wicklund, 1973; Leary, 1982), focused attention (e.g., Nideffer, 1976; Wulf et al., 1998), and implicit learning strategies (e.g., Gallwey, 1979), all to some extent suggest that a breakdown in performance under pressure is due to an attempt to consciously control normally automated skill performance. Conscious processing hypothesis testing has revealed some consistency in findings supporting the predictions of the hypothesis (e.g., Beilock & Carr, 2001; Hardy et al., 1996b; Jackson & Wilson, 1999; Masters, 1992), however, it has been highlighted in earlier discussion that further investigation is warranted.

First, inconsistent findings with regard to the influence of individual difference variables requires direct testing of these constructs. And second, various methods to incorporate a measure of effort and processing efficiency require development based on the recognition that the processing efficiency theory may well add to the understanding of the choking process in addition to the conscious processing hypothesis, and that attempts need to be made to measure a reinvestment of conscious processing. Based on the design and theoretical issues previously discussed and highlighted here, the first study was formed to address a number of these aspects; including a measure of mental effort and confidence manipulation, and attempts to monitor reinvestment of conscious processing through secondary task performance under the intentions of using a performance paradigm.

The second perspective incorporated within this research was stimulated by the findings from study one, and a reassessment of the state of the research literature on choking under pressure from a trait perspective. Unexpected findings in study one
with regard to the influence of individual differences on performance offered further inconsistency to the literature. This stimulated interest into the possibility that there might be potential for one individual to be more liable to choking under pressure than another, based on their personality, or more specifically certain characteristic traits of their personality that denote a predisposition. As previously discussed Masters et al. (1993) had to some extent pursued this approach investigating a predisposition to reinvest, however theoretical and measurement issues were apparent once the original work of Fenigstein et al. (1975) and Baumeister (1984), on trait self-consciousness, were reviewed.

In addition, particular interest was stimulated by the recent work of Wallace and Baumeister (2002) examining in particular the personality trait of narcissism and its potential to influence performance under pressure. Findings of this preliminary research in the area were evidently suggesting that the personality of narcissism significantly influenced performance under pressure in a positive way, providing evidence to suggest that narcissists may be less susceptible to choking due to their personality traits. This proposal offered further substance to the notion of personality traits contributing towards a disposition to choke. Upon examining the narcissistic personality, the relevance of self-focus was readily apparent and the potential for self-consciousness to be influenced or interact with narcissism, open for investigation with theoretical grounding (Bach, 1977; Morf & Rhodewalt, 2001). So as result, this area of research stimulated great interest, presented a novel approach towards the investigation of the phenomenon ‘choking’, and provided further support to the argument for adopting an individual difference perspective.
The adoption of the individual difference approach to choking under pressure was pursued in two stages. First; a dispositional measure of choking was designed and preliminary validated. This work was based on the proposition that choking under pressure is a personality disposition, so should be possible to measure directly through a valid scale of measurement designed for the construct. Previously, choking has been inferred through performance discrepancy via state measures, only representing situational occurrences of choking; or attempted measurement through dispositional reinvestment of which criticism has been levelled. Second, the personality variables: narcissism and trait self-consciousness were explored. As discussed, both of these variables have received some attention in previous research investigating their impact on performance under pressure from a situational perspective. They presented stimulating variables of interest for investigation in relation to each other, and their potential to be predictive traits of dispositional choking.

With consideration for theoretical and design issues relative to these constructs, and the intentions of the research to test for interactive relationships and predictive causality, a quantitative questionnaire based design was adopted. Valid inventories for narcissism and trait self-consciousness were already established providing a means to collect reliable qualitative data that could be thoroughly analysed to test for hypothesised theoretical predictions (Barron & Kenny, 1986). This design approach was also chosen on the basis that it would limit opportunity for self-enhancement to be enhanced through other design approaches like, interview, observation or performance assessment, biasing narcissist's results (Morf & Rhodewalt, 2001; Robins & Beer, 2001; Wallace & Baumeister, 2002).
To summarise, it was the intent of the current research to investigate the following research questions:

1. To what extent does the conscious processing hypothesis explain the processes of choking under pressure in relation to the influence that self-confidence and mental effort have on performance?

2. Can predisposition to choke be reliably measured? And how do the personality variables of narcissism and trait self-consciousness relate to each other and a predisposition to choke?

3. Do the personality variables of narcissism and trait self-consciousness interact with each other to influence dispositional choking? If so, what form does this interaction take?

4. Do the personality variables of narcissism and trait self-consciousness relate to other individual difference variables that have been shown to influence the anxiety performance relationship?

Structure of thesis

The chapters are based on separate manuscripts that have been prepared for submission to journals for publication. On this basis it should be expected that some key subject material will be repeated across chapters, this enabling the manuscripts to stand alone as individual research papers in future publications.

The thesis is structured as five main chapters. The first chapter has provided a broad overview of the research subject, and highlighted specific areas that it is argued warrant further investigation. Chapter two consists of study one, which adopts the mechanistic approach to the investigation of choking under pressure from a
conscious processing hypothesis perspective, examining the roles of confidence and mental effort. Chapter three encompasses two studies that initiate the (adoption of the) individual difference approach to the investigation of choking as a disposition, and the relationship between the personality variables narcissism, trait self-consciousness and choking. Chapter four consists of the final study, which extends the investigations made in studies two and three into narcissism and trait self-consciousness. This study examines the interaction between narcissism and trait self-consciousness on dispositional choking, and considers the role of self-confidence. The final chapter; chapter five, consists of a general discussion of the accumulated research findings, and provides informed proposals for potential research directions.

Study one takes the form of a laboratory based true experiment that employs multivariate analysis of variance as the salient statistical procedure. Studies two and three employ non-experimental hypothesis testing and involve construction of two measurement scales. The main statistical analysis takes the form of correlation analysis, and hierarchical multiple linear regression analysis. Study four develops the research questions in the previous two studies, using a similar questionnaire-based design with hierarchical multiple linear regression employed for the main statistical analysis. For ease of reference, key tables and figures are presented within the text, and other supportive material, including participant forms and questionnaires, are provided as appendices. The reader is referred to the appendices where necessary, and can find a full reference list of all information sources used, upon closure of chapter five.
CHAPTER 2

A test of the conscious processing hypothesis as an explanation for choking under pressure

Abstract

The influence of self-confidence and mental effort on performance was examined to test the Conscious Processing Hypothesis as an explanation of choking under pressure. Analysis of variance was used to analyse the effect of self-confidence and mental effort on putting performance under two conditions (control and competition), for two different groups (experts and novices). Experts, at baseline, demonstrated a superior skill level in the putting task. In competition both groups reported a decrease in self-confidence and an increase in mental effort with a consequent increase in putting performance. Novices performed as hypothesised but the unexpected increase in expert performance did not support the Conscious Processing Hypothesis, providing no evidence of choking. The Processing Efficiency Theory is proffered as a possible explanation of the results that were obtained.

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1 Manuscript in preparation for submission of publication to Journal of Applied Psychology, as: Akehurst, S., Hardy, L., & Woodman, T. Testing the Conscious Processing Hypothesis as an explanation for Choking under Pressure.
Introduction

An athlete requires many skills to be successful at an elite level with one of those salient factors being the ability to perform under pressure. The ability to stay focused and perform, without allowing situational factors to affect the way in which the skill is approached when being performed under pressure.

Fitts and Posner (1967) presented three stages of skill learning, starting with the novice stage of explicit cognitive understanding, through a developmental conscious processing stage that involves explicit rules which govern effortful skill processing, to an autonomous stage where processing is increasingly automatic, implicit, effortless and expert. The performer progresses through these stages when learning a new skill (Fitts & Posner, 1979). It is also suggested that performers can regress through the stages of learning in a stressful situation, resulting in an inferior performance, as seen much earlier in the progression-regression hypothesis introduced by Fitts, Bahrick, Noble and Briggs (1961).

Early reference to performance breakdowns in automatic processing (elite performance) was made in terms of 'deautomatization', which regarded reinvestment of attention as the problem (Deikman, 1969). More recently Baumeister (1984) introduced the notion of 'choking', where attempts are made to administer conscious control over a normally automated performance. Both of these concepts incorporate the notion of regression. Regression is to "return to a former state" (Pearsall, 2001, p.1206), and in regard to performing under pressure it refers to the regression to an earlier stage of learning (Fitts & Posner, 1979) by the reinvestment of conscious control upon the performance of a normally automated skill.
Processing Hypothesis (Masters, 1992) is based upon this cognitive understanding of regression.

The Conscious Processing Hypothesis predicts that, under pressure, performers will attempt to use "explicit 'rules' about how to perform the task, instead of simply allowing performance to happen using automatic processes that they normally use" (Hardy, 1999, p.231). Such attempts at control reflect regression to an earlier and inferior stage of learning. Recent studies have found supporting evidence that explicit learning leads to automatic performance breaking down under pressure (Hardy, Mullen, & Jones, 1996b; Jackson & Wilson, 1999; Langer & Imber, 1979; Masters, 1992). Early studies such as that of Langer and Imber (1979) tested three groups: no practice; moderate practice; and overpractice, on a novel task. Their results showed performance decrements for the no practice and overpractice groups, offering support for the moderate practice group improving performance due to their conscious processing stage of learning. Masters (1992) went on to directly test the Conscious Processing Hypothesis using a simple putting task performed under low and high pressure conditions. Two groups were differentiated by their mode of learning the task, one being submitted to explicit learning through skill instruction, and the other through implicit learning in which explicit knowledge of the task was prevented by a secondary attention task. When subjected to a pressure situation, the implicit learning group continued to show improvement in the putting task, whereas the explicit learning group did not, indicating a lapse into conscious control. Hardy et al. (1996b) offered further support to the findings of Masters. In a replica study Hardy et al. (1996b) included an additional implicit learning group who were required to perform the secondary attention task throughout the stress condition, in
comparison to Masters implicit learning group who were not. Once again results showed that the putting performance of the explicit learning group suffered under pressure, whereas both implicit learning groups demonstrated increased performance. Bright and Freedman (1998) attempted replication of Masters' Study but failed to find support for the Conscious Processing Hypothesis effects. In hindsight it was suggested participants were not subjected to an adequate learning process to acquire the higher stage of learning necessary for testing the negative effects on performance from a lapse into conscious control. Further studies have reported evidence in support of the Conscious Processing Hypothesis, with Jackson and Wilson (1999) showing that reliance on explicit rules induced choking under pressure, and Maxwell, Masters and Eves (2000) providing evidence that explicit learning was detrimental to performance when under pressure. In light of this extensive research, it is still evident that further understanding of the antecedents of reinvestment resulting in regression would benefit from further direct investigation. Explicit measures of conscious processing and regression are also required within the literature as there have been no direct attempts at measuring conscious processing in terms of regression.

Another limitation of studies investigating the Conscious Processing Hypothesis is the disregard for the impact of individual differences on the processes occurring. Although individual differences are acknowledged as important, they have received little attention within the stress and anxiety literature (Hardy & Jones, 1990). Self-confidence is the most prominent individual difference having been considered within the domain of stress and performance (Hardy, 1990; Martens, Vealey & Burton, 1990b). A direct attempt to investigate the influence of individual differences
on the Conscious Processing Hypothesis was made via the notion of 'Reinvestment' as a dimension of personality proposed by Masters, Polman and Hammond (1993), although evidence for its effect is equivocal.

Masters et al. (1993) postulated that 'reinvestment of controlled or conscious processing may be a dimension of personality; some individuals having a greater or lesser predisposition than others to reinvest actions and percepts with attention – particularly when under pressure' (p. 655). Masters et al. (1993) designed a 'Reinvestment Scale' that produced results offering support for the reinvestment predisposition, although after careful consideration of the scale items and the reported conclusions it is proposed that the results should be considered with caution. It is suggested the results maybe more accurately interpreted as an indication of the degree to which individuals are most likely to suffer from anxiety in stressful situations, and possibly choke, but not as a direct indication for the predisposition of an individual to reinvest. By no means does it offer substantial evidence for factors possibly determining reinvestment, leaving the concept open to debate and without a reliable method of measurement.

Most researchers acknowledge that self-confidence is perceived to have a positive relationship with performance (Hardy, Jones & Gould, 1996a; Jones & Hardy, 1990; Mahoney & Avener, 1977) and this is the original postulation of the Multidimensional Anxiety Theory (Martens, Burton, Vealey, Bump, & Smith, 1990a). The Multidimensional Anxiety Theory provided the basis for understanding the anxiety performance relationship until Hardy and Fazey (1987) criticised the two-dimensional approach to such a complex network of variables, and presented the
Catastrophe Model of Anxiety and Performance (Hardy, 1990). The Catastrophe Model has been the catalyst for the production of theoretical explanations of the mechanisms behind the anxiety performance relationship shown in the model, with the Conscious Processing Hypothesis being one of those.

Recent developments in Catastrophe Model research has incorporated self-confidence as a bias factor creating a Butterfly Catastrophe Model (Hardy, 1996). This considers self-confidence as a possible buffer in dealing with cognitive anxiety, inferring that the higher self-confidence is, the greater anxiety can be before it has a debilitative effect on performance (Edwards & Hardy, 1996; Hardy, 1990; Hardy & Mullen, 2001; Hardy, Woodman & Carrington, 2004). Two views have evolved from this proposed buffering effect. Firstly, self-confidence leads to a positive interpretation of cognitive anxiety (Jones, Swain & Cale, 1991) and secondly, self-confidence enables performers to trust their body to perform when under pressure without lapsing into conscious control (Moore & Stevenson, 1991, 1994). This latter proposition highlights the possible role of self-confidence within a regression to conscious processing framework. It suggests that an elite performer with high self-confidence is less likely to lapse into conscious control and regress than is an elite performer with low self-confidence. Low self-confident performers will have lower trust in themselves and self-doubt will induce conscious control (Hardy & Mullen, 2001).

A recent study (Akehurst, 2001) was implemented to test whether self-confidence influenced regression when performing an automated skill under pressure. The secondary probe technique was incorporated as a means to measure spare processing
capacity, on the basis that this would indicate the amount of conscious processing taking place during performance of the primary task (skipping with a rope). As a stress inducement and confidence manipulation, competition was implemented halfway through the testing procedure. It was hypothesised that increased pressure and lower confidence levels would result in a lapse into conscious control of the automated skill, based on the Conscious Processing Hypothesis and previous literature discussed. This hypothesis was not supported. Skipping performance improved in the competition condition in which lower levels of confidence were reported. In effect these findings revealed an unexpected increase in performance, failing to offer support for the Conscious Processing Hypothesis, and an unexpected negative confidence effect that also rejected the common assumption that confidence positively correlates with performance. The use of the secondary probe technique to measure spare capacity proved to be unsuccessful, which restricted analytical intentions to gain a more direct measurement of conscious processing.

To offer an explanation of these results it was purported that ability level and effort were salient factors for consideration. It was proposed participants were still at a conscious processing stage of learning, so had not reached the automated level required for the testing of the Conscious Processing Hypothesis. Consequently, the introduction of competition and manipulated confidence was interpreted to have increased conscious effort towards the task resulting in an improved performance due to this being beneficial at the conscious processing stage of learning (Beilock, Carr, MacMahon, & Starkes, 2002; Fitts & Posner, 1979; Hardy, et al. 1996b; Langer & Imber, 1979; Masters, 1992). In conclusion it was decided a further study was required to measure effort and ability level, to test the influence of these variables.
On the basis of the Conscious Processing Hypothesis it is predicted that performers of a 'high' ability level will experience a decrement in performance when an increase in mental effort is reported, in comparison to performers of 'low' ability who are predicted to experience a benefit in performance when mental effort is increased, based on their cognitive stage of learning.

This present study is based on the former arguments and has been designed with the intentions to replicate the previous study to a certain extent, incorporating the recommended measures of mental effort and ability level. The work of Beilock and Carr (2001) informed design for the amount of training required to experience learning that would replicate an expert level of processing for a simple putting task based on that used by Masters (1992), and Hardy et al. (1996b). This controlled training allows for an automated level of processing to be measured and tested in comparison to a novice level. A unidimensional post-performance measure of mental effort will be used to test for effective manipulation and correlation with expected changes in performance based on ability level and the Conscious Processing Hypothesis. Once again an attempt to measure spare capacity with regard to conscious processing will be incorporated, taking the form of a more attention demanding secondary task technique based on the distraction methods used by Beilock and Carr (2001) and Mullen, Hardy, and Tattersall (2005).

If the Conscious Processing Hypothesis is valid then the expert group should experience a lapse into conscious control when under pressure, and regress to an earlier stage of learning, impairing performance. Based on the previous study (Akehurst, 2001) the novice group is expected to evidence an improvement in
performance due to an increase in conscious effort on the task to do well in the competition. This finding would indicate that mental effort moderates the relationship between skill level and performance.

**Hypotheses**

An increase in mental effort will moderate the relationship between skill level and performance, resulting in a negative effect on performance for high skill level and a positive effect on performance for low skill level.

A reduction in self-confidence will moderate the relationship between mental effort and performance on the basis that a reduction in self-confidence will encourage a lapse into conscious control for the experts, causing a decline in performance. A decline in self-confidence for the novice group is predicted to encourage an increase in mental effort, in turn improving performance at the conscious processing stage.
Method

Participants

Undergraduate students (N=66) with limited golf experience served as participants for this study. All participants were entered into a competition, which had two ability levels: novice and expert, with two first prizes of £75. Participants were randomly assigned to either group, which then determined the procedure they followed in the experiment. Informed consent to participate in the study was given on attendance at the laboratory (see Appendix A).

Task

Primary Task

The primary task was golf putting, based on the implementation of this skill in previous studies to test the Conscious Processing Hypothesis (Hardy et al., 1996b; Masters, 1992). Putting was performed on a modified version of the previously constructed putting surface used by Hardy et al. (1996b), based on Masters (1992). The modified design consisted of a flat surface at the base of the slope (123x107cm) with a start line situated 34cm from the back end. The Astroturf surface then took a 25 per cent incline forming a slope of 96cm, which led to a flat surface area of 123 x 164cm in length, 34cm above the ground. The target hole was 10.8cm in diameter (United States Professional Golf Association specified size) and situated in the centre of the top surface, 226cm from the start line leaving a remaining 113cm beyond the hole. One putter of a Prossimmon 24 Design (length 86cm) was provided for use by all participants in practice and competition, along with 25 Molitor golf balls.
A digital camera was installed at a height of 285cm directly above the centre of the top surface of the putting set, so that the full flat surface area was in view. The camera was operated through a linked computer required for downloading each trial photograph ready for post experiment digital analysis. A computer programme was written to measure the accuracy of each putting trial photographed.

*Secondary Attention Demand*

The secondary attention demand required the participants to passively listen to a tape of recorded random words verbalised at two-second intervals throughout the putting trials. Randomly every four words the word COGNITION was repeated. The objective of the task was for the participant to count how many times they heard the word COGNITION, during the time it took them to complete the block of putting trials they were performing.

*Design*

*Skill Acquisition*

The distinction between novice and expert ability was developed by the randomly assigned experts performing a block of 300 practice golf putts on their first attendance, as a means of skill acquisition to reach a later stage of learning representative of an expert level. This accomplished stage of learning is required for the testing of the Conscious Processing Hypothesis, as conceptually, choking is related to a breakdown in automated performance under pressure (Masters, 1992). The adequacy of this skill acquisition stage was based on the evidence found in a similar study, at which conscious processing hypothesis effects were reported on performance measures assessed on basis of 280 trial putts (Beilock & Carr, 2001).
**Experimental Phase**

Both groups completed a 25-putt warm-up, a set of 25 putts under low pressure followed by 25 high-pressure putts forming the competition. The 25 low-pressure putting trials formed a baseline measure of ability for both groups and the 25 high-pressure putting trials formed the competition results.

**Manipulation**

Before the start of the high-pressure trial block the participants were informed that they were now competing against the other participants (novice or expert), in their group with the opportunity to win a first prize of £75 in both groups. It was made clear the winner would be the participant who achieved the top putting accuracy score in each group, and if a draw resulted then the secondary task performance would be the deciding factor, so performance on both tasks was important.

**Measures**

*Skill Acquisition Performance*

A record of successful putts completed in each set of 25 trials was recorded throughout the 300 putting trials, so that a learning effect could be tested for to ensure an expert level of performance was reached prior to experimentation. The total number of successful putts performed in each block of 100 trials was calculated for comparison with previous studies (Hardy et al., 1996b; Masters, 1992).

*State Anxiety and Self-confidence*

Anxiety and Self-confidence were measured using the Competitive State Anxiety Inventory – 2 (CSAI-2; Martens et al., 1990a), which provides separate measures for
Cognitive Anxiety (CA), Somatic Anxiety (SA) and Self-confidence (SC). The inventory consists of 27 statements rated on a scale of 1-4 (1 Not At All – 4 Very Much So), which the participants had to use to indicate to what level they agreed with each statement. There are nine statements relating to each of three sub-components measures. Internal consistency for the sub scales has reported alpha reliability coefficients ranging from .79 to .90 across three athlete samples (Martens et al., 1990a). The wording was altered to refer to the task and not competition in the first CSAI-2 form completed (see Appendix C), but then left as standard for the competition block. The CSAI-2 was implemented as a manipulation check for the inducement of anxiety, and reduction of self-confidence in the high-pressure condition.

**Mental Effort (ME)**

Mental Effort was measured using the Rating Scale for Mental Effort (RSME; Zijlstra, 1993). The scale is a vertical axis with three anchor points: 0 (Not at all effortful); 75 (moderately effortful); and 150 (very effortful). This scale is a unidimensional measure of how much mental effort an individual feels they have invested in a task, in this case how much effort they put into the consequent block of trials (see Appendix D). The Rating Scale for Mental Effort has received validation in a range of ergonomic settings and reported reliability measures in laboratory and work settings of ($r = 0.88$ Laboratory and $r = 0.78$ Work settings), (Smith, Bellamy, Collins, & Newell, 2001).
Primary Task Performance (PTP)

Two measures of primary task performance were taken; an absolute measure of performance and a measure of performance accuracy. For each putting trial in the low-pressure and high-pressure conditions a record was made of all successful putts forming the absolute measure of performance. Digital photographs were taken of each putting trial and downloaded onto computer, where a specifically designed programme was then used to produce the accuracy measurements. The distance between the rim of the ball and the centre of the hole was measured to give an absolute error measure for performance accuracy.

Secondary Task Performance (STP)

Secondary task performance was measured by counting accuracy. The participants' counting result was compared to the actual number of cue words spoken within the block completion time, resulting in an absolute error score as a measure of performance accuracy.

Procedure

All participants were tested individually at pre-arranged times. On arrival at the laboratory participants were required to read and sign an informed consent form before testing commenced. To start, a Personal Details Form was completed and an Anti-Social Desirability Instruction set read before the structure of testing was explained. Participants in the expert group completed their training block of 300 putts in 3 sets of 100 with a short break in between each set on their first day. On the expert's second attendance and the novice's only attendance the procedure below was followed for both groups of participants.
To start, the participants were given a set of 25 warm-up putts followed by instructions for the experimental task and completion of the Competitive State Anxiety Inventory – 2. The low-pressure condition was then performed consisting of 25 putting trials while simultaneously attending to the secondary task, followed by completion of the Rating Scale for Mental Effort. After a short interval, participants were informed about the competition details and requirements before completing the CSAI-2 once more. Performance of the 25 high-pressure putting trials with the secondary task was then completed followed by the Rating Scale for Mental Effort once more to finish. At the end participants were asked to fill in a short questionnaire regarding their experiences throughout the experiment before leaving the laboratory. All the participants received an experimental debrief with the competition results at the end of the study.
Results

The data collected were split into three distinct categories: skill acquisition data, manipulation check, and performance data. The skill acquisition data were analysed for significant evidence of a learning effect for the expert group and the manipulation check data were analysed to check for a significant manipulation of anxiety and confidence in the stress condition. Main analyses took the form of two-factor (group x condition) analysis of variance with repeated measures for each of the dependent variables; successful putts, absolute error, mental effort and counting error. Follow-up correlations were performed to offer further analysis of the relationships between the variables of interest. A screening process for outliers was performed on the data to reduce the chance of Type I and Type II errors and to allow for generalisation of the results of the sample tested (Tabachnick & Fidell, 2001). Based on the assumptions of normal distribution the exclusion of values >3 standard deviations above or below the mean was used as the detection process (Stevens, 1996). As a result the removal of four participants' data sets was necessary, leaving a remaining 62 for the main analysis.

Skill Acquisition Data (Expert Group Only)

The skill acquisition phase consisted of 300 putts in total, which were completed in blocks of 100 and split into sets of 25 at a time. The 300 putts were analysed in 12 repeated sets of 25 putts; the number of successful putts within each set of 25 trials was recorded (see Figure 2.1). Analysis of variance revealed a significant main effect for successful putts in the skill acquisition phase ($F_{11,330} = 6.807, p < .000$). This suggests that the acquisition phase was successful in producing a performance effect for putting.
To make a direct comparison with previous studies with regard to skill acquisition levels of performance the data were compiled to give performance totals for the number of successful putts within each block of 100 trials. The mean number of successful putts was calculated for each of the three blocks and directly compared to the performance results of the implicit learning groups from two previous studies; Masters (1992) and Hardy et al. (1996b). The performance score at the stage of 300 completed trials in each study was comparable, so it was accepted that the expert group in this study had reached an adequate skill level to be tested for conscious processing hypothesis effects.

To determine whether there was a significant difference in putting ability between the expert group and the novice group that was introduced in the main testing
procedure of the study, a baseline measure of performance was taken in the control condition. Analysis of variance on successful putts revealed a significant group effect \( (F_{1,60} = 5.284, p < .025) \) with the expert group reporting a significantly higher mean performance score (6.39) than the novice group (4.68). This confirmed the difference in ability level between the two groups.

Manipulation Check Data

The effectiveness of the stress manipulation was analysed based on self-report measures collected at post warm up and pre-competition from the CSAI-2 (see Table 2.1 for mean scores and standard deviations).

| Table 2.1: CSAI-2 scores for both novice and expert groups at pre-control and pre-competition (mean ± s). |
|---------------------------------|---------------------------------|
| **CSAI-2 components** | **EXPERTS** | **NOVICES** |
| Cognitive Anxiety | 15.65 ± 4.22 | 18.65 ± 5.24 | 16.20 ± 3.31 | 17.97 ± 4.48 |
| Somatic Anxiety | 11.55 ± 2.78 | 14.13 ± 4.77 | 13.80 ± 3.38 | 15.33 ± 4.31 |
| Self-confidence | 24.77 ± 5.55 | 22.58 ± 5.65 | 21.50 ± 4.34 | 20.33 ± 5.27 |

Univariate analyses of the three subcomponents: cognitive anxiety, somatic anxiety, and self-confidence were performed. Cognitive anxiety revealed a significant main effect for condition \( (F_{1,59} = 28.730, p < .000) \), but no significant group main effect \( (F_{1,59} = 0.004, p = .952) \) or significant interaction for cognitive anxiety \( (F_{1,59} = 1.923, p = .171) \). Somatic Anxiety reported a significant main effect for condition \( (F_{1,59} = 28.244, p < .000) \), no significant group main effect \( (F_{1,59} = 3.545, p = .065) \) and no significant interaction \( (F_{1,59} = 1.830, p = .181) \). Finally self-confidence showed significant main effects for condition \( (F_{1,59} = 20.769, p < .000) \) and group \( (F_{1,59} = 4.591, p < .036) \) with no significant interaction \( (F_{1,59} = 1.940, p = .169) \).
The results confirm that the stress manipulation was successful in producing an increase in cognitive and somatic anxiety and a decrease in self-confidence for the competition for both groups, with the experts being significantly more confident than the novices.

Performance Data

The performance data were subjected to analyses that allowed for the direct testing of the Conscious Processing Hypothesis based on the hypotheses of the study. Hypothesis 1 focused on ability level and performance, predicting that expert performance would suffer under stress and novices would improve.

Primary Task Performance

Primary task performance was measured in two forms, an absolute performance score and a measure of performance accuracy. The absolute performance score consisted of the number of successful putts performed in each of the two conditions, control and competition (see Table 2.2). Analysis of variance for successful putts revealed significant main effects for condition ($F_{1,60} = 4.776, p < .033$) and group ($F_{1,60} = 5.284, p < .025$), with a non-significant interaction ($F_{1,60} = 0.128, p = .722$).

Table 2.2: Primary Task Performance Measures (successful putts) for both novice and expert groups in the control and competition conditions (mean ± s).

<table>
<thead>
<tr>
<th></th>
<th>EXPERTS</th>
<th>NOVICES</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Competition</td>
</tr>
<tr>
<td>Successful Putts</td>
<td>6.39 ± 3.02</td>
<td>7.13 ± 3.35</td>
</tr>
</tbody>
</table>
The measure of performance accuracy was the average absolute error (distance from the hole to the end position of the ball) for each of the two conditions. Analysis of variance for absolute error found significant main effects for condition ($F_{1,58} = 4.419, p < .040$) and group ($F_{1,58} = 5.962, p < .018$), and revealed a significant interaction ($F_{1,58} = 4.051, p < .049$). The interaction proposes that group has a significant effect on absolute error when stress is induced, revealing a significant improvement in performance for the expert group but no significant change in performance for the novices (see Figure 2.2).

![Graph showing mean absolute error for expert and novice groups in control and competition conditions.](image)

Figure 2.2: Mean Absolute Error scores for both the novice and expert groups in the control and competition conditions.

These results confirm that both groups significantly increased their number of successful putts in the stress condition, however only the expert group significantly decreased their absolute error measure, showing improved performance accuracy.

The significant group main effects offer support for the difference in ability between
the two groups, with the experts performing significantly more successful putts and better accuracy than the novices. This reinforces the view that a learning effect was achieved within the training of the experts. The results of the novices support the prediction that under stress novices' performance will improve, but the prediction based on the CPH that experts' performance would suffer under stress, was clearly not supported.

*Secondary Task Performance*

The data collected from the secondary task were recorded as counting error, the difference between the actual number of cue words and the number of cue words counted by the participant. Analysis of variance revealed no significant main effects for condition or group ($F_{1,60} = 0.325, p = .570$ and $F_{1,60} = 0.049, p = .826$) and no significant interaction ($F_{1,60} = 0.208, p = .650$). The failure of the secondary task to offer any significant results meant that the data could not be used to infer the level of processing being used by each ability group through the measure of spare capacity to perform the secondary task.

*Mental Effort*

The self-reported mental effort data were collected post-condition using the RSME. Analysis of variance revealed no significant group main effect ($F_{1,60} = 1.676, p = .200$), but a significant main effect for condition ($F_{1,60} = 52.476, p < .000$) and a significant interaction ($F_{1,60} = 3.988, p < .05$). The significant interaction suggests that the increase in mental effort in the stress condition is dependent on group. Both groups significantly increased mental effort in the stress condition but the novice
group increases nearly twice the amount to the experts (mean novice increase 21.64; mean expert increase 12.29) (see Figure 2.3).

The reported increase in mental effort scores supports the expected increase in effort from both groups when performing under stress, but in relation to the predicted moderating effects of effort on performance the results are not as expected. The results support the prediction that novices would improve performance with increased effort, but this also proved to be the outcome for experts. This unexpected result has led to a rejection of the hypothesis based on the CPH that experts would experience a decrease in performance due to an increase in effort or regression to an inferior stage of learning.
Correlation Analysis

Pearson’s Product Moment Correlation Coefficient was used to test the relationships between the dependent variables of interest for both the expert and novice groups separately. The data from the two groups were analysed separately due to significant differences between the groups having been reported. With the experts’ sample size of 33, testing at 95% confidence level (p < .05), the correlation coefficients were required to fall between the values of 0.344 to 1.00 and -0.344 to 1.00 for there to be a significant correlation between the test variables (Howitt & Cramer, 2000).

The expert group (N = 33) reported significant correlations to support the effect of the intended stress manipulation on anxiety and confidence levels, with changes in cognitive and somatic anxiety correlating negatively with the change in self-confidence ($r = -.447, p < .009$ and $r = -.479, p < .005$ respectively). A significant negative correlation between mental effort and self-confidence was also reported ($r = -.465, p < .006$). In the competition significant correlations reported that high cognitive and somatic anxiety levels correlated with low self-confidence levels ($r = -.658, p < .000$ and $r = -.523, p < .002$ respectively), and cognitive anxiety correlated positively with mental effort ($r = .481, p < .005$). Mental effort correlated negatively with absolute error ($r = -.382, p < .028$) supporting the unexpected improvement in performance with high effort.

With regard to the novice group (N = 29) the correlation coefficients were required to fall between 0.437 to 1.00 and -0.437 to 1.00 to be significant at the 95% confidence level.
The novice group did not report any significant correlations regarding the change in manipulated anxiety and self-confidence variables, but significant correlations were reported between the variables in the competition. Cognitive and somatic anxiety negatively correlated with self-confidence ($r = -.471, p < .011$ and $r = - .768, p < .000$) suggesting support for the intended stress manipulation and, as with the expert group, a positive correlation was reported between cognitive anxiety and mental effort ($r = .377, p < .048$). Within putting performance a positive correlation between mental effort and successful putts was revealed ($r = .378, p < .043$) supporting the predicted result of an improvement in putting performance with an increase in mental effort.

In summary the correlation analysis offered support to the effectiveness of the stress manipulation for both groups, and the expected results of the novice group. The analysis also provided further evidence to substantiate the unexpected improvement in primary task performance for the expert group, with increased levels of mental effort.
Discussion

The results of this study offer further insight into the effect of stress on performance in relation to ability level and mental effort. The skill acquisition phase proved sufficient to reveal a significant increase in putting ability within the expert group, which was comparable to that attained in previous studies (Hardy et al., 1996b; Masters, 1992). Intended stress manipulations were achieved. Significant increases in cognitive and somatic anxiety were reported prior to the competition condition for both groups, with no significant difference between groups. A significant decrease in self-confidence prior to the competition condition was also reported for both groups, with the expert group reporting significantly higher confidence levels than the novice group. Significant correlations revealed that in the competition condition cognitive and somatic anxiety correlated negatively with self-confidence, indicating that as anxiety increased, confidence decreased. Cognitive anxiety also revealed a significant positive correlation with mental effort. For the expert group only a significant negative correlation was revealed between self-confidence and mental effort, indicating that a reduction in confidence related to an increase in mental effort. There were no significant correlations revealed between the manipulated factors: cognitive anxiety, somatic anxiety and self-confidence, and primary task performance measures. The secondary task failed to report any significant results, so did not implicate the significant findings in any way.

The main findings showed the novice group to act as expected. In the competition condition novices demonstrated an increase in putting performance, in conjunction with an increase in mental effort. There was no significant change in putting accuracy of the novices regardless of their increase in mental effort in the
competition condition, and results revealed that novices putting accuracy in competition was significantly poorer than that of the expert group. The expert group did not act as hypothesised. In the competition condition the experts revealed an increase in mental effort that was predicted, but in conjunction with this the experts also demonstrated a significant increase in putting performance and putting accuracy. Both the performance measures of the expert group were significantly higher than those reported by the novice group in both conditions. Interestingly an interaction for mental effort was revealed showing that although there was no significant main effect for group. In the competition condition the novice group invested nearly twice the amount of mental effort than they reported after the control condition, in comparison to a smaller increase in mental effort reported by the expert group in the competition condition. Correlations revealed a significant negative correlation between mental effort and absolute error for the expert group, supporting the fact that, with an increase in mental effort, the experts experienced an increase in putting accuracy. Novices revealed a significant positive correlation between mental effort and successful putts, supporting the fact that increased mental effort resulted in improved putting performance but not accuracy. To conclude, the unexpected improvement in expert performance under pressure refutes the hypothesis set based on the Conscious Processing Hypothesis (Masters, 1992). The results also provide another source of data that report improved skill performance in conjunction with fluctuating anxiety levels and reduced confidence levels.

The Conscious Processing Hypothesis predicted that experts would experience deterioration in performance when under pressure due to a regression from an automatic stage of processing to an inferior level of conscious control (Baumeister,
The results did not support this and actually revealed the opposite. It was hypothesised that the novice group would increase performance in the competition on the basis that they would still be at a conscious processing stage of learning so an increase in effort would facilitate performance (Akchurst, 2001). Both groups reported an increase in mental effort in the competition, which was predicted, but based on the Conscious Processing Hypothesis and Stages of Learning paradigm, the effect on performance outcome was different to that expected.

In an attempt to explain the results it could be assumed that the expert group might not have reached the required level of automaticity reflective of an expert performer who has reached the higher stage of learning (Fitts & Posner, 1979). If this was the case then it would be expected that the expert group would follow the same trends as the novice group, improve performance with the additional increase in mental effort assigned to the task, due to them still processing the task with conscious control (Baumeister, 1984; Fitts & Posner, 1979; Langer & Imber, 1979; Masters, 1992). To ascertain whether this was the case, the putting performance levels were compared to those reported in two previous studies of very similar golf set-ups (Hardy et al., 1996b; Masters, 1992). In comparison it was verified that the average putting ability levels reported during the skill acquisition process by the expert group were on par with those reported within both the mentioned studies. With regard to absolute figures the putting scores were slightly below the averages reported in the previous two studies, although it is proposed the reason for this being that the golf set-up was slightly modified for this study increasing the distance behind the target hole. This modification it is believed increased the difficulty of the task enlarging the area and
chance of error, making the set-up more realistic to a field setting where there is
gross opportunity for error in putting.

The skill acquisition phase also consisted of 300 putting trials and not 400 as used in
the comparable studies. This decision was based on evidence from Beilock and Carr
(2001) who reported conscious processing effects on the basis of 280 practice trials.
It was concluded that the expert group had reached a sufficiently higher stage of
learning that was comparable to those reached within previous studies. This was
further supported by the expert group demonstrating a significantly higher putting
score average than the novices in the control condition. So the explanation that was
employed to explain the similar findings of improved performance of Bright and
Freedman (1998) were rejected on the belief that the expert group had been subjected
to a substantial amount of practice based on previous literature (Beilock & Carr,
2001; Hardy et al., 1996b; Masters, 1992).

A second interpretation of the results is posited within the learning paradigm based
on the method of skill acquisition used within this study. The expert group was given
300 trials to practice the putting task. These practice trials were uninstructed and
occurred on their own without any secondary task being a distraction. In
consideration of this it could be construed that the expert group had learnt the putting
task implicitly during the skill acquisition phase, maybe only drawing on any
previous putting experience and the immediate internal feedback they were
experiencing through repetition of the task. When this was compared to the studies of
Masters (1992) and Hardy et al. (1996b) it was apparent that a similar approach to
learning was mirrored in the implicit learning groups. Reverting to our performance
results it was apparent that the expert group in this study revealed the same trend in performance improvement under stress as in the previous study's implicit learning groups. This trend has been explained on the basis that implicit learning is not governed by specific conscious rules, so when stress levels are increased, a lapse into conscious control and the use of explicit rules is not possible due to the implicit nature of learning; so a regression in performance is not experienced as predicted by the Conscious Processing Hypothesis (Hardy et al, 1996b; Masters, 1992). Due to a performance paradigm having been adopted in this study and not a learning paradigm, the mode of learning was not controlled; so in essence it can only be inferred as to what learning methods the experts used within their practice time.

The interaction revealed for mental effort is of interest here on the basis that the novice group invested nearly double the amount of mental effort in comparison to that which they reported in the control condition, whereas the experts reported a smaller increase in mental effort investment between the control and competition conditions. In conjunction with these increases in mental effort both groups experienced an increase in putting success, and in addition the experts also revealed a significant improvement in putting accuracy. The significant positive correlation reported between cognitive anxiety and mental effort offers support for the stress manipulation invoking anxiety and in turn increasing mental effort and primary task performance. The increase in effort that is seen as a result of the increased stress levels acts to improve performance outcome, and supports the Processing Efficiency Theory proposed by Eysenck and Calvo (1992).
The Processing Efficiency Theory (Eysenck & Calvo, 1992) proposes that if there is an increase in worry about upcoming task performance then this can act as a motivational function and increase the effort invested in the task and initiate the designing of strategies to improve performance. It is suggested that the results in this study offer clear support for these predictions. Both groups reported fluctuated anxiety levels prior to performance and reported having exerted an increase in mental effort during the competition, resulting in higher task performance.

The Processing Efficiency Theory states performance can be differentiated in two forms: performance effectiveness and performance efficiency. The former is predicted to increase as we have seen with improved performance scores, but performance efficiency is predicted to decrease when performing under pressure. This impairment in processing efficiency is due to the increase in anxiety initiating higher effort levels. Although these additional processing resources largely deal with the anxiety characteristics of worry, threatening stimuli and failure feedback, reducing the efficiency of performance processing of the task in comparison to the amount of effort being put in (Eysenck & Calvo, 1992). Essentially efficiency is the equivalent of performance effectiveness divided by effort, as stated by Eysenck and Calvo (1992). This mathematical interpretation was applied to the data collected in this study to test for a statistical change in performance efficiency but no significant results were found. However, it is highlighted here that the increase in invested effort reported by the novices was double that of the increase in effort invested by the experts, but the benefits in performance it is suggested do not reflect this investment. In other words, the experts made a smaller increase in mental effort than the novices in the competition condition but experienced more benefits with regard to
performance. Experts demonstrated a significant improvement in successful putts and putting accuracy, in comparison to the novice group which reported an increase in successful putts but revealed no change in putting accuracy. With inference only it is suggested that these results offer support for the reduction in processing efficiency for the novice group but in terms of the expert group this is open to debate.

Mullen and Hardy (2000) reported an increase in self-report effort as a result of increased anxiety in a putting study, also described as offering support to the Processing Efficiency Theory. In a later study, Mullen, Hardy and Tattersall (2005) failed to reveal an effect on self-report effort as a result of anxiety or condition but did report interesting findings via kinematic analysis. An influx in heart rate variability was revealed in the high-anxiety condition, suggesting that controlled breathing was negatively affected when stress was induced, and in kinematic analysis anxious performers showed evidence of attempting to regain control over skill movement by re-freezing degrees of freedom in the wrist, essentially regressing to an earlier stage of learning, as proposed by the conscious processing hypothesis (Hardy & Mullen, 2001; Mullen et al., 2005). These effects were associated with a decrease in performance in the stress condition. It is acknowledged that direct comparison cannot be made with the results in this present study due to the absence of kinematic analysis, but it is highlighted that the increase in putting accuracy of the experts might deduce that a regression to an earlier stage of learning did not occur, or that if re-freezing did occur it resulted in improved performance. This interpretation tempts the question once again as to the skill level attained by the experts, and whether the expert group had reached automaticity or were just more advanced in the conscious processing stage than the novices. Although, Hardy, et al. (1996b) argued that
regression effects are less likely to occur if holistic swing thoughts are employed while putting (Hardy & Mullen, 2001; Jackson & Wilson, 1999). This, it is suggested, refers back to the notion that implicit learning is likely to reduce the chance of regression to an inferior stage of learning, which encompassed the second interpretation applied to the results of this study.

The secondary task incorporated in this study was based on Beilock and Carr (2001) and Mullen et al. (2005). It was included to gain an indication of spare processing capacity available to attend to a second task in conjunction with the primary task of putting, and to indicate the level of processing efficiency. It was assumed that the expert group would perform better on the secondary task on the premise that their automatic processing of the putting task would require very limited resources, but that in the stress condition, a regression to conscious control would limit spare capacity and impairment in secondary task performance would be seen. On statistical analysis of the secondary task performance data there were no significant results reported. It was concluded that the task used only offered a very crude measure of secondary task performance and was not sensitive enough to offer a measure of processing capacity as intended. The lack of significant findings reported by the secondary attention task meant that further evidence could not be offered to support the attentional threshold hypothesis. This promotes the notion any secondary task will reduce attentional resources impairing performance on a primary task under conditions of high cognitive anxiety (Eysenck, 1992; Hardy, Mullen, & Martin, 2001; Mullen & Hardy, 2000).
However, it could also be interpreted that due to the secondary task being irrelevant to the primary task, it may actually have prevented the expert group from reinvesting conscious control of the putting task due to the attention demands the secondary task required. On this basis it could be deduced that the experts putting performance did not suffer due to the secondary task preventing regression to conscious processing, resulting in their automatic mode of processing producing putting performance. This interpretation is based on findings of Mullen and Hardy (2000), which reported evidence showing that a group performing with an irrelevant secondary task did not show primary performance decrements, in comparison to a group performing with a relevant secondary task. The results were explained by the conscious processing hypothesis, suggesting that the relevant secondary task increased consciousness of the primary task and enhanced reinvestment of conscious control; whereas the secondary task that was irrelevant required conscious effort that prevented regression occurring with regard to the process of putting.

The final result that requires discussion is that of self-confidence and performance. As prominently indicated in previous literature (Martens et al., 1990b) self-confidence has a positive relationship with performance and numerous studies have revealed confidence as a significant predictor of performance (Woodman & Hardy, 2003). However, the results of this study do not sit comfortably with this established belief. In the present study both the expert and novice groups reported a reduction in confidence prior to the competition condition. In conjunction with this lowered level of confidence, both groups showed a significant improvement in their putting performance in the competition. Similar results have been reported in previous studies (Akehurst, 2001; Gould, Petlichkoff, Simons, & Vevera, 1987; Hardy,
Woodman, & Carrington, 2004) but a comprehensive explanation has not been offered.

As discussed in Hardy (1997) in relation to the Processing Efficiency Theory, Eysenck (1982) did make reference to the role of self-confidence within the motivational effect of anxiety on performance, proposing that "cognitive anxiety only exerted a positive motivational effect if the performer was at least moderately confident of success" (Hardy, 1997, p.280). This has been further alluded to more recently by Hardy and Mullen (2001) supporting the notion that more effort is likely to be invested under pressure if the performer has a moderate level of confidence. On reassessing the self-confidence data in this study it was apparent that although a decrease in confidence was experienced prior to competitive performance, the levels of confidence reported were still moderate based on the interpretation of the average CSAI-2 scores reported (Martens et al., 1990a). So the results could offer support for the postulation that as long as a moderate level of self-confidence is maintained then an increase in cognitive anxiety will motivate the investment of increased effort to perform the task (Eysenck, 1982; Eysenck & Calvo, 1992; Hardy, 1997; Hardy & Mullen, 2001). This interpretation potentially offers an explanation for the unexpected negative relationship between confidence and performance found in this study.

This motivational effect of confidence on effort investment in persevering in situations of high anxiety or adversity has been previously identified by Bandura (1977, 1997) in the realms of self-efficacy. Set within social cognitive theory, efficacy expectations are positively related to effort and persistence and positively
relate to performance (Bandura, 1997). More recently debate has been sparked regarding negative effects of self-efficacy on performance, through research performed by Vancouver and colleagues (2001, 2002). Vancouver, Thompson, and Williams (2001) reported a negative effect of self-efficacy on subsequent performance based on a within subject design. The interpretation of these results adopted a control theory approach based on the cybernetic structure adopted by Powers (1991). It was based on the notion that if individuals perceive they are not meeting their goals then more effort will be invested, but if there is little discrepancy perceived between actual attainment and goals, then increased effort will not be sought. Essentially this was implied to indicate that high efficacy leads to poor subsequent performance through complacency. Vancouver, Thompson, Tischner, and Putka (2002) supported the notion of negative self-efficacy effects with a follow-up study that revealed manipulated self-efficacy resulted in overconfidence and enhanced the potential for performance decrements. Bandura and Locke (2003) responded to the research postulations of Vancouver and colleagues with severe scrutiny and criticism regarding the theoretical basis of their arguments and the interpretations made based on the methodological procedures used. Bandura and Locke (2003) challenged the proposals on the basis that the cybernetic system does not account for the cognitive assets possessed by the human agency and that on adopting the control theory it would require self-doubt or negative discrepancies to be present before effort will be invested and performance increased, any feelings of efficacy or attainment would only result in poor subsequent performance. Further discussion is beyond the scope of this discussion (for further details see Bandura & Locke, 2003; Vancouver et al., 2001, 2002) but the debate has arguably highlighted the potential for confidence to influence performance via numerous processes and
significantly identified self-confidence as an individual difference variable that requires further investigation.

Interestingly, Vancouver et al. (2002) in their discussion identified individual difference variables as an area for future research in an aim to develop a greater understanding of factors that might influence confidence levels and how these might be related to styles of processing. Bandura and Locke (2003) also highlighted the necessity to investigate the cost of underconfidence as well as the negative effects of overconfidence that have received interest of recent, and emphasised by Vancouver et al. (2001, 2002). With these recent identifications of the need to research individual difference variables due to inconsistent findings, as found in this study, and the significant influence that self-confidence appears to have on performance, this is presented as a priority research direction for future investigation.

Applied implications of this study are approached with caution due to the unexpected findings and theoretical debate in process at the present time, but three simple effects might be considered. First, it is apparent that heightened cognitive anxiety can have a motivational effect on a performer with moderate self-confidence, and as a result improve performance in a competitive situation through enhanced effort. Applied implications of this are vital as it is commonly thought that high anxiety levels will be detrimental to performance. Second, results provided evidence that at a novice stage of learning increased mental effort will improve performance when under pressure. Third, if the implicit learning interpretation is accepted then this once again encourages the use of more implicit or holistic learning cues to be developed once skill learning is advanced, to reduce the temptation to reinvest consciousness of
explicit rules to govern performance. This will allow increased effort to improve performance and not interfere with it through regression.

On analysis of this study a number of limitations have become apparent. First, although a participant detail form was completed asking for an indication of the individual's prior golf experience it was still difficult to control for ability level, although it was ensured that none of the participants had a golf handicap. Second, the lack of control administered to the learning phase for the expert group has meant the results may possibly be explained by the learning paradigm of the benefits of implicit learning. But it is unknown to what extent participants used their own explicit rules to practice the task so this interpretation is unsubstantiated. This leads on to the third limitation, the failed intention to use real expert golfers as the subjects for the expert group. Initially it was intended that the expert group would consist of expert golfers with handicaps between the range of 15-5, and a novice group as collected, but access to expert golfers did not prove possible so in turn the training method followed, was incorporated. The intended use of real expert golfers it is believed would have given more realistic results regarding the Conscious Processing Hypothesis and mode of learning debate. It is proposed that a field-based setting involving 'real' golfers competing in a 'real' competition would offer more valuable results with regard to actual anxiety, confidence and effort levels and the effect of pressure on performance. Finally, the failure of the secondary task to offer any significant results to indicate change in available processing capacity meant we were unable to infer any change in conscious processing as a result of stress manipulation or enhanced effort. It was suggested that the secondary task performance measure was not sensitive enough to reflect changes in conscious processing, and the task
itself was possibly not cognitively demanding enough to impinge on processing capacity.

In conclusion, it is acknowledged that support for the Conscious Processing Hypothesis was not found, but it is proffered that this was due to methodological issues and the limitations of lab-based studies. It is believed this study has offered supporting evidence for key concepts previously reported and discussed in this area of research, highlighting once again the facilitative effect anxiety can have on performance, and the possible mechanism behind this, and the importance of self-confidence in determining the response to a stressful situation. Skill level has once again been highlighted as a vital factor in the testing of the conscious processing hypothesis supporting the necessity for future research to use athletes in a field-based setting that are expert in performance and are competing in real-life situations. This it is believed will offer more reliable data regarding the influence of pressure on performance. Mental effort has been shown to significantly influence performance so it is suggested that further investigation be sought to look at the interactive effects with anxiety and confidence, and how these variables influence processing and performance.

A future direction that requires immediate attention is that of measurement. It is questioned whether performance discrepancies between manipulated conditions is enough to provide evidence of regression or 'choking'. Recent studies have attempted to gain a direct measure of regression through kinematic analysis. It is thought this is a vital area for development, and offers the potential to understand the physical mechanics behind performance decrements, but it is also emphasised here
that there is still no direct measure of choking. Individual difference variables have been highlighted as a vital area for future investigation, so it is proposed on this basis that the idea of a predisposition to choke as a dimension of personality requires consideration. This idea has previously been entertained (Masters et al., 1993) but failed to stimulate further investigation. Therefore it is argued that with an individual difference focus, this potential to measure dispositional choking may well be a vital starting point for future development in exploring the mechanics of choking from an individual difference perspective.
CHAPTER 3

Two studies examining the interaction between narcissism and trait self-consciousness upon a dispositional measure of choking

Abstract

Two studies investigate the measurement and prediction of a predisposition to choke. Narcissism (Wallace & Baumeister, 2002) and trait self-consciousness (Baumeister, 1984) have both demonstrated positive influences on performance under pressure. It is hypothesised that narcissism will moderate the relationship between trait self-consciousness and dispositional choking. Study one involved 90 mixed competitive sports performers, and study two 114 competitive gymnasts. Both studies incorporated measures of narcissism, trait self-consciousness, and dispositional choking; with an additional measure of retrospective state choking in study two. The dispositional choking scale demonstrated high internal consistency in both studies, and in study two significantly predicted state choking (RSCI). Study one revealed limited findings in relation to the individual difference variables. Study two revealed a significant interaction between narcissism and trait self-consciousness. Trait self-consciousness was positively related to high dispositional choking for individuals low in narcissism, but high narcissists reported a low disposition to choke regardless of trait self-consciousness. Narcissism also significantly predicted low dispositional choking as a main effect.

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Introduction

The study of performance under pressure has been widely researched within many fields and is a prominent area of investigation within the sport domain. The curious nature of why some individuals excel in their performance when they are aroused in a competitive situation, and why other performers, of a very similar calibre, produce a performance inferior to their capabilities, in essence choking under the pressure, is fascinating. Research to date has relied heavily on a mechanistic approach to the understanding of the processes that are proposed to occur when an individual chokes under pressure (Hardy & Mullen, 2001; Woodman & Hardy, 2001). This decrement in performance metaphorically referred to as 'choking' (Baumeister, 1984) can occur in any situation where the performer is required to produce a superior performance, and strives to do so. One explanation of the choking process that has received a lot of attention in the anxiety performance literature is the Conscious Processing Hypothesis (Masters, 1992).

The conscious processing hypothesis presented the explanation that pressure situations potentially induce heightened anxiety which leads to a reinvestment of conscious control to process performance in an attempt to ensure that a high level of performance is achieved. Reinvestment of explicit rules of skill processing represents a regression to an earlier stage of learning in which performance is more effortful and of an inferior level, resulting in performance decrements (Masters, 1992). In essence this hypothesis predicts that, under pressure, attempts are made to reinvest in conscious processing due to the heightened self-awareness of the importance of a superior performance. This actually interferes with a normally automated schema, resulting in an inferior performance. Masters (1992) reported evidence to support the
conscious processing hypothesis, revealing that individuals, who have reached an 'expert' or automatic mode of processing, experienced decrements in performance when put under pressure. He proposes that this is the result of attempts being made to reinvest conscious control of a normally automated skill. Further studies revealed support for this hypothesis (Hardy, Mullen, & Jones, 1996b; Jackson & Wilson, 1999; Lewis & Linder, 1997; Mullen & Hardy, 2000), and, in the process of investigation, started to indicate the potential influence of individual difference variables.

Attempts have been made to understand the role that self-confidence plays in the process of performing under pressure. However, findings have been inconsistent; with support for the well-established belief that confidence is positively related to performance (Hardy, 1996; Hardy & Mullen, 2001; Jones, 1995; Martens, Vealey, & Burton, 1990b), but also more recent findings which have unravelled negative effects of confidence (Akchurst, 2001; Chapter Two; Gould, Petlichkoff, Simons, & Vevera, 1987; Hardy, Woodman, & Carrington, 2004). Effort has also received attention as a variable that seems to influence the process of choking. However, once again, findings have been inconsistent with regard to whether an increase in effort is facilitative or debilitative to performance under pressure (Chapter One; Mullen & Hardy, 2000; Mullen, Hardy, & Tattersall, 2005). Mullen and Hardy (2000) identified the significance of individual differences within the processes of choking and recommended that further research is required to understand how they exert their influence.
Research methods have, in the majority, adopted an experimental approach towards choking, testing performance under manipulated situations as a means to monitor changes in performance resulting from controlled manipulations of various factors. Negative effects on performance in the manipulated condition are considered as indicative of choking. This mode of ‘choking’ measurement has been of salient use throughout the literature, and is regarded as an effective method to monitor the occurrence of choking (Baumeister, 1984; Hardy et al., 1996b; Lewis & Linder, 1997; Masters, 1992). However, it is suggested that this mechanistic approach to the investigation of choking is limited due to the apparent lack of consideration of the influence of individual differences, and its reliance only upon state rather than trait measures.

A previous attempt to measure choking via a trait measure is evident in the Reinvestment Scale presented by Masters, Polman, and Hammond (1993). Coming from a conscious processing hypothesis background, Masters et al. (1993) introduced the notion of ‘reinvestment’ as being a dimension of the personality, based on the premise that certain individuals may be more prone to reinvesting conscious processing than others. Dimensions for the scale were accumulated from a selection of questionnaires and used to formulate a measure of reinvestment. The major source of dimensions used in developing the reinvestment scale was drawn from the Self-consciousness Scale (Fenigstein, Scheier, & Buss, 1975). Trait self-consciousness had been defined as the degree to which an individual directs their attention inwards or outwards (Fenigstein et al., 1975). Using this construct, Masters et al. (1993) proposed that, if an individual is high in trait self-consciousness then they are more likely to reinvest conscious effort when under pressure. The scale was tested within a
battery of studies and revealed a positive correlation between the measure of reinvestment and the identification of individuals most likely to choke, from significant others, i.e., team captain.

Scrutiny of the scale and its theoretical origins questioned the validity of the measure on two grounds. First it was suggested that the measure might be more accurately interpreted as an indication of the likelihood an individual will suffer from anxiety, not as a measure that indicates the likelihood of an individual reinvesting conscious control when under pressure. Second, the theoretical understanding presented by Masters et al. (1993) for the use of trait self-consciousness items, conflicted with previous findings and the theoretical interpretation of trait self-consciousness and its influence on performing under pressure as presented by the originators of the construct Fenigstein et al. (1975) and as previously tested by Baumeister (1984).

Previous literature presented the construct of trait self-consciousness as a benefit to individuals when performing under pressure on the basis that an individual with a high level of habitual self-consciousness will be accustomed to self-directed attention so less vulnerable to situations of increased self-awareness (Baumeister, 1984; Carver & Scheier, 1978). However, Masters et al. adopted the construct but employed a theoretical understanding that contradicted the original theoretical base, suggesting a negative relationship between trait self-consciousness and performance under pressure. This presented another question of validity with regard to the scale measurement. Some support was reported for a positive relationship between reinvestment and choking (Masters et al., 1993; Maxwell, Masters, & Eves, 2000), but in light of the limitations of the reinvestment scale, as highlighted, caution is taken in their interpretation. The reinvestment scale has received little research
attention, and given the concerns expressed above, on this basis it was proposed felt that the original trait self-consciousness scale may offer greater potential for further research.

Fenigstein et al. (1975) made a valuable observation within the self-awareness and attention literature highlighting the fact that the research to that date had not considered the impact of individual differences. It had overlooked individuals who may constantly direct attention inward as a personality disposition and, conversely, individuals who are habitually absent of self-conscious thoughts and understanding. On this basis the personality construct of Trait Self-consciousness was introduced and defined as the disposition of an individual to direct their attention inwardly or outwardly (Fenigstein et al., 1975). Trait self-consciousness fitted into the conceptual framework as a habitual characteristic, whereas self-awareness was viewed as a state within which the level of self-directed attention is determined by changing situational factors and/or chronic personality dispositions (Fenigstein et al., 1975).

Upon design of the scale to measure trait self-consciousness three subscales emerged through factor analysis: Private self-consciousness, Public self-consciousness and Social Anxiety. The context within which private and public self-consciousness and social anxiety can be understood is based on a process and reaction format. Private and public self-consciousness are regarded as the process of self-focused attention and social anxiety acts as the possible reaction to this process. Private self-consciousness is specifically related to self-focused attention to inner thoughts and feelings, whereas public self-consciousness is defined as the attention individuals direct to their thoughts and their perceptions of the reactions of others in regard to
themselves as a social entity. Social anxiety consistently appeared as a third factor that was more closely related to public self-consciousness. It was proposed to be a potential reaction to high public self-consciousness, in the sense that an increase in public self-awareness led to the potential for an individual to become anxious about themselves as a social object. It is important for the trait construct of self-consciousness not to be confused with situational self-awareness and self-directed attention. Fenigstein et al. (1975) have introduced the construct of trait self-consciousness based on the theory of self-awareness that has formerly investigated how the manipulation of situational self-focus can affect performance (Carver & Scheier, 1978; Duval & Wicklund). Carver and Scheier (1978) reported findings that supported the self-awareness theory and suggested that individuals with low trait self-consciousness were more affected by manipulated situational self-directed attention. Baumeister (1984) reinforced the significant influence that trait self-consciousness has on an individual when dealing with heightened self-awareness.

Baumeister (1984) conducted a set of studies that investigated the influence of trait self-consciousness (private and public) on performance within various manipulated settings. Findings suggested that persons with low trait self-consciousness performed better than high trait self-conscious individuals when in a low pressure situation. But in contrast, once the groups were subjected to a pressure situation the high self-conscious individuals performed better than the low self-conscious group and experienced an improvement in their performance, where the low self-conscious group showed decrements in performance indicating a level of choking. As an interpretation of these results it was suggested that in high pressure situations individuals high in trait self-consciousness are more able to deal with the heightened
self-awareness as they are used to having self-directed attention, whereas those low in trait self-consciousness are not used to the high levels of self-directed attention. When self-awareness is increased in a pressure situation the performance of low trait self-conscious people is interfered with, possibly by elevated social anxiety and or by a reinvestment of conscious processing resulting in an inferior performance (Baumeister, 1984; Masters, 1992).

Another dispositional construct that has received little attention in relation to performing under pressure is that of Narcissism. Narcissism has been classified as a clinical mental illness in its severest form, originating from the Greek mythology of Narcissus, a beautiful youth who fell in love with his own reflection (Wallace & Baumeister, 2002). The Diagnostic and Statistical Manual of Mental Disorders (4th ed. [DSM-IV]; American Psychiatric Association, 1994) defined narcissism as a perverse pattern of grandiosity, self-focus, and self-importance. The clinical classification refers to traits like exploitativeness, exhibitionism, vanity, superiority, empathy deficiency and self-admiration, all culminating to create a grandiose feeling of greatness and self-love (Morf & Rhodewalt, 2001; Wallace & Baumeister, 2002).

These characteristics have also been identified in the sub-clinical measure of narcissism designed by Raskin and Hall (1979) and Raskin and Terry (1988). The Narcissistic Personality Inventory (NPI) was designed to identify sub-clinical levels of narcissism within individual personalities of a non-clinical population. The scale produced seven subscales that were trait characteristics mirroring the DSM-IV classification, and has proved to be a valid measuring tool of the narcissistic personality (Emmons, 1987; Raskin & Terry, 1988; Rhodewalt & Morf, 1995). This
sub-clinical measure provided the impetus for further research to discover how the narcissistic personality dictates an individual’s behaviour and thought processes.

Wallace and Baumeister (2002) particularly focused on narcissism and performance viewing the opportunity for glory as a motivating factor for high narcissists. Their compilation of studies produced some interesting results with regard to the influence of narcissism on an individual’s performance within different settings. Evidence was found for a positive effect of narcissism on performance under pressure. The pressure of a situation was manipulated for two groups, low and high narcissists. Then performance on a task was measured in each situation. Results revealed that high narcissists’ performance on the task improved in the high pressure situation whereas the low narcissists’ performance decreased on the task when under pressure indicating a degree of choking had occurred. The high narcissists’ improvement under pressure was explained by the pressure situation offering a greater opportunity for self-enhancement, so in turn motivating the performers to put in more effort and consequently enhance performance. In comparison, the low narcissists showed performance decrements when under pressure, supporting the findings associated with expert performers who experienced a breakdown in performance when put under pressure. Previous research has explained this phenomenon through the reinvestment of conscious control, induced by anxiety, which interferes with automatic processing; the Conscious Processing Hypothesis (Hardy et al., 1996b; Jackson & Wilson, 1999; Masters, 1992).

Upon review of the literature it is proposed that personality research can offer great insight into the understanding of how individual differences influence an individual’s
behaviour. On this basis it is proposed the investigation of choking under pressure from an individual difference perspective is warranted to gain a comprehensive understanding of the factors influencing an individual's performance in a pressure situation. As an initial step forward within this adopted approach it is regarded as salient that a dispositional measure of choking be designed to test whether there is a predisposition to choke; are some individuals more prone to choking than others due to their disposition? Based on the dissatisfaction with the reinvestment scale, the first aim of this research will be to design a measurement scale that is specifically directed to tap into the proposed construct of choking as a personality disposition. The second aim of this research will be to investigate further the personality variables: narcissism and trait self-consciousness, which have both individually been positively related to performing under pressure. However it is proposed that narcissism potentially moderates the relationship between trait self-consciousness and choking on the basis that high narcissists choke less regardless of their level of trait self-consciousness, whereas low narcissists will be less likely to choke if they have high trait self-consciousness as they would be more accustomed to dealing with self-directed attention.
Study One

Study Aims

1. To design a valid dispositional measure of choking.

2. To explore the personality variables Narcissism and Trait Self-consciousness in relation to each other and dispositional choking.

Hypotheses:

1) Narcissism will be inversely related to dispositional choking.

2) Trait Self-consciousness will be inversely related to dispositional choking.

3) Narcissism will protect against the debilitative effects of low trait self-consciousness.
Method

Participants

Ninety participants with an even gender split (45 males/45 females), aged 14-34 years (mean = 20.44, ± 3.856) took part in this study. Participants came from a selection of competitive team and individual sport clubs including, Football, Trampolining, Tennis, Athletics, Basketball, Netball, Volleyball, and Rowing. Permission was obtained from each club coach before the athletes were approached. A total of eighteen coaches were involved with the participating athletes, with informed consent (see Appendix A), and parental consent where necessary (see Appendix B), being obtained from all participants before completion of the study.

Measures

Narcissism

The Narcissistic Personality Inventory (NPI-40; Raskin & Hall, 1979; Raskin & Terry, 1988) was used to measure subclinical narcissism. The NPI consists of 40 items that have two forced-choice responses. The dichotomous responses comprise of a 'narcissistic' view and a 'non-narcissistic' view. For example, 'I like to be centre of attention', would be a response choice of a narcissist, and 'I prefer to blend in with the crowd' would be a non-narcissistic response choice. The narcissistic responses are scored 1 if chosen, giving a total narcissistic score out of a maximum of 40 (see Appendix E). Raskin and Terry (1988) offered supportive evidence for the construct validity of the NPI-40 as a general construct of narcissism and identified seven first-order components as a result of a principal-components analysis. The analysis reported a full-scale alpha of .83 and seven first-order components with lambda 3
internal consistencies of .50 and above. Inter correlations ranged from .11 to .42, with at least two intercomponent correlations of .25 or above with two other components for each of the seven identified components.

*Trait Self-consciousness*

The Self-Consciousness Scale (S-CS; Fenigstein et al., 1975) was used to measure dispositional self-consciousness. The scale consists of three subscales that measure Public and Private Self-Consciousness and Social Anxiety. In total there are 23 items which are rated on a Likert scale ranging from 0 (Extremely Uncharacteristic) to 4 (Extremely Characteristic). A total Self-Consciousness score can be calculated as well as the three subscale scores (see Appendix F). Fenigstein et al. (1975) reported internal validity with all items loading on their appropriate factor above a level of .40, which was consequently supported by high test-retest reliability correlations of public self-consciousness, .84; private self-consciousness, .79; social anxiety, .73; and total score, .80.

*Dispositional Choking*

A specific inventory was devised to create a dispositional measure of choking. The Dispositional Choking Scale (DCS) was designed to gain a subjective measure of an individual's liability to choke under pressure, as judged by their coach (DCS-Informant). The inventory was designed for the athlete's coach to complete, on the basis that this would be more likely to give a reliable measure eliminating athlete repression or biased interpretation of their ability to perform under pressure. The DCS-I consists of 8 items that are rated on a Likert scale ranging from 0 (Strongly Disagree) to 10 (Strongly Agree), for example; 'This athlete tends to choke under the
pressure of competition'. The maximum score for the scale is 80, which represents an individual with an extremely high disposition to choke under pressure (see Appendix G).

Procedure

On attendance at each of the sport clubs a list of the athletes that would be participating in the study was received from the club coach. Informed and/or parental consent was then consequently obtained from all participants before the data collection began. Each athlete was given a copy of the NPI and the S-CS to complete on their own before or after training. The relevant coach for each of the participating athletes was then given multiple copies of the DCS-I to complete in relation to each of their athletes. All participating individuals at that club were debriefed as a group in regard to the theory and intentions of the study, before the researcher departed. The same procedure was followed for each of the clubs attended.

Data Analysis

For internal reliability of the newly devised Dispostitional Choking Scale a Cronbachs Alpha Coefficient analysis was used to check for consistency between scale items, and to ensure a recommended standardised item alpha was reported for the inventory (Stevens, 1996). T-tests were performed on all variables to check for gender differences to see whether gender needed to be controlled for through standardisation, and correlational analysis explored the relationships between the independent and dependent variables. Multiple Hierarchical Regression was used in the main analysis to enable the independent variables to be entered as predictors of
the criterion variable, dispositional choking, on theoretically based models (Howitt & Cramer, 2000). Each hierarchical model tested consisted of narcissism as the first predictor variable, with one of the trait self-consciousness sub-components as the second predictor variable, followed by the product term of the interaction of the two predictor variables as the third and final stage. Three models were tested, one for each self-consciousness sub scale.
Results

Preliminary Analyses

Reliability Tests

The test of internal consistency for the Dispositional Choking Scale – Informants measure reported very high inter-item correlations; all above .5 with an overall cronbach's alpha coefficient of .9545 for the scale (see Table 3.1). From the analysis it was shown that the removal of items was not warranted due to the change in alpha being minimal, so all eight items were retained in the scale.

Table 3.1: Inter-item correlations, Means, and Standard Deviations for Full-Scale Dispositional Choking (DCS-I).

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.10</td>
<td>2.37</td>
</tr>
<tr>
<td>2</td>
<td>.69</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.37</td>
<td>2.81</td>
</tr>
<tr>
<td>3</td>
<td>.74</td>
<td>.90</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.12</td>
<td>2.57</td>
</tr>
<tr>
<td>4</td>
<td>.70</td>
<td>.90</td>
<td>.97</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.07</td>
<td>2.54</td>
</tr>
<tr>
<td>5</td>
<td>.83</td>
<td>.80</td>
<td>.81</td>
<td>.79</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3.80</td>
<td>2.44</td>
</tr>
<tr>
<td>6</td>
<td>.50</td>
<td>.53</td>
<td>.56</td>
<td>.53</td>
<td>.58</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>5.29</td>
<td>2.33</td>
</tr>
<tr>
<td>7</td>
<td>.67</td>
<td>.64</td>
<td>.71</td>
<td>.69</td>
<td>.76</td>
<td>.66</td>
<td>1.00</td>
<td>-</td>
<td>4.42</td>
<td>2.41</td>
</tr>
<tr>
<td>8</td>
<td>.79</td>
<td>.72</td>
<td>.76</td>
<td>.76</td>
<td>.87</td>
<td>.63</td>
<td>.77</td>
<td>1.00</td>
<td>4.19</td>
<td>2.54</td>
</tr>
<tr>
<td>Full Scale</td>
<td>.80</td>
<td>.85</td>
<td>.90</td>
<td>.88</td>
<td>.90</td>
<td>.63</td>
<td>.79</td>
<td>.87</td>
<td>34.36</td>
<td>17.46</td>
</tr>
</tbody>
</table>

Note: N = 90. The correlations between the full scale and the eight individual scale items were item-corrected to eliminate item overlap.

Independent t-tests

Gender differences were reported for narcissism and social anxiety. It was revealed that males were significantly higher ($t = 3.199$, $df = 88, p < .002$) in narcissism than females, and females were significantly higher ($t = -3.459$, $df = 88, p < .001$) in social anxiety than males (see Table 3.2). To control for these gender differences in the main analyses the data was separated and standardised within gender before being collapsed back to a full data set. This procedure was taken to avoid a type one error being made due to variability in the data based on gender differences.
Table 3.2: Descriptives for all test variables (Males N = 45; Females N = 45).

<table>
<thead>
<tr>
<th>GENDER</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNPI</td>
<td>Male</td>
<td>15.98</td>
<td>6.979</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>11.38</td>
<td>6.658</td>
</tr>
<tr>
<td>TPRISC</td>
<td>Male</td>
<td>21.58</td>
<td>5.132</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>21.71</td>
<td>4.727</td>
</tr>
<tr>
<td>TPUBSC</td>
<td>Male</td>
<td>16.07</td>
<td>4.070</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>17.18</td>
<td>5.245</td>
</tr>
<tr>
<td>TSASC</td>
<td>Male</td>
<td>9.71</td>
<td>4.939</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>13.56</td>
<td>5.586</td>
</tr>
<tr>
<td>TDCS-I</td>
<td>Male</td>
<td>34.36</td>
<td>14.648</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>34.36</td>
<td>20.051</td>
</tr>
</tbody>
</table>

Note: Narcissism (TNPI), Private Self-consciousness (TPRISC), Public Self-consciousness (TPUBSC), Social Anxiety (TSASC), and Dispositional Choking (TDCS-I).

Correlations

Analysis of correlations used the standardised values for the test variables so that gender effects were controlled for (see Table 3.3). The data set as a whole reported a significant negative correlation between narcissism and social anxiety \((r = -0.527, p < 0.000)\) as expected, and significant positive correlations between private and public self-consciousness \((r = 0.410, p < 0.000)\) and public self-consciousness and social anxiety \((r = 0.389, p < 0.000)\), which support the expected subscale correlations (Fenigstein et al., 1975).

Table 3.3: Correlation Matrix of standardised values (Z scores) for all test variables \((N = 90)\).

<table>
<thead>
<tr>
<th></th>
<th>TNPI</th>
<th>TPRISC</th>
<th>TPUBSC</th>
<th>TSASC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPRISC</td>
<td>1.73</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TPUBSC</td>
<td>0.136</td>
<td>0.410**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TSASC</td>
<td>-0.527**</td>
<td>0.166</td>
<td>0.389**</td>
<td>-</td>
</tr>
<tr>
<td>TDCS-I</td>
<td>-0.026</td>
<td>-0.019</td>
<td>-0.118</td>
<td>-0.064</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

Note: Standardised scores for Narcissism (TNPI), Private Self-consciousness (TPRISC), Public Self-consciousness (TPUBSC), Social Anxiety (TSASC), and Dispositional Choking (TDCS-I).
Regression Analysis

Hierarchical multiple regression analyses were performed on the data set as a whole, for three theoretically based models incorporating the relevant test variables. In each model there were two predictor variables: Narcissism and either Private self-consciousness, Public self-consciousness or Social Anxiety, and the criterion variable of Dispositional Choking. The hierarchical technique allowed narcissism to have forced entry in block one followed by one of the three self-consciousness subscales in block two, and finally block three consisted of the interaction of the two predictor variables entered in the model. The predetermined order of entered predictor variables allowed for the moderated relationship between the independent variables and dependent variable to be tested directly (Howitt & Cramer, 2000).

Private Self-consciousness

In block one, narcissism failed to significantly predict dispositional choking ($R^2 = .001, F(1, 88) = .060, p = .808$), private self-consciousness failed to significantly predict the criterion variable over and above narcissism in block two ($R^2_{cha} = .000, F(1, 87) = .020, p = .887$), and in block three the interaction product term (narcissism x private self-consciousness) also failed to predict significant additional variance in the criterion variable ($R^2_{cha} = .001, F(1, 86) = .047, p = .829$) (see Table 3.4).

Public Self-consciousness

In analysis two, narcissism reported the same non-significant predictive value as stated above. In block two public self-consciousness failed to significantly predict the criterion variable ($R^2_{cha} = .013, F(1, 87) = 1.177, p = .281$), and the interaction
product term (narcissism x public self-consciousness) also failed to add any significant predictive value to the model ($R^2_{cha} = .003, F(1, 86) = .234, p = .630$) (see Table 3.4).

Table 3.4: Model summary table for multiple hierarchical regression analysis: Three analyses performed on the criterion variable Dispositional Choking, ($N = 90$).

<table>
<thead>
<tr>
<th>ANAL</th>
<th>Variables entered</th>
<th>$R^2$</th>
<th>Std. Error of the Estimate</th>
<th>$R^2_{cha}$</th>
<th>$F_{cha}$</th>
<th>df</th>
<th>B</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Block 1 Narcissim</td>
<td>.001</td>
<td>1.0053</td>
<td>.001</td>
<td>.060</td>
<td>1, 88</td>
<td>-.041</td>
<td>.967</td>
</tr>
<tr>
<td></td>
<td>Block 2 Pri SC</td>
<td>.001</td>
<td>1.0110</td>
<td>.000</td>
<td>.020</td>
<td>1, 87</td>
<td>-.251</td>
<td>.803</td>
</tr>
<tr>
<td></td>
<td>Block 3 Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.102</td>
<td>.919</td>
</tr>
<tr>
<td></td>
<td>Nar x Pri SC</td>
<td>.001</td>
<td>1.0166</td>
<td>.001</td>
<td>.047</td>
<td>1, 86</td>
<td>.216</td>
<td>.829</td>
</tr>
<tr>
<td>2</td>
<td>Block 1 Narcissim</td>
<td>.001</td>
<td>1.0053</td>
<td>.001</td>
<td>.060</td>
<td>1, 88</td>
<td>.073</td>
<td>.942</td>
</tr>
<tr>
<td></td>
<td>Block 2 Pub SC</td>
<td>.014</td>
<td>1.0043</td>
<td>.013</td>
<td>1.177</td>
<td>1, 87</td>
<td>-.004</td>
<td>.997</td>
</tr>
<tr>
<td></td>
<td>Block 3 Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-1.095</td>
<td>.277</td>
</tr>
<tr>
<td></td>
<td>Nar x Pub SC</td>
<td>.017</td>
<td>1.0088</td>
<td>.000</td>
<td>.234</td>
<td>1, 86</td>
<td>-.483</td>
<td>.630</td>
</tr>
<tr>
<td>3</td>
<td>Block 1 Narcissim</td>
<td>.001</td>
<td>1.0053</td>
<td>.001</td>
<td>.060</td>
<td>1, 88</td>
<td>-.159</td>
<td>.874</td>
</tr>
<tr>
<td></td>
<td>Block 2 S Anx</td>
<td>.009</td>
<td>1.0069</td>
<td>.008</td>
<td>.726</td>
<td>1, 87</td>
<td>-.554</td>
<td>.581</td>
</tr>
<tr>
<td></td>
<td>Block 3 Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.909</td>
<td>.366</td>
</tr>
<tr>
<td></td>
<td>Nar x S Anx</td>
<td>-.095</td>
<td>.277</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


* $p < .05$; ** $p < .01$; *** $p < .001$

Social Anxiety

In analysis three, the non-significant predictive value for narcissism remained the same as reported above. In block two social anxiety failed to significantly predict the
criterion variable ($R^2_{\text{cha}} = .008$, $F(1, 87) = .726$, $p = .397$), and the interaction product term (narcissism x social anxiety) also failed to add to the predictive value of the model ($R^2_{\text{cha}} = .014$, $F(1, 86) = 1.199$, $p = .277$) (see Table 3.4).

In summary the main analyses reported no significant results with regard to the independent variables of narcissism and self-consciousness predicting the criterion variable of dispositional choking. Results offered no evidence to support hypotheses one and two. The significant negative correlation between narcissism and social anxiety does offer potential support for hypothesis three, suggesting that narcissism protects against the social anxiety sub-component of trait self-consciousness.
Discussion

The aims of this study were met. A valid instrument to measure dispositional choking was designed, and a test of scale reliability revealed inter-item consistency and a high scale alpha suggesting measurement validity of the construct dispositional choking. Aim two was to explore the relationships between the personality variables; narcissism and trait self-consciousness, in relation to each other and their influence on dispositional choking. Three hypotheses were set based on theoretical predictions (Baumeister, 1984; Wallace & Baumeister, 2002), but the results of this study offered limited support for these hypotheses. In relation to hypothesis one there was no correlation between narcissism and dispositional choking, and in the main analyses narcissism did not significantly predict dispositional choking. In relation to hypothesis two, there were no correlations revealed between the trait self-consciousness subscales and dispositional choking, and in the main analyses the trait self-consciousness subscales did not prove to be significant predictors of dispositional choking over and above narcissism. The lack of significant results from the main analyses meant that there was no evidence to support hypothesis three, which predicted narcissism would protect against the debilitative effects of trait self-consciousness. A significant negative correlation was revealed between narcissism and social anxiety, but was the only significant result indicating the relationship between the personality variables. Significant correlations between the subscales of trait self-consciousness offered support to the findings of Fenigstein et al. (1975).

Theoretical implications of this study are somewhat marginal due to the lack of significant results reported in the main analysis. Preliminary correlations offer some evidence that supports prior findings. The self-consciousness subscales revealed
positive correlations between private and public self-consciousness, and public self-consciousness and social anxiety, which support the findings of Fenigstein et al. (1975) in their assessment of the scale. Social anxiety also revealed a significant negative correlation with narcissism, which although the relationship has not received direct assessment before, is in the expected direction based on previous literature that has reported narcissism to be negatively related to trait anxiety (Spano, 2001). Based on our understanding of narcissism it would be assumed that social anxiety would not be a characteristic of the narcissistic personality due to the grandiose view of the self that narcissists hold and their avid seeking of situations to achieve self-enhancement and glory (Morf & Rhodewalt, 2001; Wallace & Baumeister, 2002). With regard to private and public self-consciousness, the relationship with narcissism is still unclear. It is assumed that, if narcissists do have high habitual self-consciousness, they would not experience social anxiety as a consequence, due to the characteristics of the narcissistic personality. Previous research has reported narcissism to be positively correlated with high self-focused attention (Emmons, 1987), but at this stage there is no evidence to suggest that narcissists also have high trait self-consciousness.

The devised scale to measure dispositional choking was found to have good internal consistency, with no changes to the items needed. This encourages further investigation into the construct dispositional choking and the use of the Dispositional Choking Scale as a measurement tool to develop further scale assessment and validation. It is proposed that the scale be rephrased to compile a self-report format in addition to the informant design to test whether the scale offers a valid self-report measure of dispositional choking also. This recommendation is based on the
individual difference approach that has been adopted in this particular line of investigation, so it is thought appropriate that a self-report measure would add to the validity of this research investigation into personality and predisposition to choke. In light of the main analysis in the present study providing an absence of significant results regarding the dependent variable, regardless of the scale consistency reported, it is also proffered that a self-report measure of the scale may offer more direct measurement of dispositional choking in line with the research focus.

A discussion of the limitations of the present study may offer potential reasons for the paucity of significant findings. Firstly, in relation to the informant’s measure it was thought there may have been too much disparity in the measure, caused by varied coach-athlete relationships regarding length, proximity and style. These confounding factors may have reduced the accuracy of the information garnered from this measure of an individual’s disposition to choke. As a recommendation to dilute the effects of this confounding factor, it is proposed that in future the informant measure may be better completed by an individual of the athlete’s choice on the understanding that it must be someone that knows the athlete very well.

Secondly, consideration is given to the inclusion of subjects from a variety of sports in the study, and the inconsistencies that this caused with regard to data collection and potential variability in the type of data collected. Based on the individual difference approach to this line of inquiry it was thought sport type differences would not confound results, but due to the limited findings reported in the analysis it was suggested that all possible confounding factors need to be controlled for in future research. On this basis, proposals are made for future investigations to focus on one sport, so there is greater consistency within the data for more sensitive analysis to be
achieved at this initial stage of theoretical investigation. Thirdly, based on the former two points it was decided that a state measure of choking would be advantageous to allow for analysis of consistent reliability of the dispositional choking scale with another choking measure. In line with the individual difference approach to this research, this may require the design of a scale that can report a measure of state choking directly in a self-report format, as opposed to an actual measure of performance discrepancy as has been used previously to indicate state choking from a mechanistic perspective. Obtaining a state measure of choking in conjunction with the dispositional measure would also provide the opportunity to test the ability of the dispositional choking scale to predict state choking, and offer concurrent validity. If there is support for this proposal, the dispositional choking scale may be advocated as a very useful tool within applied settings in athlete familiarisation.

A number of conclusions have been drawn from study one that has allowed for informed decisions and changes to be made in the preparation and design of study two. In summary, the salient factors highlighted as areas for consideration were two-fold. Firstly with regard to measurement; the re-formatting of the dispositional choking scale as a self-report measure, and the designing of a self-report state measure of choking were proposed. And secondly with regard to consistency; the confining of the subject sample to a single sport, and changing the informant to an individual chosen by the athlete, were recommendations made to limit the effects of possible confounding variables.
Study Two

Study Aims

1. To test the viability of the dispositional choking scale as a predictor of state choking.

2. To investigate the potential interaction between narcissism and trait self-consciousness on choking under pressure.

Hypotheses

1) Dispositional choking will positively predict state choking.

2) Narcissism will moderate the relationship between trait self-consciousness (private and public) and choking, protecting against the debilitative effects of low trait self-consciousness (private and public).

3) Narcissism will moderate the relationship between trait social anxiety and choking, protecting against the debilitative effects of high trait social anxiety.
Method

Participants

A total of 114 gymnasts participated in the study, 90 females and 24 males with a mean age of 20 years (SD = 2.026). The sample of gymnasts was accumulated from 12 university clubs throughout Britain, and consisted of competing gymnasts within the disciplines of Artistic Gymnastics, Sports Acrobatics, Tumbling and Trampolining. For each participating gymnast there was also an informant chosen by the gymnast to represent him or her to complete one observational measure. Participants were approached once the club leader had given his/her consent to the club’s participation and each gymnast gave their written consent before completing the study (see Appendix A).

Measures

Narcissism

Narcissism was measured by the Narcissistic Personality Inventory (NPI-40; Raskin & Hall, 1979; Raskin & Terry, 1988) as used in the previous study. The inventory produces a sub-clinical measure of narcissism based on responses chosen from 40 forced choice item pairs. Each item pair consists of a narcissistic response, for example “I am an extraordinary person”, and a non-narcissistic response, for example “I am much like everybody else”. If the narcissistic response is chosen a score of 1 is given to that item, otherwise the item scores 0. The maximum scale total is 40 and represents an individual with a high narcissistic personality (see Appendix E). Principal-components analysis produced the NPI-40 structure as the best solution resulting in seven first-order components and a general factor representative of
narcissism. All seven components had a minimum of three items that loaded at .50 or above on that component, and the average intercomponent correlation was .22. Overall the general factor showed a scale alpha of .83 and a total score correlation of .98, supporting the reliability and consistency of the NPI-40 (Raskin & Terry, 1988).

**Trait Self-consciousness**

The Self-consciousness Scale (S-CS; Fenigstein et al., 1975) was used as in the previous study to measure private and public self-consciousness and social anxiety. The scale consists of 23 items in total, of which 10 relate to private self-consciousness, for example “I’m always trying to figure myself out”; 7 to public self-consciousness, for example “I’m concerned about my style of doing things”; and the remaining 6 to social anxiety, for example “I have trouble working when someone is watching me”. Subscale items are randomly ordered and based on a Likert scale ranging from 0 (Extremely Uncharacteristic) to 4 (Extremely Characteristic). Each subscale has its own maximum score of: 40 for private self-consciousness, 28 for public self-consciousness, and 24 for social anxiety, and these are analysed separately in this study (see Appendix F). In assessment of the scale Fenigstein et al. (1975) reported all items to have a loading of above .40 for their appropriate factor. Subscale correlations showed significant correlations between private and public self-consciousness ($r=.23$), and public self-consciousness and social anxiety ($r=.21$). The correlation between private self-consciousness and social anxiety fluctuated around zero. Test-retest correlations provided reliability evidence for the three subscales; private self-consciousness, ($r=.79$); public self-consciousness, ($r=.84$); and social anxiety, ($r=.73$); and for the total scale score, ($r=.80$).
**Dispositional Choking**

Dispositional choking was measured via two formats of the Dispositional Choking Scale; the informants measure (DCS-I) and as a self-report measure (DCS-SR). The intention was to test the potential reliability of the DCS as a self-report measure as well as an informant's measure.

The DCS-I was employed in this study to gain an observant measure of dispositional choking as it was in study one. The scale consists of 8 items, based on a Likert scale ranging from 0 (Strongly Agree) to 10 (Strongly Disagree). For example; “This gymnast tends to choke under pressure”. A maximum score of 80 for the scale indicates that the informant regards the individual as having a very high disposition to choke under pressure (see Appendix G). Internal reliability of the DCS-I (completed by the coach) was reported in study one with a total scale Cronbach’s alpha coefficient of .9545 and inter-item correlations of .50 and above.

The DCS-SR was introduced in this study to gain a self-report measure of dispositional choking. The scale consists of the same 8 items that form the DCS-I and are based on an identical Likert scale, but due to the self-report nature of the inventory the items have been re-worded accordingly. For example; “I tend to choke under the pressure of competition”. Similarly the maximum score of the scale is 80, indicating the individual perceives him or herself to have a very high disposition to choke (see Appendix H).
State Choking

The 'State Choking Inventory' (RSCI) was devised to quantify an indication of an individual’s level of state choking in retrospect to three previous competitive experiences. This is an 18-item scale which consists of three sections. Each section is identical, containing a standard six items of which the participant is asked to complete retrospectively in reference to a different situation, at the start of each of the three sections. The three different situations are based on the three most recent competitions that the participant has experienced starting with their most recent, followed by the second and third. For each experience the standard six items are completed, based on a Likert scale ranging from 0 (Much Worse) to 10 (Much Better). Each section has a maximum retrospective loss of performance score ‘state choking’ of 60, after reverse scoring where necessary, giving the inventory as a whole a maximum total score of 180. The standard six items were designed to quantify, in retrospect, the difference in an individual’s performance in training, in comparison to their actual performance in competition. For example, “How well do you feel you performed in the competition compared to in training?” and “How did the pressure of competition affect your performance?” The three sections were calculated individually, and the total of the most recent competition alone was used in analysis. If all three experiences were completed then an inventory total was also calculated and a separate analysis was based on the total scale measure (see Appendix I).

Procedure

Data collection involved the use of four inventories, all of which the gymnasts themselves completed and one of which was also completed by an informant as an
observational measure. The participant questionnaire booklet consisted of a letter to the gymnast detailing information about the study, an informed consent form, a demographics questionnaire and four self-report inventories. The NPI-40 (Raskin and Hall, 1979; Raskin & Terry, 1988) was completed as a measure of narcissism, the S-CS (Fenigstein et al., 1975) as a measure of trait self-consciousness, the DCS-SR as a measure of dispositional choking and the RSCI as a measure of state choking. The observational measure completed by the chosen informant was the DCS-I scale, providing an informant's measure of the gymnast's disposition to choke.

University clubs were approached at the British University Sports Association Gymnastics Championships and asked if they would be willing to take part in the study. Future contact was then made with each individual club leader to gain consent for the club's gymnasts to participate in the study. Once this was obtained the researcher visited the gymnastic clubs at a pre-arranged time within the club's training schedules. All gymnasts were informed of the aims and requirements of the study before signing an informed consent form. A questionnaire booklet was then distributed to each participating gymnast and completed within the session where possible. The informant's questionnaire was also completed within the same session and returned to the researcher with the completed questionnaire booklets. If informants were not present at the session the questionnaire booklets were taken by the coach for him/her to direct the gymnast in its completion and then returned to the researcher via post at a later date. All participating clubs were offered a synthesis of the study findings on request, after completion of the study.
Data Analysis

To test for internal consistency of the newly designed choking scales the Cronbach's Alpha Coefficient test was used to analyse the Dispositional Choking Scale as a self-report measure and once again as an informant's measure, and the Retrospective State Choking Inventory. To assess the data for gender differences, t-tests were used to highlight significant differences within each of the test variables. This was done so that if gender was a significant factor of variability within the data then standardisation would be implemented to control for this prior to the main analysis.

Correlations were performed on all test variables to indicate significant directional relationships between the independent and dependent variables. Hypothesis testing was performed via Multiple Hierarchical Regression using theoretically based models to test independent variables as predictors of the criterion variables.
Results

Preliminary Analyses

Reliability Tests

Internal consistency analyses were performed on the Dispositional Choking Scale, once again, in an attempt to offer support to the findings reported in the previous study, and also for the newly devised Retrospective State Choking Inventory. The DCS-I, as completed by an informant like in study one, produced a scale alpha of .9178 and inter-item correlations ranging between $r = 0.41$ and $r = 0.79$. The DCS-SR completed as a self-report measure produced a very high scale alpha of .9238 with inter-item correlations ranging between $r = 0.32$ and $r = 0.85$ (see Table 3.5).

Table 3.5: Inter-item correlations, Means, and Standard Deviations for Full-Scale Dispositional Choking (DCS-SR).

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.31</td>
<td>2.47</td>
</tr>
<tr>
<td>2</td>
<td>.71</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.30</td>
<td>2.75</td>
</tr>
<tr>
<td>3</td>
<td>.50</td>
<td>.53</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.82</td>
<td>2.29</td>
</tr>
<tr>
<td>4</td>
<td>.59</td>
<td>.79</td>
<td>.65</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.33</td>
<td>2.58</td>
</tr>
<tr>
<td>5</td>
<td>.57</td>
<td>.65</td>
<td>.59</td>
<td>.80</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td>3.89</td>
<td>2.31</td>
</tr>
<tr>
<td>6</td>
<td>.32</td>
<td>.57</td>
<td>.46</td>
<td>.66</td>
<td>.52</td>
<td>1.00</td>
<td></td>
<td></td>
<td>4.62</td>
<td>2.64</td>
</tr>
<tr>
<td>7</td>
<td>.73</td>
<td>.82</td>
<td>.45</td>
<td>.68</td>
<td>.67</td>
<td>.48</td>
<td>1.00</td>
<td></td>
<td>4.36</td>
<td>2.43</td>
</tr>
<tr>
<td>8</td>
<td>.53</td>
<td>.57</td>
<td>.85</td>
<td>.67</td>
<td>.63</td>
<td>.44</td>
<td>.50</td>
<td>1.00</td>
<td>3.49</td>
<td>2.34</td>
</tr>
<tr>
<td>Full Scale</td>
<td>.69</td>
<td>.83</td>
<td>.70</td>
<td>.87</td>
<td>.78</td>
<td>.59</td>
<td>.77</td>
<td>.73</td>
<td>33.11</td>
<td>16.17</td>
</tr>
</tbody>
</table>

Note: N = 114. The correlations between the full scale and the eight individual scale items were item-corrected to eliminate item overlap.

The RSCI produced a scale alpha of .9345 with inter-item correlations ranging between $r = 0.52$ and $r = 0.93$, showing very high internal consistency for the standard six questions in section one of the inventory. Analysis was only completed on the standard six questions in section one due to sections two and three of the inventory being repetitions of the same standard six questions, but reporting on different scenarios (see Table 3.6).
Table 3.6: Inter-item correlations, Means, and Standard Deviations for Section One of the Retrospective State Choking Inventory (RSCI).

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.09</td>
<td>2.51</td>
</tr>
<tr>
<td>2</td>
<td>0.93</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.18</td>
<td>2.48</td>
</tr>
<tr>
<td>3</td>
<td>0.54</td>
<td>0.60</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5.41</td>
<td>2.17</td>
</tr>
<tr>
<td>4</td>
<td>0.77</td>
<td>0.79</td>
<td>0.60</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>4.49</td>
<td>2.45</td>
</tr>
<tr>
<td>5</td>
<td>0.66</td>
<td>0.71</td>
<td>0.82</td>
<td>0.60</td>
<td>1.00</td>
<td>-</td>
<td>5.44</td>
<td>2.18</td>
</tr>
<tr>
<td>6</td>
<td>0.84</td>
<td>0.83</td>
<td>0.52</td>
<td>0.73</td>
<td>0.63</td>
<td>1.00</td>
<td>5.44</td>
<td>2.19</td>
</tr>
<tr>
<td>Full Scale</td>
<td>0.87</td>
<td>0.91</td>
<td>0.68</td>
<td>0.80</td>
<td>0.77</td>
<td>0.82</td>
<td>27.45</td>
<td>12.72</td>
</tr>
</tbody>
</table>

Note: N = 113. The correlations between the full scale and the eight individual scale items were item-corrected to eliminate item overlap.

T-tests

Table 3.7: Descriptives for all test variables (Males: N = 24; Females: 90).

<table>
<thead>
<tr>
<th>GENDER</th>
<th>TNPI</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>male</td>
<td>16.2917**</td>
<td>6.74685</td>
<td>1.37719</td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>11.7111</td>
<td>6.75950</td>
<td>1.37719</td>
<td></td>
</tr>
<tr>
<td>TPRISC</td>
<td>male</td>
<td>24.5833</td>
<td>7.24069</td>
<td>1.47800</td>
</tr>
<tr>
<td>female</td>
<td>23.2333</td>
<td>7.35833</td>
<td>1.47800</td>
<td></td>
</tr>
<tr>
<td>TPUBSC</td>
<td>male</td>
<td>15.7083**</td>
<td>5.05173</td>
<td>1.03118</td>
</tr>
<tr>
<td>female</td>
<td>18.7889</td>
<td>4.23335</td>
<td>1.03118</td>
<td></td>
</tr>
<tr>
<td>TSASC</td>
<td>male</td>
<td>10.8750*</td>
<td>4.69331</td>
<td>0.95802</td>
</tr>
<tr>
<td>female</td>
<td>13.3333</td>
<td>4.96278</td>
<td>0.95802</td>
<td></td>
</tr>
<tr>
<td>TDCS-SR</td>
<td>male</td>
<td>33.1250</td>
<td>13.46271</td>
<td>2.74806</td>
</tr>
<tr>
<td>female</td>
<td>33.1111</td>
<td>16.88989</td>
<td>2.74806</td>
<td></td>
</tr>
<tr>
<td>TDCS-I</td>
<td>male</td>
<td>32.4545</td>
<td>13.52151</td>
<td>2.88280</td>
</tr>
<tr>
<td>female</td>
<td>30.1860</td>
<td>14.02729</td>
<td>2.88280</td>
<td></td>
</tr>
<tr>
<td>TPP1</td>
<td>male</td>
<td>25.3333</td>
<td>12.82208</td>
<td>2.61370</td>
</tr>
<tr>
<td>female</td>
<td>27.9000</td>
<td>12.69084</td>
<td>2.61370</td>
<td></td>
</tr>
<tr>
<td>TPP2</td>
<td>male</td>
<td>27.4000</td>
<td>13.41013</td>
<td>2.99860</td>
</tr>
<tr>
<td>female</td>
<td>27.9875</td>
<td>10.77796</td>
<td>2.99860</td>
<td></td>
</tr>
<tr>
<td>TPP3</td>
<td>male</td>
<td>32.1765</td>
<td>11.37561</td>
<td>2.75899</td>
</tr>
<tr>
<td>female</td>
<td>29.2923</td>
<td>11.94613</td>
<td>2.75899</td>
<td></td>
</tr>
<tr>
<td>TRSCI</td>
<td>male</td>
<td>84.9412</td>
<td>22.18522</td>
<td>5.38071</td>
</tr>
<tr>
<td>female</td>
<td>82.6154</td>
<td>23.80762</td>
<td>5.38071</td>
<td></td>
</tr>
</tbody>
</table>

Note: Narcissism (TNPI), Private Self-consciousness (TPRISC), Public Self-consciousness (TPUBSC), Social Anxiety (TSASC), Dispositional Choking - Self-report (DCS-SR), Dispositional Choking - Informant Measure (DCS-I), Retrospective State Choking Past Performance One (TPP1), Past Performance Two (TPP2), Past Performance Three (TPP3), and Full Scale (TRSCI).

* p < .05; ** p < .01; *** p < .001

Gender differences were revealed using independent samples t-tests for narcissism, public self-consciousness and social anxiety (see Table 3.7 for means and standard deviations). Males were significantly higher in narcissism than females ($t = 2.951, df$
Females were significantly higher in public self-consciousness than males \( (t = -3.038, df = 112, p < .003) \), and significantly higher in social anxiety than males \( (t = -2.180, df = 112, p < .031) \). Based on these three findings the data were standardised within gender to control for any possible gender effects in the main analysis.

**Correlations**

Correlations were performed on the independent and dependent variables, for the data set as a whole \( (N = 114) \) having been standardised within gender to eliminate any confounding variability in the data (see Table 3.8). A correlation involving the total score calculated from the Retrospective State Choking Inventory is based on a reduced sample of 82 participants, due to the remaining 32 failing to complete all three sections of the inventory, and correlations presented on the informant measure of dispositional choking are also based on a reduced sample of 108, due to eight informants failing to return their completed DCS-I.

**Table 3.8: Correlation Matrix of standardised values (Z scores) for all test variables \( (N = 114) \) except for TDCS-I \( (N = 108) \), and TRSCI \( (N = 82) \).**

<table>
<thead>
<tr>
<th></th>
<th>TNPI</th>
<th>TPRISC</th>
<th>TPUWSC</th>
<th>TSASC</th>
<th>TDCS-SR</th>
<th>TDCS-I</th>
<th>TPP1</th>
<th>TRSCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPRISC</td>
<td>.022</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TPUWSC</td>
<td>.044</td>
<td>.377**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TSASC</td>
<td>-.431**</td>
<td>.126</td>
<td>.270**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TDCS-SR</td>
<td>-.176</td>
<td>-.134</td>
<td>.044</td>
<td>.249**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TDCS-I</td>
<td>-.206*</td>
<td>.103</td>
<td>.109</td>
<td>.185</td>
<td>.287**</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TPP1</td>
<td>-.173</td>
<td>-.043</td>
<td>-.013</td>
<td>.189*</td>
<td>.490**</td>
<td>.381**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TRSCI</td>
<td>-.210</td>
<td>-.098</td>
<td>.012</td>
<td>.088</td>
<td>.641**</td>
<td>.308**</td>
<td>.825**</td>
<td>-</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).  
* Correlation is significant at the 0.05 level (2-tailed).  
Note: Narcissism (TNPI), Private Self-consciousness (TPRISC), Public Self-consciousness (TPUBSC), Social Anxiety (TSASC), Dispositional Choking – Self-report (DCS-SR), Dispositional Choking – Informant Measure (DCS-I), Retrospective State Choking Past Performance One (TPPI), and Full Scale (TRSCI).
Correlations on the two dependent variables of dispositional and state choking were performed as a means of checking for construct validity on the premise that high dispositional choking would predict high state choking. Firstly a significant positive correlation was revealed between the self-report measure and informant measure of dispositional choking ($r = .287, p < .003$), and a significant positive correlation between the retrospective state choking full scale measure and past performance one only ($r = .825, p < .000$). Secondly, significant positive correlations were revealed between the total retrospective state choking measure and the self-report measure of dispositional choking ($r = .641, p < .000$) and with the informant measure of dispositional choking ($r = .308, p < .006$). Additionally the whole data sample showed significant positive correlations between the retrospective state choking past performance one only, and self-report dispositional choking ($r = .490, p < .000$), and the informant dispositional choking measure ($r = .381, p < .000$).

With regard to correlations between the dependent and independent variables only narcissism and social anxiety offered significant results. The independent variable of narcissism was negatively correlated with the informant measure of dispositional choking ($r = -.206, p < .032$). Social anxiety was positively correlated with the self-report measure of dispositional choking ($r = .249, p < .008$), and a positive correlation with the retrospective state choking past performance one measure ($r = .189, p < .044$) was revealed.

Correlations between the independent variables indicated only one significant correlation with narcissism and social anxiety ($r = -.431, p < .000$). The self-consciousness subscales produced expected correlations, a positive correlation
between private and public self-consciousness ($r = .377, p < .000$), and a positive correlation between public self-consciousness and social anxiety ($r = .270, p < .004$), supporting findings of Fenigstein et al. (1975).

Main Analysis

Simple Regression

To test hypothesis one a simple regression analysis was conducted to see whether dispositional choking predicted state choking. Four regressions were performed. The first analysis revealed that the dispositional choking self report measure significantly predicted 41% of the variance in retrospective state choking as measured by the full scale ($R^2 = .410$, $F(1, 81) = 55.676, p < .000$) (see Table 3.9). The second analysis revealed that the informant measure of dispositional choking significantly predicted 9.5% of the variance in retrospective state choking as measured by the full scale ($R^2 = .095$, $F(1, 76) = 7.839, p < .006$) (see Table 3.9).

Table 3.9: Model summary table for simple regression analysis on the criterion variable: state choking – full scale measure (RSCI).

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Variables entered</th>
<th>$R^2$</th>
<th>Std. Error of the Estimate</th>
<th>B</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Model 1 Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zscore(Dispositional) Choking – SR</td>
<td>.410</td>
<td>.7727</td>
<td>.641</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Model 1 Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zscore(Dispositional) Choking – I</td>
<td>.095</td>
<td>.9579</td>
<td>.308</td>
<td></td>
</tr>
</tbody>
</table>

Note: Analysis 1 ($N = 82$); Analysis 2 ($N = 108$).
* p < .05; ** p < .01; *** p < .001

In analyses three and four the criterion variable was retrospective state choking performance one only (PP1). Analysis three revealed that the dispositional choking
self report measure significantly predicted 24% of the variance in the criterion variable \((R^2 = .240, F(1, 113) = 35.451, p < .000)\), and, finally, analysis four revealed the informant measure of dispositional choking to significantly predict 14.5% of the variance in the criterion \((R^2 = .145, F(1, 107) = 17.988, p < .000)\) (see Table 3.10).

These results support hypothesis one, providing evidence that the dispositional measure of choking does significantly predict retrospective state choking, and that the self-report measure of dispositional choking predicts the greatest variance (41%) in retrospective state choking as measured by the full scale. On this basis the DCS-SR and the RSCI will form the dominant criterion variables for the multiple hierarchical regression analyses used to test hypotheses two and three.

**Table 3.10: Model summary table for simple regression analysis on the criterion variable: state choking – past performance one only (PP1).**

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Variables entered</th>
<th>(R^2)</th>
<th>Std. Error of the Estimate</th>
<th>(\beta)</th>
<th>(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Model 1</td>
<td>Constant</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zscore(Dispositional) Choking -SR</td>
<td>.240</td>
<td>.8715</td>
<td>.490</td>
</tr>
<tr>
<td>4</td>
<td>Model 1</td>
<td>Constant</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zscore(Dispositional) Choking -1</td>
<td>.145</td>
<td>9249</td>
<td>.381</td>
</tr>
</tbody>
</table>

Note: Analysis 3 \((N = 114)\); Analysis 4 \((N = 108)\).  
* \(p < .05\); ** \(p < .01\); *** \(p < .001\)

**Moderation Test**

Multiple hierarchical regression analyses were performed for the predictor variables of narcissism and the self-consciousness subscales on the two criterion variables dispositional and state choking. The data set was analysed as a whole, having been standardised within gender to eliminate gender effects. Narcissism was entered into model one of each analysis, followed by one of the self-consciousness sub-scales in model two and the interaction of the two predictor variables in model three. Each
analysis was performed on the two criterion variables of dispositional choking, using the DCS-SR and DCS-I, and state choking using the RSCI and PP1.

Full results are presented for the criterion variable dispositional choking as a self-report measure (DCS-SR), and total retrospective state choking (RSCI). Results are summarised for the dependent variables of dispositional choking informant measure (DCS-I) and retrospective state choking past performance one (PP1) with only significant findings reported to offer support to the prevalent criterion variables. The full data set (N=114) was analysed for the criterion dispositional choking as all participants successfully completed the DCS-SR. Analysis on the criterion state choking was based on a restricted data set (N=82) as 32 participants did not complete all three competition retrospective reports (RSCI). Only those gymnasts who completed all three sections of the retrospective state choking inventory were included in the analysis to give a reliable overall inventory total.

**Private Self-consciousness**

*Analysis One – Self Report Dispositional Choking.* In block one narcissism predicted 3.1% of the variance of dispositional choking (DCS-SR), which was nearing significance at the 5% level ($R^2 = .031, F(1, 112) = 3.569, p = .061$). Private self-consciousness did not significantly predict the criterion variable over and above narcissism ($R^2 \text{ cha} = .018, F(1, 111) = 2.085, p = .152$). In block three the interaction product term (narcissism x private self-consciousness) did significantly add to the predictive value of the model over and above narcissism and private self-
consciousness ($R^2$ cha = .037, $F(1, 110) = 4.443, p < .037$) (see Table 3.11 and Figure 3.1).

![Dispositional Choking (DCS-SR) vs. Private Self-consciousness](image)

*Figure 3.1: Nature of the interaction between narcissism and private self-consciousness on dispositional choking – DCS-SR (N = 114).*

**Analysis Two – Full Scale State Choking.** For state choking block one reported narcissism was revealed to predict a variance of the criterion variable (RSCI), which was nearing significance ($R^2 = .044, F(1, 80) = 3.686, p = .058$). Private self-consciousness did not add significantly to the predictive value of the model ($R^2$ cha = .011, $F(1, 79) = .886, p = .349$). In block three the interaction product term (narcissism x private self-consciousness) did predict a significant variance of the criterion variable over and above narcissism and private self-consciousness ($R^2$ cha = .045, $F(1, 78) = 3.925, p = .051$) (see Table 3.11 and Figure 3.2).
Table 3.11: Model summary table for multiple hierarchical regression analysis for narcissism and private self-consciousness: analyses one (criterion variable DCS-SR) and two (criterion variable RSCI) results.

<table>
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Note: ANAL = Analysis 1 criterion: self-report dispositional choking ($N = 114$)
Analysis 2 criterion: full scale state choking ($N = 82$).
* $p < .05$; ** $p < .01$; *** $p < .001$

![Figure 3.2: Nature of the interaction between narcissism and private self-consciousness on state choking - RSCI ($N = 82$).](image-url)
Public Self-consciousness

Analysis One - Self-report Dispositional Choking. For the criterion variable dispositional choking (DCS-SR) narcissism predicted the same near significant variance of the criterion variable as reported above for analysis one. Public self-consciousness did not significantly add to the predictive value of the model over and above narcissism ($R^2_{cha} = .003, F(1, 111) = .306, p = .581$). In block three the interaction product term (narcissism x public self-consciousness) also failed to predict a significant additional variance in the criterion variable ($R^2_{cha} = .010, F(1, 110) = 1.098, p = .297$) (see Table 3.12).

Table 3.12: Model summary table for multiple hierarchical regression analysis for narcissism and public self-consciousness: analyses one (criterion variable DCS-SR) and two (criterion variable RSCI) results.

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| 2    | Block 1           |       |                            |             |           |    |        |       |
|      | Narcissism        | .044  | .9838                      | .044        | 3.686     | 1, 80 |        | .235  |
|      | Block 2           | .045  | .9897                      | .001        | .047      | 1, 79 |        | -.194 | -1.829 |
|      | Block 3           |       |                            |             |           |    |        |       |
|      | Constant          | .132  | .9496                      | .087        | 7.825**   | 1, 78 | -.309  | -2.797** |
|      | Nar x Pub SC      | .112  |                            |             |           |    |        |       |

Note: ANAL - Analysis 1 criterion: self-report dispositional choking ($N = 114$)
Analysis 2 criterion: full scale state choking ($N = 82$).

* $p < .05$; ** $p < .01$; *** $p < .001$
Analysis Two – Full Scale State Choking. In block one; narcissism revealed a near significant prediction of the criterion variable as reported above for analysis two. Public self-consciousness did not significantly add to the predictive value of the model ($R^2_{\text{cha}} = .001$, $F(1, 79) = .047$, $p = .829$). In block three the interaction product term (narcissism $\times$ public self-consciousness) did significantly predict the criterion variable over and above narcissism and public self-consciousness ($R^2_{\text{cha}} = .087$, $F(1, 78)$, $p < .006$) (see Table 3.12 and Figure 3.3).

![Graph showing the nature of the interaction between narcissism and public self-consciousness on state choking - RSCI (N = 82).]

Figure 3.3: Nature of the interaction between narcissism and public self-consciousness on state choking - RSCI (N = 82).
Social Anxiety

Analysis One – Self-report Dispositional Choking. Finally for the dependent variable dispositional choking (DCS-SR) narcissism once again reported the same near significant predictive value of the criterion variable in analysis. In block two social anxiety significantly predicted the criterion variable over and above narcissism ($R^2_{cha} = .037$, $F(1, 111), p < .038$). The interaction product term (narcissism x social anxiety) did not significantly add to the predictive value of the model in block three ($R^2_{cha} = .003$, $F(1, 110) = .331, p = .566$) (see Table 3.13).

Table 3.13: Model summary table for multiple hierarchical regression analysis for narcissism and social anxiety: analyses one (criterion variable DCS-SR) and two (criterion variable RSCI) results.

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Note: ANAL – Analysis 1 criterion: self-report dispositional choking ($N = 114$)
Analysis 2 criterion: full scale state choking ($N = 82$).
* $p < .05$; ** $p < .01$; *** $p < .001$

Analysis Two – Full Scale State Choking. In block one; narcissism once again reported the near significant variance of the criterion variable as reported above in analysis two. Social anxiety revealed no significant additional predictive value over
and above narcissism ($R^2_{\text{cha}} = .000, F(1, 79), p = .901$), and the interaction product term (narcissism x social anxiety) also failed to significantly add to the predictive value of the model ($R^2_{\text{cha}} = .013, F(1, 78) = 1.082, p = .302$) (see Table 3.13).

**Dispositional Choking – Informant Measure (DCS-I)**

Analyses with the informant’s measure of dispositional choking as the criterion variable ($N = 108$) indicated that narcissism was the only variable entered that consistently predicted a significant variance of the criterion variable ($R^2 = .042, F(1, 106) = 4.695, p < .032$). Private self-consciousness, public self-consciousness, and social anxiety were all non-significant predictor variables.

**State Choking – Past Performance One Only (PPI)**

Analyses of the retrospective state choking past performance one as the criterion ($N = 114$) indicated that narcissism consistently revealed a predictive value nearing significance at the 5% level in block one ($R^2 = .030, F(1, 112) = 3.450, p = .066$). The only other significant predictor of the criterion was reported by the interaction product term of narcissism x public self-consciousness in block three ($R^2_{\text{cha}} = .039, F(1, 110) = 4.591, p < .034$) (see Table 3.14 and Figure 3.4). This supported the significant interaction effect reported in block three of analysis two for the total retrospective state choking criterion variable.
Table 3.14: Model summary table for multiple hierarchical regression analysis on the criterion variable: state choking – past performance one, with narcissism, public self-consciousness and the interaction product term as predictor variables, (N = 114).

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*p < .05; ** p < .01; *** p < .001

Figure 3.4: Nature of the interaction between narcissism and public self-consciousness on state choking – PP1 (N = 114).
In summary of the main analyses, narcissism was revealed as a significant predictor of dispositional choking and a near significant (at the 5% level) predictor of state choking. Private and public self-consciousness both failed to predict dispositional and state choking over and above narcissism, whereas social anxiety was revealed as a significant predictor of dispositional choking (DCS-SR). The interaction product term of narcissism and private self-consciousness significantly predicted the criterion variables dispositional choking (DCS-SR) and state choking (RSCI). Additionally, the interaction product term of narcissism and public self-consciousness was revealed as a significant predictor of the criterion variable state choking as a full scale measure (RSCI) and past performance one only (PP1). These significant interaction effects offer support for the moderation of narcissism in hypothesis two, although the nature of the interaction is opposite of that predicted. The moderation effect of narcissism was not supported for social anxiety as predicted in the third hypothesis, although the significant main effect of social anxiety as a predictor of self-report dispositional choking and the significant negative correlation between narcissism and social anxiety do offer some support for the predictions of hypothesis three.
Discussion

The aims of the study were met, which were to test the viability of the dispositional choking scale as a predictor of state choking, and to investigate the potential interaction between narcissism and trait self-consciousness on choking under pressure. The results offered partial support to the stated hypotheses. Firstly, analysis revealed that dispositional choking was positively correlated with retrospective state choking, and that the self-report measure of dispositional choking significantly predicted nearly half of the variance in the full scale measure of retrospective state choking, offering support for hypothesis one. Secondly, partial support for hypothesis two was reported. Narcissism was revealed as a near significant predictor of dispositional choking and as a near significant predictor of state choking. Private and public self-consciousness both failed to predict dispositional and state choking criterion variables, over and above narcissism in models one and two. The only significant correlation reported between these independent variables was that of a positive relationship between private and public self-consciousness, as expected.

Tests of the interactions of the predictor variables revealed four significant findings that offered evidence for a consistent pattern in the results. The interaction between narcissism and private self-consciousness significantly predicted self-report dispositional choking and full scale retrospective state choking. The interaction between narcissism and public self-consciousness significantly predicted full scale retrospective state choking and past performance one only. All significant interactions revealed that narcissism moderates the relationship between trait self-consciousness and choking, but in the opposite direction to that predicted. Narcissism was shown to protect individuals from the debilitative effects of high trait self-consciousness not low trait self-consciousness, as hypothesised. Finally, narcissism
was not found to moderate the relationship between social anxiety and choking, as predicted in the third hypothesis. But social anxiety was a significant predictor of dispositional choking over and above narcissism. Social anxiety was also significantly and negatively correlated with narcissism, and consistently positively correlated with choking, which, it is suggested, offers partial support for the notion that narcissism protects against the negative effects of social anxiety.

Theoretical implications for the results of this study are discussed with regard to the three hypotheses, to aid clarity of interpretation. Hypothesis one dealt solely with the dependent variables of dispositional choking and retrospective state choking, in an aim to establish whether the dispositional choking scale was a viable predictor of state choking. The consistent significant positive correlations between all four measures (DCS-SR; DCS-I; RSCI; and PP1) of choking and the significant predictive values revealed for dispositional choking of state choking suggest that the dispositional choking scale is as a reliable measure of the likelihood of an individual choking under pressure as it significantly predicted nearly half the variance of full scale retrospective state choking measure. However, at this preliminary stage it is recognised that more testing is required to support the predictive reliability of the scale. It is also highlighted that the measure of state choking used was also based on a new inventory that required retrospective reports of past experiences. The nature of this inventory may require some caution due to the reliance on accurate participant recall of competitive situations over a period of time. In its defence, the scale alpha for the retrospective state choking inventory was extremely high and inter-correlations reported consistency within the items. In light of this it is proposed the next stage of validation would be to test the predictive validity of the dispositional
choking scale against a situational state measure of choking through actual performance discrepancies. This would offer an indicative measure of choking through recognised methods of testing for performance decrements, as used in previous research that has approached choking from a mechanistic perspective (Hardy et al., 1996b; Masters, 1992; Mullen & Hardy, 2000).

Hypothesis two predicted the main theoretical test in this study based on previous findings from Baumeister (1984) regarding trait self-consciousness and choking, and Wallace and Baumeister (2002) in relation to narcissism and performance under pressure. Baumeister (1984) reported that high levels of trait self-consciousness (private and public) were beneficial to individuals when required to perform under pressure, in comparison to low trait self-conscious individuals who experienced decrements in performance when subjected to pressure situations. In relation to the results of this study there is no direct evidence to support this finding. The subscales of private and public self-consciousness did not significantly correlate with choking and analyses revealed no significant main effects in the test of prediction. In terms of narcissism, Wallace and Baumeister (2002) reported that narcissism was beneficial to performance under situations of heightened pressure, challenge and public evaluation, whereas low narcissists experienced performance decrements indicative of choking in the test situations. The results of this study offer support to this finding on the basis that narcissism consistently evidenced a near significant main effect in the prediction of both dispositional and state choking. Surprisingly the only significant negative correlation reported was between the informant measure of dispositional choking and narcissism.
The interaction predicted in hypothesis two was based on the notion that narcissism would protect an individual from choking regardless of his/her level of trait self-consciousness, whereas high trait self-consciousness would reduce choking liability of individuals low in narcissism (Baumeister, 1984; Wallace & Baumeister, 2002). The results revealed a consistent moderation effect of narcissism on the relationship between trait self-consciousness and choking (dispositional and state), but the nature of this interaction was the opposite of that predicted in the hypothesis. Analysis showed that, as predicted, narcissism did protect individuals from choking, but when it interacted with trait self-consciousness individuals reported a higher choking liability with high trait self-consciousness if low in narcissism, compared to a lower choking liability if high in narcissism.

In an attempt to explain these findings, their implications are regarded as two-fold. Firstly, the finding that narcissism significantly predicts a lower level of dispositional choking and retrospective state choking offers support for the belief that the personality variable does protect against the debilitative effects of pressure. The mode in which it does this is not yet defined but previous research has suggested that it is through a motivational factor that drives a narcissist to seek out opportunities for self-enhancement and glory on the basis that these situations will allow the individual to ‘show off’ and be admired (Wallace & Baumeister, 2002). It has been well-documented that narcissists have a very high self-esteem (Eammons, 1987; Raskin & Terry, 1988; Raskin, Novacek, & Hogan, 1991) and regard themselves as grandiose, superior and exceptional individuals who will be successful (Morf & Rhodewalt, 2001; Rhodewalt & Morf, 1995; Robins & Beer, 2001; Robins & John, 1997). On this basis it is deemed fully comprehensible that narcissism should predict
low dispositional and state choking, as their grandiose self-views and innate motivation to be centre of attention will only be enhanced and fulfilled under pressure situations. It is on this line of understanding that a potential explanation has been developed to interpret the unexpected findings of the interaction between narcissism and trait self-consciousness on choking.

It is proposed that the grandiose self-views and high level of self-esteem and optimism that narcissists possess would strongly indicate high levels of self-confidence and positive interpretation. It is suggested that these factors influence the positive view of pressure situations and lack of self-doubt apparent in these situations, which enhance the motivation of a narcissist to crave opportunities with heightened self-directed attention from themselves and others. Research has widely shown that high self-confidence can benefit performance and possibly act as a buffer for the negative effects of anxiety (Hardy & Mullen, 2001). Self-confidence has also been shown to be linked with positive interpretation of anxiety and self-belief (Hardy, 1996; Jones, Swain, & Cale, 1991). On this basis it is proposed that narcissists possess a high level of confidence that in turn is accompanied by positive interpretation, and in this instance it is posited that narcissist's confidence encourages a positive interpretation of trait self-consciousness; regardless of level.

For instance, it might be plausible that high narcissists interpret high self-consciousness differently to low narcissists. Taken that it has been previously shown high narcissists seek out opportunities for glory and revel in any situation that offers self-enhancement (Wallace & Baumcister, 2002), it might be assumed that high narcissists with high self-consciousness like what they see. They like focusing on
themselves and being centre of attention, so have a positive interpretation of self-consciousness which in turn reduces their liability to choke. Whereas it might be assumed that for a low narcissist, high self-consciousness poses as more of a threat than it does to a high narcissist. This is based on the understanding that heightened self-focus induces discomfort and anxiety about self-directed and public attention; resulting in competition being viewed as an opportunity to fail or be scrutinised by others (Baumeister, Hamilton, & Tice, 1985; Conroy, Willow, & Metzler, 2002). This negative interpretation of self-consciousness would therein lead to a higher liability to choke. It is suggested that individuals low in narcissism are more likely to have varied levels, or it could be said more 'realistic' levels of self-confidence, due to absence of a chronic personality disposition like narcissism predisposing high confidence. So it would be expected that the effect of trait self-consciousness and its interpretation might be more significant and changeable for individuals low in narcissism, and potentially be dependent on the level of self-confidence. In essence this interpretation poses the very interesting question for future research: does self-confidence and in turn interpretation mediate the relationship between the interaction of narcissism and trait self-consciousness and choking?

A second potential explanation for the unexpected nature of the interaction and influence upon choking was in relation to the mode of measurement used for choking. This was rationalised on the basis that Baumeister inferred choking through performance discrepancies in a situation of manipulated self-consciousness. In this study the measures of choking used were both self-report based, so may have offered a more reliable view of how liable an individual is to choke as perceived by the self, in comparison to a single state measure of performance. This possible interpretation
can be linked to a previous research approach to choking presented by Masters et al. (1993). Masters et al. (1993) presented the notion of reinvestment as a dimension of personality and in doing so incorporated trait self-consciousness items to form a basis for a 'reinvestment scale' that was designed to be able to measure an individual's predisposition to reinvest, and subsequently choke. The items were included in the scale on the belief that individuals who were habitually more self-conscious would be more likely to reinvest conscious control in a pressure situation. However, this understanding contradicts the interpretation of trait self-consciousness presented by Baumeister (1984) in which high levels of habitual self-consciousness are believed to benefit an individual when under pressure from heightened levels of self-directed attention. It is proposed that both interpretations of how trait self-consciousness might impact on performance under pressure are theoretically plausible. In review of both proposals it is suggested that the mode of choking measurement may be the determining factor with regard to the relationship between trait self-consciousness and choking reported, however, further investigation is required to test this theory. The present results potentially offer support for the later interpretation presented by Masters et al. (1993) in which high trait self-consciousness is related to a higher disposition to choke, for low narcissists in this case.

Finally, the third hypothesis warrants discussion at this point due to the fact that social anxiety was revealed as a significant predictor of self-report dispositional choking over and above narcissism and that significant correlations revealed a positive relationship with choking (dispositional and state) and a negative relationship with narcissism. The positive relationship between social anxiety and
choking and the predictive value was expected based on extensive literature which has consistently documented the negative effects of performance anxiety (e.g. Burton, 1988; Gould, Petlichkoff, & Weinberg, 1984; Martens et al., 1990b), social physique anxiety (e.g. Hart, Lcary, & Rejeski, 1989; Martin & Mack, 1996; Wilson & Eklund, 1998), and negative effects of heightened self-awareness (e.g. Carver & Scheier, 1978; Duval & Wicklund, 1973; Lewis & Linder, 1997). The negative relationship with narcissism was also expected based on the fact that narcissists have grandiose self-views and seek out opportunities to be centre stage and receive others adoration, with no question of self-doubt or apprehension.

Fenigstein et al. (1975) posited social anxiety as a potential reaction to the process of self-consciousness, on the basis that if high public, and private self-consciousness in some cases, are viewed as threatening by the individual then high social anxiety will be a reaction to the process. It is proposed that this can be linked with the interpretation offered to explain the results in this study. In relation to narcissism it is suggested that for high narcissists, high trait self-consciousness will not trigger social anxiety, due to the grandiose self-views and self-enhancement motivation characteristic of this personality disposition. However for low narcissists, it is possible that if individuals have high trait self-consciousness and low confidence then they are likely to interpret their self-consciousness negatively, which, it is suggested will result in high social anxiety and a higher risk of choking. The social anxiety results are interesting in the sense that relationships with all other variables were in the expected direction, and that social anxiety significantly predicted self-report dispositional choking. This finding in itself warrants further investigation; as
does the potential for confidence and positive interpretation of trait self-consciousness upon influencing the occurrence of social anxiety as a consequence.

With the proposed explanation as a basis, high narcissism protects individuals from choking and has an even stronger effect in combination with a high level of trait self-consciousness; this is possibly due to high confidence and positive interpretation that narcissists have of self-directed attention. However, individuals with a low level of narcissism report a higher liability to choke if they have a high level of trait self-consciousness. This has possibly been explained by a negative interpretation of self-directed attention, due to low confidence, leading to the well-established effects of increased cognitive anxiety, self-doubt, and physiological arousal that are believed to be factors in the processes behind choking under pressure as described by the Catastrophe Model (Hardy, 1990; Hardy & Fazey, 1987; Hardy & Mullen, 2001).

An explanation of the processes that are presented in the Catastrophe Model was presented by Eysenck and Calvo in 1992 as the Processing Efficiency Theory. The theory proposed that a loss of performance is caused by restricted processing capacity for the task, due to an increase in cognitive anxiety 'worry' taking up valuable resources. In turn this highlights the importance of the event and results in the performer investing more effort into the task reducing performance efficiency. Eysenck (1982) suggested that effort will only be increased if the performer has at least a moderate level of confidence in their potential success. The results of this study offer support for this theory on the basis that narcissism has been previously related to low anxiety. Due to the narcissist's grandiose self-view, confidence and positive interpretation they are also unlikely to experience the negative effects of
anxiety and self-doubt. So in relation to the processing efficiency theory worry would not detract from task processing capacity and effort levels will always be at a maximum due to narcissists' innate motivation to demonstrate their superiority and greatness. In comparison, it is proposed that low narcissists report higher dispositions to choke when there is a higher level of trait self-consciousness due to a negative interpretation of self-consciousness, which may be influenced by the individual's level of confidence. So in relation to the processing efficiency theory it is suggested that low narcissists are more likely to experience worry and suffer from high trait self-consciousness if they have a low level of confidence. Low confidence is likely to induce negative interpretation of self-consciousness, increasing anxiety and as Eysenck (1982) suggested possibly reduce on task effort if confidence in success is low, resulting in detrimental performance.

Another theory presented as an explanation of the mechanics behind choking was the Conscious Processing Hypothesis (Baumeister, 1984; Masters, 1992), which presented the argument that an increase in conscious processing or directed attention to a task interferes with automaticity and in turn results in a decrement in performance. Baumeister (1984) showed that high trait self-conscious individuals to be less likely to choke under pressure than individuals with low trait self-consciousness. Baumeister's explanation was that high trait self-conscious individuals are more adept in dealing with high self-directed attention, so heightened self-awareness in a pressure situation does not have so much of an impact as it does on individuals who have low trait self-consciousness. It is suggested that this interpretation is plausible if the individual is confident and has a positive interpretation of his/her self-consciousness, like high narcissists. However, it is on
the basis of the results in this study, if an individual has high trait self-consciousness in conjunction with low confidence, it is likely they will interpret their self-consciousness negatively, resulting in the negative effect of conscious processing on performance that is explained by the conscious processing hypothesis (Masters, 1992).

Attempts have been made to understand how the results of this individual difference approach to choking may relate to the mechanistic explanations previously presented to explain choking. However, it is also cautioned that, at this preliminary stage of investigation, these interpretations are speculative to stimulate future directions for investigation in this line of research.

It is imperative to highlight certain factors that might have posed as limitations within the design of this study. The first issue relates to the nature of the participants. In support of the subject sample it was confined to a single sport; gymnastics, which is an individual sport that requires a fine, controlled motor skilled performance under pressure with limited room for error. Due to the nature of the sport, the slightest error can cause a catastrophic performance. On this basis it was thought that gymnastics would provide a prime basis within which to gather a sample of individuals who maybe prone to choking or potentially suffer from the negative effects of choking regularly. The individual nature of gymnastics provides a prime stage for success or failure, and due to the self-presentational nature of the sport it was also presumed that trait self-consciousness may have a significant impact on performance. The benefits of this subject sample were a limiting factor regarding gender representation, with the majority of the sample being female. With the necessary age restriction
(young adults) it also meant that the sample gathered came from a varied competitive level with varying levels of experience. It is unlikely that these factors confounded the results reported in this study, but it is acknowledged that they restricted the ability to generalise the results across genders and other sports. On this basis it is proposed that further research needs to research a range of sports in an attempt to assess the theoretical implications of these findings across the board and to test both males and females to establish whether gender is an influential factor within the relationship between personality and choking.

Second, the level of accuracy reported in the Retrospective State Choking Inventory might be questioned in some cases due to length of memory recall over time that was required for some participants to report on their last three competitions. For some gymnasts their least recent competition that they were subjectively recalling was over one year previously, which might throw into question the reliability or accuracy of this report. Also due to the subject sample being drawn from a variety of competitive levels, novice gymnasts were unable to complete the full inventory due to not having competed in three previous competitions. This resulted in the sample size analysed in respect of the full scale measure of retrospective state choking being reduced to 82, excluding the other 34 from relevant analyses. On this basis it might be recommended that competitive level and/or experience may be more defined in future to allow for greater consistency within the data and analysis procedure.

Third, also in relation to self-reporting measures, is the issue of accuracy and bias being determined by personality traits. It has been highlighted previously that individuals high in trait private self-consciousness might report more accurately on
dispositional measures due to their habitual tendency to be more self-conscious of their inner thoughts and feelings, so in essence have more self-knowledge (Carver & Scheier, 1978; Fenigstein et al., 1975). In relation to narcissism accuracy of self-reports might also be questioned on the basis that narcissists hold a distorted view of themselves that is predominantly grandiose and self-enhancing, which might potentially bias their opinion when being asked to report on their ability to perform and previous experiences (Robins & Beer, 2001; Robins & John, 1997). Self-report bias is an excepted limitation of questionnaires on the basis that in many situations there is no other viable method to collect the information that is possible from a self-report format (Betz & Walsh, 1990).

Finally, the informant’s measure posed a number of issues. Giving the gymnast a choice about who they perceived to know them most accurately to give an observational report was a rational decision, but it also meant that informers’ relationships with gymnasts was not consistent in type or length. This lack of consistency may have interfered with the reliability of the measure. It is proposed this may be one explanation for the limited findings reported for the dependant variable of the informant’s observational measure of dispositional choking. This lack of significant findings for the observant measure is in line with the results of the pilot work and suggests that the dispositional choking scale is a more reliable measure as a self-report format.

As with all areas of research that are in their infancy the findings of this study should be regarded with caution at present in relation to practical application, but it is suggested that there are a number of implications that promote interest. In quite basic
terms the Dispositional Choking Scale might be of interest to coaches for use with athletes, new and sustained. For example if a coach is starting out with a new athlete, or one of their known athletes is maybe suffering a performance slump, the self-report dispositional choking scale maybe a good tool to employ to find out how the athlete thinks about their own performance ability in training and competition. With a new athlete this information may prove vital in helping the athlete progress in the most beneficial way for personal development, indicating to the unknown coach how the individual regards competition and pressure. With an athlete performing consistently below par, the scale may help indicate if performing under pressure is an issue and or whether the athlete holds a positive or negative view of their competitive capabilities. In conjunction with this it is suggested the retrospective state choking inventory might also be used in a similar manner to find out how a performer recalls or thinks about their previous performances.

All individuals are different, reacting and dealing with situations depending on their experience and personality, so it only seems logical that the more knowledge a coach can gain about one of their athletes the more they will understand how they work and be able to individually design their training and support to fulfil their needs. The results from this study give sure indication that individuals high in narcissism may view competition and pressure quite differently to individuals low in narcissism. In conjunction with Wallace and Baumeister (2002) this study suggests that narcissists view competition as a self-enhancing opportunity, not a pressurised situation, so reducing the likelihood of choking. In an applied setting a high narcissist may not need help in relation to dealing with competitions, whereas an individual reporting a low level of narcissism may view competition quite differently with regard to
pressure and potential to fail, so require mental training and preparation for dealing
with these factors to reduce the likelihood of choking.

A number of future directions have been highlighted throughout the discussion, and
a summary of the salient recommendations for future research follows. Of priority it
is considered that the self-report dispositional choking scale should be tested in
conjunction with a situational measure of performance, so that analysis can reveal
whether the dispositional measure can reliably predict state choking as measured via
the previously accepted method of negative performance discrepancy. If supported
this would offer valuable validity to the measurement of a predisposition to choke.
The unexpected nature of interaction reported in this study warrants further
investigation to substantiate the finding, with examination of the potential
mediational role of self-confidence and interpretation of trait self-consciousness on
the relationship between the interaction of narcissism and trait self-consciousness
and choking.

The role of social anxiety has also been highlighted as an interesting area for
development. As with confidence and interpretation, anxiety is a well-established
construct in the literature that is known to have a major influence on an individual’s
performance. Understanding how social anxiety is related to personality might be a
key to researching potential methods of dealing with the negative effects and
learning how to overcome this form of anxiety caused by self-consciousness.

In more general terms it is felt that consideration of two factors may warrant further
investigation to create more clarity in the understanding of the theoretical
implications in this research approach. As mentioned before, the gender issue warrants further investigation to see whether males and females vary in narcissistic characteristics and whether gender influences how the independent variables interact to influence choking. Finally, sport type requires further research either to gain a greater data sample that incorporates a wide range of sports to allow for generalisation, or with multiple studies looking at different types of sport individually to gain a more in-depth view of the influence that sport type may have on personality and choking under pressure.

To conclude, it is felt the results of this study have shed interesting light on the attempt to understand how personality factors potentially interact to influence an individual's disposition and resultant behaviour. The adoption of the individual difference approach to choking has proved enlightening, and in view of the proposed future directions warrants much further attention to discover more exciting findings in the future.
CHAPTER 4
Interactive effects of narcissism and trait self-consciousness upon dispositional choking, and the role of confidence.

Abstract
Narcissism has previously been hypothesised to moderate the relationship between trait self-consciousness and dispositional choking. It was predicted that high narcissism would be associated with low dispositional choking regardless of trait self-consciousness, but for low narcissists, low dispositional choking would be associated with high trait self-consciousness. Previous contradictory findings stimulated this research and the role of confidence was examined. For the present study, participants consisted of 272 mixed sports performers. Measures included: narcissism, trait self-consciousness, trait sport confidence, and dispositional choking. A moderation effect was obtained for the individual sports sample only (N = 80). The nature of the interaction supported the hypothesised moderation as stated above. Confidence was a significant predictor of dispositional choking, and positively correlated with narcissism. However, confidence did not fully explain the effects of narcissism and did not mediate the interactive effects of narcissism and trait self-consciousness on dispositional choking. The nature of the interaction supported the original hypothesis based on the findings of Baumeister (1984) and Wallace and Baumeister (2002).
Introduction

Interest in narcissism has grown over the past half century, including investigation of its origins as a clinical personality disorder, and its sub-clinical characteristic traits that many ‘normal’ individuals display in their daily living (Akhtar & Thomas, 1982). The narcissistic self has been described as dynamic and fragile, but with an exaggerated level of grandiosity that encompasses many distinct characteristic traits (Morf & Rhodewalt, 2001; Mullins & Kopelman, 1988). The identified traits of a narcissist consist of: entitlement, exploitativeness, exhibitionism, authority, leadership, self-sufficiency, superiority, and vanity. These factors emerged from the development of the Narcissistic Personality Inventory (NPI-40; Raskin & Hall, 1979; Raskin & Terry, 1988). The narcissistic personality inventory has provided a valid tool for the measurement of sub-clinical narcissism and has assisted in the enquiry of how narcissism relates to other individual difference constructs, and the behavioural and emotional responses of the narcissistic personality (Bogart, Benotsch, & Pavlovic, 2004; Eammons, 1987; Rhodewalt & Morf, 1995;).

Narcissistic behavioural traits have received interest from varied perspectives but it is narcissism’s behavioural impact on performance under pressure that is of salient interest in this study. Wallace and Baumeister (2002) presented a set of comprehensive studies that examined the influence of narcissism on task performance when situational variants were manipulated. Their approach stemmed from a motivational perspective which predicted that narcissists are motivated to perform by perceiving the opportunity for glory and self-enhancement. Results showed that high narcissists experienced a rise in performance when challenge was high, and when there was a high level of external evaluation of their performance. In
simple terms when there was an opportunity for narcissists to demonstrate their ability and receive praise and glorification, they were motivated to prove their superiority and 'greatness'.

In essence, what the above findings portray is evidence of a personality that is unlikely to choke under pressure. Rather, it is highly likely to thrive when under pressure. Wallace and Baumeister (2002) propose that narcissists perceive competition and any form of public display of ability, as an opportunity for self-enhancement and glory. The narcissist's perceptions of these situations are thought to be absent of self-doubt regarding failure, defeat or embarrassment, which reduces the likelihood of negative apprehension leading to choking (Campbell, Foster, & Brunell, 2004a; Wallace, Baumeister, & Vohs, 2005). It is the positive perception of pressure situations that contrasts with the view held by an individual who is prone to choking under pressure. It is likely that the latter would perceive a pressure situation as a potential opportunity for failure, negative evaluation and as a result, experience anxiety, doubt and negative apprehension (Baumeister, Hamilton, & Tice, 1985; Conroy, Willow, & Metzler, 2002; Wallace et al., 2005). These are common factors that have been identified by individuals who have experienced choking, but by no means are definitive and may vary depending on the individual (Edwards, Kingston, Hardy, & Gould, 2002).

Choking is defined by Baumeister (1984) as 'a failure to perform up to whatever level of skill and ability the person has at that time' (p.611). Baumeister (1984) offered an explanation of the choking process based on a model of self-focus that originated from previous theories of self-awareness and the influence of self-directed
attention (Carver & Scheier, 1978; Duval & Wicklund, 1973). Duval and Wicklund (1972), proposed a theory of self-awareness which was based upon the situational manipulation of self-focused attention and monitoring of resultant behaviour. The theory proposed that heightened self-awareness resulted in enhanced situational self-directed attention, which significantly impacted on an individual’s performance. Fenigstein and colleagues proposed that an individual’s behaviour in situations of heightened state awareness will be affected by trait self-consciousness. Fenigstein et al. (1975) designed a scale for the measurement of trait self-consciousness (S-CS), which contained three subscales; private self-consciousness, public self-consciousness, and social anxiety. Trait self-consciousness was defined as ‘the consistent tendency of persons to direct attention inward or outward’ (Fenigstein et al., 1975, p. 522), with private self-consciousness focusing on one’s inner thoughts and feelings, and public self-consciousness based on seeing the self as a social object (Fenigstein et al., 1975). A third factor that consistently appeared separately to public self-consciousness was that of social anxiety, which was described as a potential reaction to, or by-product of, public self-consciousness and defined as ‘a discomfort in the presence of others’ (Fenigstein et al., 1975, p.523).

Baumeister (1984) investigated choking under pressure in relation to trait self-consciousness. In summary, Baumeister (1984) found that individuals with low trait self-consciousness (private and public subscales used only) were more affected by an increase in situational self-focused attention than were individuals high in trait self-consciousness, and in turn experienced a decrement in performance when put under pressure. Baumeister explained these results by arguing that individuals high in trait self-consciousness were used to focusing on the self, so when the situation was
manipulated to increase self-directed attention, individuals low in trait self-consciousness were more vulnerable to its effects.

It is at this point that potential links between narcissism and trait self-consciousness become apparent, and emerge as an interesting research question. Avid self-focus is identified as a characteristic trait of narcissism (Eammons, 1987; Morf & Rhodewalt, 2001; Rhodewalt & Morf, 1995), and trait self-consciousness has been identified as a potential chronic disposition that influences self-directed attention and behaviour (Carver & Scheier, 1978; Fenigstein et al., 1975). As discussed, both have been separately tested with regard to performing under pressure. The findings have indicated that high narcissists are less likely to choke (Wallace & Baumeister, 2002), and that individuals with high trait self-consciousness are less likely to choke (Baumeister, 1984), when under pressure. Based on these results it was hypothesised in chapter three that narcissism would moderate the relationship between trait self-consciousness and choking. The hypothesised prediction was that individual's high in narcissism would be less prone to choking regardless of their level of trait self-consciousness, whereas when narcissism was low, individuals would be more prone to choking if they had low levels of trait self-consciousness.

A previous test of this hypothesis (Study Two in Chapter Three) resulted in contradictory findings. A significant interaction between narcissism and trait self-consciousness was revealed, but the nature of the interaction was not as hypothesised. When narcissism was high, high trait self-consciousness reduced the likelihood of choking, whereas when narcissism was low, high trait self-
consciousness showed an increase in the liability to choke. Interpretation of the results highlighted two factors for consideration.

The first factor for consideration was the role of confidence. It was suggested that self-confidence could be a mediating process that explained the interaction of narcissism and trait self-consciousness on choking. It was proposed that if confidence is high then high trait self-consciousness is more likely to be interpreted positively so not increase the likelihood of choking. If confidence is low then it is more likely that high trait self-consciousness will be interpreted negatively; increasing the likelihood of choking (e.g., Hardy & Mullen, 2001; Jones, 1995). Previous research has also suggested a significant positive relationship between narcissism and confidence (Campbell, Goodie, & Foster, 2004b; Rhodewalt & Morf, 1995; Wallace & Baumeister, 2002). This potentially offers an explanation of Study Two's findings on the basis that as narcissism increased, self-confidence increased so that higher trait self-consciousness was associated with lower choking. Conversely, individuals with low narcissism are more susceptible to lower levels of confidence, which, it was proposed would lead to high levels of trait self-consciousness being associated with choking.

The second factor for consideration was the choking measure employed. Baumeister (1984) previously reported the positive relationship between trait self-consciousness and performance based upon choking measures inferred through state performance discrepancies. Also the findings of Wallace and Baumeister (2002) in relation to narcissism and choking were inferred through performance scores. In contrast, the choking measures in study two (in Chapter Three) were both self-report scales, one
for state choking and the other for dispositional choking. So in essence the hypothesis that was derived from findings based on state choking was tested in relation to dispositional choking and self-report state choking retrospection.

The dispositional choking scale was designed due to dissatisfaction with an earlier attempt that had approached the idea of a choking disposition, but from a conscious processing perspective (Masters, 1992; Masters, Polman, & Hammond, 1993). Masters et al. (1993) proposed that individuals have a predisposed level of reinvestment for conscious processing when under pressure, so based on the conscious processing hypothesis (Masters, 1992) are more likely to choke under pressure if they have a high predisposition to reinvest. Trait self-consciousness was a salient factor included in the reinvestment scale based on the argument that individual's high in trait self-consciousness were more likely to reinvest conscious processing when under pressure (Masters et al., 1993; Maxwell, Masters, & Eves, 2000). The reinvestment scale was scrutinised with regard to its validity of measurement and contradictory interpretation of trait self-consciousness in comparison to Baumeister (1984). However, the results of study two (in Chapter Three) offered support for this interpretation, which may indicate that the mode of measurement might influence the relationship reported between trait self-consciousness and choking. On this basis, it was suggested that further testing of the dispositional choking scale could aid understanding of the relationship between trait self-consciousness and choking.

In light of the limitations identified and the nature of the interaction revealed in study two (in Chapter Three) being opposite to that originally hypothesised, it was
proposed that further testing of the same moderation effect was required.

Examination of the role of confidence might provide an explanation for how the interactive effects of narcissism and trait self-consciousness influence dispositional choking.

The aims of this study were twofold: 1) to repeat the same test of moderation as hypothesised in chapter three with the aim to establish further evidence regarding the nature of the moderation as revealed in the study two (in Chapter Three), or as originally hypothesised; 2) to investigate the relationship between narcissism, trait self-consciousness, and self-confidence, with the precise mode of analysis based on the findings of the moderation analysis used to examine 1) above.

If the nature of the interaction supported the findings of study two (in Chapter Three) then confidence would be tested as a potential mediator of the interactive effects of narcissism and trait self-consciousness on dispositional choking. However, if the nature of the interaction offers support for the original hypothesis set, based on the findings of Baumeister (1984) and Wallace and Baumeister (2002), then analysis of the role of confidence would take a different form. Analyses would test whether the significant narcissism effects could be explained by self-confidence, based on the previously reported positive correlation between the two constructs; or whether the effects of narcissism were more than just confidence.
Research Questions

Hypothesis 1:

Two competing hypotheses will be tested regarding the nature of the interactive effects of narcissism and trait self-consciousness on dispositional choking:

1.1 High narcissism will be associated with low choking regardless of the level of trait self-consciousness, but low trait self-consciousness will be associated with lower levels of choking for low narcissists.

1.2 High narcissism will be associated with low choking regardless of the level of trait self-consciousness, but high trait self-consciousness will be associated with lower levels of choking for low narcissists.

Hypothesis 2:

Two questions will be tested regarding the role of confidence:

2.1 Are the effects of narcissism entirely explained by confidence?

2.2 Does confidence mediate the interactive effects of narcissism and trait self-consciousness on dispositional choking?
Method

Participants

The sample consisted of 272 competitive athletes from a variety of sports. The sport type pool consisted of team sports like football, hockey and netball, and individual disciplines, for example, athletics, tennis and karate. All subjects were at a competitive level within their sport, but this was not fixed at a criterion standard, allowing for breadth of participation from club to international competitors. Males (N=163) and females (N=109) aged between 16 and 34 years (mean age =20 years; SD = 2.5) participated. Approximately a third of the sample was undergraduate students completing the study as part of an assignment, and the remainder were athletes recruited by the students. All participants were required to give informed consent before completing the study (see Appendix A).

Measures

Narcissism

The Narcissistic Personality Inventory (NPI-40; Raskin & Hall, 1979) was used to gain a measure of sub-clinical narcissism. The inventory was originally designed in 1979 by Raskin and Hall and has since been validated and made use of by various researchers in different disciplines (Eammons, 1987; Raskin & Terry, 1988; Rhodewalt & Morf, 1995). The scale consists of 40 items that have forced-choice responses. The items consist of a ‘narcissistic’ response and a ‘non-narcissistic’ response. If the narcissistic response is chosen this is allocated a score of one, if not then the item scores 0. All the responses are totalled at the end to produce a total narcissism score which has a potential maximum score of 40 (see Appendix E). Principle components analysis provided construct validity for seven first-order
components and an overall measure of narcissism that reported a norm value of 15 with no significant gender differences (Raskin & Terry, 1988). More recent investigation has suggested there are potential gender variances that need exploring (Morf & Rhodewalt, 2001; Tschanz, Morf, & Turner, 1998).

**Trait Self-consciousness**

The Self-consciousness Scale (S-CS; Fenigstein et al., 1975) was implemented to measure the level of trait self-consciousness. The scale consists of three subcomponents that on completion produce a separate score for each of the three constructs; Private Self-consciousness, Public Self-consciousness and Social Anxiety. In total there are 23 items that are scored on a five point likert scale ranging from 0 'Extremely uncharacteristic' to 4 'Extremely characteristic'. To give examples; a private self-consciousness item would be ‘I reflect about myself a lot’, ‘I usually worry about making a good impression’ would be an example item of public self-consciousness, and finally an item for social anxiety might read ‘Large groups make me nervous’ (see Appendix F). Fenigstein et al. (1975) reported internal validity with all items loading on their appropriate factor above a level of .40, which was consequently supported by high test-retest reliability correlations of public self-consciousness, \( r = .84 \); private self-consciousness, \( r = .79 \); social anxiety, \( r = .73 \); and total score, \( r = .80 \).

**Interpretation of Trait Self-consciousness**

A modification was made to the original Self-consciousness Scale (S-CS; Fenigstein et al., 1975) to include an additional scale that would measure interpretation of the trait self-consciousness items. For each of the 23 items there was an additional likert
scale ranging from -3 (Very negative; debilitating) to +3 (Very positive; facilitative), to measure the individual’s interpretation of that item. For example item ten reads ‘I get embarrassed very easily’, so the original scale measures how characteristic this statement is of the individual and then the additional scale measures to what extent the individual interprets this characteristic positively or negatively. To calculate the interpretation scores the items were once again split into the same three subscales: private and public self-consciousness and social anxiety, and the item scores summed for each (see Appendix K).

**Trait Sport Confidence**

The Trait Sport Confidence Inventory (TSCI; Vealey, 1986) was used to measure dispositional self-confidence. The inventory consists of 13 items that are measured on a nine-point likert scale ranging from 1 (Low) to 9 (High). The inventory asks the athlete to think about how confident he/she usually feel about performing successfully in sport and then asks the athlete to compare his/her confidence on different items to the most confident athlete he/she knows. Potential total scores range from 9 to 117 with a high score representing high trait sport confidence (see Appendix J). In preliminary development of the inventory reliability tests reported an alpha coefficient of .93 for internal consistency of the scale, with significant correlations for State Sport Confidence and other constructs also evident, offering support for concurrent validity as a measure of trait sport confidence (Vealey, 1986).

**Dispositional Choking**

The Dispositional Choking Scale (DCS) was used to measure an individual’s trait liability to choke under pressure. The scale consists of eight items that are scored on
a likert scale of 0 (Strongly Disagree) to 10 (Strongly Agree). On completion the item scores are totalled to produce an overall measure of dispositional choking with a maximum score of 80 (see Appendix H). Initial testing (Study One in Chapter Three) of the internal reliability of the inventory reported a high scale alpha of .9545, which at that time was based on the inventory being completed as an observer's measure. In the main study the scale once again produced a high scale alpha of .9178 as an observer's measure. When the inventory was completed as a self-report measure the alpha coefficient was .9238 with inter-item correlations ranging between $r = .32$ and $r = .85$. To gain concurrent validity the Dispositional Choking Scale, as a self-report measure, was tested against a retrospective subjective of state choking, producing a significant positive correlation ($r = .653, p < .01$) indicating construct validity (Study Two in Chapter Three). As a result of these findings, the Dispositional Choking Scale has been used in this study as a self-report measure.

**Procedure**

Participants were approached to take part in the study based on their fulfilment of the recruitment criteria: aged over 16 years and currently competitive in their sport. They were informed that the study was questionnaire based taking approximately 20 minutes to complete, on the topic of personality and sport performance. On agreement to complete the study they were first of all required to read and sign an informed consent form and complete demographic details based on their sporting experience. The participants were then issued with the questionnaire booklet consisting of four inventories that were completed in the company of the researcher, so any questions could be answered. On completion of the study the participants were debriefed and provided with information for future contact if required.
Results

Preliminary Analysis

Reliability Tests

The Cronbach's alpha coefficient indicator of internal consistency was used to test the Dispositional Choking Scale and the modified interpretation scales of the Self-consciousness Scale (Fenigstein et al., 1975). Firstly, the Dispositional Choking Scale reported an alpha coefficient of .91, once again supporting internal consistency in the scale. Secondly, the internal consistency for each of the three interpretation subscales of the modified self-consciousness scale reported the following alpha coefficients: .66 for private self-consciousness, .72 for public self-consciousness and .74 for social anxiety. All scale alphas were regarded suitably reliable for the scale measurements (Pallant, 2001).

Independent T-tests

Independent sample t-tests were employed to test for gender differences between all the independent and dependent variables. Means and standard deviations can be seen in Table 4.1. Males reported significantly higher mean values for narcissism than did females ($t = 4.117, df = 270, p < .000$), trait sport confidence ($t = 7.212, df = 270, p < .000$), interpretation of private self-consciousness ($t = 3.004, df = 254.049, p < .003$), and interpretation of public self-consciousness ($t = 3.215, df = 270, p < .001$). In comparison, females reported significantly higher mean values than males for public self-consciousness ($t = -3.380, df = 252.009, p < 0.001$), social anxiety ($t = -3.698, df = 270, p < .000$), and dispositional choking ($t = -5.267, df = 201.234, p < .003$). In summary, with seven out of the nine variables reporting gender differences it was
regarded as necessary to standardise the data within gender to control for possible gender effects when analysing the full data set in the main analysis.

Table 4.1: Descriptives for all test variables (Males: N=163; Females: N=109).

<table>
<thead>
<tr>
<th></th>
<th>GENDER</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
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<tr>
<td>TNPI</td>
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<td>15.5583***</td>
<td>7.32752</td>
<td>.57394</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>11.7523</td>
<td>7.68374</td>
<td>.73597</td>
</tr>
<tr>
<td>TPRISC</td>
<td>Male</td>
<td>21.2822</td>
<td>4.90088</td>
<td>.38387</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>21.9725</td>
<td>4.80829</td>
<td>.46055</td>
</tr>
<tr>
<td>TPUBSC</td>
<td>Male</td>
<td>15.8405***</td>
<td>5.25395</td>
<td>.41152</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>17.8716</td>
<td>4.57064</td>
<td>.43779</td>
</tr>
<tr>
<td>TSASC</td>
<td>Male</td>
<td>11.3374***</td>
<td>5.06040</td>
<td>.39636</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>13.6330</td>
<td>4.95285</td>
<td>.47440</td>
</tr>
<tr>
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<td>77.4969***</td>
<td>14.41466</td>
<td>1.12904</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>64.4404</td>
<td>14.95204</td>
<td>1.43215</td>
</tr>
<tr>
<td>TDCS</td>
<td>Male</td>
<td>23.8558**</td>
<td>11.30385</td>
<td>.88539</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>32.1835</td>
<td>13.67491</td>
<td>1.30982</td>
</tr>
<tr>
<td>TPRINT</td>
<td>Male</td>
<td>5.4785**</td>
<td>6.81894</td>
<td>.53410</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.1560</td>
<td>5.83599</td>
<td>.55899</td>
</tr>
<tr>
<td>TPUINT</td>
<td>Male</td>
<td>4.4233***</td>
<td>5.71968</td>
<td>.44800</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.0642</td>
<td>6.23502</td>
<td>.59721</td>
</tr>
<tr>
<td>TSAINT</td>
<td>Male</td>
<td>1.1534</td>
<td>6.94918</td>
<td>.54430</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>-3.761</td>
<td>6.87964</td>
<td>.65895</td>
</tr>
</tbody>
</table>

Note: Narcissism (TNPI), Private Self-consciousness (TPRISC), Public Self-consciousness (TPUBSC), Social Anxiety (TSASC), Trait Sport Confidence (TCONF), Dispositional Choking (TDCS), Interpretation of Private Self-consciousness (TPRINT), Interpretation of Public Self-consciousness (TPUIN), and Interpretation of Social Anxiety (TSAINT).

*p < .05; **p < .01; ***p < .001

Correlations

Table 4.2 shows the full correlation matrix. The dependent variable of dispositional choking correlated negatively with narcissism \((r = -.265, p < .000)\), supporting previous findings (Study Two in Chapter Three), and negatively with trait sport confidence \((r = -.396, p < .000)\) as hypothesised. A significant positive correlation was reported between dispositional choking and social anxiety \((r = .238, p < .000)\) but there were no significant relationships found between the criterion variable and self-consciousness. However, dispositional choking did significantly correlate with the three interpretation scales of private self-consciousness \((r = -.162, p < .007)\),
Expected significant positive correlations were reported between the three subscales of the Self-consciousness Scale (private self-consciousness, public self-consciousness, and social anxiety; see Table 4.2) supporting previous findings (Fenigstein et al., 1975; Study Two in Chapter Three).

Narcissism significantly correlated with social anxiety \((r = -0.545, p < .000)\), but failed to show significant relationships with private or public self-consciousness. Significant positive correlations were reported between narcissism and trait sport confidence \((r = 0.227, p < .000)\), and the interpretation scales of private self-consciousness \((r = 0.176, p < .004)\), public self-consciousness \((r = 0.289, p < .000)\), and social anxiety \((r = 0.324, p < .000)\), which were all in the predicted directions. Significant negative correlations were obtained for trait sport confidence with social

Table 4.2: Correlation Matrix of standardised values (Z scores) for all test variables \((N = 272)\).

<table>
<thead>
<tr>
<th></th>
<th>TNPI</th>
<th>TPRISC</th>
<th>TPRINT</th>
<th>TPUBSC</th>
<th>TPUINT</th>
<th>TSASC</th>
<th>TSAINT</th>
<th>TCONF</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPRISC</td>
<td>-0.015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPRINT</td>
<td>0.176*</td>
<td>0.242*</td>
<td>0.176*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPUBSC</td>
<td>-0.086</td>
<td>0.400*</td>
<td>0.167*</td>
<td>-0.086</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPUINT</td>
<td>0.289*</td>
<td>-0.057</td>
<td>0.414*</td>
<td>-0.167</td>
<td>0.289*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSASC</td>
<td>-0.520*</td>
<td>0.226*</td>
<td>0.159*</td>
<td>-0.167</td>
<td>0.226*</td>
<td>-0.057</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSAINT</td>
<td>0.324*</td>
<td>-0.072</td>
<td>0.353*</td>
<td>0.252*</td>
<td>-0.252</td>
<td>0.353*</td>
<td>-0.072</td>
<td>0.324*</td>
</tr>
<tr>
<td>TCONF</td>
<td>0.227*</td>
<td>-0.120*</td>
<td>0.135*</td>
<td>-0.132</td>
<td>-0.132</td>
<td>0.135*</td>
<td>-0.120</td>
<td>0.227*</td>
</tr>
<tr>
<td>TDCS</td>
<td>-0.265*</td>
<td>-0.012</td>
<td>-0.162*</td>
<td>0.097</td>
<td>-0.162</td>
<td>0.097</td>
<td>-0.012</td>
<td>-0.265*</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Note: Standardised scores for Narcissism (TNPI), Private Self-consciousness (TPRISC), Public Self-consciousness (TPUBSC), Social Anxiety (TSASC), Trait Sport Confidence (TCONF), Dispositional Choking (TDCS), Interpretation of Private Self-consciousness (TPRINT), Interpretation of Public Self-consciousness (TPUINT), and Interpretation of Social Anxiety (TSAINT).
anxiety ($r = -0.237, p < 0.000$), as expected, and with private self-consciousness ($r = -0.120, p < 0.0047$). Trait sport confidence also showed significant positive correlations with the three interpretation variables of private self-consciousness ($r = 0.135, p < 0.026$), public self-consciousness ($r = 0.120, p < 0.048$), and social anxiety ($r = 0.181, p < 0.003$) as predicted (see Table 4.2).

**Main Analysis**

The main analysis consisted of hierarchical multiple regression analyses to test for moderation and mediation hypotheses. Hierarchical regression was employed so that the specific theoretically-based models could be tested directly. For all analyses the criterion variable was dispositional choking, with the predictor variables changing dependent on the model being tested. As previously mentioned the data set was analysed as a whole ($N=272$) with all variables standardised within gender before being collapsed across gender.

**Moderation Test for Narcissism**

Hypothesis one was that narcissism would moderate the relationship between trait self-consciousness and dispositional choking, based on previous findings (Study Two in Chapter Three). This involved two analyses: (1) narcissism entered in block one, private self-consciousness in block two, and the interaction product term (narcissism x private self-consciousness) in block three, as the predictor variables on the criterion dispositional choking; (2) narcissism entered in block one, public self-consciousness in block two, and the interaction product term (Narcissism x public self-consciousness) in block three, as the predictor variables on the criterion dispositional choking.
**Analysis One - Private Self-consciousness**

Narcissism significantly predicted a proportion of the variance in dispositional choking \((R^2 = .070, F(1, 270) = 20.366, p < .000)\). Private self-consciousness did not add to the predictive value of the model over and above narcissism \((R^2_{\text{cha}} = .000, F(1, 269) = .070, p = .792)\). In block three, the interactive product term of narcissism and private self-consciousness also failed to predict significant additional variance in the criterion variable \((R^2_{\text{cha}} = .000, F(1, 268) = .008, p = .928)\) (see Table 4.3).

**Table 4.3: Model summary table for multiple hierarchical regression analysis on the criterion variable dispositional choking, for analyses one (narcissism and private self-consciousness) and two (narcissism and public self-consciousness), \(N = 272\).**

<table>
<thead>
<tr>
<th>ANAL</th>
<th>Variables entered</th>
<th>Std Error of the Estimate</th>
<th>(R^2) cha</th>
<th>(F) cha</th>
<th>df</th>
<th>(\beta)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Block 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Narcissism</td>
<td>.070</td>
<td>.9643</td>
<td>.070</td>
<td>20.366***</td>
<td>1, 270</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Block 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Narcissism</td>
<td>.070</td>
<td>.9660</td>
<td>.000</td>
<td>.070</td>
<td></td>
<td>1, 269</td>
</tr>
<tr>
<td></td>
<td>Pri SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Block 3</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Narcissism</td>
<td>.070</td>
<td>.9677</td>
<td>.000</td>
<td>.008</td>
<td></td>
<td>1, 268</td>
</tr>
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<td></td>
<td>Constant</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nar x Pri SC</td>
<td>.070</td>
<td>.9677</td>
<td>.000</td>
<td>.008</td>
<td></td>
<td>1, 268</td>
</tr>
<tr>
<td>2</td>
<td><strong>Block 1</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Narcissism</td>
<td>.070</td>
<td>.9643</td>
<td>.070</td>
<td>20.366***</td>
<td>1, 270</td>
<td>.046</td>
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<tr>
<td></td>
<td>Block 2</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Narcissism</td>
<td>.076</td>
<td>.9632</td>
<td>.005</td>
<td>1.591</td>
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<td>1, 269</td>
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<td></td>
<td>Pub SC</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Block 3</td>
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<tr>
<td></td>
<td>Narcissism</td>
<td>.076</td>
<td>.9643</td>
<td>.005</td>
<td>1.591</td>
<td></td>
<td>1, 269</td>
</tr>
<tr>
<td></td>
<td>Pub SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nar x Pub SC</td>
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<td>.9645</td>
<td>.001</td>
<td>.311</td>
<td></td>
<td>1, 268</td>
</tr>
</tbody>
</table>

Analysis 2 – predictors: Narcissism, Public Self-consciousness and Interaction Product Term.
* \(p < .05\); ** \(p < .01\); *** \(p < .001\)
Analysis Two - Public Self-consciousness

In block one; narcissism was a significant predictor of the criterion variable as reported above. Public self-consciousness did not significantly add to the predictive value of the model over and above narcissism \( (R^2 \text{ cha} = .005, F(1, 269) = 1.591, p = .208) \), and the interactive product term of narcissism and public self-consciousness also failed to predict significant additional variance in the criterion variable \( (R^2 \text{ cha} = 0.01, F(1, 268) = .311, p = .578) \) (see Table 4.3).

Due to the lack of support for the predicted moderation hypothesis, consideration was given to the differences between the present data set and the sample used in the study two (in Chapter Three). It was concluded that the most salient difference between the data sets was the type of sport in which participants were involved. In study two (Chapter Three) the sample involved athletes from one individual sport (gymnastics), whereas the present data set encompassed various individual and team sports. On recognition of this, it was regarded viable that the test for moderation predicted in hypothesis one should be repeated separately for both individual and team sports. With this as a basis it was expected that the hypothesised moderation would hold for individual sports, but not for team sports.

Sport Type Analysis

Table 4.4 reports the means and standard deviations for all the test variables based on the sport type split. Independent t-tests revealed significant differences for the individual and team sport samples. Trait sport confidence was significantly higher for the team sport sample than the individual sport sample \( (t = -1.990, df = 270, p < \)
and dispositional choking was significantly higher for the individual sport sample than the team sport sample ($t = 2.396, df = 270, p < .017$).

**Table 4.4: Descriptives for all test variables (Individual Sports: N=80; Team Sports: N=192).**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNPI</td>
<td>Individual</td>
<td>12.8125</td>
<td>7.38986</td>
</tr>
<tr>
<td>Team</td>
<td>14.5417</td>
<td>7.77217</td>
<td>.56091</td>
</tr>
<tr>
<td>TPRISC</td>
<td>Individual</td>
<td>22.4125</td>
<td>5.01313</td>
</tr>
<tr>
<td>Team</td>
<td>21.2031</td>
<td>4.77289</td>
<td>.34445</td>
</tr>
<tr>
<td>TPUWSC</td>
<td>Individual</td>
<td>17.0875</td>
<td>4.60653</td>
</tr>
<tr>
<td>Team</td>
<td>16.4740</td>
<td>5.26764</td>
<td>.38016</td>
</tr>
<tr>
<td>TSASC</td>
<td>Individual</td>
<td>12.5125</td>
<td>5.14841</td>
</tr>
<tr>
<td>Team</td>
<td>12.1510</td>
<td>5.13719</td>
<td>.37074</td>
</tr>
<tr>
<td>TCONF</td>
<td>Individual</td>
<td>69.3000**</td>
<td>15.46200</td>
</tr>
<tr>
<td>Team</td>
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<td>1.15661</td>
</tr>
<tr>
<td>TDCS</td>
<td>Individual</td>
<td>30.0813*</td>
<td>13.34675</td>
</tr>
<tr>
<td>Team</td>
<td>25.9896</td>
<td>12.61761</td>
<td>.91060</td>
</tr>
<tr>
<td>TPRINT</td>
<td>Individual</td>
<td>5.8250</td>
<td>7.58876</td>
</tr>
<tr>
<td>Team</td>
<td>4.0156</td>
<td>5.97944</td>
<td>.43153</td>
</tr>
<tr>
<td>TPUINT</td>
<td>Individual</td>
<td>2.8500</td>
<td>6.45353</td>
</tr>
<tr>
<td>Team</td>
<td>3.7396</td>
<td>5.84574</td>
<td>.42188</td>
</tr>
<tr>
<td>TSAINT</td>
<td>Individual</td>
<td>.8750</td>
<td>7.42281</td>
</tr>
<tr>
<td>Team</td>
<td>.4010</td>
<td>6.73763</td>
<td>.48769</td>
</tr>
</tbody>
</table>

Note: Narcissism (TNPI), Private Self-consciousness (TPRISC), Public Self-consciousness (TPUBSC), Social Anxiety (TSASC), Trait Sport Confidence (TCONF), Dispositional Choking (TDCS), Interpretation of Private Self-consciousness (TPRINT), Interpretation of Public Self-consciousness (TPUINT), and Interpretation of Social Anxiety (TSAINT).

* $p < .05$; ** $p < .01$

**Analysis One - Private Self-consciousness**

**Individual Sports.** Within the individual sport sample (N=80) reported narcissism to significantly predict the criterion variable in block one ($R^2 = .107, F(1, 78) = 9.363, p < .003$). Private self-consciousness did not add to the predictive value of the model over and above narcissism ($R^2 \text{ cha} = .002, F(1, 77) = .156, p = .694$). In block three, the interactive product term of narcissism and private self-consciousness also failed
to predict additional variance in the criterion variable ($R^2 \text{ cha} = .010, F(1, 76) = .887, p = .349$) (see Table 4.5).

Table 4.5: Model summary table for multiple hierarchical regression analysis on the criterion variable: dispositional choking, for analyses one (narcissism and private self-consciousness) and two (narcissism and public self-consciousness), comparing individual sports ($N = 80$) to team sports ($N = 192$).

<table>
<thead>
<tr>
<th>ANAL</th>
<th>TYPE</th>
<th>Model</th>
<th>$R^2$</th>
<th>Std. Error of the Estimate</th>
<th>$R^2 \text{ cha}$</th>
<th>$F \text{ cha}$</th>
<th>df</th>
<th>$\beta$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Block 1</td>
<td>.107</td>
<td>1.0137</td>
<td>.107</td>
<td>9.363**</td>
<td>1, 78</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Narcissism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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Type: 1 = Individual Sports, 2 = Team Sports

*p < .05; **p < .01; ***p < .001
**Team Sports.** The team sport sample (N=192) reported narcissism to significantly predict the criterion variable in block one ($R^2 = .053, F(1, 190) = 10.659, p < .001$). Private self-consciousness did not add to the predictive value of the model over and above narcissism ($R^2_{cha} = .000, F(1, 189) = .097, p = .755$). In block three, the interaction product term of narcissism and private self-consciousness also failed to predict significant additional variance in the criterion variable ($R^2_{cha} = .000, F(1, 188) = .054, p = .817$) (see Table 4.5).

**Analysis Two - Public Self-consciousness**

**Individual Sports.** In block one; narcissism was a significant predictor of the criterion variable as reported above. Public self-consciousness did not significantly add to the predictive value of the model over and above narcissism ($R^2_{cha} = .011, F(1, 77) = .972, p = .327$). In block three, the interactive product term of narcissism and public self-consciousness did add a significant predictive value to the model in block three ($R^2_{cha} = .054, F(1, 76) = 5.004, p < .028$) (see Figure 4.1).

**Team Sports.** In block one; narcissism was a significant predictor of the criterion variable as reported above. Public self-consciousness significantly predicted the criterion variable over and above narcissism ($R^2_{cha} = .019, F(1, 189) = 3.873, p < .051$). In block three, the interactive product term of narcissism and public self-consciousness did not significantly add to the predictive value of the model ($R^2_{cha} = .001, F(1, 188) = .213, p = .645$) (see Table 4.5).
Role of Confidence

Mediation Test for Trait Sport Confidence

Hypothesis 2.2 questioned whether confidence mediates the interactive effects of narcissism and trait self-consciousness on dispositional choking. A test of mediation was performed on the individual sport sample, with the constructs of narcissism and public self-consciousness only, due to private self-consciousness and the team sport sample not having revealed any significant interactive effects in the previous moderation analyses. Firstly, the predictor variables of narcissism, public self-consciousness, and the interaction product term (narcissism x public self-consciousness) were regressed on the proposed mediating factor of trait self-confidence in analysis one. In analysis two the mediation model consisted of: narcissism entered in block one; public self-consciousness in block two, confidence
in block three, and the interaction product term (narcissism x public self-consciousness) in block four (Baron & Kenny, 1986), (see Table 4.6).

Table 4.6: Model summary table for multiple hierarchical regression analyses testing for the mediation of confidence on the interactive effects of narcissism and public self-consciousness on dispositional choking, (N = 80).

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<th>df</th>
<th>( \beta )</th>
<th>( t )</th>
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</tbody>
</table>

**ANAL:** Analysis 1 – Criterion variable – Trait Sport Confidence
Analysis 2 – Criterion variable – Dispositional Choking

* p < .05; ** p < .01; *** p < .001

**Analysis One**

In block one, narcissism failed to significantly predict the criterion variable of trait sport confidence \((R^2 = .022, F(1, 78) = 1.785, p = .185)\). Public self-consciousness failed to add significant predictive value to the model \((R^2_{\text{cha}} = .003, F(1, 77) = .249, p = .619)\). In block three, the interaction product term for narcissism and public self-consciousness also failed to predict significant variance of the criterion variable \((R^2_{\text{cha}} = .000, F(1, 76) = .018, p = .894)\) (see Table 4.6).
Analysis Two

Trait sport confidence was forced in to block three, reporting a significant predictive value of the criterion variable ($R^2_{cha} =.121, F(1, 76) = 12.058, p < .001$). However, the interaction product term for narcissism and public self-consciousness still remained a significant predictor of the variance of dispositional choking in block four ($R^2_{cha} = .052, F(1, 75) = 5.502, p < .022$) over and above trait sport confidence controlled for in block three (see Table 4.6). This failed to offer support for the prediction that confidence mediates the interactive effects of narcissism and public self-consciousness on choking, but did identify the construct of confidence as a significant predictor of dispositional choking over and above narcissism and public self-consciousness.

Confidence and Trait Self-consciousness

To test hypothesis 2.1 that questioned whether narcissism effects could be entirely explained by confidence, the moderation analyses was repeated replacing narcissism with confidence. In block one, confidence was a consistent significant predictor of the criterion variable for the individual sport sample ($R^2 = .149, F(1, 78) = 13.660, p < .000$), and the team sport sample ($R^2 = .156, F(1, 190) = 35.175, p < .000$). In analysis one, private self-consciousness in block two, and the interaction product term of confidence and private self-consciousness in block three, both failed to add significant predictive value to the model for both the individual and team sport samples. In analysis two, public self-consciousness in block two, and the interaction product term of confidence and public self-consciousness in block three, also failed to add significant predictive value to the model for both individual and team sport
samples (see Table 4.7). These results revealed no support for confidence moderating the relationship between trait self-consciousness and dispositional choking, suggesting that confidence does not explain the significant effects of narcissism.

**Table 4.7: Model summary table for multiple hierarchical regression analysis on the criterion variable: dispositional choking, for analyses one (confidence and private self-consciousness) and two (confidence and public self-consciousness), comparing individual sports (N = 80) to team sports (N = 192).**

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**ANAL: Analysis 1 – predictors: Confidence, Private Self-consciousness and Interaction Product Term.**

**Analysis 2 – predictors: Confidence, Public Self-consciousness and Interaction Product Term.**

**Type:** 1 = Individual Sports, 2 = Team Sports

* p < .05; ** p < .01; *** p < .001
Discussion

There were two salient purposes to this study: 1) to further examine the nature of the moderation between narcissism and trait self-consciousness upon dispositional choking, due to previous contradictory findings; and 2) on the basis of the moderation reported, examine the role of confidence. Correlations revealed that narcissism was positively but weakly correlated with trait sport confidence and interpretation of trait self-consciousness, and negatively correlated with social anxiety (moderately) and dispositional choking (weakly). The self-consciousness subscales correlated positively with each other, and with their respective interpretation subscales.

The test of moderation was only significant when data were split on sport type. Analyses then revealed a significant interaction between narcissism and public self-consciousness upon dispositional choking for the individual sport sample. The nature of the interaction indicated that high narcissism was associated with low choking regardless of trait self-consciousness; however, for low narcissists, low levels of public self-consciousness were associated with higher dispositional choking. This moderation effect supported the second prediction of hypothesis one (1.2), which was originally based on the findings of Baumeister (1984) and Wallace and Baumeister (2002).

Analysis of the role of confidence confirmed that confidence was a significant predictor of dispositional choking over and above narcissism and trait self-consciousness, but did not account for the effects of the moderation upon dispositional choking. Furthermore, confidence appeared not to be the mechanism by
which narcissism exerted its influence on choking because the correlation between confidence and narcissism was low (0.23) and confidence did not interact with trait self-consciousness in the same way as narcissism.

The results of this study offered support for the original theoretically based hypothesis from chapter three (hypothesis 1.2) only when the data set was analysed by sport type. The individual sport sample reported that high narcissism was associated with low dispositional choking, and that low narcissists were less liable to choke if they had high levels of public self-consciousness. In relation to the literature, the significant main effect for narcissism on choking is consistent with the findings of Wallace and Baumeister (2002) and those reported in study two (in Chapter Three). Baumeister (1984) reported findings that showed high trait self-consciousness to significantly influence performance outcome under pressure, with high trait self-consciousness being associated with less susceptibility to choke. In the present study trait self-consciousness alone did not significantly predict dispositional choking for the individual sport sample. However, the nature of the interaction with narcissism revealed for this group does offer support for the hypothesised positive effect of high trait public self-consciousness on performance under pressure reported by Baumeister (1984). The interaction revealed a negative trend between increasing trait public self-consciousness and increasing dispositional choking when moderated by narcissism.

The team sport sample also showed narcissism to be a significant predictor of low dispositional choking, once again supporting the previous findings of Wallace and Baumeister (2002). However, this sample did not report a significant interaction
between narcissism and trait self-consciousness to support the moderation hypothesis, as was revealed by the individual sport sample. Having said that, public self-consciousness did reveal a marginally significant main effect (p = .051) for the prediction of dispositional choking for the team sport sample. This result contradicted the significant effect of high trait self-consciousness on performance presented in Baumeister's studies (1984). Two factors are highlighted at this point that require further discussion; 1) the significance of sport type, and 2) the difference in results obtained for private and public self-consciousness.

First to be considered is that of sport type. The disparity in the findings between individual and team sports are evident as described above. Findings suggest that the relationship between narcissism and trait self-consciousness is different for individuals involved in team sports to those of individual sports. Public self-consciousness influences dispositional choking directly for the team sport sample, but only exerts influence on dispositional choking for the individual sport sample when it interacts with narcissism. It is suggested that personality type and sport demands may be of influence. For example, more narcissistic individuals maybe attracted to individual sports due to the greater personal opportunity for glory, and the sport demands may foster greater levels of self-consciousness that impact performance differently depending on the individual personality. Recent literature has suggested that narcissists may not make effective team players because their personality characteristics of self-obsession and poor interpersonal relations could impinge on their attraction to, and success within, a team (Wallace et al., 2005). The distinction between individual and team sports and how this relates to the
relationship between narcissism and trait self-consciousness upon choking is
recommended as a worthy avenue for further investigation.

Second is the difference in results obtained for private and public self-consciousness.
Baumeister (1984) found that high levels of both private and public self-consciousness were beneficial to performance when put under pressure. His results were based on performance discrepancies between situations, with a decline in performance under pressure inferring the occurrence of choking. The results of the present study were based on a self-report dispositional measure of choking and only revealed significant results with regard to public self-consciousness. It is proposed that the mode of measurement used to assess choking may be an influence here, based on the suggestion that the self-report dispositional measure of choking is more susceptible to the potential influence of self-report bias from the personality constructs of private self-consciousness and narcissism. Within the narcissism literature it has previously been considered how the impact of high narcissism may actually lead to self-report bias on the basis that it is innate for that personality type to inflate the self in a positive manner (John & Robins, 1994; Rhodewalt & Morf, 1995; Robins & Beer, 2001). In relation to trait self-consciousness it has also been acknowledged that those individuals habitually high in trait self-consciousness may have greater insight into themselves and complete self-report measures more accurately than individuals who are more prone to direct attention outwardly (Fenigstein et al., 1975). On this basis it is suggested that the lack of findings in relation to private self-consciousness with the dispositional measure of choking maybe a result of the mode of measurement, although further investigation is required to substantiate this interpretation.
The second purpose of this investigation was to examine the role of confidence. A positive, although weak, correlation was revealed between confidence and narcissism offering support for the findings of Campbell et al. (2004b), which showed narcissism to significantly correlate with confidence and overconfidence. Confidence revealed a moderate negative correlation with dispositional choking and was a significant predictor of dispositional choking, offering support for the general acceptance that high confidence relates to higher performance (Woodman & Hardy, 2003). Positive interpretation of the three self-consciousness subscales related positively with confidence and narcissism as predicted. This offers potential support for previous research that has indicated the positive success orientated view typical of a narcissist (Elliot & Thrash, 2001; Wallace et al., 2005), and to findings that have reported that high confidence relates to positive interpretation of other factors, for example anxiety or adverse situations (Bandurra, 1977; Jones, 1995).

Confidence was tested as a mediating factor for the interactive effects of narcissism and public self-consciousness on dispositional choking. This hypothesis was set based on findings of a previous study (Study Two in Chapter Three). The test of mediation was performed on the significant moderation effect reported for the individual sport sample only. Results revealed that narcissism and public self-consciousness did not significantly affect trait sport confidence, and the interactive effects of narcissism and public self-consciousness remained significant with the inclusion of confidence. This clearly indicated that confidence was not the mechanism by which the interaction of narcissism and public self-consciousness exerted its influence upon dispositional choking.
The relationship between confidence and trait self-consciousness was also examined in relation to dispositional choking. However, the findings revealed that trait self-consciousness did not predict dispositional choking over and above confidence, with no signs of confidence interacting with trait self-consciousness to influence dispositional choking. These findings provide more evidence to support the argument that the effects of narcissism cannot be explained by confidence, on the basis that confidence did not interact with trait self-consciousness in the same way as narcissism.

In conclusion, the precise role of confidence and the influence of trait self-consciousness interpretation is still not clear, although results present a clear argument for the contention that confidence does not account for the effects of narcissism, and that narcissism and confidence influence trait self-consciousness differently. On the basis of these results and the earlier distinction highlighted between sport type influencing the relationship between the variables of narcissism and trait self-consciousness, it is apparent that further research is required to establish a clearer understanding of the relationships between these individual difference variables.

Consideration is given to two applied implications of the findings from this study, of which the first relates to the positive association between high public self-consciousness and low dispositional choking. It is proposed that increasing public self-consciousness in training may help desensitise individuals to the negative apprehension that can be caused by heightened self-focused attention in pressure
situations. However, the results also suggest that high confidence is related to positive interpretations of trait self-consciousness, and that both confidence and interpretation are related to lower dispositional choking. On this basis it is recommended that enhancing trait self-consciousness should only be encouraged if the individual has a high level of confidence, or if confidence enhancement is worked on simultaneously, to encourage a positive interpretation of trait self-consciousness. Otherwise it is cautioned that increasing self-consciousness in an individual of low confidence may lead to negative interpretation of the self and increase anxiety and apprehension.

The second practical implication concerns the influence that narcissism has on an individual’s behaviour and appraisal system. Narcissism may influence how an individual performs in certain types of sport. For example, high narcissists may excel in an individual sport due to the spotlight being solely on the individual. Their appraisal of that situation may be very positive and welcoming. For a low narcissist, an individual sport may be quite threatening and appraisal of the situation comparatively negative to that of a high narcissist; so a low narcissist’s performance may benefit from positive appraisal intervention training.

Three salient limitations of this study are raised for consideration when interpreting the findings. Firstly, it is highlighted that data collection was performed by numerous researchers. This may have reduced the consistency in procedure followed in comparison to that normally achieved by one sole researcher, although substantial controls were put in place to ensure that inventories were completed consistently. Necessary demographic information was also collected for effective participant
screening. An advantage that did occur from this method of data collection was the widened participant pool that was accessed via the different researchers.

The second limitation raised relates to the two individual difference variables: gender and sport type that were revealed as significant factors of influence. Gender effects were controlled for by within gender standardisation, but on the basis that gender differences were apparent it is suggested that this variable is worthy of future investigation. Variability in sport type emerged as an influential variable that, once controlled for through separate sport type analysis, resulted in significant relationships between the test variables being revealed. On this basis, it is proposed that sport type must be controlled for in future research, or be specifically investigated to determine the differences between individual and team sports in relation to narcissism, trait self-consciousness and dispositional choking. With these two individual difference variables demonstrating significant effects it is considered whether competitive level, and/or experience may have been a confound variable within the data. Competitive level was not controlled for on the basis that choking under pressure is believed to occur at all levels of performance (Baumeister, 1984). However, on the apparent sensitivity of the data to individual differences it may well be reasonable to proffer that competitive level could have influenced the relationships between the personality variables and dispositional choking. Woodman and Hardy (2003) discussed the potential differences that competitive level can have on dealing with pressure situations that may well impact on the self-report measures that have been reported in this study. For example, experienced athletes may have reported low dispositions to choke due to having spent many years training to master the skill of dealing with performance pressure. In comparison, novice athletes might
have reported high dispositions to choke due to their lower level of competitive experience. Further research might test for differences in the relationships revealed between narcissism, trait self-consciousness and dispositional choking on the basis of competitive level or experience.

The final limitation discussed refers to the recurring issue of self-report bias. This discussion point (John & Robins, 1994; Rhodewalt & Morf, 1995; Robins & Beer, 2001) undoubtedly requires consideration at this stage due to the present research study being completely based on self-report measures of dispositional traits. There is potential for both of these personality traits (narcissism and trait self-consciousness) to influence the data as has previously been discussed in relation to the dispositional choking scale. However it is argued here, based on the narcissistic state of consciousness (Bach, 1977) that unintentional self-report bias influenced by personality variables is sub-conscious and the views that are expressed are the actual beliefs about the self that the individual holds. The interpretation of constructs is often more influential than the actual construct intensity, as has been seen in anxiety interpretation literature (e.g., Jones, 1995; Swain & Jones, 1996), so it is suggested that the views individuals have of themselves are valuable regardless of unconscious bias. It is their beliefs and interpretation of the self that is most influential (Robins & John, 1997; Wallace et al., 2005). It is argued that it is difficult to see how self-report bias in this case could have caused the interactive effects reported, due to the significant interaction with trait self-consciousness being most salient with individuals low in narcissism. It is also accepted that self-report measures offer information that could not be gained by any other means (Betz & Walsh, 1990), and in this case through inventories that have received repeated validation (Baumeister,
1984; Eammons, 1987; Fenigstein et al., 1975; Raskin & Terry, 1988; Rhodewalt & Morf, 1995; Vealey, 1986).

Based on the inflated grandiose views that narcissists report of themselves, it might be suggested that future research involving the dispositional choking scale should also include an actual measure of performance. This would allow for an objective measure of choking to be gained to either substantiate the findings being reported by individuals on the self-report measure of dispositional choking or provide an objective confirmation of individuals' dispositions to choke. Such an approach would assist in eliminating any interference that may be caused by personality self-report bias.

A number of prospective areas for future research have been highlighted throughout the discussion, but of salient interest and most logical progression, the following suggestions are made. Further investigation into the influence of type of sport may help to establish the relationships between the key constructs of narcissism, trait self-consciousness and dispositional choking. It has also been recommended that the dispositional choking scale should be tested in conjunction with actual performance discrepancy measurements. An objective measure of state choking would allow analyses to indicate whether the dispositional choking scale correlates with state choking measures and provide opportunity for the influence of self-report bias in relation to the personality variables to be assessed. In conjunction with this, it is recommended that repeated performance measures could be analysed to develop a more reliable measure of an individual's liability to choke, rather than relying on a single 'snap shot' approach to state choking. The role of confidence and
interpretation of self-consciousness in relation to narcissism, trait self-consciousness and dispositional choking requires further attention due to preliminary examination finding inconclusive results. However, it is emphasised that the present research study has made a valuable start in this line of investigation, providing significant evidence examining the similarities and disparities between the constructs of narcissism and confidence, and the way in which they relate to interpretation of self-consciousness and dispositional choking.
CHAPTER 5

General Discussion

Introduction

It is the aim of this final chapter to bring together the research that has been presented in this thesis. The chapter consists of four sections: 1) a summary of the main intentions and findings of the four studies reported; 2) a discussion of the main theoretical issues and recommendations for future research directions that have been derived from this programme of research; 3) a discussion of the applied implications of the research findings; followed by 4) concluding remarks.

Summary

At the outset of this research programme the aim was to investigate the processes underpinning performance under pressure, especially those that might cause choking to occur. The explanation presented by the conscious processing hypothesis was well-documented with supporting evidence, and warranted further investigation with regard to the role of individual difference variables (Hardy et al., 1996b; Masters, 1992; Mullen & Hardy, 2000). On this basis, the study in chapter one was designed to test the conscious processing hypothesis as an explanation for choking under pressure, specifically examining the variables confidence and mental effort with regard to their roles in the choking process. The laboratory based experiment manipulated anxiety and confidence to allow for comparison of performance in low and high pressure conditions for two groups: expert and novice performers. A secondary attention task was incorporated to assess the utilisation of available attentional resources and mental effort was recorded post performance. Findings indicated that the stress manipulation had been effective in decreasing confidence
levels and increasing anxiety. Both groups reported increases in mental effort in the high pressure condition, and novices improved performance as expected. However, the experts also showed performance improvement in the high pressure condition, which contradicted the predictions of performance decline based on the conscious processing hypothesis. The unexpected findings with regard to performance and confidence were discussed in relation to theoretical interpretations and limitations of the study. The role of effort was argued to be consistent with the processing efficiency theory (Eysenck & Calvo, 1992). It was concluded that the influence of individual differences warranted further attention due to the apparently inconsistent findings being reported within the literature. An imbalance in the literature between the mechanistic approach adopted to investigate choking under pressure and an individual difference approach was identified. This recognition underpinned the argument for adoption of the individual difference approach to explore choking within the subsequent studies of this thesis, with the aim of developing various perspectives that had previously been presented.

The three subsequent studies approached the construct of choking from an individual difference perspective. Previous research indicated reinvestment (Masters et al., 1993), Trait Self-consciousness (Baumeister, 1984; Fenigstein et al., 1975), and Narcissism (Wallace & Baumeister, 2002), as key constructs worthy of further investigation with regard to their influences upon performance under pressure and dispositional choking.

The purpose of the second study (Chapter Three, Study One) was to design a dispositional measure of choking. Dissatisfaction with the previous reinvestment
scale (Masters et al., 1993) stimulated design of the dispositional choking scale, and also the potential role of trait self-consciousness in performance under pressure. The findings of Baumeister (1984) presented an argument for high trait self-consciousness being beneficial for individuals performing under pressure; however, further research was limited. Secondly, the narcissistic personality had received recent interest with regard to performing under pressure and presented evidence for narcissism benefiting an individual’s performance when under pressure. On this basis another purpose of the second study was to initiate examination of the personality constructs narcissism and trait self-consciousness.

The second study (Chapter Three, Study One) revealed supporting evidence for the dispositional choking scale to be a reliable measure of the defined construct. However, there was little evidence of relationships between narcissism, trait self-consciousness, and dispositional choking. Once certain limitations of the second study (Chapter Three, Study One) had been dealt with in the design of the third study (Chapter Three, Study Two) the replica study presented more fruitful results. The dispositional measure of choking significantly predicted the retrospective state choking measure that was devised for the study. Narcissism was revealed as a significant moderator of the relationship between private and public self-consciousness and choking. High narcissism was associated with low choking regardless of trait self-consciousness; however high choking was associated with increasing levels of trait self-consciousness for low narcissists. These findings contradicted the nature of the interaction predicted and questioned the mediating role of confidence and directional interpretation.
The final study in chapter four attended to the results revealed in the third study (Chapter Three, Study Two) by re-testing the moderation hypothesis to clarify the nature of the interaction between narcissism and trait self-consciousness, and to further examine the role of confidence. A larger, more diverse subject sample enabled comparison of team and individual sports. For the individual sample narcissism was a significant moderator of the relationship between public self-consciousness and dispositional choking. High narcissism was associated with low choking regardless of public self-consciousness, but for low narcissists high public self-consciousness was associated with lower levels of choking. The nature of the interaction supported the original theoretically based hypothesis that was opposed in the third study (Chapter Three, Study Two). The team sport data did not yield an interaction between narcissism and trait self-consciousness, however, narcissism and public self-consciousness were both significant predictors of dispositional choking. The potential mediating role of confidence was not supported; however, confidence was found to be a significant predictor of dispositional choking over and above narcissism, supporting the argument that narcissism effects cannot be explained entirely by confidence.

Theoretical implications and future directions for research

The theoretical implications of each study have been discussed throughout the thesis, so it is the aim of this discussion to consider additional issues that build upon theoretical implications previously identified. Future research directions have also received discussion within each chapter. On this basis, only additional recommendations will be discussed, preceding a summary of future research directions presented in list form.
Narcissism and Trait Self-Consciousness

The findings of studies reported in chapters three and four have presented varying results with regard to the nature of the relationship between narcissism and trait self-consciousness. Each have received discussion in turn regarding their theoretical implications and interpretations; however two issues are worthy of discussion in relation to the contradictory nature of the findings.

The first issue that has arisen is as a consequence of the contradictory nature of the interactive relationship between narcissism and trait self-consciousness reported in the third and fourth studies. The unexpected findings are of particular interest due to both sets of significant results having been based on individual sport samples, so it is upon this similarity that differences warrant discussion. A potential explanation for the contradictory findings between the individual sport samples is presented in relation to the different nature of individual sports incorporated in the two studies. Within individual sports there are various types of performance including independent (e.g., gymnastics), coactive (e.g., sprinting), and reactive/proactive (e.g., tennis). It is argued that the nature of the performance might influence the relationship between personality traits and dispositional choking. In relation to narcissism the nature of performance that allows the greatest opportunity for self-enhancement and individual glory should attract high narcissists; whereas for a low narcissist a sport of this nature offers the maximum opportunity for choking and personal failure. In gymnastics, the spotlight is on the individual performer during his/her performance of complex motor tasks that are subjectively scored (Grandjean, Taylor, & Weiner, 2002; Plessner, 1999). It is proposed these factors heighten the
importance of self-presentation and the visibility of individual performance (Leary, 1992). In comparison, the nature of performance in a coactive sport like sprinting or swimming changes the performance stage, on the basis that multiple competitors perform simultaneously, potentially reducing the focus on the individual performer; and for the proactive or reactive dependent type of individual sports, where the spotlight is split between two (in the main) competitors whose performances are directly influenced by each other (Carron, Burke, & Prapavessis, 2004). So although the personal opportunity for glory is similar for all individual sports in comparison to team sports, the nature in which this is achieved varies depending on the style of performance.

The individual sport sample in chapter four consisted of a variety of individual sports covering the spectrum of different natures of performance stages identified, including complex and simple motor tasks, and subjective and objectively scored sports; in comparison to the refined gymnastic sample in study two (Chapter Three). Consequently, high levels of trait self-consciousness may have increased the liability to choke for the gymnasts low in narcissism due to the pressurised performance stage to which they were subjected. However, a data sample that represents a mix of individual sports is more likely to present the general effect of high self-consciousness being beneficial to individuals low in narcissism. This interpretation is clearly speculative, and requires further investigation to compare individual sports in relation to the moderation effect.

The second issue that warrants attention is as a consequence of the apparent difference that sport type has on the relationship between narcissism and trait self-
consciousness. This is proposed as a potential explanation for the lack of significant findings in study one (in Chapter Three), due to the subject sample consisting of both individual and team sport performers. In addition to this the significant findings in study four were as a result of splitting the data on sport type. It has been suggested that team sports attract a different personality disposition to that of individual sports, or that narcissism and trait self-consciousness influence dispositional choking differently based on the type of sport involved. This was discussed in chapter four so will not be addressed again here, however it is noteworthy that a significant sport type difference has previously been documented in relation to the sources of sport confidence and more specifically self-presentation. Vealey, Hayashi, Garner-Holman, and Giacobbi, (1998) found individual sport performers to rate self-presentation as a much higher source of sport confidence than did team sport performers, suggesting that the nature of individual sports influences the extent to which athletes are aware of scrutiny of body type and presentation. In direct relation to self-presentation literature James and Collins (1997) identified significant others and competitive anxiety and doubt, as the salient self-presentation sources of competitive stress. It is proposed these are of significant interest in relation to narcissism on the premise that narcissists are motivated by gaining praise and admiration from others (Wallace & Baumeister, 2002), and their care and concern for others is minimal (Morf & Rhodewalt, 2001); and it has been questioned as to whether narcissists do actually experience competitive anxiety (Wallace et al., 2005). It is proposed that self-presentation is potentially closely related to narcissism (Wallace et al., 2005) and trait self-consciousness (Buss, 2001; Mittal & Balasubramanian, 1987) and warrants further investigation in conjunction with the
possible influence that sport type may have on the relationships studied in the present research.

The remaining component of trait self-consciousness; social anxiety, was revealed as a consistent significant predictor of high choking. This offers support for previous anxiety performance literature which documents the negative effects of anxiety, in this case a form of cognitive anxiety, on performance (Martens et al., 1990b). The significance of social anxiety upon performance has received prior attention in relation to self-presentation (Schlenker & Leary, 1982), which has more recently been considered with regard to group influence. Carron et al. (2004) discussed the potential for social anxiety to be reduced by the presence of coactors, and team members, in comparison to individual sports that require solo performance. Once again this returns to the significance of type of performance, and emphasises how sport type might influence the relationship between narcissism and trait self-consciousness. A consistent relationship between the construct of narcissism and social anxiety was also reported in the nature of a negative correlation. It is proposed that the constructs represent opposing characteristics in that a high narcissistic personality has been associated with experiencing low anxiety (Spano, 2001), and craving for others' attention (Morf & Rhodewalt, 2001; Wallace & Baumeister, 2002; Wallace et al., 2005), which are presented as characteristics that would contradict the defining items of social anxiety as presented by Fenigstein et al. (1975) and Schlenker and Leary (1982). The negative relationship between narcissism and social anxiety is proposed as an area for future investigation, due to the significant effects both factors have on choking.
Trait self-consciousness has been further refined into adaptive and maladaptive subcomponents. Two subcomponents have been identified in private self-consciousness: self-reflectiveness and internal state of awareness; and two in public self-consciousness: style consciousness and appearance consciousness (Burnkrant & Page, 1984; Mittal & Balasubramanian, 1987; Nystedt & Ljungberg, 2002). It is proposed that further examination of these proposed facets might also lead to an explanation for the inconsistent findings with regard to the interaction with narcissism, and the effects upon choking (Watson & Bidderman, 1993).

**Narcissism and Confidence**

The final question that has arisen from the present findings and their interpretation regards the nature of narcissists' confidence; in essence is the confidence that narcissists possess different to the confidence that 'non-narcissists' have? Confidence literature has taken many forms including self-efficacy research (Bandura, 1977), perceived competence (Harter, 1982; Nicholls, 1984), and sport confidence (Vealey, 1986; Vealey et al., 1998), but it is emphasised that, in all of these domains of research, the level at which an individual reports his/her confidence, is dependent upon a general trait level of confidence and the influence of situational factors that are transient in nature. In comparison, it is proposed that this is not the case for narcissists. Narcissists have a predisposition to be 'confident' and it is suggested that this is not subjected to doubt or scrutiny based upon situational factors, like 'normal confidence' due to the avid self-belief and grandiose opinion that narcissists hold of themselves regarding their superiority and greatness. Fear of failure and expectancies of success are factors that have been shown to enhance competitive anxiety and influence confidence and behaviour under pressure (Baumeister et al., 1985; Conroy
Narcissists do not appear to experience self-doubt or fear of failure that may influence their confidence levels (Campbell et al., 2004b; Raskin, Novacek, & Hogan, 1991); they are solely motivated by success orientation (Campbell et al., 2004a; Wallace et al. 2005), opportunity for glory (Wallace & Baumeister, 2002), and rate their confidence on expectations rather than actual performance measures (John & Robins, 1994; Robins & Beer, 2001; Robins & John, 1997). So for example, Campbell et al. (2004b) found that, even if a prior performance does not suggest a high future performance, narcissists are still reported to predict a high performance in the future, which is based on pre-expectation schemata. In other words, narcissists’ future performance expectations are partially based on previous performance assessment, but are largely based upon initial performance expectations made prior to actual performance; so are largely schema-driven opposed to data-driven. This it is proposed stems from their performance success orientation and craving for opportunity for glory and superiority, resulting in their confidence remaining unaffected by actual performance measures and assessment, like a ‘non-narcissist’s’ would be.

In summary it is concluded that narcissism is beneficial to sporting performance (Wallace et al., 2005), because of its reported association with reduced likelihood of choking under pressure. This, it is proposed, occurs through personality characteristics that predispose an individual to be motivated by success orientation, and be devoid of self-doubt and negative anxiety, thereby allowing for all self-enhancement opportunities to be embraced with confidence of success. It is proposed these characteristics can be regarded as the opposite of those of a ‘normal’ disposition that may be more liable to choking under pressure depending on other
individual difference factors like trait self-consciousness, confidence, interpretation and social anxiety. However, initial discussion has also arisen more recently regarding the potential negative aspects of narcissism with regard to performance. Wallace et al. (2005) have highlighted the potential for narcissists’ overconfidence leading to failure due to their potential underestimation of their limitations, which in some situations may be costly to performance. Campbell et al. (2004b) hinted towards the potential failure of narcissists based on their overconfidence and greater willingness to take risks; this might be compared to the self-handicapping and risk aversive behaviour tactics of individuals who are motivated by avoiding failure and portraying positive self-presentation (Carron et al., 2004; Leary, 1992). Also in a team situation if performance success depends on the narcissist sacrificing an opportunity for personal glory for the team success then this may also end in failure (Wallace et al., 2005). The interpersonal relations of narcissists are strewn with issues that may indicate narcissists not being good team players (Emmons, 1987; Wallace & Baumeister, 2002; Wallace et al., 2005). Unfortunately exploration of this issue is beyond the scope of this discussion, although it is highlighted as an avenue for further investigation especially in relation to the significant influence that sport type had on the result in the present research.

Based on the discussion points presented it is suggested that future research into narcissism and trait self-consciousness needs to delve further into the basic constructs. Narcissism research has identified seven subscales of the personality trait (Emmons, 1987; Kubarych, Deary, & Austin, 2004; Raskin & Terry, 1988) that warrant further investigation regarding their specific relationship to the sporting context. The adaptive and maladaptive split within narcissism also warrants attention
(Rhodewalt & Morf, 1995; Watson & Biderman, 1993), as it might be suggested that adaptive narcissism components are beneficial to performance in comparison to maladaptive components. Further knowledge of these specific components in relation to sport may lead to the potential for interventions to be developed to assist in training for the specific beneficial components of narcissism that are adaptive narcissistic qualities with regard to performing under pressure. Due to the preliminary nature of the investigations undertaken in this thesis with regard to narcissism, and trait self-consciousness in relation to dispositional choking, the concepts have been retained in their broader form. However, it is believed that the subcomponents identified in this discussion may offer some justification and understanding as to the way in which the constructs interact and exert influence.

From the preceding discussions of theoretical implications and future directions derived from the present research, the following broad based research questions are presented as a summary of ten potential avenues worthy of exploration.

1. How does confidence exert its influence upon performance under pressure?
2. What determines the extent to which an increase in task effort will have a facilitative or debilitative effect on performance under pressure?
3. Can the dispositional choking scale predict an individual's level of state choking as measured over a season of performances?
4. Does type of performance influence the nature of the interaction between narcissism and trait self-consciousness (private and public) upon choking?
5. How does sport type (individual v team) influence the relationships between narcissism, trait self-consciousness and choking under pressure?
6. Is the confidence of a narcissist different to 'normal' confidence?
7. How does narcissism relate to self-presentation and impression management?
8. How do the subscales of narcissism relate to sport specifically?
9. Are narcissism and social anxiety opposing constructs?
10. How does interpretation of trait self-consciousness influence choking?

Applied Implications

Based on an accumulation of the findings from this programme of research, in summary, four implications for applied application have been derived. The first of those highlights the significance of confidence. Interventions to enhance confidence are of salient importance. Confidence was related to lower dispositional choking and more positive interpretation of trait self-consciousness. It is suggested this can be related to the likelihood that high confidence would facilitate positive interpretation of anxiety, and encourage an increase in effort to perform well under pressure. The results of study one show the importance that should be given to teaching athletes that a small drop in confidence, or an increase in anxiety can prove to be beneficial to performance. An increase in effort was also shown to improve performance under pressure for novice performers and expert performers in this instance; however, it is proposed further delineation is required for the construct of effort in terms of the potential negative effects of reinvestment of conscious control.

The mixed findings with regard to the interaction of narcissism and trait self-consciousness present the requirement of some caution being taken in practical application. However, it might be proposed that private and public self-consciousness can both be facilitative and debilitative for low narcissists depending on the type of sport and performance demands. For example, if a performer is active
in a sport that has similar characteristics to those identified of gymnastics then there is potential for high trait self-consciousness to be debilitating to performance under pressure. In contrast, findings suggest that high public self-consciousness may prove to be facilitative to performance under pressure in other sports. It is suggested that desensitisation to self-focused attention would be beneficial on both accounts, on the basis that if individuals become accustomed to self-directed attention in training then this will potentially have less of a negative impact in competition. It is proposed this type of intervention should be in conjunction with enhancing confidence on the basis that high confidence was related to positive interpretation of trait self-consciousness.

Findings in relation to narcissism have derived some interesting aspects for applied implication. The negative relationship with dispositional choking has identified the narcissistic personality as one less prone to suffering from negative effects of performance anxiety. It is advised that the narcissistic personality may influence a performer's perspectives and appraisals of situations. Narcissists are likely to have different mental training requirements in comparison to low narcissists. For example, a low narcissist may require interventions designed to help deal with performance pressure and the competition, whereas it is unlikely that a narcissist would benefit from the same intervention due to their desire for others' attention, self-enhancement opportunities and success orientated approach to performance. Recognition of the narcissistic personality will assist in developing appropriate interventions to help performers specifically, in relation to their personality disposition.

It has been proposed the dispositional choking scale may be a beneficial tool for use with performers as a means to finding out how they interpret their ability to deal with
pressure, and how they rate their performance under pressure in comparison to their performance in training. Such insight might allow coaches and sport psychologists to recognise individuals who perceive performance pressure to be an issue. This early recognition will allow the coach or psychologist to design appropriate interventions to help train the performer to deal with pressure, and reduce choking.

**Concluding Remarks**

To conclude, it is proposed that the aim of this research programme to examine choking under pressure from an individual difference perspective has been achieved. Processes and determinants of the phenomenon were examined, with the first study demonstrating the influential roles that individual differences have within the choking process. Upon adoption of the individual difference perspective, the construct dispositional choking was established in association with a scale specifically designed to measure the variable. The findings in relation to narcissism have provided support for previous research from other domains and that of Wallace and Baumeister (2002). Narcissism is a new area of interest within the sport domain and it is proposed that the present research has provided a valuable contribution towards forming a basis from which further research can be stimulated and progressed. The relationship between narcissism and trait self-consciousness has presented some interesting theoretical issues regarding the influence of sport type and performance demands. These warrant further investigation in an attempt to rationalise the consistent contradictory findings in relation to trait self-consciousness and performance. It is believed that this research programme has made a complementary advancement within the individual difference research approach towards choking under pressure. If greater understanding of how individual
difference variables influence a performer's disposition to choke is generated, then it is proposed early recognition of this will assist in specific proactive interventions being incorporated in training, as opposed to reactive measures being taken after an event of choking has occurred.
REFERENCES


INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT

The researcher conducting this project subscribes to the ethics conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This form and the information it contains are given to you for your own protection and full understanding of the procedures. Your signature on this form will signify that you have received information, which describes the procedures, possible risks, and benefits of this research project, that you have received an adequate opportunity to consider the information, and that you voluntarily agree to participate in the project.

Having been asked by _________ of the School of Sport, Health and Exercise Sciences at the University of Wales Bangor to participate in a research project, I have received information regarding the procedure.

I understand the procedure to be used in this research and any possible personal risks to me in taking part.

I understand that I may withdraw my participation in this research at any time.

I also understand that I may register any complaint I might have about this experiment to Prof Roger Eston Head of the School of Sport Health and Exercise Sciences, and that I will be offered the opportunity of providing feedback on the experiment using standard report forms.

I may obtain copies of the results of this study, upon its completion, by contacting: Sally Akehurst (PhD Student), School of Sport, Health and Exercise Sciences, University of Wales Bangor, George Building, Normal Site, Holyhead Road, Bangor, Gwynedd, LL57 2PX 01248 383495.

I confirm that I have been given adequate opportunity to ask any questions and that these have been answered to my satisfaction.

I have been informed that the research material will be held confidential by the researcher.

I agree to participate in the study.

__________________________________________
NAME (please type or print legibly):

__________________________________________
ADDRESS: (Optional)

__________________________________________
SIGNATURE:

__________________________________________
DATE:
Appendix B

INFORMED CONSENT FOR MINORS AND DEPENDENT POPULATIONS BY PARENT, GUARDIAN AND/OR OTHER APPROPRIATE AUTHORITY TO PARTICIPATE IN A RESEARCH PROJECT

The researcher conducting this project subscribes to the ethics conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This form and the information it contains are given to you for your own protection and full understanding of the procedures. Your signature on this form will signify that you have received information which describes the procedures, possible risks, and benefits of this research project, that you have received an adequate opportunity to consider the information, and that you voluntarily agree allow your child/or dependent to participate in the project.

I (name of parent/guardian) am the parent/guardian of (name of child/dependent), and given my consent for him/her participation in the study. I understand that this study is to be carried out in the following place: Training Venue at the following time(s): During Training and that the research project is supervised by: Dr Tim Woodman & Prof Lew Hardy of the School of Sport, Health and Exercise Sciences, University of Wales, Bangor.

I certify that I understand the procedures to be used and have fully explained them to (name of child/dependent):

In particular, the participant understands the risks (if any) of taking part. The participant also knows that he/she has the right to withdraw from the project at any time. Any complaint about the experiment may be brought to Prof. Roger Eston, Head of the School of Sport, Health and Exercise Sciences at the University of Wales, Bangor, Gwynedd, LL57 2PX.

I may obtain a copy of the results of this study, upon its completion, by contacting: Sally Akhurst (PhD Student), School of Sport, Health and Exercise Sciences, University of Wales Bangor, George Building, Normal Site, Holyhead Road, Bangor, Gwynedd, LL57 2PX 01248 383495.

Name (please print) ____________________________________________

ADDRESS: (optional) __________________________________________

____________________________________________________________

SIGNATURE: ____________________________  DATE: ____________
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APPENDIX C, O, E, F, G, H, I, J, K,