

**A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF  
PUTTING EXPERIMENT**

**Masters by Research**

**Candice Quilliam**

**September 2014**

**A thesis submitted to the University of Gloucestershire in accordance  
with the requirements of the degree of sport psychology; Masters by  
Research in the Faculty of Sport and Exercise Sciences.**

**Table of Contents**

Table of Figures .....	4
Table of Tables.....	5
- Introduction - .....	6
Introduction .....	7
Personal rationale .....	9
Research Rationale .....	11
Research Question .....	11
Research Aims.....	11
Research Objectives .....	11
Thesis structure .....	13
Chapter 1 – Introduction.....	13
Chapter 2 – Literature Review .....	13
Chapter 3 – Method .....	13
Chapter 4 – Results.....	13
Chapter 5 – Discussion.....	14
-Literature Review - .....	15
Literature Review .....	16
Definition Debate .....	18
Why People Choke? .....	22
Self-Focus Theories.....	22
Distraction .....	26
Moderators of Choking .....	30
Skill level .....	30
Trait Reinvestment.....	31
Coping skills .....	31
Trait Anxiety.....	33
Self-Consciousness .....	34
Self-Presentation .....	35
Self-Presentation Model .....	41
-Method-.....	44
Method .....	45

Theoretical framework .....	45
Ontology .....	45
Epistemology .....	45
Methodology .....	47
Participants .....	51
Procedure .....	53
Data Collection .....	54
Data Analysis .....	55
Methodological Rigor .....	56
Ethics .....	57
- Results - .....	59
Results .....	74
Individual differences .....	74
Motivation .....	74
Self-concept .....	79
Positive affected states .....	84
Expectations .....	87
Shifts in Attention .....	91
Self-presentation .....	93
Social Factors .....	99
Team vs. Individual .....	99
Environment .....	101
- Discussion - .....	104
Discussion .....	105
Overview .....	105
The role of “other” moderators and the relationship between self-presentational concerns .....	106
Motivation .....	106
The self-concept .....	108
Environment .....	110
Positive affected states .....	112
Expectations .....	113
Shifts in attention .....	114

Candice Quilliam     A QUALITATIVE EXPLORATION OF CHOKING DURING A  
GOLF PUTTING EXPERIMENT

Role of self-presentational concerns .....	116
Appearance .....	116
Focus .....	117
Ability and technique .....	118
The role of self-presentation during a choking episode .....	119
Future research .....	120
Methodological Considerations .....	121
Limitations .....	122
Implications for Practice .....	123
- Conclusion - .....	124
Conclusion .....	125
Personal Reflection on the Research Process .....	127
- References - .....	129
References .....	130
- Appendix - .....	146
Appendix .....	147

**Table of Figures**

Figure 1. Coding framework of choking during a golf putting experiment .....49

**Table of Tables**

Table 1. Supplementary analysing table of the qualitative results identified .....78

# **-Introduction -**

## Introduction

This study critically examines the incidences of choking during a putting experiment and explores the perceived causes and consequences of choking under pressure, whilst specifically considering the role of the self-presentation model as an explanation for choking in sport.

With the help of the media such as radio and TV broadcasts, sporting events such as the Olympics, the FIFA football world cup and the Super Bowl have become worldwide phenomena (Bryant & Holt, 2006). These sport competitions where there is increased stress and pressure can cause athletes to respond both physically and mentally in a manner that can negatively affect their performance (Lundqvist, 2006). This negative affect has led coaches, managers, and athletes to take an increasing interest in the field of sport psychology (Katare, 2013). Sport psychology is a relatively new field within psychology and is the study of how an athlete's behaviours and beliefs relate to their ability to excel in their sport. Athletes often find themselves in high stakes situations where performing their best carries implications for future opportunities and success. This pressure and the potential for choking arise in all competitive sports, high pressured tasks and in many contexts outside of the sporting environment as explained by Pete Sampras (2000, p.68) "We all choke.... no matter who you are, you just feel pressure in the heat of the moment". Choking can be defined as an acute and considerable decrease in skill executing and performance when self-expected standards are normally achievable, which is the result of increased anxiety under perceived pressure (Mesagno & Hill, in press).

For many years researchers have investigated what causes skilled and experienced athletes to 'choke' under the many pressures of competition. Why do some athletes fail when they should succeed? Therefore, there is a need for researchers to investigate the antecedents, mechanisms and consequences of choking under pressure in sport.

Previous choking research has established that the self-focus theories (Beilock & Gonso 2008; Beilock & Carr, 2001; Gucciardi & Dimmock, 2008) offer the most likely explanation for choking in sport, although distraction theories (Beilock & Carr, 2001; Lewis & Linder, 1997; Wine, 1971) may explain some cases of choking caused by attentional disruptions (Beilock & Carr, 2001). However, a range of variables have been consistently identified that are thought to influence the probability of choking in sport. These variables include: self-consciousness (Baumeister, 1984), trait anxiety (Baumeister & Showers, 1986), self-confidence (Baumeister, Hamilton & Tice, 1985), negative fear of failing, evaluation apprehension and coping (Mesagno, Harvey & Janelle, 2011). All of these variables appear to be a key and central factor in the self-presentation model (Mesagno, Harvey & Janelle, 2011), which has been offered recently as an alternative explanation of choking in sport.

Self-presentation (also known as impression management) is characterised as a collection of processes in which a person tries to control how he or she is evaluated by others (Leary & Kowalski, 1990; Wilson & Eklund, 1998). Researchers (e.g., Williams & Elliot, 1999; Wilson & Eklund, 1998) have reported that athletes experience a variety of self-presentational concerns associated with competition yet, to date, there has been limited research in this area. Self-presentation has received infrequent attention in prior research dealing with anxiety and performance (Mesagno, Harvey & Janelle, 2011), and therefore more investigation is needed to discover the affects and consequences self-presentation has on performance. Not only may further research into the effects of self-presentational concerns on performance help athletes and coaches alike, it is an important factor for future research in choking under pressure.

*When it comes to choking, the bottom line is that everybody does it. The question is not whether you choke or not, but how-when you choke-you are going to handle it.*

*Choking is a big part of every sport, and part of being a champion is being able to cope with it better than everyone else*

(John McEnroe in Weinberg & Gould, 1995, p.333)

### **Personal rationale**

The previous quote in particular intrigued me to find out more about the concept of choking under pressure. After reading the quote time and time again, I began to disagree with John McEnroe. I do not believe everybody chokes, however I do believe that there is the potential for anyone to choke. What interests me most about the subject area is that I have never experienced choking that I am aware of, yet for years I have watched both famous sportsmen and team mates choke in situations that surprise me. The unpredictability of choking is what fascinates me the most, can anyone choke? Are some people more susceptible than others? Or do some people have more control over their physical and mental states to not choke? As someone who is particularly low in self-confidence and highly self-conscious I am intrigued to extend Mesgano, Harvey and Janelle's (2011) work on the effects of self-presentation and performance to find out first-hand whether this contributes to choking under pressure. Finally I enjoy working with people and discovering their experiences, how this made them feel and what it made them think, which is why I have decided to take on this research topic and to investigate it through qualitative methods.

It is important for researchers to use and implement the correct research design and methods to obtain the most valuable data. For many years, quantitative research has been the most popular and dominant approach used in sport psychology literature (Gucciardi & Dimmock, 2008; Cao, Price & Stone, 2010; Mesagno, Harvey & Janelle, 2011). As the majority of previous choking research has been dominated by experimental methodology (see Hill, Hanton, Matthews, & Fleming, 2010a for a review) the data collected has lacked

insight into the personal experiences of the individuals who have choked. However, more recent studies have adopted qualitative methods in an attempt to offer a greater insight into the antecedents, mechanisms, moderators and consequences of choking under pressure (e.g., Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Hill et al., 2010).

The use of qualitative research in sport psychology is increasingly on the rise, allowing researchers a greater understanding of the participants' perceptions and experiences (Dale, 1996). Thus, to address the research question this study adopts the qualitative methodology of interpretative phenomenological analysis (IPA). A study employing IPA is considered to enrich the literature of an area previously studied quantitatively (Smith, 1996). Interpretive phenomenological analysis (IPA) is an approach which focuses on interpreting the life experiences of interviewees and representing a view of the world from interviewees' perspectives (Smith, 1996). IPA has been developed as a distinctive approach to conducting qualitative research in psychology offering a theoretical foundation and a detailed procedural guide. IPA is phenomenological in that it is concerned with individuals' subjective reports rather than the formulation of objective accounts, and it recognises that research is a dynamic process (Smith, 1996). Furthermore, the authors (Smith, 1996) of IPA acknowledge that access depends on and is complicated by the researchers' own conceptions, as these conceptions are required in order to make sense of that other personal world through a process of interpretative activity. Thus, IPA research has tended to focus on the exploration of participants understandings, perceptions and views (Reid, Flowers & Larkin, 2005) which is an ideal method for the research project as it aims to understand and explore the participants understanding and experiences of choking under pressure.

### **Research Rationale**

This research will offers a contribution to the extant literature to extend, support or challenge the theory that self-presentational concerns will have an impact on participants choking under pressure. Previous research has shown that self-focus and distraction theories (Beilock & Carr, 2001; Gucciardi & Dimmock, 2008) have influenced participants choking, however, self-presentational concerns are consistently discussed by authors in the results and discussions (Geukes, Mesagno, Hanrahan, & Kellmann, 2012; Mesagno, Harvey & Janelle, 2011). Therefore, this study will examine the incidences of choking during a putting experiment and explore the perceived causes and consequences of choking under pressure, whilst specifically considering the role of the self-presentation model as an explanation for choking in sport.

The literature review offers an in depth review of what has been discussed during the introduction and explores the incidences of choking through previous research. The introduction has identified the gap in the current research which the literature review will explain, furthermore it will outline important theories in choking research.

### **Research Question**

- To explore incidences of choking during a putting experiment.

### **Research Aims**

The aim of this study was to explore the causes and consequences of choking whilst more specifically, considering the role of the self-presentation model as an explanation for choking in sport.

### **Research Objectives**

- To examine the role of ‘other’ moderators and their relationship with self-presentation

Candice Quilliam     A QUALITATIVE EXPLORATION OF CHOKING DURING A  
GOLF PUTTING EXPERIMENT

- To explore the perceived role of self-presentational concerns within choking in a putting experiment.
- To examine the role of self-presentation within a choking episode.

## **Thesis structure**

### **Chapter 1 – Introduction**

**This chapter identifies, explains and outlines briefly the background of previous choking and self-presentation research. It identifies a gap in the literature and why this research is needed. It also provides a personal and research rationale as well as the research aims, objectives and question.**

### **Chapter 2 – Literature Review**

**Chapter 2 explores in details previous research into the choking phenomena. It explores the definition debate, two main choking theories: the conscious processing hypothesis & the explicit monitoring hypothesis as well as the moderators of choking. It focuses on self-presentation as a gap in the research and explains where the research objectives and questions have developed.**

### **Chapter 3 – Method**

**This chapter addresses and explains the philosophical stance adopted by the researcher and explains the methodology and method employed within this study. It explains the studies procedure in detail including the data collection and data analysis. As the methodology used was IPA, this chapter also includes a reflective account detailing the researcher methodological journey throughout the study.**

### **Chapter 4 – Results**

**The results section identifies the themes which were discovered from the transcripts during the data analysis. These results are demonstrated in a master table and summery tables as well as being explained and narrated in detail throughout the results section. After analysis of the participant transcripts, two higher order themes identified (individual differences and social factors) which were developed from eight**

**super ordinate themes. Individual differences consisted of six super ordinate themes: (i) motivation, (ii) self-concept, (iii) expectations, (iv) self-presentation, (v) shifts in attention and (vi) positive affected states. Social factors consisted of two super ordinate themes: (i) team vs. individual and (ii) environment.**

#### **Chapter 5 – Discussion**

**This chapter takes the themes that were identified in the results and critiques them against previous and current research. Furthermore, it goes explores how these findings support or disagree with choking research. It connects all the themes together as much as possible and where possible explains how the themes have impacted each other and the impact it has on literature to date.**

#### **Chapter 6 – Conclusion**

**The concluding chapter summarises the findings of the study and identifies and explains areas where studies similar to this one can be improved. Moreover, it explores how this research will be of help in future research such as adding to the limited number of qualitative studies in the choking research. In addition, this chapter includes a personal reflection on the research process which explains how the researcher thought the overall study went and the researcher’s feelings towards the data found.**

# **-Literature Review -**

### Literature Review

*The only thing that could have saved her is if – at the critical moment in the third set- the television cameras had been turned off, the Duke and Duchess had gone home, and the spectators had been told to wait outside (Gladwell, 2000, p. 84-93)*

To represent what constitutes choking, Gladwell (2000) describes the late stages of the 1993 ladies Wimbledon final. Jana Novotna was just points away from victory and held a strong lead over Steffi Graf, the games dominant player. “Suddenly Novotna’s game broke down in ways wholly unrelated to the play of Graf but instead to the pressure of the game, Novotna choked, which resulted in Graf winning the final” (Gladwell, 2000).

Today’s modern athlete are better rewarded than those of yesteryear and may undoubtedly find themselves in high stake situations where performing their best carries implications for future opportunities, rewards, and success. High level performance in important situations is crucial for advancement in most facets of life, not only in sporting contexts. A strong performance of an individual can result in scholarships, international glorification, endorsements, and sponsorship, whereas a poor performance can lead to career ending results. Thus, with such opportunities and rewards available and a concomitant increase in media and public scrutiny, athletes’ lives are often accompanied by significant levels of psychological pressure, originating from the need to succeed and avoid failure.

Pressure has always been an integral part of sports, it is not something that might just happen to us, and it is something that is created by the athlete. Pressure is simply how we perceive the situation we are in and this perception can have various effects on the individual and performance (Baumeister, 1984). In one athlete high pressure can generate outstanding performances; however, in another athlete this same perceived pressure can result in poor and/or failed performances. These poor or unsuccessful performances in

response to what an individual perceives as an important and pressure-filled situation has been considered a 'choke' (Baumeister, 1984; Baumeister & Showers, 1986; Masters, 1992; Beilock & Carr, 2001; Hill, Hanton, Flemings & Matthews, 2010; Mesagno, Harvey & Janelle, 2011):

“Choking is about thinking too much, panic is about thinking too little. Choking is about loss of instinct, panic is reversion to instinct. They may look the same, but they are worlds apart” (Gladwell, 2000 p. 84 -93)

The distinction between choking or panic is important, particularly for future performances and developing adequate coping strategies (Gladwell, 2000). Choking is the result of implicit thoughts that interfere with behaviour instead of the athlete using intuition and natural ability, while panicking results from brain areas responsible for emotion and the fight or flight response, overtaking those in charge of reason (Katz & Epstein, 1991). Choking is a specific kind of failure (Katz & Epstein, 1991). Researchers (e.g., Baumeister, 1984; Beilock & Carr, 2001, Gucciardi & Dimmock, 2008; Hill, Hanton, Fleming & Matthews, 2011; Mesagno, Harvey & Janelle, 2011) have investigated what causes skilled and experienced athletes to 'choke' under the many pressures of major competitions. Several studies (Wang, Marchant, Morris & Gibbs, 2004; Wilson, Chattington & Marple-Horvat, 2007; Heaton & Sigall, 1991) explain the characteristics that make certain individuals susceptible to choking, have shown that both a high 'trait' anxiety and self-consciousness correlate with poor performance under pressure. More recently, Mesagno (2009; 2010) has argued that the critical trigger of a choking episode is self – presentational concerns, which is an individual's attempt to create a public image that will support their preferred beliefs about themselves (Baumeister, 1982; Schlenker, 1980). To date there have been only a few studies that have directly investigated self-presentational concerns as a cause of choking under pressure. Unfortunately, due to the

uncertainty and the perplexity of ‘choking,’ there remains a number of unanswered questions from researchers, fans, athletes, and coaches. They are frequently asked why teams and/or individual athletes fail to achieve what they are capable of and what they are expected to achieve in major competitions. Two particularly famous examples of this catastrophic drop in performance are Greg Norman in the 1996 Augusta Masters final (Greg Norman took a six-stroke lead into the final round of the Masters. The Australian then shot 78 and lost. It was an enormous collapse by Norman) and Jana Novotna in the 1993 Wimbledon final (Jana Novotna was 4-1, 40-30 in the third set, the Czech then hit a double-fault, leading to a dramatic drop in performance and consequently Jana Novotna lost the Wimbledon final). This lack of definitive knowledge and confusion surrounding the phenomenon of choking demonstrates the gap for further investigations into the causes, moderators, and consequences of choking under pressure, specifically in sport.

Previous research has shown that self-focus and distraction (Beilock & Carr, 2001; Gucciardi and Dimmock, 2008) have caused choking under pressure, with self-presentational concerns consistently appearing in results and discussions. This is a gap in the choking research and has been suggested as an important area of further investigation. Consequently, by determining the causes and consequences of choking, and exploring whether self-presentational concerns do or do not contribute towards choking under pressure will help coaches and athletes alike to mentally prepare for major competitions.

### **Definition Debate**

Understanding what contributes to choking and/or success under pressure may help researchers recognise the similarities and differences in the cognitive control structures underlying a diverse set of skills ranging from problem solving to sports performance. Moreover, by uncovering the mechanisms leading to pressure induced failure, such as choking, we can further our understanding of how emotional and motivational factors

combine with memory and attention processes to influence skill learning and performance. Over the past twenty years, researchers (Baumeister, 1984; Baumeister & Showers, 1986; Beilock & Carr, 2001; Beilock & Gray, 2007; Gucciardi & Dimmock, 2008; Hill, Hanton, Flemings & Matthews, 2010; Masters, 1992; Mesagno, Harvey & Janelle, 2011; Nideffer, 1992; Wang, Marchant, Morris & Gibbs, 2004) have attempted to understand and define the phenomenon of choking yet, to date, no universal definition has been accepted.

One of the earliest and most widely used definitions in subsequent choking research is that of Baumeister (1984) who proposed that choking is simply ‘performance decrements under pressure circumstances’ (p. 610.). In addition, Baumeister defined pressure as ‘any factor or combination of factors that increases the importance of performing well on a particular occasion’ (p. 610.). There are two main potential limitations to this proposed definition; firstly, the quantity of performance decrements is not stated and secondly, there is no differentiation in skill level (Baumesiter & Showers, 1986). However, recent research has found that choking can occur in both novice and skilled athletes, just through different mechanisms (Beilock & Carr, 2001; Beilock & Carr, 2007; Gucciardi & Dimmock, 2008; Lewis & Linder, 1997). In addition, with recent developments in choking research, the main limitation of this definition is the absence of anxiety being present, therefore making this definition somewhat inadequate (Beilock and Gray, 2007; Hill et al., 2010; Mesagno, 2006; Wang, 2002; Weinberg & Gould, 2003).

In recent years there has been an increase in the number of researchers’ investigating the choking phenomenon. The definitions that have been proposed within the last decade demonstrate a further understanding of the concept of choking in sport. However, there remains uncertainty about the most appropriate way to describe and explain choking in sport.

Mesagno (2006) identified choking as “a critical deterioration in the execution of habitual processes as a result of an elevation in anxiety levels under perceived pressure” (p. 3). This definition incorporated essential elements that have been found to relate to choking through research (Wang, 2002) such as: elevation in anxiety levels and perceived pressure; furthermore, the importance of attention is identified in the definition. In addition, Mesagno and Mullane-Grant (2010) identified reasons such as anxiety for the decline in athlete performance, suggesting that both attention deterioration and anxiety are needed before an athlete will choke. Beilock and Gray (2007) however, specifically focused on the individual and suggested that choking is “poor performance in response to what an individual perceives as an important and stressed filled situation” (p. 426). Despite greater specificity, this definition fails to incorporate anxiety, skill level and suggests that a choke applies during any poor performance under pressure (Gucciardi and Dimmock, 2008). However, Beilock and Grays’ (2007) definition does identify that an individuals’ perception of what a pressure and/or stress filled situation has an impact on whether an athlete will choke or not, as every individual will perceive situations differently. One of the more recently proposed definitions of choking emerged from the work of Hill, Hanton, Fleming and Matthews (2009) who argued that choking in sport is “a significant decline in performance under pressure” (p. 203).

Furthermore, they added that ‘choking in sport is a process whereby the individual perceives that their resources are insufficient to meet the demands of the situation, and concludes with a significant drop in performance a choke’ (p. 206). Hill et al. (2009) stated the importance of a significant drop in performance and what constitutes a choke rather than just having a decline or poor performance. This was the first definition to state that a choke was not simply any poor performance but an acute drop in performance, therefore arguing that a moderate under performance is not considered a choke. Finally,

Hill et al. (2010) concluded that the cause of choking is due to two main theories (self-focus and the distraction theory) that have come about through the many years of research in the subject area.

Results and evidence from past research has led to a number of conceptual developments, such as the newest definition proposed by Mesagno and Hill (in press) which brings together previous discussion. They argue that “choking is an acute and considerable decrease in skill execution and performance when self-expected standards are normally achievable, which is the result of increased anxiety under perceived pressure.”

Baumeister and Showers (1986) noted some problems with choking research that to date remain unresolved. Specifically, they argued that few researchers have directly investigated the specific factors that predispose athletes to choking in sport. Secondly, research into the roles of dispositional self-consciousness as a cause of choking has resulted in contradictory findings. Finally, although there have been a number of models developed to explain aspects of choking, no one model appears capable of describing and explaining the complexities and contradictions evident in choking research. Therefore, a major problem for researchers investigating choking has been the lack of agreement in defining what constitutes a choke.

Although further are more definitions have since been proposed (e.g., Daniels, 1981; Gucciardi & Dimmock, 2008; Masters, 1992; Nideffer, 1992; Wang, 2002) the definitions discussed previously are best suited for this research paper. Based on existing definitions (particularly that of Hill et al., 2010) choking is a catastrophic decline in performance due to a rise in anxiety, perceived pressure, and perceived loss of control in the situation. Furthermore, the athlete has to have played consistently better previously and be confident he/she could have done better. This is developed from recent work by Otten (2009) who found that the more an athlete has perceived control over their competitive

situation and interprets the anxiety in a positive way, the better they will perform under pressure; those who ‘reinvest’ their attention in the task, meanwhile feel great anxiety (Otten, 2009). Furthermore, research suggests that perceived control might be one of the best predictors of clutch performance in sport and mediates choking under pressure (Otten, 2009).

In addition to attempting to provide a clear and operational definition of choking, previous studies have also tried to understand why choking occurs. Researchers (e.g., Baumeister, 1984; Baumeister & Showers, 1986; Beilock & Carr, 2001; Beilock & Gray, 2007; Gucciardi & Dimmock, 2008; Hill, Hanton, Flemings & Matthews, 2010; Masters, 1992; Mesagno, Harvey & Janelle, 2011; Nideffer, 1992; Wang, Marchant, Morris & Gibbs, 2004) have presented several theories that place emphasis on different psychosocial constructs when explaining the process of choking. In the next section three different choking theories will be described and examined critically, namely the self-focus theory, (Baumeister, 1984; Beilock & Carr, 2001; Masters, 1992) distraction theory (Lewis & Linder, 1997; Nideffer, 1992; Wine, 1971) and self-presentation model (Mesagno et al., 2011).

### **Why People Choke?**

As well as attempting to define ‘choking’, researchers (Baumeister & Showers, 1986; Baumeister, Hamilton & Tice, 1985; Cottrell, 1972; Mesagno, Harvey & Janelle, 2012; Wang, Marchant, Morris & Gibbs, 2004) have examined why people choke under pressure.

### **Self-Focus Theories**

For years coaches and experts have advised athletes to take their time when executing their skill- slowing down their delivery in hope to quell nerves. However, researchers (Beilock & Gonso, 2008; Beilock & Carr, 2001; Gucciardi & Dimmock, 2008)

have found that it is better to 'just get on with it' particularly if the athlete is well rehearsed.

Carver and Scheier (1985) proposed that the processes of choking under pressure in sport are due to self-focus. The essence of this theory is that there is an assumption that pressure increases anxiety which has been shown to lead to inward self-focus (Carver & Scheier, 1985), and that self-focus can lead to skill failure through attempts to apply conscious thoughts to automatic movements. This hypothesis derives from the theory of skill acquisition (Fitts & Posner, 1967), which suggests that the development of skills proceeds through different cognitive phases.

During the early phases of skill acquisition an athlete's skill execution involves assistance from a collection of controlled structures within their working memory (Fitts & Posner, 1967). The controlled structures explicitly control movements in a step by step manner, making movements slower and causing the athlete to make an error (Anderson, 1982; Fitts & Posner, 1967). As a result, novice athletes' spare processing capacity in their working memory is considerably reduced and unavailable, affecting the novice's processing and execution of the skill resulting in an error strewn performance. Continuous practice allows skills to become more automated and the knowledge needed to perform the skill becomes implicit to the athlete. Thus, the processing of the skill is executed procedurally outside of working memory and the movement becomes smoother and more coordinated and the athlete is able to concentrate on other cues without interruption (Beilock & Carr, 2001; Fitts & Posner, 1967; Masters, 1992). However, it is argued that, under pressure individuals experience self-consciousness which causes some to regress back to inefficient processing of explicit information similar to that of a novice performer, resulting in poor performance (Baumeister, 1984; Mesagno, Harvey & Janelle, 2011).

There are two main self-focus theories: (i) the conscious processing hypothesis (CPH; Masters, 1992) and (ii) the explicit monitoring hypothesis (EMH; Beilock & Carr, 2001). The CPH suggests that pressure induced anxiety produces increased control of the explicit movement. The premise is that when explicit rules are formed the individual may resort to reinvestment (conscious processing) in those rules which could lead to performance decrements (Masters, 1992). Whereas, the EMH suggests that pressure produces increased attention to the step by step procedures required to perform a task.

The CPH and EMH models possess a number of similarities but contain an important conceptual distinction. It has been suggested that during EMH, the athlete attempts to monitor the explicit aspects of the skill, leading to a general disruptive effect on performance, whereas the CPH claims that the athlete will consciously control the skill, causing an additional detrimental effect (Jackson, Ashford & Northworth, 2006). However, both these hypotheses suggest that this increased pressure causes athletes to consciously monitor movement, which is counterproductive to the performance of skilled task. Support for the self-focus theories of choking has been developed through a number of studies examining the effect of attentional focus on performance, these studies aim to replicate the demands that pressure might impose on the athlete (Beilock & Carr, 2001; Beilock & Gonso, 2008; Beilock & Gray, 2007; Gray, 2004; Gucciardi & Dimmock, 2008).

For example, Beilock and Gonso (2008) divided novice and skilled golfers into two groups and instructed them to perform a series of golf putts. The researchers encouraged members of the first mixed (both novice and skilled golfers) group to take their time, whereas they encouraged members of the second mixed group to putt as quickly as they could. Novice golfers performed less accurately when speed was emphasised, however, skilled golfers demonstrated the opposite pattern; they performed best when told to execute quickly and faltered when advised to take their time. Beilock and Gonso (2008) argued that

the results are because athletes who take extra time to perform when already practiced encourage too much conscious thought. “These golfers were really hurt when we asked them to pay too much attention” “What happens under stress is that they do start worrying, and in response to that they start monitoring their performance” (Beilock and Gonso, 2008, p. 350), and then choke as a result. Furthermore, detailed reports from the golfers that choked indicated that they felt speed aided their performance, by keeping them from thinking too much about the execution of the golf putt.

This research by Beilock and Gonso (2008) is further supported by a similar study by Gucciardi and Dimmock (2008) who found that putters, who repeated three mechanical terms as they were putting, performed worse than other random worded groups compared to the control group when they putted without repeating anything. These results demonstrate that when athletes are asked to think or talk of terms in relation to the process or execution of the skill, it causes them to self-focus and in turn creates errors in the movement resulting in poor performance. In addition, a holistic swing thought was the most effective method of maintaining performance. This inward attention allowed participants to focus on task relevant information and prevented participants from thinking about the explicit components of the skill and task, therefore avoiding choking (Hill et al. 2010). Moreover, Gray (2004) investigated the effects of high pressure on highly skilled baseball players by comparing batting performance between two groups: a pressurised situation and a controlled situation. The results demonstrated that the highly skilled baseball players in the high pressure condition had fewer hits, therefore it was these athletes that exhibited signs of choking. Gray (2004) argued this was because their swing varied more during the high pressure condition than it would at normal times during a game. In addition, Gray (2004) concluded that this was because the high pressure situation caused an inward shift of attention. This caused athletes to monitor their swing execution

which disrupted their normal automated execution process, resulting in a poorer batting performance. The results of the kinematic swing analysis suggested that this performance deterioration was at least partially due to the fact that skilled-focused attention such as self-focus in experts interfered with the sequencing and timing of the different motor responses involved in swinging a baseball bat (Gray, 2004).

It is evident that self-focus notions of choking have received widespread empirical justification leading to a mass of support for self-focus being the theory to explain the causes of choking (Beilock & Carr, 2001; Beilock & Gonso, 2008; Gucciardi & Dimmock, 2008; Gray, 2004; Hill et al, 2009; 2010; Jackson et al., 2006; Masters, 1992; Mesagno, Marchant, & Morris, 2009). Moreover, Wulf, Shea and Park (2001) have conducted extensive research that provides evidence that having an external focus has more of a positive impact on performance compared to having an internal focus. From this research they proposed the constrained action hypothesis in which they state an external focus allows unconscious, fast and reflective processes to control the movement. Whereas, an internal attentional focus constrains the athletes motor system by interrupting the processes that regulate the coordination of an individual's movements (Wulf, Shea & Park, 2001) resulting in a disruption of performance.

### **Distraction**

Supporters of the distraction theories propose that pressure creates a distracting environment that shifts attentional focus to task irrelevant cues, such as worries about the situation and its consequences (Beilock & Carr, 2001; Lewis & Linder, 1997; Wine, 1971). Under the distraction theories, performance breakdowns under pressure are most likely in skills that rely on working memory for storage of decision and act on relevant information that might be susceptible to corruption of forgetting as a consequence of dual task interference (Beilock, Holt, Kulp & Carr, 2004). Anxiety leads to a decrease in available

working memory resources which, in turn, has a negative influence on cognitive performance (Beilock & Carr, 2005). The processing efficiency theory (PET) (Eysenck & Calvo, 1992) suggests that performance deterioration is a consequence of worrying and negative thoughts distracting the athlete evoked from the pressure situation. More specifically, this pressure makes individuals shift their attention from task-relevant cues to the worries perceived and both have to compete for the limited attentional resources available in working memory. Furthermore, Beilock and Carr (2005) found that individuals with high working memory capacity are more strongly affected by a pressure situation than those with low working memory capacity. Eysenck and Calvo's (1992) processing efficiency theory examines the influence of cognitive anxiety, manifested as worry, on performance. This theory postulates that anxiety has two main effects. Firstly, working memory's storage and processing resources are occupied by worry, producing performance decrements in cognitively demanding tasks. Secondly, anticipation of imminent skill failure results in additional processing resources (i.e., mental effort) being allocated in order to maintain performance (Wilson, 2008). Consequently, processing efficiency theory postulates that performance effectiveness is often less affected than processing efficiency due to increases in effort compensating for the depletion of attentional resources (Calvo, 1985).

Furthermore, Eysenck and Calvo (1992) account for individual differences in the intensity of such responses to pressure such as effort compensation, hypothesising that individuals' with high trait anxiety will be more likely to exhibit such responses compared to low trait anxious individuals. Research evidence supports this prediction and indicates that there are fundamental differences between such individuals (Jerusalem, 1990). Moreover, body of research from within the mainstream cognitive psychology literature (e.g., Eysenck, 1997; Eysenck, Payne, & Derakshan, 2005) and a number of sport settings

(e.g., Murray & Janelle, 2003; Williams, Vickers & Rodrigues, 2002) has provided support for the predictions of processing efficiency theory (Wilson, 2008).

More recently, Eysenck, Derakshan, Santos and Calvo (2007) proposed an extension to the attentional control theory and provide a more precise explanation regarding the specific functions responsible for the skill failure under pressure. Eysenck and colleagues (2007) that anxiety disrupts the balance between two attentional systems. More specifically, Corbetta and Shulman (2002) propose the efficiency of the goal driven attentional system resulting in reduced attentional control and impaired functioning of ‘inhibition’ and ‘shifting’ functions of the central executive. This executive system is the cognitive system that controls and manages cognitive processes (Baddeley & Hitch, 1974). These functions refer to the ability to suppress proponent responses (inhibition) and the ability to switch back and forth between multiple tasks, operations or mental sets (Miyake, Friedman, Emerson, Witzki, Howerter & Wager, 2000). Ultimately this theory emphasises hyper-vigilance and hypersensitivity towards a negative stimuli under pressure, therefore resulting in choking. While addressing some of the limitations of the processing efficiency theory in terms of its lack of precision or explanatory power theoretically, empirical research is required to test the predications of the attentional control theory and coping (Wilson, 2008).

According to most distraction theorists, because high-pressure situations co-opt attentional resources, tasks that rely heavily on working memory should be most negatively impacted under pressure. This has been supported (Beilock & DeCaro, 2007; Gimmig, Huguet, Caverni, & Cury, 2006) and demonstrated using math problems that are heavily dependent on working memory. These math problems were solved less accurately in a high-pressure test compared with a low-pressure test. In contrast, the math problems that were highly practiced and thus could be directly retrieved from long-term memory

(Logan, 1988), which demanded calculations in the working memory, were performed just as well in low and high pressure situations. Furthermore, Eysenck and Calvo (1992) accounted for individual differences in the intensity of such responses to pressure, hypothesising that individuals' with high trait anxiety will be more likely to exhibit such responses compared to low-trait anxious individuals. Research evidence supports this prediction and indicates that there are fundamental differences between such individuals (Eysenck & Calvo, 1992).

The existing literature indicates that self-focus theories offer the most likely explanation for choking in sport (Beilock & Gray, 2007), although most support has arisen from experimental studies. In addition, recent choking research that has adopted more ecologically valid qualitative methods, found increasing support for the distraction theories (Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Hill, Hanton, Matthews, & Fleming, 2010b). Therefore, it is possible that choking in sport can occur via self-focus or distraction, depending on situational and personal variables (Beilock, Holt, Kulp, & Carr, 2004). For example, Mesagno et al. (2011) identified recently that self-presentational concerns may provide the most important and central mediating factor of choking and therefore requires further study. However, there are several mediating factors that influence choking (e.g., skill level, trait reinvestment, coping skills, trait anxiety (Baumeister and Showers, 1986), self-confidence, self-consciousness (Baumeister, Hamilton & Tice, 1985), negative fear of failing (Mesagno, Harvey & Janelle, 2012), evaluation apprehension (Cottrell, 1972) and coping (Wang, Marchant, Morris & Gibbs, 2004)).

## **Moderators of Choking**

### **Skill level**

For choking to occur, there must be reasonable evidence that the athlete could have performed better. However, this is not always easy to determine. For example, it is difficult to interpret when novices experience choking because performance decrements may be due to insufficient skill level. Some researchers suggest that choking may occur among performers at any level of skill, specifically those supporting self-focus theories (Baumeister & Showers, 1986; Beilock & Carr 2002), however other researchers (Masters, Polman & Hammond, 1993; Wang et al., 2004) have maintained that choking can only occur among skilled performers. To examine whether choking only occurs among skilled athletes, Beilock and Carr (2001) asked novice participants to practice in a golf-putting task and tested putting performance under pressure both early and late in practice. Results indicated that pressure and self-focus actually facilitated execution in the early test trials. However, following prolonged practice, performance decrements under pressure were observed. It was concluded that the proceduralised performances of experts were disrupted by self-focus, whereas novice skill execution, which requires online processing, remained unaffected. Beilock and Carr (2001) suggested that choking in novices could be more readily explained through distraction, whereas elite athletes are more likely to choke through self-focus. More specifically, novices' processing of task-relevant information exceeds their limited capacity to cope with additional demands of pressure. This is supported by Wang et al. (2004) who proposed that for novices choking is due to distraction because inexperience with attentional selectivity and becoming distracted with irrelevant external tasks or cues, whereas elite athletes primarily choke through self-focus.

### **Trait Reinvestment**

Trait reinvestment is a predisposition for excessive attention to self and constant processing of movement execution only during pressure situations (Beilock & Carr, 2001). Beilock and Carr (2001) suggested that implicit motor learners perform automatically under stress, due to their lack of ‘reinvestment’ in explicit rules. More specifically, explicit rules are not formed because athletes that have learned implicitly are not accessible under stress (Masters et al., 1993). Implicit motor learners refer to athletes who acquire a motor skill without the simultaneous acquisition of explicit knowledge about the performance of that skill (Masters, 1992). Masters and colleagues predicted that high reinvesters would be more susceptible choking under pressure because their performance slowed significantly more than low reinvesters in high pressure trials. Their results did, in fact, indicate that high reinvesters performed poorly, compared to low reinvesters, evidently high reinvesters directed conscious awareness to the movement during stressful situations, thereby disrupting automaticity. Masters (1992) used the distinctions between explicit and implicit processes controlled and automatic processing, and declarative and procedural memory to argue that choking occurs when performers reinvest explicit knowledge or controlled processing under pressure which support the self-focus theories.

### **Coping skills**

Endler and Parker (1990), define coping as “a response to environmental and psychological demands in particularly stressful situations” (p. 845). When athletes are confronted with pressure, the effectiveness of their coping skills may determine success or failure. When an athlete appraises stress (e.g., pressure), coping strategies are activated to manage the stressor and their emotional response. Athletes use coping strategies to alter cognitions of a pressure situation or increase resources to deal with the situation. Generally, an athlete's coping style is a predictor of the coping strategies used in

competition (Anshel & Anderson, 2002). Choking in sport has been argued to be partly caused by the use of inappropriate coping strategies to deal with pressure (Wang, Marchant, Morris & Gibbs, 2004). The two main coping styles used by athletes are approach coping and avoidance coping (Krohne, 1993). Approach coping involves directing cognitive and behavioural efforts toward solving the problem causing stress (Crocker & Graham, 1995), whereas avoidance coping is aimed to reduce stress by directing activities away from the stressful stimulus (Anshel & Weinberg, 1999).

To examine the effects of coping styles on the likelihood of choking, Wang, Marchant, Morris and Gibbs (2004) asked 66 basketball players to complete a coping questionnaire (Coping Style Inventory for Athletes; Anshel & Kaissidis, 1997) one-week prior to participation in a basketball task. Participants then performed 20 free throws under both low-pressure and high-pressure conditions. Based on a multiple regression analysis, Wang et al. (2004) found that approach coping accounted for 7% of the explained performance variance under pressure. Athletes that predominantly used approach coping performed less accurately under high-pressure than those that predominantly used avoidance coping strategies. Thus, approach coping which increased anxiety was suggested as a cause of choking and avoidance prevented it (Mesagno & Marchant, 2013). However, more recent research (Hill et al., 2010a, 2010b, 2011) has found the opposite. Hill and Shaw (2013) investigated the experiences of eight athletes who choked under pressure regularly whilst playing a team sport and found that an approach-coping style was perceived to alleviate the likelihood of choking, whereas the use of avoidance-coping increased the susceptibility to choke (Hill & Shaw, 2012).

Jordet and colleagues (Jordet, 2009; Jordet & Hartman, 2008) analysed the preparation time and self-regulatory behaviour of soccer players taking penalty kicks in international competitions. They found that players who missed goals in the high pressure

situation had significantly faster preparation times and more avoidance behaviour than those who successfully scored a goal. They suggested that the use of avoidance coping prevented the use of appropriate self-regulation techniques, that enables optimal performance, thus supporting the contention that avoidance coping is linked to performance failure under pressure (Jordet & Hartman, 2008). Therefore it appears that athletes use both avoidance and approach styles to cope with pressure suggesting the most effective coping styles is due to individual differences and preference.

### **Trait Anxiety**

Trait anxiety (A-trait) refers to a general level of stress that is a characteristic of an individual, related to personality. Baumeister and Showers (1986) claimed that A-trait could influence performance under pressure. They suggested that A-trait negatively influences performance under pressure and can vary according to how individuals have conditioned themselves to respond and manage stress, (i.e., what may cause anxiety and stress in one person may not generate any emotion in another). Therefore, suggesting that people with high levels of trait anxiety can often become easily anxious and/or stressed. Previous research has shown that individuals high in A-trait typically perform more poorly in pressure situations than those who are low in A-trait (Calvo, Alamo, & Ramos, 1990; Kivimaki, 1995; Kurosawa & Harackiewicz, 1995). Calvo, Eysenck, and Castillo (1997) suspected that individuals who were high in A-trait were likely to focus on threat related, as opposed to neutral stimuli and interpret threat from ambiguous stimuli. Individuals with high A-trait were also likely to frequently focus on self-evaluative, or self-depreciative thinking in pressure situations (Wine, 1971), resulting in an increase in self-awareness and negative effects on performance. Williams, Vickers and Rodrigues (2002) demonstrated the association between trait anxiety and existing attentional theories of choking. They

suggested that high trait anxiety appeared to encourage choking through distraction and self-focus mechanisms.

From a distraction perspective, the recurrent and intense state anxiety responses experienced by highly trait anxious individuals under pressure overwhelms their working memory causing processing inefficiency and thus encouraging choking (Wilson, 2008). Similarly, high trait anxious individuals also tend to have high dispositional reinvestment (Masters et al., 1993) and are therefore vulnerable to choking via conscious control processes.

### **Self-Consciousness**

A number of researchers (e.g., Baumeister, 1984; Heaton & Sigall, 1991; Kurosawa, & Harackiewicz, 1995) have examined the relationship between self-consciousness and performance, particularly under conditions of low and high-pressure. Fenigstein, Scheier, and Buss (1975) defined self-consciousness as the tendency of persons to direct attention inward or outward.

Self-consciousness is an individual difference that influences the cognitive appraisal process which affects awareness of the self or a tendency to self-analyse (Watson & Biderman, 1993). Self-consciousness can be broken down into public and private anxiety measures (Fenigstein, Scheier, & Buss, 1975). Public self-consciousness involves concern with performance and self-presentation, whereas, private self-consciousness encompasses both awareness about internal states and a tendency to self reflects (Fenigstein et al., 1975). Similarly, Scheier, and Carver (1985) have referred self-consciousness as the tendency to be self-aware. Self-awareness is likely to occur in situations where aspects of the environment direct the attention of performers to themselves. Factors that commonly elicit self-awareness include the presence of cameras, audiences, and reflective devices (Carver, Antoni, & Scheier, 1985; Heaton & Sigall, 1991). Self-consciousness dispositions have

relevance for sports contexts, because athletes frequently perform in the presence of audiences. Numerous researchers (Carver & Scheier, 1985; Fenigstein, 1984; Woody, 1996) have suggested that self-consciousness often links to negative self-focus which may affect performance particularly in the presence of an audience. This is supported by Fenigstein (1984) who proposed that poor performance is caused when self-conscious individuals become over-sensitive in pressure situations causing them to self-focus and subsequently choke.

In contrast, Baumeister (1984) found that high self-consciousness actually led to lowered susceptibility because these individuals were used to self-reflecting. This however was disputed (Daly, Vangelisti, & Lawrence, 1989; Saboonchi & Lundh, 1997), with respect to the relationship between self-consciousness and anxiety, a number of studies reported that high self-conscious individuals are more likely to report increased state anxiety (A-state) under pressure conditions than low self-consciousness individuals (Daly, Vangelisti, & Lawrence, 1989; Saboonchi & Lundh, 1997). Thus, suggesting that people who are high in self-consciousness are likely to be more susceptible to performance failure and /or choking than people who are low in self-consciousness.

The moderators described appear consistently through past and current research, however very little research has specifically investigated their relationship and influence regarding choking under pressure. Taking into account the self-focus and distraction theories along with the moderators that have been identified, a new model, the self-presentation model was developed by Mesagno et al. (2011) providing an explanation for why people choke under pressure.

### **Self-Presentation**

Self-presentation, also known as impression management, refers to the processes through which people consciously or unconsciously try to control how others perceive

them (Gammage, Martin, Ginis, & Hall, 2004; James & Collins, 1997; Leary & Kowalski, 1990; Wilson & Eklund, 1998). The construct of self-presentation refers to behaviours aimed at conveying a positive image of the self to others (Schlenker, 1980) and has received sporadic research attention in sport psychology (Mesagno, Harvey, & Janelle, 2011). Self-presentation is the attempt to control images of self before real or imagined audiences (Schlenker & Leary, 1982) and is often a deliberate, goal-directed act in which the individual attempts to generate particular self-images to influence how an audience perceives and treats the individual. More specifically, self-presentation is an attempt by the individual to selectively present aspects of the self in order to maximise the likelihood that the desired social impression will be generated (Leary & Kowalski, 1990). However, self-presentation can also reflect non-conscious responses triggered by relevant social cues (Schlenker & Leary, 1982). The image he/she wants to produce depends on the goal the individual wants to achieve, which, in turn, is affected by a variety of personal and situational factors. In addition, people differ in the degree to which they are concerned about how they are perceived and evaluated by others, and the extent to which they monitor their self-presentations (Martin-Ginis & Leary, 2004). Self-presentation can involve a conscious deception, or may involve calling focus to the actual attributes of an individual. Although deceptions do occur, most self-presentations are consistent with a person's self-concept, and rarely attempt to convey an image that is inconsistent with the way a person views him or herself (Leary & Kowaliski, 1990).

Jones and Pittman (1982) described five self-presentation strategies that are designed to create certain impressions and to arouse different emotions: (i) integration, (ii) intimidation, (iii) self-promotion, (iv) exemplification, and (v) supplication. Firstly, integration as a self-presentational strategy involves efforts to appear likeable and to be liked. Intimidation of self-presentational strategies can be found in efforts to appear

dangerous and to be feared. The self-presentational strategy of self-promotion involves efforts to appear competent and to be respected. Exemplification as a self-presentational strategy involves efforts to appear worthy and to arouse guilt. Finally, supplication is a strategy that involves the desire to appear helpless and to arouse feelings of nurturance and obligation. These various self-presentational strategies are used in different situations and lead to different behaviours.

By being perceived positively, athletes maintain their self-esteem and athletic identity (Leary & Kowalski, 1990). Schlenker (1980) suggested that others' impressions of the individual are constructed and defined by the individuals' goals and self-beliefs in a particular situation. If an athlete is placed in a situation where these goals become threatened or they are not achieved, the athlete will experience self-presentational concerns (Leary, 1992). Thus, presenting the self to others in a socially desirable and constructive manner will help to minimise anxiety. According to Leary (1992), being presented in a socially desirable manner is central to maintaining positive self-presentation, for anxiety increases when a performer perceives that presentation of the self has been threatened. A social situation such as a sporting performance will provide abundant opportunities for self-presentation concerns, in which the potential to be perceived negatively by others increases significantly (Leary, 1992). This in turn will increase social anxiety, the perceptions of threat, and the perception of being evaluated negatively (Schlenker, 1980).

To date, research has attempted to demonstrate the relationship between self-presentation and anxiety (Bray, Martin & Widmeyer, 2000; Hill, Hanton, Fleming and Matthews, 2010, 2011, 2013; Leary, 1992; Lormier, 2006; Schlenker, 1980). In addition, Wilson and Eklund (1998) found that cognitive trait anxiety was significantly correlated with self-presentational concerns during competitions. Furthermore, Hudson and Williams (2001) found that self-presentational concerns are more strongly related to cognitive

anxiety rather than somatic anxiety, indicating that worry related thoughts are relevant and important to self-presentation. This is supported by Mesgano, Harvey and Janelle (2012) who found that basketball players with high self-presentation concerns displayed a significant increase in anxiety and a significant decrease in performance. In addition, Lormier (2006) also found a positive relationship between self-presentational concerns and worry. Similarly, Bray et al. (2000) extended the trait anxiety/self-presentation link to state anxiety/self-presentation correlations, finding that cognitive and somatic state anxiety differentially correlated with self-presentational concerns. Within these correlational studies however, no direct measure of performance outcome was assessed, thereby limiting the implications for performance. These studies indicated that self-presentational concerns have an established link to competitive anxiety, which is argued to be a vital component in choking under pressure. However, this research cannot fully explain the impact and relationship self-presentation has on the athlete and with choking under pressure. This is due to the correlational nature of the studies, limiting what data can be used regarding a direct link between self-presentation and choking as it cannot reveal which variable has influential power over the other.

Mesagno, Harvey and Janelle (2011) used experienced hockey players and randomly assigned them to one of five groups (performance-contingent monetary incentive, video camera placebo, video camera self-presentation, audience, or combined pressure) before taking penalty shots in both low and high pressure conditions. The results indicated that the groups exposed to self-presentation manipulations (such as the video camera and audience) experienced choking, whereas those receiving motivational pressure treatments decreased anxiety and increased performance under pressure (Mesagno, Harvey & Janelle, 2011). Importantly, this substandard performance experienced under high pressure conditions was below all groups' performance scores in both low pressure

familiarisation phases and performance between the low and high pressure phases also differed. In addition, Mesagno, Havery and Janelle (2011) found that cognitive state anxiety mediated the relationship between the self-presentation group and performance. The main limitation of Mesagno et al's. (2011) study and with the majority of choking research still remains; that the participants had not specifically experienced choking, therefore, it is uncertain whether the participants had a poor performance or choked. **This demonstrates the need for an investigation in which participants identified as chokers are able to talk about their choking experience, a need that was overcome by this study. This study used participants who had been previously identified as chokers and found that self-presentation, self-focus and distraction theories all have a role in choking under pressure.** However, the previous findings (Mesagno et al, 2011) do still provide quantitative support for the proposed self-presentation model of choking, whilst demonstrating implications for anxiety manipulations in future psychology research.

Mesagno, Harvey and Janelle, (2011) found that the self-presentation concerns elevated anxiety more than other motivational components during the pressure manipulations. These results, in addition to related studies, provide strong evidence that self-presentational concerns may play a role in increasing anxiety and in the choking process, primarily because of the self-presentation components of the pressure manipulations they encourage. **Moreover, it is argued that theoretically, it is reasonable to assume that initial anxiety which originates from self-presentational concerns leads the athlete to use coping strategies** (Wang, Marchant, Morris & Gibbs, 2004).

Recent qualitative studies have also inferred that cognitions associated with self-presentation concerns such as evaluation apprehension, (Gucciardi et al., 2010, Hill et al., 2010b; Hill et al., 2011; Mesagno, Harvey & Janelle, 2012), and fear of being negatively evaluated (Mesagno et al., 2011), are associated with choking, because they appear to

heighten anxiety and increase the likelihood of a choking episode through either self-focus or distraction.

The results from the previous studies demonstrate that self-presentational concerns consistently appear as an mediating reason as to why athletes choke under pressure, alongside trait anxiety (Baumeister & Showers, 1986), self-confidence (Baumeister, Hamilton, & Tice, 1985) negative fear of failure, evaluation apprehension and coping (Wang, Marchant, Morris, & Gibbs, 2004). Additionally, several quantitative studies on the intrinsic characteristics that make certain individuals susceptible to choking have shown that both a high 'trait' anxiety and self-consciousness correlate with poor performance under pressure (Wang, Marchant, Morris & Gibbs, 2004; Wilson, Smith & Holmes, 2007; Heaton & Sigall, 1991). A-trait people frequently focus on self-evaluative or self-depreciative thinking in pressure situations such as fear of negative evaluation, (Wine, 1971) resulting in an increase in self-awareness resulting in a negative effect on performance. **These findings offer support for the recently proposed self-presentation model of choking (Mesgano, Harvey & Janelle, 2011) which indicates that the desire to avoid negative judgement from others is the critical element of the choking process.** However, there have been only a small number of studies that have directly investigated self-presentational concerns as a cause of choking under pressure. In the past, choking studies have lacked ecological validity due to their experimental research designs such as the researcher keeping a detached role as the researcher. Therefore, it is suggested that more qualitative studies are needed to gain insight into athletes' experiences to fully understand the concept of choking.

As a result of their 2009 and 2011 studies, Mesagno and colleagues (Mesagno, Marchant & Morris, 2009; Mesagno et al., 2011) developed a model that represents the

first attempts to bring together the associated moderators of choking under pressure, with self-presentation at its core.

### **Self-Presentation Model**

Mesagno et al.'s (2009: 2011) self-presentation model of choking emerged from qualitative evidence of individuals who experienced choking. Analysis of the participant interviews indicated a link between perceived self-presentation and choking, explained through public self-consciousness and fear of being evaluated negatively. Thus, the suggestion is that individuals who experience public self-consciousness are more likely to become aware of being observed, will be concerned about audience judgments, and may feel that they are the object of others' attention. To date, there has only been one study that investigated directly self-presentational concerns as a moderating factor of choking in sport. In this study, Mesagno et al. (2011) found that the critical trigger of participants' choking episode were derived from self-presentational concerns. Whereby public self-consciousness (the concerns of performance and self-presentation) led to debilitating anxiety, distraction / self-focus and ultimately, choking. In turn, the athlete will attempt to convey a positive self-presentation to others through their performance outcome, which may lead them to 'self-monitor' their techniques (i.e., self-focus) or become distracted by their self-presentation concerns; both responses will lead to choking. Furthermore, it is argued within this model that athletes who have a predisposition towards fear of negative evaluation are far more susceptible to choke through self-presentational concerns (Mesagno et al., 2011), self-focus (Baumeister, 1984; Beilock & Carr, 2001; Masters, 1992) and/or distraction (Nideffer, 1992).

There is a need to examine the accuracy of the self-presentational model and its applicability to a range of pressurised contexts (Mesagno Harvey & Janelle, 2012). There is still a lack of evidence regarding self-presentation to determine whether it is a key cause

or simply a contributing factor in choking under pressure. This has been identified as a vital gap due to the limited amount of research in the area. Further research is needed to help understand and explain the choking process and the relationship with self-presentation, therefore this is one of the research objectives for the study. Moreover, a qualitative exploration is needed to gain insight into the factors associated with choking, and to explore the relationship between self-presentation and choking in more detail. Therefore, this study explores whether or not perceived self-presentational concerns are associated with choking under pressure through a qualitative approach.

To date, the phenomenon of ‘choking’ has primarily been studied through behavioural and cognitive approaches, mainly using self-focus and distraction theories to explain the causes of choking in athletes. However, it is evident that there are key moderators that contribute to the choking process. Therefore, this investigation explores the incidences of choking during a novel task role of ‘other’ moderators during a previous putting experiment. Previously participants took part in a putting experiment (see appendix H) in both high and low pressure conditions, their score was recorded and they were then identified as either non-chokers or chokers. The chokers were then asked to take part in this study to gain in-depth information about their choking experience. In particular this investigation has the intention to (a) to examine the role of ‘other’ moderators and their relationship with self-presentation, and (b) to explore the perceived role of self-presentational concerns within choking during a putting experiment and (c) the role of self-presentation within a choking episode.

This literature review has presented the key existing theories related to the choking process. It has identified and explored the gap in the research such as the limited amount of qualitative studies in this area. The next chapter will discuss the qualitative method

Candice Quilliam    A QUALITATIVE EXPLORATION OF CHOKING DURING A  
GOLF PUTTING EXPERIMENT

adopted for this study as well as explaining the procedures adopted for data collection and analysis.

# **-Method-**

## **Method**

### Theoretical framework

This section introduces and explains the researchers position epistemologically and ontologically and explores the strengths and limitations of the methodology used. It can be argued that such discussions are essential to the development of research as they shape the approach to both theory and the method (Marsh & Furlong, 2010). Research philosophy is an over-arching term relating to the development of knowledge and the nature of that knowledge (Saunders, Thornhill & Lewis, 2009). It is important to recognise that both ontology and epistemology are mainly based on the researcher's beliefs and personal persuasion about the conception of the world and have certain methodological consequences (Hays, 2002).

### Ontology

Ontology is described as “a branch of philosophy that addresses the nature of being and reality” (Reber, 1985). Put simply, ontology defines what is real in the world. There is a continuum of ontological beliefs with object and subject at either end. Object orientated ontologists believe there is an objective, external reality where the researcher remains in a detached objective position (Hays, 2002). Subjective orientated ontologists believe that reality can only be constructed and the researcher and subject should be actively involved in this process.

### Epistemology

Epistemology is described as ‘the theory of knowledge’ (Marsh & Furlong, 2010). An Epistemological assumption is focused on the study of the nature of the world and how we know what we know (Marsh & Furlong, 2010). This philosophical concept is known as the ‘knowledge gathering process’ (Grix, 2004 p.63) and explores the methods chosen in order to test the validity of results (Mills, 1959). There are two epistemologies that have

affected the direction in which sport psychology is researched (Brustad, 2002), these are constructivist and positivist.

Constructivism as an approach is the assumption that the experiences and perceptions of individuals will have an impact on the development and construction of knowledge (Willig, 2001; Davis, 2007). Constructivists maintain that scientific knowledge is constructed by scientists and not discovered from the world. Constructivists argue that the concepts of science are mental constructs proposed in order to explain sensory experience. Additionally, the constructivist theory argues that there is no single valid methodology in science, but rather a diversity of useful methods (Murphy, 1994). Constructivism is thus opposed to positivism, the philosophy that holds that only authentic knowledge is that which is based on actual sense experience and what other individuals tell us is right and wrong.

The opposite approach is positivism. This approach argues that all knowledge is based on sense experience and can only progress through observations and experiments. Positivism is used in applied sciences such as Physics, Chemistry and Biology (Cohen, Mannion & Morrison, 2002). Brustad (2002) argues that the positivist approach aims to produce research that follow conventional scientific methods and is independent of the reader. Moreover, Davies (2007) indicates that research questions that are based upon a scientific approach with statistical data, take on a positivist approach.

Both ontological and epistemological positions significantly shape research design and methodology. This study will adopt a constructivist approach based on the nature of the inductive and subjective methods. A constructivist approach is favoured due to the attempt to understand the phenomena in question through constructive, interpretive and personal experiences from the participants.

My own perspective, (as a post-positivist) is one commonly linked with qualitative research particularly within sport psychology. Post-positivists believe in the existence of a single reality, acknowledging that reality can never fully be known (Guba, 1990). Knowledge in the post-positivist belief system is not regarded as conclusive, verifiable or external to the human psyche, but instead is assumed to be tentative, sociably and individually constructed (Reimer, 1996). This provides a platform for phenomenological exploration of complex subject areas such as choking under pressure. Furthermore from an empiricist perspective, the belief is that a phenomenon, in this case choking, exists objectively but can only be fully understood subjectively through individuals. My ontological and epistemological positions therefore align well with phenomenological, hermeneutic and ideographic research methods such as IPA.

### **Methodology**

Interpretive phenomenological analysis (IPA: Smith, Harré & Van Langenhove, 1995; Smith, Jarman and Osborn, 1999) is a methodology that focuses on interpreting the life experiences of interviewees and representing a view of the world from interviewees' perspectives (Smith, 1996). IPA has been developed as a distinctive methodology to conducting qualitative research in psychology offering a theoretical foundation and a detailed procedural guide. This methodology has origins in other fields of enquiry, such as phenomenology and symbolic interactionism, which advocate that human beings are not passive perceivers of an objective reality, but rather that they come to interpret and understand their world by formulating their own biographical stories into a form that makes sense to them (Smith, 2010). IPA is phenomenological in that it is concerned with individuals' subjective reports rather than the formulation of objective accounts, and it recognises that research is a dynamic process (Smith, 1996). Furthermore, IPA acknowledges that access to participant's experiences depends on and is complicated by

the researchers' own conceptions, as these conceptions are required in order to make sense of that other personal world through a process of interpretative activity.

IPA also stems from hermeneutics, in relation to the theory of interpretation and understanding texts (Smith, 1996). As IPA is influenced by symbolic-interactionism the meanings that are assigned to events by the individuals are a central part of the process of understanding, and those meanings are only obtained through a process of social engagement and a process of interpretation. IPA uses an inductive (i.e. bottom up) approach to a research question (Reid, Flowers & Larkin, 2005), the participants are the experts of their own thoughts, perceptions and feelings, which are presented through telling stories and talking about their experiences. According to Reid, Flowers and Larkin (2005), IPA offers psychologists the opportunity to learn from the insights of the experts - research participants themselves.

The aim of IPA is to explore in detail the processes through which participants make sense of their own experience, by looking at the participants' account of the processes they have been through (Chapman & Smith, 2002; Smith et al, 1997). Thus, IPA research has tended to focus on the exploration of participants understandings, perceptions and views (Reid, Flowers & Larkin, 2005). This is an ideal methodology for the present research project as it aims to understand and explore participant understandings and experiences of choking under pressure. As this methodology focuses on the detailed experiences and understandings of each research participant, it implies a commitment to fully analyse individual cases before attempting to analyse a group of interviews as a whole. This movement from the individual case to groups of cases represents the synthesis element of this approach.

IPA recognises that the researcher needs to be located in the research dialogue in order to get close to a better understanding of the participants perspective but also that such

a perspective can never fully be achieved as the researcher cannot fully or completely understand the world of the interviewee. Consequently this research method is considered to be 'double hermeneutic' (Smith, Flowers & Osborn, 1997). This double hermeneutic design means that firstly, the research participant is interpreting his or her own life experiences and discussing these with the researcher and, secondly, that the researcher is interpreting the experience of the participant as told to him or her. The interpretations of the researcher are important as they carry the context of the interaction with the research participant with them.

Smith (2004) argues that despite its strong roots in health psychology, IPA is suitable to use in a wide array of disciplines. Thus far the majority of IPA research could easily fit into several traditional sub-disciplines such as sport psychology. The choice of research method influences the way in which the researcher collects data. Specific research methods also imply different skills, assumptions and research practices. IPA is chosen as the most appropriate research design for this project investigating the perceived relationship between self-presentational concerns and choking in sport. Moreover, a study employing IPA might enrich the literature of an area previously only studied quantitatively (Smith, 1996) which many previous choking studies have been. Despite a lack of published studies using IPA in sport psychology, the uses of IPA to elaborate on quantitative findings from a study are considered justifiable. One of the greatest properties of IPA is the ability to reveal un-anticipated phenomena (Shaw, 2001). Due to the, bottom up, nature of the process, the aims of IPA are not to test an existing hypothesis, but rather to allow captured themes to emerge from the data (Reid et al., 2005). With the suitability of IPA as a means of a method for the research project clearly established, the research process, the issues in relation to method of data collection, sample size, and participants' will be subsequently need to be considered.

It is feasible to obtain data suitable for IPA analysis through a range of methods. Diaries and personal accounts can produce significant and meaningful individual thoughts, emotions and experiences. Similarly, the use of interviews can facilitate insight into the participants' world. The underlying principle behind all different types of interviews is the belief that asking individuals about their perceptions and experiences has potential to produce accurate and meaningful information about the individuals concerned, merely asking someone about their thoughts about a particular topic is seen as one of the most effective and elaborative ways of obtaining information about them (Gratton & Jones, 2004).

For the purposes of IPA, the use of a semi-structured interview are the most suitable data collection methods (e.g. Smith & Osborn, 2003). In the semi-structured interview the interview schedule is used as a guide for the interview (Smith, 1995). Semi-structured interviews allow the researcher and the participant to engage in a mutual dialogue where initial questions by the researcher are adjusted and re-structured during the course of the interview in light of responses from the participants (Chapman & Smith, 2002; Smith & Osborn, 2003). Semi-structured interviews therefore provide possibilities to obtain detailed accounts on the anticipated and undiscovered issues that arise. When using semi-structured interviews as a means of data collection, an attempt to establish rapport and empathy between the researcher and the participant can be maintained (Smith, 1995). As questions are unstructured, the researcher is freer to explore interesting areas and follow the participants' interests and apprehensions. As a result, semi-structured interviews tend to produce rich data (Smith, 1995).

In IPA, the aim is to give voice to the participant and to explore their view on the world (Smith, 1995). Subsequently all of the interview questions in this study were framed in an open manner, and designed to give a gentle nudge from the interviewer (Smith &

Osborn, 2003) to the participant, rather than leading the interview in a pre-determined direction.

IPA acknowledges the role of the researcher and the importance of the research process. Access to an individuals' personal account is both dependent on and complicated by the researchers own conceptions, experiences and beliefs which are required in order to make sense of that other personal world through a process of interpretative activity (Smith, 1996)(see Appendix D).

In all studies it is important to have enough participants to make the data reliable, feasible and valid. In qualitative research, and specifically in IPA, the traditional view of a linear relationship between the number of participants and value of research has been challenged (Reid et al., 2005). Traditionally IPA research has consisted of an average of 15 participants (Reid et al, 2005), however, sample sizes vary greatly. It has recently been recommended that sample sizes should not exceed 10 participants (Smith, Jarman & Osborn, 1999). Smith et al. (2004) considered that reduced participant numbers allowed for a richer depth of analysis that might be inhibited with a larger sample. More recently, the use of case studies has also been suggested for IPA (Smith, 2004). Providing that such numbers produce coherent themes and are able to produce sufficient evidence to support the researchers' interpretations of the respondents discourse, using lower sample sizes than 10 is therefore warranted (Smith, 2010). Furthermore, the strict inclusion criterion for this study only allowed for a small sample size ensuring that the study included information rich participants which is consistent with the IPA approach (Smith, 2010).

### **Participants**

The participants used in the study were recruited via purposive sampling and involved full-time female students (n=4) from the University of Gloucestershire between the ages of 18-24 (see Appendix G for information on participants). The participants were

non-golfers who had been identified as a choker in a previous study (see Appendix B for study outline). An initial study used golf putting as a motor skill task to identify the participants who choked under pressure and those who did not.

The participants from the initial experiment (see Appendix C & H) were selected to be interviewed for the current study if they experienced choking under pressure which was measured as a >40% drop in performance score under high pressure. The procedure for the previous study was as follows:

An email which provided the aim, purpose and nature of the study was sent to all students enrolled on a sport-related degree programme at the selected University. A student wishing to take part in the study, and who was a novice golfer, was recruited to the study. An equivalent status mixed-method approach (see Giacobbi, Poczwadowski, & Hager, 2005) was adopted to address the research aims. That is, experimental quantitative approaches were used initially to expose participants to physiological and psychological stress, in order to identify choking episodes and establish whether a relationship between physiological stress and choking in sport existed' (taken directly from paper, see appendix H for complete procedure p. 6).

Choking under pressure has been investigated predominantly through the examination of any inferior performance under pressure (Hill, Hanton, Matthews & Fleming, 2010). Vickers and Williams (2007) however, propose that >40% drop in performance will be a choke as it demonstrates a significant reduction in performance under pressure. The process of purposive sampling was preferred as it recruits information rich participants who will have experienced the phenomenon of choking, therefore consistent with the IPA approach (Smith 2010), and addresses the concern of Hill et al. (2010) who claim that many choking studies have mistakenly examined an underperformance rather than a choke.

## **Procedure**

Firstly ethical clearance was obtained and approved in line with the University's research ethics procedures. This came from the University of Gloucestershire's ethical committee before the investigation could start. The FREP and RESC chair screened the RD1 proposal during the meeting of the university research degrees committee. The investigation proposal was then cleared through the university of Gloucestershire research ethics gatekeeper system following feedback from the FREP and RESC chairs. The participants who had been identified as chokers were asked if they would partake in the current study and if they could be interviewed (for more information see Appendix H for full previous investigations method). Once participants agreed to be interviewed they were given an information sheet (Appendix A) and a consent form (Appendix B) to complete before being asked to meet in an interview room at the University of Gloucestershire. A time and date for the interview was agreed that was convenient for both the participant and the researcher. Participants were asked to be interviewed more than once if needed to gain as much information as possible. During the initial round of interviews which lasted between an hour and two, participants were asked to retrospectively recall their experience of performing in the previous study (Appendix C). The interview schedule was developed with the help of supervisors and from the previous investigation (see Appendix H for details the interview process in the previous investigation). Furthermore, they were asked to explore their choking experience and the potential role that self-presentational concerns have played in their choking episode.

Throughout the interview and analysis procedure the researcher kept a reflective journal which reviewed the atmosphere surrounding the interview, including the participants' body language and the general aspects of the interview that could not be identified from the transcripts. The reflective journal was also used whilst transcribing to

ensure as much data and information as possible was collected from the researcher's interpretations. The use of a reflective journal is one way in which a hermeneutic circle can be engaged, moving back and forth between the parts and the whole of the text (Van Manen, 1997). Van Manen (1997) argues that writing forces an individual into a reflective attitude in which one writes themselves in a deeply collective way. Furthermore, if the researcher has unanswered questions or feels that an issue is unresolved they can repeat the interview process in an attempt to obtain maximum information from the participant. One of the most common mistakes that I had to actively overcome was identifying the difference between saturate participants (that is, repeatedly interviewing the same participants until nothing new emerges) rather than saturating the data (Morse, Barrett, Mayan, Olson & Spiers, 2002). I ensured data saturation by only returning to interview key participants for the second or third time if the aim was orientated towards obtaining data to expand the depth or address any gaps that appeared in the emerging analysis or reflective journal.

### **Data Collection**

The use of semi-structured interviews allowed the researcher to make sense of the participants' experiences and to understand the participants' point of view rather than generalise. This is fitting for this study, as a choking episode is particularly individual, unique, to each athlete. This form of interviewing allows the researcher and participants to engage in a discussion whereby open style questions are adapted as a result of the participants' responses. The researcher is therefore also able to probe any interesting and important areas that may arise throughout the interview (Smith, 2010). The researcher had a set of questions on an interview schedule to guide the interview (see Appendix D), allowing the participant to talk freely and the interview to flow in many directions. The benefit of a semi-structured interview is that it allows the interviewee to talk in depth about

their opinions, with minimal direction from the researcher. However, the researcher did have a general area of interest and questions that they pursued, meanwhile trying to enter both the psychological and social world of the participants to gain and understand their interpretations (Smith, 2010). The interview questions were generally open-ended questions as Smith and Osborn (2003) suggested that movement away from the schedule may be valuable to and enlighten the investigation. The researcher must however be in control of how much movement away from the schedule is allowed. The primary focus of the interview was to understand and determine the perceived relationship between self-presentational concerns and choking in sport.

### **Data Analysis**

With regards to the interview, the assumption in IPA is that the analyst is interested in learning something about the psychological world of the participant. This involves the researcher engaging in an interpretative relationship with the transcripts with the aim of understanding the participant's own perception of the choking phenomena and the role of self-presentation concerns. This, however, is dependent on the researchers own personal perception of choking through the process of interpretative study (Smith, 2010).

Furthermore, the researcher attempted to capture and do justice to the participants' perceived experiences of the phenomena in question and to learn about their mental and social world. Participant perceptions and experiences are not transparently available; they must be obtained through sustained engagement with the text and a process of interpretation (Smith, 2010).

Analysing data from a study adopting an IPA method follows a cyclical process (Smith, 2010). Firstly the researcher had the preliminary encounter with the transcripts from the semi-structured interviews from the participants who had choked. These transcripts were re-read several times by the researcher. During this process any interesting

or significant comments that the participant said was annotated and recorded. The second stage consisted of the researcher identifying emergent themes from the transcripts. These themes were listed and the researcher started to explore connections between them. Stage three involved the researcher grouping these themes together in clusters, while other themes may be a super-ordinate notion. This process is a theoretical ordering as the researcher attempts to understand the connection between themes that were already identified and were currently emerging. All themes were consistently checked against the transcripts to ensure they matched the words of each participant. Finally, patterns that were established from the themes of the ‘chokers’ were recorded and inputted into a master table. The themes were then ordered as to which captured the participants concerns most accurately (Smith, 2010). The researcher then reviewed and audited the themes, to ensure that they were a true representation of the original transcripts. Finally, the themes from the master table (go to p. 61) were transformed into a narrative account (Smith, 2010).

### **Methodological Rigor**

Methodological rigor is the means by which we demonstrate integrity and competence in the research process (Aroni, Goeman, Stewart, Sawyer, Abramson & Thein, 1999), a way of demonstrating the legitimacy of the research process. Without rigor, there is a danger that research may become fictional journalism, worthless as contributing to knowledge (Morse et al., 2002). Guba and Lincoln (1981) argue that while all research must have ‘true value’, ‘applicability’, ‘consistency’, and ‘neutrality’ in order to be considered worthwhile, the nature of knowledge is different between the two (quantitative and qualitative) research paradigms. Consequently, each paradigm requires specific criteria for addressing rigor. In addition, Lincoln and Guba (1985) propose that the criterion in the qualitative paradigm to ensure ‘trustworthiness’ are strategies such as negative cases, peer debriefing, audit trials, and member checks. Furthermore, they identify important

characteristics of the investigator: responsiveness, adaptability to changing circumstances, sensitivity, and have the ability for clarification and summarisation (Morse et al., 2002).

The sample must be appropriate, consisting of participants who best represent the research topic (Morse, 1991); this was achieved through purposive sampling as the participants had previously been identified as chokers. This ensures efficient and effective saturation with optimal quality data and minimum dross. Sampling adequacy, evidenced by saturation and replication (Morse, 1991), means that sufficient data to account for all aspects of the phenomenon have been obtained. Moreover, for rigor to be achieved there are strategies that should be adhered to by the researcher such as, methodological coherence, theoretical sampling, and sampling adequacy. These strategies were achieved in the present study by following the suggested framework of IPA particularly during the data collection and data analysis sections. Morse et al. (2002) argues that when these strategies are used appropriately they force the researcher to correct both the direction of the analysis and the development of the study as necessary, thus ensuring reliability and validity of the completed project.

### **Ethics**

Prior to the investigation, all volunteers were given an information sheet and an informed consent form to complete and were given the option to withdraw from the investigation at any time (see Appendix B). The participants were also assured of confidentiality and anonymity. Anonymity was ensured by completing interviews in private interview rooms and participants' names were kept confidential. Confidentiality was assured as participant data was recorded on a Dictaphone and stored on a secure computer, with only the researcher and supervisors able to access this information. Finally, psychological risk was minimised as the researcher never directly identified the participant as a 'choker'.

This chapter has sought to explain the procedures and ethical considerations involved in this study. From the data analysis process two higher order themes were identified: individual differences and social factors. These two higher order themes were developed from eight super-ordinate themes: motivation, the self-concept, positive affected states, expectation, shifts in attention, self-presentation, team vs. individual, and the environment. These themes are explained and in accordance to IPA recommendations they are interpreted by the researcher during the results chapter.

# **-Results -**

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

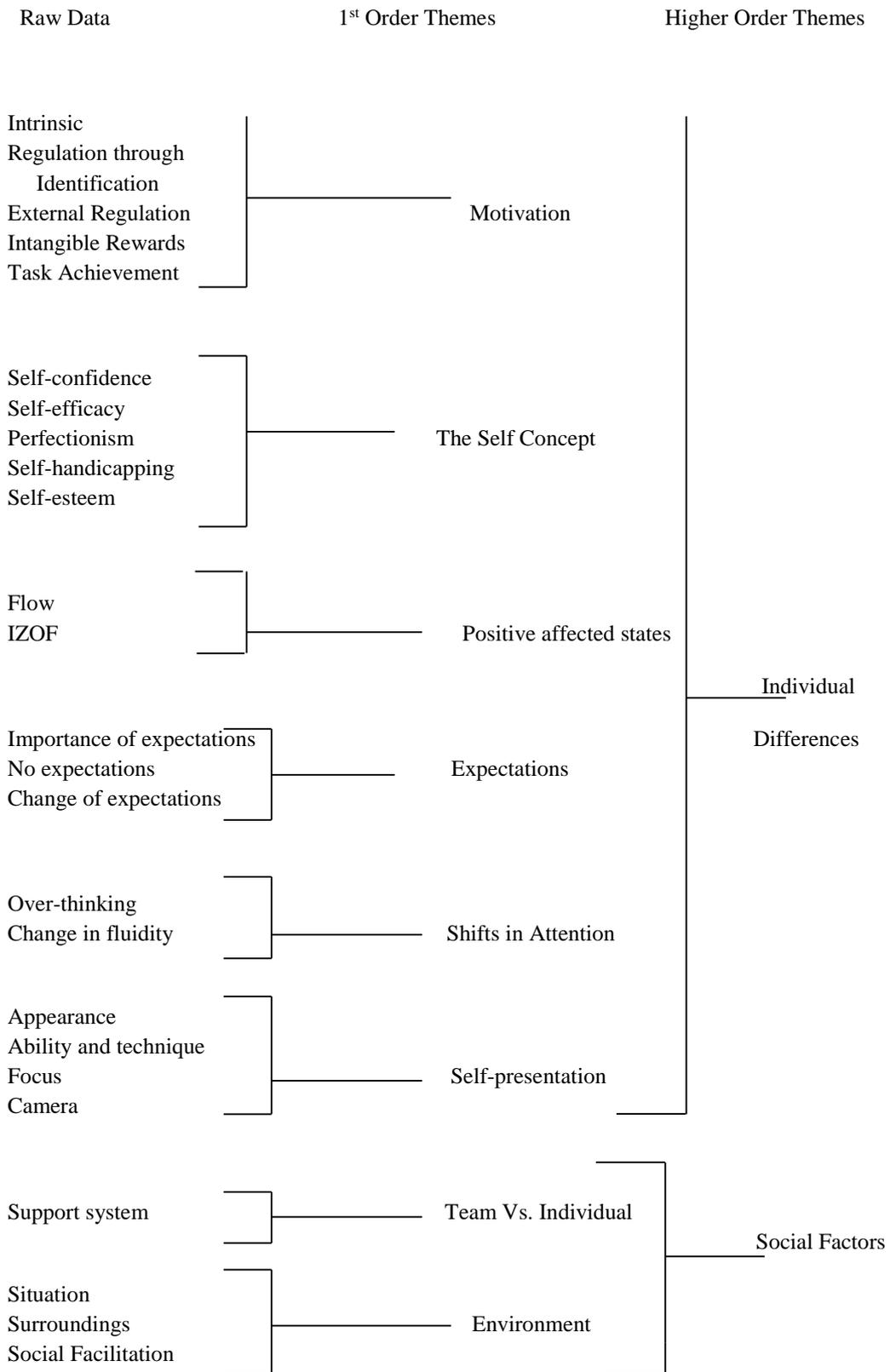


Figure 1. A diagram to show the themes and higher themes found from the results

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1  
Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
Motivation from within the individual. The desire to perform well and succeed	<p>“I like a challenge and having a drive to do well at something, it makes you feel good about yourself, I quite like the feeling that you get..... rewarding feeling”</p> <p>Participant 5: Vicky, page 19, interview 1</p>	<p>Enjoys to do something new but not too easy by liking a challenge. Always wants to feel good about ‘self’ therefore doesn’t take criticisms well. Wanting to get that rewarding feeling – having a need to succeed to feel that she has done well. Mentions Drive to do well at something but she doesn’t specify what, is it at everything? Something new? Or something she is used to playing?</p>	Intrinsic	Motivation	
The conscious valuing of a goal or regulation so that the said action is accepted as personally important	<p>“In the high pressure I kept reminding myself that I had aims and goals to achieve and that I need to get it close to the target”</p> <p>Participant 2: Ryannan, page 7, interview 1</p>	<p>What are the goals and aims that participant wanted? Perhaps these goals and aims were unrealistic and unachievable therefore ending in participant choking? Kept what to do simple and what in her mind she thought she had to do ‘get it close to the target’- hard to do, therefore supporting that some of the goals may have been unrealistic. She had to keep reminding herself therefore this may be why her performance began to falter when she stopped and had to think or she may have been getting distracted – not taking the experiment seriously or perceiving it as important</p>	Regulation through Identification	Mention of why participants want to do well and what makes them want to perform well under pressure	Individual Differences

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
Motivation coming from any source outside of the individual. In addition the desire to receive the physical rewards, I.e., money.	<p>“...yeah the filming did make me feel a lot more pressurised because um, you know that someone is going to be looking back at your performance.”</p> <p>Participant 4: Molly, page 5, interview 1</p>	<p>The whole quote is a little vague and does the mean that anyone makes the individual want to perform better or are their particular people – social facilitation? Participant feels pressure when performance is going to be watched by others or watching back where someone can watch and criticise mistakes. Participant doesn't mention if she was performing alone, could it still be pressured? –related to self-presentational concerns?</p>	<p>External Regulation</p>	<p>Motivation</p>	<p>Mention of why participants want to do well and what makes them want to perform well under pressure</p>
Mentioning of wanting to receive and the acknowledgment of praise, recognition and achievement	<p>“I wouldn't want to look silly in front of someone who is an expert in my sport you would usually really want to try and impress them and just so you can feel good about yourself and your game”</p> <p>Participant 2: Ryannan, page 9, interview 1</p>	<p>Silly meaning unskilled/looking clueless? - Related to self-presentation? Only worried about an expert because they know when you are doing something wrong, whereas if not an expert you can still look good but not do it right. She doesn't mind about doing it right all the time only if there is someone that is able to notice that she can doing it right. By trying to impress someone who is an expert she will not feel good about herself or her game if the 'expert' is not impressed- relies on praise of others, not self-satisfied.</p>	<p>Intangible Rewards</p>	<p>Individual Differences</p>	

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
Not being concerned about how others are judging performance but looking good and having the right technique for self-benefit	<p>“No not particularly, I was aware that I had to sort of, sort of produce, umm I don’t know really, um I was aware that people would be watching me and like I said before if there was somebody who knew the correct technique they might be judging me but in terms of what I was doing at the time I was too concerned about how I was looking, it was a case of how I was looking to myself like the right technique, it is more for me like it is a personal sense of what I was doing like my stance I wasn’t really thinking about what other people would be looking and me thinking what they would be saying, I personally think I know where I need to improve and what I do good because I’m the one doing it so I wasn’t really concerned about what people would be saying, I was doing wrong because I probably knew I was doing it wrong already”</p> <p>Participant 2: Ryannan, page 14, interview 1</p>	<p>It was a personal thing for this individual. She seems to be very hard on herself although wanting to look good and have the right technique she wants to do it for herself. These self- presentation concerns can still affect performance as she is constantly thinking about how she is looking, she also must put a lot of pressure on herself where it is perhaps not needed</p>	<p>Task achievement</p>	<p>Motivation</p>	<p>Individual Differences</p>
				<p>Mention of why participants want to do well and what makes them want to perform well under pressure</p>	

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
The confidence that the individual has in their general abilities and how this affected their performance	<p>“Umm, yeah I think it gave me confidence and made me think like yeah you can do this, it’s not anything out of the ordinary and it’s not anything you do any other day just need to do the experiment to the best of my ability, just needed to use an object to try and channel my coordination in this task”</p> <p>Participant 2: Ryannan, page 11, interview 1</p>	<p>What confidence? Doesn’t say my confidence, does this mean individual want confident and uneasy about the situation but just thinks she was confident because she should be? Individual sounds confident but maybe over confident as no athlete can do anything particularly when she is not a golfer –very different to netball. Confident but actually not? The way participant deals with pressure may be unrealistic as she thinks she is confident and able but doesn’t assess the situation properly. Ending with a contradictory statement showing the she was actually unsure of the situation she was ‘confident’ in doing?</p>	<p>Self-confidence</p>	<p>The self-concept</p>	<p>Individual Differences</p> <p>Mention of personality factors and any descriptions of how these affect their performance under pressure and how it helps them to cope with the situation</p>
The expectation and belief from the individual of how capable they believe they are of performing the task successfully	<p>“When you aren’t doing as well as you usually would and you feel like your failing and not really playing properly.”</p> <p>Participant 5: Vicky, page 1, interview 1</p>	<p>Just because you aren’t doing as well as usual, shouldn’t mean that you aren’t doing it properly? Not every game participant has played has surely gone well, but doesn’t mean she did not play properly? Expectations? Individual feels because she wasn’t doing as well as what she expected she thinks it means she is not doing it properly? Could affect mentions and putting and have a negative attitude towards it</p>	<p>Self-efficacy</p>		

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
Any mention of what type of person, personality type the individual thinks they are and how this affected their performance	<p>“I think I also put myself under a lot of pressure anyways because I always want to perform well at everything”</p> <p>Participant 4: Molly, page 2, interview1</p>	<p>Why does she put herself under a lot of pressure, is this for everything or just sport. Hard on herself, might mean more pressure is put on individual where it is not needed making individual work under stress affecting her performance. participant says she ‘always wants to perform well at everything’ – a winning attitude leaving no room for error, however how does this affect performance when she doesn’t do well? She does have a positive encouraging attitude</p>	<p>Perfectionism</p>	<p>The self-concept</p>	<p>Individual Differences</p>
The process where the individual suggests any reason to avoid effort in the hopes of keeping from the potential of failing	<p>“At the end of the day, I am a novice so I don’t think people can expect me to have it perfect...”</p> <p>Participant 2: Ryannan, page 9, interview 1</p>	<p>‘at the end of the day’ no room for others’ opinions? Leaving no room for there to explain or give reasons why performance may have faltered. Shutting people down and out quite quickly. She is taking the blame off the possibility of performing badly by using just being a novice and leaving no room for any other reasons, lets her hide maybe embarrassment of doing badly? Suggests she doesn’t like pressure on herself and doesn’t like judgement on her performance?</p>	<p>Self-handicapping</p>		

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
The degree of worth and competence the individual attributes to themselves and the task	<p>“I like a challenge and having a drive to so well at something, makes you feel good about yourself”</p> <p>Participant 5: Vicky, page 19, interview 1</p>	<p>She likes having a bit of an excitement or something to work a bit hard for, not something that comes to easy, she might have enjoyed this experiment as it was something new? The drive and succeeding makes participant feel good, makes them feel worthy of doing what they need to do, maybe gives them a boost to perform well and go hard at it when it’s something harder than usual or different. When something gets to easy maybe participant gets bored or doesn’t feel that succeeding at something that’s easy or familiar is actually succeeding?</p>	<p>Self-esteem</p>	<p>The self -concept</p> <p>Mention of personality factors and any descriptions of how these affect their performance under pressure and how it helps them to cope with the situation</p>	<p>Individual Differences</p>
The mention of the individual not thinking about the process and just ‘going with it’. The feelings of energised focus, full involvement and enjoyment, being completely immersed in the task.	<p>“... but when I was just having fun and like going with the flow it was a lot better and it seemed to go quicker too”</p> <p>Participant 3: Tara, page 13, interview 1</p>	<p>Having fun – letting go and just enjoying the process forgetting about things that may have previously worried or concerned her. Because individual was having fun it was a lot better, but she doesn’t comment on her performance where it was better or worse? ‘seemed to go quicker’ maybe she was enjoying it too much, and not concentrating on the task just enjoying and talking about the whole situation rather than her performance and the experiment</p>	<p>Flow</p>	<p>Positive affected states</p> <p>Mention of any arousal or anxiety that affected performance, two main theories Flow and IZOF</p>	

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
The mention of needing or enjoying a certain amount of pressure or arousal to perform well before performance starts to decline	<p>“I usually think I enjoy situations where you know there is a bit of pressure but not a lot because too much pressure is not good and then you start to worry”</p> <p>Participant 2: Ryannan, page 2, interview 1</p>	<p>Participant likes a bit of pressure- the performance or situation must have some importance linked to it – if it is too easy the individual lost interest or doesn’t enjoy them therefore leading to not putting enough effort in to perform well? But too much pressure is not good and makes participant worry, she doesn’t state how much is too much and whether she felt it in the experiment? – does she know when it has reached the point or just blames bad performance on this? Maybe unprepared?</p>	IZOF	<p>Positive affected states</p> <p>Mention of any arousal or anxiety that affected performance, two main theories Flow and IZOF</p>	Individual Differences
Having an expectation to do well and stating how It positively helps performance according to the individual	<p>“I think I always want to have the expectation to do well and because I was there just about to start I was a bit nervous but excited and just expected to do well just because I hadn’t done it before so did not want to have negative feelings towards it and then that might affect my performance before I had even started it”</p> <p>Participant 5: Vicky, page 9, interview 1</p>	<p>She has a personal set of task/aims for herself and how she should perform, she has a positive attitude expecting to do well and appearing very confident. She did not want to have negative feelings prior to the experiment, -preparation must be important for her and it seems to me that she makes a conscious effort to go in with a positive attitude, however, expectation to do well doesn’t explain how well, what does well mean, and if it’s the same for every situation?</p>	Importance of expectations	<p>Expectations</p> <p>Any mentions of expectations from the individual before, after and during the experiment</p>	

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
Having no expectations at any stage, if/how this affected performance	<p>“Before the experiment I had no expectations of what I was going to be like because I did not know how good I would be, umm or how difficult the task would be”</p> <p>Participant 4: Molly, page 9, interview 1</p>	<p>Did not know what to expect, therefore did not know how to prepare so no preparation. ‘I did not know how good I would be’ – related to self-handicapping, just because she did not know how good she would be does that mean she wouldn’t know what to expect, I think she would, easy to hide behind if she performs badly. Individual was told what was needed and what the task entailed so is she making excuses, trying to take blame or pressure off her rather than the situation?</p>	No expectations	<p>Expectations</p> <p>Any mentions of expectations from the individual before, after and during the experiment</p>	Individual Differences
Individual mentioning of how their expectations changed at any stage of the experiment and the impact this had on performance if any	<p>“... Mmm yeah I guess so, after I had stated it, I just thought I could do better and then had some expectations of myself because you do it and see that you can do it, then you ... so I just thought I would do ok, better than I thought when I was thinking about it before”</p> <p>Participant 3: Tara, page 18, interview 1</p>	<p>She doesn’t come across as very confident in new situations; does she need to actually physically do something first and particularly well before thinking she can successfully achieve it? Doesn’t use encourage words such as ‘I would do OK’ – not very confident language.</p>	Change of expectations		

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
Individual over thinking or thinking too much about performing during the experiment	<p>“ I did not really want to think too much about it because I just think the more I think about things the more they don’t go right for me, I think it’s better when you just let things get on with it and let it just go how it’s meant to go”</p> <p>Participant 5: Vicky, page 6, interview 1</p>	<p>Did not want to think too much? But about what? About the actual performance? about everything? About technique?, consciously made decision to try not think about what to do- not thinking enough about how to do it because she doesn’t know the skill well enough to not think about what to do? I think she just let things get on with it because she wasn’t entirely sure what to do so was easier and better to just try go with it and see what happens. She does however sound confident that this works for her, previous experience?</p>	Over thinking	Shift in attention	Individual Differences
Mention of the process not being natural or instinctive and that the individual was having to analysing and think too much about how their performance was going	<p>“ I just took a step back got my minds to myself again really and went back to do it, I did not want too much because then I start to analyse myself and what I’m doing and get over critical of my performance and I end up making it worse so I think it worked by just staying calm really”</p> <p>Participant 5: Vicky, page 12, interview 1</p>	<p>Felt that she consciously needed to get composure, did she feel that her performance was getting out of control, did she know when, was it when she putted a few badly, one badly or just when she started to panic? She said she did it then she did not want to do it too much, why? She thought it would help performance before why not after –contradicting herself, might need a better understanding of coping skills? Maybe stopping and taking a step back is too much but slow down can help her to stay calm and performance is continuous and smooth</p>	Change in fluidity	The mention of consciously slowing down, and directly thinking about performance and the affect if any this had on the individuals performance	

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
How the individuals physical appearance affects performance	<p>“Umm I don’t really know, I’m just like, well obviously everyone Is going to sweat and stuff and um stuff like that but I think if there is a lot of like supporters and stuff you want to be looking your best on court when you’re playing”</p> <p>Participant 4: Molly, page 4, interview 1</p>	<p>She mentions everyone-generalising. So it’s not embarrassing or bad as ‘everyone’ is going to sweat and not look great, but If by their self or other people did not they would be worried- it’s ok because if everyone does it so she can’t be singled out. Talks about social facilitation, when people are watching she is conscious of how she looks therefore makes effort to look good therefore affecting performance, distracted, not trying as hard to avoid sweating</p>	<p>Appearance</p>	<p>Self-Presentation</p>	<p>Individual Differences</p>
How the individual believes their ability is going to be judged by other people and how this affects performance	<p>“I was quite conscious of people looking at me and looking at the way I was holding the golf club and was thinking like if there were any golfers then they would be thinking like oh god that’s now the way you are meant to hold it, and I was quite like anxious that I knew I might not be holding it properly but I knew that I sort of had to just get on with it and gave it a ago anyways”</p> <p>Participant 2: Ryannan, page 4, interview 1</p>	<p>Worrying about having the wrong technique, if individual knew they weren’t holding it properly this might be playing on her mind when she was putting. To be consciously aware that she might have the wrong technique she likes to look right, and to look like she knows what she is doing. She sounds uneasy and anxious on her performance because she had to carry on and do the putting knowing that she was probably holding the club wrong, this brings up more anxiety and worry about irrelevant thoughts. She sounds determined though</p>	<p>Ability and Technique</p>		

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
How focused or un focused the individual was and how important it is to them and their performance that they are perceived to be focused	<p>“Well like, I did not really know what I was doing and that people would laugh or id just make a fool out of myself, I don’t really play golf and don’t really know much about it, so I was just worrying about how I would putt and what I would look like putting”</p> <p>Participant 3: Tara, page 4, interview 1</p>	<p>She is worried about peoples judgements and did not want to look silly in front of anyone, conscious of this fact, so whenever people are watching there is she worried they are judging he constantly – not very confident. Worried about not knowing what to do, if putting was bad that means look silly/fool? Might have been conscious to make it look like she knew what she was doing when she did not? –therefore could have rushed or to slow, doing what she thinks people would think was right.</p>	Focus	Self-Presentation	Individual Differences
Mentioning of the camera causing the individual to worry about self-presentational concerns	<p>“Throughout the pressure condition I was constantly aware of the camera and I kept thinking that I was going to be watched back over and that id I did badly, whoever was watching it would be criticising my technique and performance”</p> <p>Participant 4: Molly, page 1, interview 2</p>	<p>She sounds as if she was distracted by the camera constantly, distracting from her performance. She has a very negative view of the camera and about how people watching the camera back would be – doesn’t like to be criticised or will always see the worst in her performance – fear of negative evaluation – only with technique not appearance or focus</p>	Camera		

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
How team sports means there are people around you and the mention of how this can boost and positively/ negatively affect performance	<p>“Umm I guess you have the support of your team mates, you train together and play together and you get rewarded together, I like the fact of having the thought of if I was to fail there are 11 other girls that can pick me back up on and off court, with a pressure situation I guess you all face it, sometimes it’s harder in a team as you feel like if you make a mistake you’ve let your team down but on the other hand they are there to help you gain more and forget about it and tackle the next problem”</p> <p>Participant 5: Vicky, page 1, interview 2</p>	<p>Likes to have people around in the same situation, like being in a sociable situation where there are lots of people around her, feels safe? – ‘Rewarded together’ doesn’t mention about losing together, if they lose is it because of the team still or does it then come down to certain individuals? She portrays that in a team she feels stronger and more confident in herself, this may come across in performance, team makes her feel secure. Support and fall back =team</p>	Support system	<p>Team vs. Individual Sports</p> <p>Mention of a contrast between performing in an individual sport or a team sport</p>	Social Factors
Does participants feelings and thoughts change depending on the situation or do they feel all situations they do/feel the same	<p>“Sometimes depending on the situation I never want to be perceived to be looking stressed about something... despite what I’m feeling inside”</p> <p>Participant 4: Molly, page 20, interview 1</p>	<p>She mentions that only sometimes and it depends on the situation, but what situation makes her feel more stressed, is it when it is a high pressure situation, or if it’s a situation that she is not used it. Using the word never suggests that in ‘every’ situation she doesn’t want to look stressed. She never wants to be ‘perceived’ by who? Looking stressed at something – at what, everyone will look stressed at some point, and particularly in high pressure situations, so trying not to look stressed could cause performance decrements. ‘despite what I’m feeling inside’ – be hard to keep it inside if you’re feeling a certain way to ignore it so how is she covering it up, this might affect how she performs</p>	Situation	<p>Environment</p> <p>The mention of the atmosphere, surroundings and situation in the high pressure condition and its effect on performance</p>	

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

Table 1

Qualitative results framework

Inclusion criteria for raw data	Best quote	Interpretation	Raw data	1 <sup>st</sup> order	Higher order
Being in a different place or doing a task the individual is not used to and how this has an effect on performance	<p>“...quite anxious and uncomfortable really, I think also because it was an unfamiliar task sort of thing it just made me feel a lot more aware and anxious”</p> <p>Participant 2: Ryannan, page 15, interview 1</p>	<p>Individual feels that she is not very comfortable this could be because un wanted and worry that may affect performance. Un-familiar task – the golf or being in the laboratory, why does this make her a lot’ more aware and anxious? Did not prepare well enough or know how to prepare because it’s something new. Might need to know about coping better too. Says she was more aware, aware of what, how she was feeling? The surrounding? The camera?</p> <p>Family and friends – very specific so does it not matter if there is just a crowd of people that she doesn’t know watching? Friends and family are close and therefore more like to be honest about how she performs; this might be why she worries about them coming to watch. She mentions when it’s an important game, it might therefore not be the fact that those people have come to watch but the importance of the game that actually affects her performance, this is the same with home and away, used to playing at home, so away might cause her to worry more</p>		<p>Surroundings</p> <p>Environment</p>	<p>Social Factors</p>
How others in the crowd can affect performance i.e., friends, family, partners	<p>“Like if your family and friends come to watch an important game it would be different and like you’re playing home or away that would make a big difference”</p> <p>Participant 5: Vicky, page 2, interview 1</p>			<p>Social facilitation</p>	

## **Results**

The aim of this investigation was to examine incidences of choking during a putting experiment and to explore the perceived causes and consequences of choking under pressure, whilst specifically considering the role of the self-presentation model as an explanation for choking in sport. After the IPA analysis of the transcripts two higher order themes were identified: individual differences and social factors. These two higher order themes were developed from eight super-ordinate themes all of which are presented in Figure 1 and in more detail in Table 1. These comprise of motivation, the self-concept, positive affected states, expectation, shifts in attention, self-presentation, team vs. individual, and the environment.

### **Individual differences**

#### **Motivation**

The first higher order theme, individual differences, was formulated from six of the eight super-ordinate themes which are shown in the first part of Table 1 (see pp. 1-11). Firstly, motivation set the scene for the themes which followed in that it articulated the reasons behind what makes the participants want to achieve. Moreover, it is a useful prerequisite for the other super-ordinate themes. Throughout the interviews participants discussed what they felt made them want to perform well. In addition, they attempted to understand and explain this feeling. Generally, participants described being both intrinsically and extrinsically motivated towards the task with Tara and Vicky being specifically intrinsically motivated, whilst all participants mentioned factors associated with being extrinsically motivated.

Intrinsic motivation as a theme was created when the participant spoke about the desire or motivation from within themselves to succeed during the previous putting experiment (see appendix H for more information on previous investigation). Tara was

particularly intrinsically motivated to do well which was demonstrated as most of her motivational talk included self-desire and determination. When asked how she felt or if she felt different about performing the second phase of the experiment Tara stated

*I don't think so, like, I think the same as before you just want to get out here and do the best you can and stuff, and just have fun. But I think in the high pressure after you have puttied a tiny bit you just want to do well, and when you have done a good shot you kind of want to do that over again because you know that you can do it and then you can get a good score.*

Tara articulated that her motivation for wanting to achieve came from an intrinsic source of self-development and needing to generate a sense of achievement. It is evident she found her motivation during the experiment from this intrinsic source as she stated that she felt it from the same place as before when she completed phase one of the experiment.

Although Tara came across as positive and excited for the next phase (second pressure condition), she used words such as 'you' to describe what she is feeling. This suggested that she may have believed that this is how she was meant to feel. This language generalised her feelings to what she might expect most people would feel during the experiment. Although she is still intrinsically motivated, in herself she is feels uneasy and unsure. By not feeling comfortable or confident during the experiment, particularly in the high pressure condition, may have caused Tara to choke. Furthermore, Tara discussed that she wanted to do well even during both pressure conditions

*Well, like, I just felt a bit more relaxed and chilled out in the low pressure and just felt like I was having a bit of a laugh. I'm not good at golf, so just was fun, but like when it was more serious I was a bit more worried, and I think before I wouldn't mind if I'd missed a few putts but just maybe a little bit got more annoyed at myself.*

*If I did in the high pressure one just because it was more serious and you felt like you wanted to do well.*

In this extract, Tara used personalised language such as ‘I’ when talking about having a laugh and having fun specifically in the low pressure condition, both important elements of intrinsic motivation. This personalised language allows us to assume that these feelings were genuine as it suggested that Tara was recalling exactly what she was feeling and thinking at the time of the experiment. In contrast, when Tara spoke of how she felt during the high pressure condition, she reverted back to non-personal language such as ‘you felt like you wanted to do well’. This could be due to Tara covering up feelings of worry or nervousness. In addition, Tara might have felt that although she wanted to do her best, she may not feel like she can, therefore generalising her experience. This insecurity during the high pressure condition may have been a factor that caused Tara to choke. However, this was not the case for Vicky who was very direct when she spoke of her motivation. *“I like a challenge and having a drive to do well at something, it makes you feel good about yourself. I quite like the feeling that you get...rewarding feeling”*. From this quote Vicky appeared to be confident and identified what she enjoys and what she believed motivates her; a ‘challenge’ and ‘having a drive’. Vicky distanced herself from the end result suggesting that in the past she has felt this way as she has succeeded. However, she does not succeed in this experiment and therefore does not refer to the outcome. Both Tara and Vicky described their motivation but do not portray it as a useful factor during the experiment as they both struggle to personalise the positive factors they associate to intrinsic motivation. Therefore to Tara and Vicky, motivation may be a key factor associated with their choking episode.

Although intrinsic motivation appeared to be limited to Tara and Vicky, extrinsic motivation appeared to be experienced by all participants, understandably some more than

others. For this theme participants describes motivation that comes from (or is performed for) an external source. One particular type of extrinsic motivation which was discovered through analysis is external regulation. Molly stated that her motivation to do well came from being recorded, *“Yeah the filming did make me feel a lot more pressurised because you know that someone’s going to be looking back at your performance, and if you haven’t performed well you think oh they might be watching me and obviously they can see afterwards how you had done.”*. Although a little vague, this quote demonstrated that the camera caused Molly to feel pressure and conscious of her performance. However, Molly did not state whether when people are watching it would make her perform better or worse, this may be because she is unsure how she performs in pressure situations. Molly appeared to feel pressure because she is aware that her performance is going to be watched and therefore she was motivated to do well, as she stated *“they can see afterwards how you have done”*. This suggested that Molly was aware that if she did not perform well her ‘bad’ performance could be repeated on tape resulting in increased anxiety and worry causing choking. This is reiterated by Molly later on in her interviews, *“You want to be the person to win the prize money. You want to be the person to get the highest score, and you want to be the person that when it’s watched back looks the best.”*

In addition to being motivated to perform by the camera, Molly suggested that she was further motivated by the monetary reward that was offered, suggesting that Molly is very extrinsically motivated during the experiment. Conversely, Molly refused to say ‘I’ when describing how she felt in this quote so one can perhaps disregard that this is truly what motivated her. This could possibly mean that she was unaware of what was motivating her to do well. However, she thought that these are the reasons behind her motivations, as she thought that this is what would motivate most people who participated in the experiment. This lack of personal motivation attached to wanting to do well may be

the reason why Molly choked as she could not understand what motivated her or did not care enough for what she believed should motivate her to do well. This demonstrated a lack of self-awareness and the ability to self-reflect, therefore inhibiting the likelihood of learning constructively from previous experiences. This lack of self-awareness is associated to choking and may have contributed to Molly's' choking episode.

Lastly for extrinsic motivation it was evident that intangible rewards were a motivational factor in a few of the participants. Participants such as Ryannan expressed their desire for wanting acknowledgement and praise for their achievements: *"I wouldn't want to look silly in front of someone who is an expert in my sport. You would usually really want to try and impress them just so you can feel good about yourself and your game"*. Although, Ryannan talked about when she participated in netball, this was transferable to the putting experiment. She described that she was inherently motivated by the need to impress someone with more expertise than herself. However, during the putting experiment there was not an expert golfer taking part, therefore this quote from Ryannan could imply that she simply did not try to do as well as she would if there had been an expert golfer in the room. Furthermore, as the experimenter was not an expert and could not praise Ryannan for her performance she appeared to lose the sense of 'feeling good' about herself and her performance, which may have led to performance decrements. The need to receive praise or acknowledgement of achievement may be an adept source of motivation when participating in a sport that the participant is familiar and comfortable with. However, when a participant is a novice, such as Ryannan was in this experiment they may not take criticism well, and therefore have a fear of negative evaluation. This is associated to the choking phenomenon.

From all of the transcripts it was evident that motivation was a key factor that affected performance and was found to be associated with many of the other themes such as the self-concept, to which we now turn.

### **Self-concept**

Self-concept is a general term used to refer to how someone thought about or perceives themselves, and is based on the individual's beliefs about his or her personal qualities. These beliefs are based on different factors such as confidence, esteem and perfectionism. The inclusion criterion for the self-concept was when participants had mentioned their personal drives and desires to succeed. In addition participants had described how these affected their performance under pressure and how they coped with the task.

Firstly, participants' confidence to perform during the experiment in both the low and high pressure situations was voiced substantially during the interviews. Self-confidence was categorised when the participants talked about their confidence in relation to their abilities to perform the task and how they felt this confidence affected their performance. Ryannan spoke about her confidence during the experiment:

*Yeah I think it gave me confidence and made me think like yeah you can do this. It's not anything out of the ordinary and it's not anything you do any other day just need to do the experiment to the best of my ability, just needed to use an object to try and channel my coordination in this task.*

Ryannan stated that she felt confident and it is evident that she used positive self-talk during the experiment. This enabled her to feel that she was able to perform the task well and to be confident in her abilities to achieve. She believed that because she plays netball, a sport which involves similar concepts, such as co-ordination, she felt that she was able and should perform well during the experiment. Ryannan does not state where

this confidence came from that she is talking about, as she does not state ‘my confidence’ which would indicate these were her personal feelings at the time of the experiment. This lack of personal acknowledgment may infer that Ryannan was talking about what she thought she should be feeling or knows of someone similar who felt that way. The way in which Ryannan may deal with pressure may be unrealistic as she thought she was confident and able. However, it appeared she had not assessed the situation according to her personal capabilities, therefore, inferring that although she felt confident, she may have gone on to choke due to her lack of self-awareness. In addition, there is no inclusion of the different pressure situations in Ryannan’s extract suggesting that the pressure conditions did not impact or change her confidence levels to perform well throughout the experiment. However, Ryannan had previously mentioned that:

*“I had more confidence in the low pressured one. In the high pressure one I felt more strained to compete and in the back of your head something is always telling you and reminding you think time you have to do well”* suggesting that the amount of pressure behind a situation affected Ryannan’s confidence to perform.

This is similar to Vicky. When asked if she felt any difference between the two pressure conditions Vicky stated that: *“I don’t think I was as confident as I was before because I was feeling uneasy and not particularly in my comfort zone”*. It is evident from Vicky’s words that pressure evoked a change in confidence as did the environment that she was in. Vicky clearly refers to not being in her comfort zone when her confidence decreased which may have caused her to choke.

Following on from self-confidence, participants spoke about how they felt and to what degree they perceived their worth and competence for the task they faced. Their self-esteem was noted as this became a popular theme in participant transcripts. Vicky stated that *“I like a challenge and having a drive to do well at something, makes you feel good*

*about yourself*”, Here Vicky inferred that she felt good about herself as she found the task challenging, and would always try to do her best and perform any task well, ensuring positive reinforcement – *“makes you feel good about yourself”*. By finding a task challenging and succeeding, Vicky found both worth and competence in her ability which may transfer into future performances. Vicky also implied that she enjoyed having something to work hard for as she finds this exciting. If a task is too easy Vicky may not enjoy it or receive the positive feeling when she completes it. This suggested that Vicky enjoyed the experiment as it was something new and challenging for her. Vicky further stated that *“you need to feel something to know it’s a competitive situation and then I get the drive I need to do well and perform well”*. This supported her earlier statement of enjoying a challenge but further includes that it is this challenge or competitive situation that evokes her drive to perform well. Vicky was adamant that this is what she needs in order to have a satisfactory performance. However, this does not explain what would happen if she did not feel the competitiveness of a situation. Would she still be able to feel the drive? From her previous statement it may be assumed that Vicky would not be satisfied with a performance without drive or a competitive feel. Even if she succeeded it appeared that she would not receive the same feedback as she would from taking part in something which she found challenging. This suggested that Vicky choked due to the lack of drive or competitive feel.

Molly was another participant who spoke of how having the need for a task to be challenging was important to her performance, *“most of the time I’m pretty well and good at it (responding to pressure) I like to rise to the challenge and like to take on a challenge”*. Although Molly is confident and stated that she enjoyed taking on a challenge, she does not describe how it affected her performance but insinuated that she feels it becomes a challenge when she is in a pressure situation. She does not refer to the

experiment suggesting that during the high pressure condition and due to her being a novice at the putting, she did not succeed at the challenge but was happy to attempt the task. Therefore, Molly may have choked due to being unprepared for the pressure or challenge that was created by having the camera in the high pressure condition.

Self-handicapping is the process where the individual suggests any reason to avoid effort in the hopes of keeping from the potential of failing. All four participants exhibited thoughts related to self-handicapping which is understandable as they were all novices at putting in the experiment. Ryannan stated “*at the end of the day I am a novice so I don’t think people can expect me to have it perfect...*”, Ryannan left no room for the opinions of others as she started off with ‘at the end of the day’ implying that whatever happened has happened and that it is finished so does not need to be brought up again. This defensive language implied that Ryannan is trying to cover up the feelings of anxiety and embarrassment as she knows she did not perform as well as she would have wanted to. Ryannan attempted to take the blame off the possibility of performing badly by inferring that she is a novice and this rationalisation of why she performed badly is to her acceptable and leaves no room for any other reasons. This suggested that Ryannan did not like pressure put on herself, does not like failing or having negative judgement on her performance and will therefore use self-handicapping to excuse poor performance or choking.

Furthermore, Vicky discussed the opinions of others and how she felt this affected her performance “*I think their opinions did not really matter to me because it’s not something I should be good at really because I haven’t done it enough to be good at it*”. Although Vicky does not use assertive language she is quite explicit that the opinions from others did not affect performance because she was a novice, similarly to Ryannan, Vicky is pre-empting the possibility of a poor outcome with an already made excuse to potentially

hide embarrassment or blame. Vicky also suggested that in performances in which she is experienced the opinions of others do have an effect on performance. The perceived opinions of others during performance may have in fact contributed to performance decrements and are discussed later in the sub-theme self-presentation.

The effects of self-handicapping can have a negative impact on participant self-efficacy. Self-handicapping can be used to protect ones self-efficacy, however it can also be an indication that someone has a fragile self-efficacy. Self-efficacy is the expectation and belief of how capable a performer believes they are of performing the task successfully. At the start of the experiment Vicky stated that a pressure situation is “*when you aren't doing as well as you usually would and you feel like you're failing and not really playing properly*”. Vicky suggested that when she is not performing as well as what she had expected, she thought it meant that she was not performing ‘properly’. This is where Vicky finds the need to self-handicap, to protect herself from the effects of pressure situations. Because Vicky began with a negative attitude towards pressure situations she may have gone into the high pressure putting condition with a negative attitude. This negative attitude may have affected other concepts of herself and performance such as self-confidence and self-esteem resulting in increased anxiety and choking. Self-efficacy is connected to a later sub-theme, expectations. As the experiment progressed so did the levels of the participants’ self-efficacy. Molly stated that

*Before the experiment I had no expectations of what I was going to be like, because I did not know how good I would be, or how difficult the task would be” and then goes on to say that “the second time round I probably had more, I had higher expectations of my performance because I had already done it before, and I knew what I could achieve and I wanted to obviously improve on that.*

Here Molly demonstrated that her self-efficacy was changeable and that she felt the need to have experienced something before to be able to have an expectation of her abilities of succeeding at a task. This is perhaps a strategy that Molly and the other participants created to protect themselves from criticism and failure by only letting their self-efficacy become apparent after they were certain of the possibility of being successful in the activity.

### **Positive affected states**

Another predominant sub theme that emerged from the data was the notion of positive affected states, such as arousal and anxiety. Arousal and anxiety are major aspects of many learning theories and is clearly related to other themes that have been identified in this experiment such as motivation and shifts in attention. Throughout the experiment in both the high and low pressure conditions participants indicated that arousal and/or anxiety was present and explained how they felt this affected their performance. Two predominant positive affected states which became reasonably apparent from the transcripts are flow and IZOF.

Flow is identified as the state in which people are so involved in an activity that nothing else seems to matter. The experience itself is so enjoyable, that people will do it even at great cost, for the sheer sake of doing it (Csikzentmihayli, 1990). For flow to be formulated as a theme participants had described themselves and the experience of the golf putting as being fully involved and completely immersed in the task and indicated that they just went with the flow, enjoying what was happening rather than thinking too much about the process itself. Tara in particular experienced what she described to resemble the concept of flow during her performance and when asked were there any thoughts or feelings that she felt affected her performance she stated

*I don't know, maybe but I think that having fun and just thinking about not worrying helped me because when I started to worry and miss some putts I think like I got really angry at myself and just wasn't putting good but I think when I was just having fun and like going with the flow it was a lot better and just seemed to go quicker too.*

Tara reiterated that she felt that having fun is important when she performs, this allowed her to let go of pressure and by just enjoying the process and the situation she is able to forget about things that maybe have previously worried or concerned her. This is supported later on in the transcripts where I had asked Tara if the opinions of others impacted her performance, Tara responded that she tries her best to block this out. When asked how she felt this affected her performance Tara replied with “...*there is so much that goes on at once you just have to kind of go with the flow*”. It seems Tara enjoyed the concept of experiencing flow when she performs, as she inferred it is her way of dealing with and limiting pressure through total concentration. Tara felt this total concentration allowed her to avoid criticisms and judgements by blocking out unwanted interruptions to her performance and staying immersed in the task. Although Tara might feel that this adopted coping mechanism helped her performance it is possible it does the opposite. As Tara put more effort into enjoying the process and making it fun she is therefore not concentrating on the task or experimental situation. This distraction may have affected her performance scores which resulted in choking.

In essence, participants Tara and Vicky in particular described experiencing flow during the experiment and both applied reason that flow was helping performance, Vicky describes one experience of flow as “*just that really pleasing feeling when you don't think about what you're doing and it goes along really nicely and the game just flows*”.

Although in this quote Vicky talked about when she plays netball rather than during the

experiment (see limitations) it is evident that she associated flow with positive feelings. This is equivalent to the feelings Tara associated to flow, suggesting that both participants found security when experiencing the flow phenomenon. Therefore, both participants may have choked due to not being able to feel flow during the experiment. Thus, causing an increase in anxiety due to the lack of security they associate to the flow phenomenon. This may have distracted them from the task ahead which is likely to have influenced their choking episodes.

As there was a difference in pressure during the experiment, pressure was inevitably going to come up as a factor that participants' thoughts generally affected performance. For this specific sub theme of IZOF, quotes were identified when participants mentioned needing or enjoying a certain amount of pressure to perform well, before or after this point would have caused a decline in their performance. *"I usually think I enjoy situations where you know there is a bit of pressure but not a lot because too much pressure is not good and then you start to worry"*, This extract implied that Ryannan enjoyed pressure situations where she feels that she is still in control of her feelings and emotions, suggesting that enough pressure is needed to associate importance to the situation. Therefore inferring that if there is not enough pressure felt during the task, Ryannan may lose interest and will not find it enjoyable leading to lack of effort and concentration. In contrast, too much pressure makes a participant worry leading to a reduction in enjoyment. Although Ryannan stated that a certain level of pressure is good for performance, she merely thought that she enjoyed them. Such sceptical language suggests that it might be the outcome from a pressure situation where she has performed well that she enjoys, rather than pressure itself with uncertain outcomes. This uncertainty of how much pressure and if it was the pressure that she enjoyed is replicated when she says that *"I like playing in situations where it is like quite pressurised but I would prefer it*

*if the pressure that was in the game would be lower*". Unlike Ryannan who was vague about how she felt pressure and the amount affected her performance, Molly thought that pressure in fact aided hers "*initially I think it makes me feel a bit nervous but when I'm actually doing it, it gives me an adrenaline rush and it makes me want to perform well*" which she followed on to say "*I think in general it has a good impact on performance it makes me like pushes me to perform better*". The conflicting sense of how pressure affects performance is understandable in different individuals', however the misinterpretation of the amount of pressure and how to facilitate this pressure may be a reason why these participants were chokers. In addition, Molly seemed to be confident that pressure had a positive impact on performance whereas it may actually inflict more pressure on her. Where she was aspiring to do better the pressure increases, along with somatic changes such as the 'adrenaline rush' which may have caused performance to drop without Molly's' acknowledgment, therefore causing Molly to choke.

### **Expectations**

Participants rarely spoke of expectations from others affecting their performance and if they did mention about others expectations, they implied it had an insignificant impact on their performance. Most importantly and curiously, was that all participants recalled having no expectations before they had started the experiment. Molly stated "*before the experiment I had no expectations of what I was going to be like because I did not know how good I would be, or how difficult the task would be*". First and foremost, by not having any expectations prior to the experiment suggested that no preparation was made by Molly. Therefore, Molly may have felt out of her depth or un-prepared when coming into the experiment resulting in shifts of attention, concentration and most likely high levels of arousal, all associated to choking. Furthermore, Molly talked about being unsure about how she would perform and the procedure of the task, although this had been

previously explained to Molly several times by the experimenter. By implying that Molly had no expectations, she allowed herself to blame or use this as an excuse if she was to perform badly. This may be a way that Molly copes with the pressure, by not creating a situation that was deemed too important and where she should be expected to do well. This was related to another sub theme discussed previously, self-handicapping. Similarly to Molly, Vicky also appeared to make the relationship between having no expectations and self-handicapping, *“I don’t really know what I expect as it’s not really in my area that I know much about so did not really know what to expect really”*. This was considered as self-handicapping as participants had been informed of the experiment procedure previously. By implying that they had no expectations prior to the experiment and offering reasons for this, participants allow themselves to calculate as the experiment takes place whether or not they are going to do well or not. This suggested that going into the experiment, Molly and Vicky had low expectations and in particular had low self confidence in their ability to succeed, therefore, causing them to choke.

As the experiment progressed so did the participants expectations. Tara, Ryannan and Vicky described how their expectations increased and go further to justify why their expectations started to change.

*...Mmm yeah I guess so, after I had started it, I just thought I could do better and then had some expectations of myself because you do it and see that you can do it, then you, so I just thought I would do ok, better than I thought when I was thinking about it before*

Tara stated that it was only after she had started the experiment her expectations began to change and became more positive. Tara thought she could do better suggesting that this change was brought on by starting the experiment with a poor performance. Tara does not come across as very confident from the previous quote, particularly in new

situations, as she implies that she needs to perform an activity first and do reasonably well before thinking she can successfully achieve it. Throughout the interview Tara did not use encouraging or positive words. When Tara developed expectations she did not believe she would do great at the task but just 'OK'. Thus, inferring that she wasn't confident that she would achieve what she was expecting to. Therefore, this negative attitude and lack of self-confidence may have caused Tara to choke. Furthermore, when it seemed Tara was gaining her confidence she referred to 'you' rather than I, supporting that Tara demonstrated low confidence along with low expectations. Unlike Tara, Ryannan changed her expectations continuously throughout the experiment particularly when she felt she wasn't putting well,

*I think if I missed a couple I thought oh god but then increased my expectations because I knew that I had done it before and well to start off with and if I missed a couple then I sort of had to keep telling myself and to increase my expectations to not settle for what like If I missed three in a row to not settle for that and like keep telling myself you can do better".*

Ryannan used expectations to increase her confidence and motivation throughout the experiment. Contrasting to Tara who appeared less confident in her ability, Ryannan appeared to thrive off having an expectation, when she hasn't performed as well as she should this gives her a boost to improve performance and mental state. This self-talk strategy seemed to comfort Ryannan when things went wrong, however she does not explain whether it was consistent, suggesting she did not use it when she was putting well. The inconsistency in self-talk and expectation was involved in the choking process, however cannot explain fully why Ryannan choked.

Not only was the change of expectations significant to participants, so was the importance that the participants associated to this expectation, the affect it had on

performance and the change itself. Vicky explains why she feels that having an expectation was important

*I think I always want to have the expectation to do well and because I was there about to start I was a bit nervous and just expected to do well just because I hadn't done it before so did not want to have negative feelings towards it and then that might affect my performance before I had even started it.*

Vicky had a personal set of aims for herself and how she should perform. She had a positive attitude towards expecting to do well and she appeared to be confident in her ability to achieve this. Vicky shared that she did not want to have negative feelings prior to the experiment, therefore suggesting that preparation was important to make her consciously start the experiment with that positive attitude. Although Vicky believed that this positive attitude and confidence aided her performance, it may in fact hindered her performance as she was in a new situation where being over confident might have caused her to choke. In addition always wanting the expectation to do well appeared to put more pressure on the situation. Vicky does not explain what happens if her expectation to do well is not met as this may have occurred during the experiment that caused Vicky to choke. In contrast, Molly who previously stated that she has no expectations prior to the experiment later says that *"the second time round I probably had more, I had high expectations of my performance because I had already done it once before and I knew what I could achieve and I wanted to obviously improve on that"*. Molly's expectations had changed after she had already performed the initial phase of the experiment, therefore suggesting that the expectations that Molly had the second time round were realistic and achievable for her, thus resulting in confident, positive, personal language.

### **Shifts in Attention**

One of the main choking theories is self-focus. This shift in attention and concentration became apparent throughout the transcripts. Although participants did not specifically say that they felt this caused their performance to deteriorate, they did identify self-focus concepts such as over thinking. Here the individual has reportedly over thought or thought too much about her performance during the experiment, Vicky said that

*I did not really want to think too much about it because I just think the more I think about things the more they don't go right for me, I think it's better when you just let things get on with it and let it just go how it's meant to go.*

Vicky made it evident that she was consciously trying not to think about what she was doing and how the performance was going. By making this a conscious decision meant that her concentration was shifted from simply thinking about performing the task, to making the effort to not think about worrying as well as performance. This distraction may have contributed to Vicky's choking experience. Moreover, Vicky decided to 'just get on with it' because she wasn't entirely sure how to do the experiment, therefore, when she did think about what to do she felt things did not go right, whereas the easier thing for her to do was to go with it and see how it turned out. While Vicky came across through the transcript as confident in this method she later comments that "*I think during the high pressure because I was a bit more nervous and thinking about it a lot more I don't think I was as confident*". In the previous extract Vicky generalised her experience to what she thought most of the time. In the last extract however Vicky was precise and explained that the high pressure condition particularly caused a change in attention during the performance. Both extracts however do not explain what Vicky worries or concentrates on, whereas Ryannan stated that

*I think sometimes I over thought the technique and yeah like then they led me to over shooting or under shooting because I was thinking I need to hold my hand down a bit at the correct part of the putter and then sometimes that caused me then to over shoot, and like put too much power behind it, or like under shoot and put well, had a lack of power behind it.*

Similarly to Ryannan, Tara also identified that technique was what worried her most “*yeah I think so like I thought to much about the technique and how I was going to do things maybe, that it just went wrong*”. Both Ryannan and Tara identified that worrying about having the correct technique resulted in a poorer performance. Although both Ryannan and Tara are novice golfers, they understandably would not have the correct technique, and their attention towards this detail is what is likely to have caused them to choke rather than having the incorrect technique itself, which it appeared that they thought in hindsight as well.

As well as over-thinking either the technique or the process, participants spoke about losing the natural momentum and a change of fluidity when putting. When she felt that something was going wrong during her performance, Ryannan reported that

*I just took a step back got my mind to myself again really and went back to do it, I did not want too much because then I start to analyse myself and what I'm doing and get over critical of my performance and I end up making it worse so I think it worked but staying calm really.*

During the performance it appeared that Ryannan consciously felt that she needed to regain composure. She does not mention why she felt this way, or if perhaps she felt she was losing control of the putting, which would explain the need to get her mind together again. Conversely, Ryannan firstly implied that stopping the performance using self-focus to gain self-control was something that she does to help performance. However when she

felt it go wrong she then stated that this strategy resulted in her analysing herself and made her performance worse. This suggested that Ryannan did not know which strategy, whether to use self-focus to regain control, to keep going or to stop, would have helped her performance or to cope with the pressure demands, so therefore she did both to try and help her calm down. Ryannan believed she was confident of knowing that she needs to do something when her performance was starting to falter but was unsure of exactly what to do, this change in fluidity may explain Ryannan choking during the experiment. Moreover, it was evident that Ryannan had not developed appropriate coping strategies and therefore choked as a result.

### **Self-presentation**

The last theme in the individual differences super ordinate theme is self-presentation. Participants expressed their self-presentational concerns and how they believe this affected performance. There are several concerns that appear within the transcripts; appearance, focus, ability and the camera that was present during the experiment. One of the more obvious concerns regarding self-presentation is appearance. This concern was discussed and described by participants throughout the interview. Molly and Vicky spoke about how they want to look good when they perform, however they don't mention how they felt when they appeared in the experiment and focused more on their preparation of their appearance and what they wouldn't want to appear like. Molly stated that

*I'm just like, well obviously everyone is going to sweat and stuff and I'm stuff like that but I think if there is a lot of like supporters and stuff you want to be looking your best on court and when you're playing.*

Firstly Molly mentioned that everyone will sweat which is generalising her statement. This generalisation may have helped Molly from feeling embarrassed when sweating during a performance where she was aware she will not appear looking her best,

so by enforcing that everyone sweats Molly felt she could not be singled out. Molly's effort to avoid looking bad during performing may affect performance by distracting her from the task as she tries to look her best. Molly also failed to include if it was general supporters or specific people that affect the way she felt about her appearance. This identification may help Molly in future performances, so she can distinguish who in particular she feels she needs to impress through her appearance. In contrast to this self-presentational awareness, Ryannan described how her concerns affected her performance during the experiment,

*It made me more body conscious in terms of I knew somebody was watching me and somebody would be. It wasn't a case of I was being recorded at the time it was more the case that I would be watched back and I knew that it could be coming up in other peoples lectures and things like that and other people would be looking at me.*

Ryannan talked about a different type of physical appearance and mentioned that she was body conscious because people will be able to watch her. This suggested that during performances where people will be watching either from spectators or a recording she will experience self-presentational concerns. Therefore during the low pressure condition in the experiment where there was no recording Ryannan most likely did not experience any concerns that may have interrupted her performance or concentration, explaining why she did better in this pressure condition.

As well as their physical appearance, participants' mental appearance to others was identified as a key self-presentational concern. Participants' explained how they believed being focused and keeping level headed was important to them and how they felt this self-presentational concern affected their performance. Tara hesitantly stated that

*I did not really know what I was doing and that people would laugh or id just make a fool out of myself, I don't really play golf and don't really know much about it, so I was just worrying about how I would putt and what I would look like putting.*

Tara's statement implied that she was worried about peoples' judgements and did not want to look silly, therefore, unfocused in front of anyone. She was conscious of this fact so whenever people are watching her perform she was worried that they are judging her constantly. This increase of anxiety and distraction from performing the task may have led Tara to choke. Tara seems to be particularly low in confidence during this time. This worry might have made Tara consciously make it look like she did in fact know what she was doing when she did not. Therefore she may have rushed or putted too slow leading to poor performance just so it could appear to others she was focused and knowledgeable about how to perform the task. The difference between when people felt their self-presentational concerns was evident between the two pressure conditions, the change in pressure impacted on Vicky's motivation and feelings towards her performance "*I was just thinking that I should concentrate more on what I was doing and just take the whole situation more serious because its being counted and its being watched back so you need to get this one right*". Vicky admitted to taking a different approach to the high pressure condition as it was going to be watched back. Vicky found that concentrating more on task would help her get it right and assuming it would help her performance. However, when asked if Vicky felt that this change in approach affected her performance she did not think that it had any impact. It is evident that the high pressure condition meant more to Vicky and she changed her attitude towards the experiment. However, as she feels that it did not impact on her performance it could mean that it simply did not mean enough to Vicky. She knows that she should focus more but implied that she does not actually carry out this thought process any further.

Not only is self-presentation about how individuals think others perceive them mentally and physically, but also about how an individual thinks others perceive how capable they are to complete the activity. This self-presentational concern appeared to be the most prevalent amongst the participants and one that they held the most importance to.

*I was quite conscious of people looking at me and looking at the way I was holding the golf club and was thinking like if there were any golfers then they would be thinking like oh golf that's not the way you are meant to hold it, and I was quite like anxious that I knew I might not be holding it properly but I knew that I sort of had to just get on with it and gave it a go anyways*

It was apparent that Ryannan was most concerned and worried about not having the correct technique when performing. This suggested that during the experiment she knew she was not holding the putter correctly, which could have distracted her away from the task or she may have thought too much about the technique thus affecting her performance throughout. This distraction by Ryannans' self-presentational concerns are evident when she described her thoughts during the high pressure condition "*when I was being recorded I was very aware that people would be looking at the way I'm stood, my posture, my technique, yeah so I think it, I did think differently when I was being recorded*". Furthermore to be consciously aware that she might have the wrong technique demonstrated that it was important to Ryannan to look like she knows what she was doing. As this did not happen, it resulted in unwanted feelings such as becoming anxious. Ryannan makes it clear that these feelings were not common but only when she thought there might be someone who knew that she would be holding the putter wrong, i.e., someone who plays golf. This suggested that Ryannan was still somewhat determined to succeed in the experiment.

Tara and Molly however demonstrated that their concerns arose from anyone thinking that their ability for the task was not good enough. Tara stated that *“I did not want people to think I was rubbish and that I’m not very good”*. This fear of negative evaluation was shared by Molly who says that *“if I did something really bad, um if I did a particularly awful putt or something you become quite nervous thinking that someone is going to be watching it back and can see your faults”*. Both Tara and Molly demonstrated vividly the importance they associated with having the correct ability and technique and how they perceive others do too. This fear of negative evaluation was linked with other themes such as the self-concept and more importantly is associated to choking. Therefore, suggesting that Tara and Molly’s self-concept of themselves may be heavily reliant on their self-presentational concerns. This was apparent during Ryannan’s transcripts where she stated that

*In the high pressure I was thinking oh my days it’s being recorded, I needed to make sure that I can get the next one closer and made me think more about my technique and what I was doing with the golf club*

Ryannan explained that the high pressure condition where her confidence was low affected her self-concept by (a) the camera being present and her performance being recorded and (b) her inward shift of attention to thinking about having the correct technique. By stating ‘oh my days’ suggested that Ryannan at this stage worried about being recorded and therefore think about her technique.

In the experiment there was a low and high pressure condition; one was considered high pressure because of the camera which was present that participants were made aware of before they were asked to putt. The camera evoked many feelings for the participants, particularly worry and self-presentational concerns. Molly referred back to the high pressure condition and described her experience

*Throughout that pressure condition I was constantly aware of the camera and I kept thinking that I was going to be watched back over and that if I did badly, whoever was watching would be criticising my technique and performance.*

Molly inferred that she was distracted constantly by the presence of the camera which was likely to have distracted her from her performance and therefore caused Molly to choke. Molly uses the word ‘constantly’ as the presence and reasoning behind the camera had a big impact on Molly’s experience during the experiment. Therefore when speaking retrospectively Molly exaggerated the cameras presence and the amount of attention she focused on the camera. Obviously the camera was present for the duration in the high pressure condition. However, Molly was more aware of her feelings towards having the camera present and the possibility of it being watched back, than the presence of the camera itself. This was evident when Molly stated *“the higher pressure I think did put me off a bit more because I was a little bit more concerned that I was being filmed and I was thinking about it maybe more than the performance itself”*. Molly had a negative view of the camera and about how people watching the footage back would be, similar to her previous quote the fear of negative evaluation could explain why Molly choked. Molly, Vicky, Tara and Ryannan shared their dislike and negative feelings towards having the camera present, for example, Tara stated that *“when the cameras were there I did feel more worried and anxious about what I was doing”* and a worried Vicky described her thoughts and feelings as

*I think I just was a bit more conscious like crap people are going to be looking at me now and they can’t look anywhere else so it will be easy for them to watch me and analyse what I’m doing wrong and can see that I’m putting badly.*

Vicky explained that she was ‘more conscious’ during the high pressure condition. She implied that this was when she became more aware of her thoughts and feelings

towards the potential for negative judgements. By referring to becoming 'more conscious', Vicky emphasised the amount of attention she gave to this particular situation and insinuating that the camera had a grave impact on her thoughts, feelings and performance during the high pressure condition. Furthermore, along with the associated negative feelings towards the camera all the participants implied that during the high pressure condition their cognitions changed. They stated that they focused on different aspects of the experiment compared to the low pressure condition and that they were worried about how they would appear to others both physically and mentally.

### **Social Factors**

The second higher order theme social factors included two super-ordinate themes, team vs. individual and the environment.

#### **Team vs. Individual**

All four participants participated in team sports, specifically netball. The support that the participants feel when they participate in their sport was evident as one of the most important factors to handling pressure. The participants described how in their team sports there are people around them and that this can boost their esteem and performance positively. In particular Vicky stated that

*You have the support of your team mates, you train together and play together and you get rewarded together, I like the fact of having the thought of if I was to fail there are 11 other girls that can pick me back up on and off court, with a pressure situation I guess you all face it, sometimes it's harder in a team as you feel like if you make a mistake you've let your team down but on the other hand they are there to help you.*

From this quote Vicky implied that she likes to have people around her facing the same situation whether it was negative or positive. She appeared to enjoy being in social

situations where she is surrounded by people, this maybe to make her feel secure, revealing why she enjoys team sports. Vicky mentioned about getting 'rewarded together' but did not mention about losing together if the team lost, suggesting that if the team did lose it would come down to certain individuals. However, she then continued to say that when she fails the support of the rest of the team would be able to pick her back up, both on and off court. Thus suggesting that if the team does lose and it comes down on particular individuals that her team are supportive and do not assert blame onto each other keeping it a positive environment to compete in. Vicky portrays that in a team she feels stronger and more confident within herself, this may then come across in her performance as she is willing to take more risks and remain positive, however when performing individually such as in the experiment when something goes wrong Vicky does not have the support around her or anyone to keep her positive resulting in performance decrements. Consequently performing a task like golf on her own exposed Vicky to a situation without social support and therefore may have encouraged choking. Molly shares the feeling of finding comfort in knowing her team will support her and she will have someone to fall back on if something goes wrong

*A team sport requires more than one player, personally in a pressure situation I like to have team mates around me, as they can support me and help relieve any stress and anxiety I might have. I consider individual sports to carry a greater amount of pressure as you are working independently and don't have anyone to rely on or fall back on if you are feeling pressurised.*

Molly explained her dislike for pressurised situations and having to perform them individually. Thus suggesting that in the high pressure condition during the experiment Molly felt uncomfortable, and therefore found it hard to handle any stress and anxiety that she may have felt. She insists that individual sports carry greater amounts of pressure,

however this may be due to the fact that Molly was simply not used to individual sports and in her team games she does not feel the pressure as much because she is easily able to blend in with the rest of the team, shifting pressure onto the players around her. Therefore, this might be why Molly choked as she struggled to perform in isolation as she felt exposed and her ego has more potential of being damaged if she failed individually.

### **Environment**

The last super-ordinate theme that was identified was the environment; as participants found themselves in a different situation than was normal. This affected participants' thoughts, feelings and sometimes performance, which may have contributed to the participants choking. By being in a different surrounding and by completing a task that the participants were not used to seemed to negatively impact participants' feelings and performance.

Ryannan stated that she felt anxious and uncomfortable and continued to say that "*I think also because it was an unfamiliar task sort of thing it just made me feel a lot more aware and anxious*". It was evident from Ryannan that she found being in a new experimental environment participating in a different form of activity developed unwanted feelings of worry and anxiety and because of being in an environment that she was not comfortable in, she became more aware of these negative feelings which may have impacted on her overall performance. Similarly, Molly explained that for her, not all situations are the same "*depending on the situation I never want to be perceived to be looking stressed about something... despite what I'm feeling inside*". Although Molly explained that each situation is diverse and different therefore her feelings will be associated differently, she does not explain what makes the situations different. Moreover, whether it's the difference in the environment specifically, or a difference in pressure for example Molly went on to say that in every situation she does not want to look stressed.

Thus relating back to self-presentational concern, suggesting that this was an important factor to Molly even if she is comfortable in her surroundings or not. Thus, being worried about these concerns may have contributed to Molly's choking episode. Molly implied that she tries to conceal as much of her feelings and thoughts in situations whether she is comfortable with her surroundings or not, by concentrating on keeping these feelings inside. This may create more pressure on the situation and distract Molly from focusing on the task.

In addition to Ryannan and Molly's experience of performing in new surroundings and different situations, Vicky reported that she feels she performs better in a situation that she is used to "*I think you can feel when nothing is going right in netball because you so used to how it feels and you get the momentum and just that really pleasing feeling*". This was reiterated by Ryannan later on in her transcripts when she explains why an unfamiliar task causes her to become more aware and anxious

*I maybe think like there's a difference in control because it's not something I usually play like in netball you know you're in control because you play so much you know what it feels like to be in control and when you're losing control.*

Both Ryannan and Vicky insinuated that it was important to know when you are performing well and when you have control of the situation and that they know this through the years of playing their sport, netball. However, when they are in new situations and performing tasks unfamiliar they are unaware when they are starting to lose control until it is perhaps too late and it has completely affected the mental state. This loss of control in a new environment appeared to negatively affect performance causing heightened arousal and anxiety levels resulting in choking.

In this chapter the identified themes have been presented in a summary and master table which allows the reader to see how the themes relate to each other. The results have

also been narrated and interpreted in detail. In the next chapter these themes are explored further and critiqued in relation to previous and current research in the area. Moreover, this discussion explains how this particular study may benefit future investigations and how it has influenced choking research.

# **-Discussion -**

## Discussion

### Overview

The aim of this study was to explore the causes and consequences of choking whilst more specifically, considering the role of the self-presentation model as an explanation for choking in sport. Specifically, the aim was to: (a) to examine the role of ‘other’ moderators and their relationship with self-presentation, and (b) to explore the perceived role of self-presentational concerns within choking during a putting experiment and (c) investigate the role of self-presentation within a choking episode.

The study consisted of four female participants who had taken part in an initial study and had previously been identified as chokers. The participants were then interviewed retrospectively to explain and describe their choking experience. This was carried out through analysing semi-structured interviews using an Interpretative Phenomenological Analysis (IPA). The results of the present study are summarised in Table 1. Few qualitative studies have examined the construct of self-presentational concerns and choking under pressure. It was therefore intended that the current study would add to existing knowledge in this area. The research question that was presented at the start of the study was to explore incidences of choking during a putting experiment.

In the following section the key findings are considered in relation to the research question and objectives above, and discussed in relation to the existing theory and evidence base. The significance of the study, experimental implications of the results, methodological considerations, limitations, and suggestions for future research, then explored. Finally, the conclusions and a personal reflection will summarise the findings, the discussion and overall perspective of the investigation.

### **The role of “other” moderators and the relationship between self-presentational concerns**

After the analysis of the results, eight super ordinate themes were identified; motivation, self-concept, expectations, self-presentation, shifts in attention, positive affected states, individual differences, and, environment. These themes were apparent in the participants’ transcripts and it was evident that in one way or another the themes had an impact on one or all participants’ thoughts, feelings, and performances.

#### **Motivation**

Firstly it was evident that motivation may have been a contributing factor explaining why participants in this investigation choked under pressure. Participants described a variety of motivational concepts which they believed motivated them to perform well. From the transcripts motivational concepts such as: intangible rewards, external regulation and task achievement, (see Table 1. p.61 - 74) were intense enough to impact performance and intertwine with self-presentation concerns. Intangible rewards such as wanting to receive praise and recognition of achievement were apparent particularly in Ryannan and Molly’s transcripts. The need to impress and look good in front of people who may have watched back the film seemed to stem from self-presentational concerns, and increased when participants perceived an expert would be watching (Conroy, Poczwardowski, Henschen, 2001; McGregor & Elliot, 2005). This motivation to perform particularly well in front of an expert may have led to performance decrements due to increased anxiety. In addition, the need to impress perceived spectators resulted in fear of negative evaluation which in the self-presentation model suggests that the participant turns to self-monitoring i.e. self-focus or will become distracted from the task at hand (Mesagno, Harvey & Janelle, 2011) which was also demonstrated in this investigation. This, supports the suggestion that participants’ motivation, such as wanting

to look good in front of spectators (in this study the video recorder) or the fear of negative evaluation can lead participants to choke under pressure. This implies that the role of self-presentational concerns itself is not a standalone concept explaining the cause of choking in sport. External regulation, such as the desire to receive physical rewards, i.e. money, was also reported as a motivational influence, specifically in the case of Molly. In this investigation it appeared that the potential of receiving monetary reward increased performance pressures resulting in the participants choking under pressure. This is supported by Ariely et al. (2009) who found that monetary reward can significantly reduce performance, however they argued that this is dependent on the reward amount. In contrast, Mesagno, Harvey and Janelle (2011) found that motivational pressure treatments such as money actually decreased anxiety and increased performance under pressure. This, suggests that external regulation can either facilitate or debilitate an athletes' performance by creating performance pressure resulting in a poor performance, however, this is dependent on the individuals' desire or need for the monetary reward. Therefore, it may be argued that in some cases the role of motivational concerns within choking in sport is due to its association with anxiety, and how this relationship will affect the levels of anxiety felt by the participant, and could lead to choking (Leary, 1992; Schlenker & Leary, 1982).

Finally task achievement although not directly linked with self-presentational concerns was found to increase the pressure felt by participants and is likely to have contributed to their performance decrements (Wang, 2002). In support of Wang (2002) Wallace, Baumeister and Vohs (2005) state that performance pressure is directly tied to the performer's motivation to achieve certain outcomes such as acquiring the correct technique. This performance pressure normally increases' the performer's motivation to achieve his or her desired goal (Elliot, 1999; Wallace, Baumeister and Vohs, 2005, Wang, 2002). In this investigation however, the motivation to achieve the desired outcomes such

as the using the correct technique led to an increase of pressure, resulting in a decline in performance. This, suggests that the self-presentational concern of having the correct technique or worrying whether ‘others’ perceive you have the correct technique and the individuals motivation may be a vital contributor to choking in sport. This is an area where future sport psychology investigations can explore. Specifically, to investigate whether particular motivations, can both debilitate or facilitate performance resulting in some athletes choking under pressure.

### **The self-concept**

Self-presentational concerns were found to have a direct impact on athlete self-concept and therefore affected performance which may have resulted in choking. The role of self-presentational concerns can be one of protection for some of the concepts of the ‘self’ (Elliot & Church, 2003), such as self-efficacy and self-esteem. In this investigation participants regularly changed their self-beliefs due to either performance progression or performance decrements. Ranney (2007) argued that failing to uphold the competence a participant believes they have could result in changes to self-concept as well as changes in how others view the participant. This was demonstrated when Vicky’s self-efficacy, self-esteem and confidence increased as she felt she had started to putt well. This was reiterated by Molly who also showed that perceived competence can change certain concepts of the self. Therefore, if they perceive they are incompetent when going into a pressure situation their negative self-concept may cause them to choke. In addition Beilock and Carr (2001) speculated that the skill level of an athlete has an effect on their perceived self-efficacy and self-confidence. Therefore suggesting that as all participants were novices they might have been unsure of how much efficacy and confidence they should associate to the task which may have led them to choke. This was demonstrated throughout the interviews where participants appeared to be uncertain of how confident they were during the task, and

therefore attached what they believed to be appropriate amounts of confidence to succeed in the task. Self-presentation and the need to want to impress spectators may have been a contributing factor to participants applying unrealistic levels of confidence accordingly to the situation (Wallace, Baumeister & Vohs, 2005). Therefore, by going into the experiment as either over confident or under confident may have caused participants to choke.

In an attempt to protect their self-concept, particularly their self-esteem, participants found an opportunity to assign blame for their poor performance on a contributing factor identified as self-handicapping (Arkm & Baumgardner, 1985, Levesque, Lowe & Mendenhall, 2001; Smith & Snyder, 1982). All participants recalled some type of self-handicapping during the investigation. One explanation for why participants withdrew to self-handicapping may have been due to the camera and the thought of people watching. This is illustrated in both Molly and Tara's transcripts as they refer to being consciously aware of people watching and the presence of the camera. This relationship between awareness of an audience and self-handicapping has been found in previous research where it has been shown that people are more prone to choking when they believe they must cope with high audience expectations (Wallace, Baumeister & Vohs, 2005). It is further suggested that some participants may self-handicap in an attempt to lower audience expectation (Gibson, Sachau, Doll & Shumate, 2002). This was demonstrated by Tara's strategy of blocking out unwanted judgements and distractions and by all participants referring back to only being a novice at golf and expressing that spectators could not expect them to be good. This is supported by Elliot & Church (2003) who found that most people who self-handicap do so to provide an excuse in case of anticipated failure. Moreover, Leary (1992) found that higher levels of self-handicapping were associated with greater competitive and physique related self-presentation concerns. In addition, self-handicapping can allow the development of a participants' ability

following a successful performance or the discounting of participants' ability following failure. It is equally plausible that reductions in perceived competence and assumptions of character flaws may be experienced (Prapavessis et al., 2004). This is therefore an area for future research, in particular the relationship between characteristics, self-presentation and self-handicapping.

Overall, from previous research and from the results found in this investigation, it may be argued that a participants' self-concept has a vital role on whether a participant will choke or produce a competitive performance. Tara specifically suffered from a negative self-concept and low self-confidence which impacted on her belief, self-presentation, motivation, and caused added performance pressure and anxiety.

### **Environment**

All four of the participants that choked under pressure are netball players and therefore were used to participating in a team environment and in a spacious environment compared to the laboratory where the individual experiment took place (see appendix H for task setup). An understanding of how the performance environment alters cognitive processes not only advocates our understanding of choking but provides insight into related situations in which performance unexpectedly falters (Wine, 1971). Participants expressed their discomfort of performing in a new environment. Molly stated that as well as the laboratory surroundings being a new environment this increased her anxiety and therefore her perceived pressure during the experiment. Wine (1971) argued that the increased perceived pressure creates a distracting environment that shifts attentional focus to task-irrelevant cues such as worrying about the situation and the consequences. This is apparent in the case of Molly who stated that during pressure situations her self-presentational concern was to not look stressed to other people therefore athletes out of their usual performance environment with high levels of self-presentation and/ or anxiety may be

distracted from the task at hand resulting in them choking under pressure. This is supported by Beilock and Carr (2001) who found that even experienced golfers who had to alter their execution process in order to adjust to the novel environment and found their normal execution became disrupted. Although it is evident that distraction was part of Molly's choking experience she also refers to wanting to look good in front of people and her environment, therefore shifting attention inwards, and focusing more on her concentration and technique. Thus suggesting that any given pressure situation may therefore emphasise different outcome pressures and monitoring pressures. Particularly in high pressure situations, aspects of both pressures may be present simultaneously, therefore disrupting working memory availability and directing what attention that remains in ways that are counterproductive (Beilock, et al, 2004; Beilock & Carr, 2005; Beilock & DeCaro, 2007; Gray, 2004). Furthermore, Ryannan stated that she had different thoughts and feelings between the low and high pressure condition, demonstrating that the pressure situation rather than the environment (along with the additional self-presentational concerns due to the camera) may be a contributing factor in choking under pressure. Thus, pressure may lead to skill failure in multiple ways, depending on features of the performance situation rather than the performance environment itself.

To date little research has been concluded on whether the pressure situation and multiple pressure elements systematically exerts different effects on performance (DeCaro, Thomas, Albert & Beilock, 2011; Mesagno et al, 2011). Vicky reported feeling out of her comfort zone during the experiment particularly in the high pressure situation which possibly led to performance decrements. Wallace, Baumeister and Vohs (2005) argue that to perform well, skill task performers must monitor certain aspects of themselves and their environment while ignoring other factors such as the elements of their performance they have brought in from playing netball. It would be interesting to investigate further how

these participants dealt with pressure situations in their common environment to determine whether choking is due to state or trait. Furthermore, as participants exhibited signs of self-handicapping and if choking is trait orientated, it may become a habit allowing participants to predetermine performance outcomes, particularly if they are concerned about performing well.

### **Positive affected states**

The two main positive affected states that were identified throughout the participants' transcripts were flow and IZOF (Individual Zones of Optimal Functioning). Although both theories were only minimally apparent throughout the transcripts and not expressed by every participant, it was evident that they were an influencing factor in participants' performances.

Firstly, flow was experienced by both Tara and Vicky. Tara specifically stated and inferred that having fun in the experiment or in a pressure situation was important to her performance and her self-concept. In addition, Tara explains that having fun and the feeling of flow helps her to forget things that had previously caused her to worry or to increase her anxiety, thus having a positive impact on her performance. The concept of flow facilitating performance is supported when found that the flow experience was often reported by athletes when they were performing exceptionally well (Jackson & Csikszentmihayli, 1999). Vicky similarly stated that flow helped her performance as it gave her a rewarding feeling which she earlier stated motivates her to perform well, therefore suggesting that when Vicky felt flow she was doing well in her performance. Although flow appeared to facilitate both Tara and Vicky's performances, overall it caused both participants to get distracted from the task at hand. Tara consciously made an effort of having fun and blocking out unwanted distractions, however by doing this she actually focused on task irrelevant cues, causing her to choke in the experiment. It is evident that

flow was present for Tara and Vicky during the putting investigation, however, they wanted to feel the concept of flow more than they let it happen naturally this caused them to become more self-conscious which resulted in distraction and poor performance.

Secondly, participants' performance during the putting experiment can be explained through the tenets of IZOF. Similarly to flow, anxiety had a huge impact on performance and contributed to their choking episode. However, participants suggested that they needed a certain amount of pressure to make the experiment enjoyable, which has been supported in previous research (Hanin, 1980, 1997). Therefore participants experienced sub-optimal levels of anxiety and associated this with a negative effect thus causing performance decrements resulting in choking.

Overall it is evident that both positive affected states were incorporated into the experiment by participants with the aim to facilitate performance, however, it in fact debilitated performance and only assisted in the choking process with the contribution of other factors such as being in a new environment.

### **Expectations**

All four participants reported having no expectations of how well they would perform prior to the investigation. As discussed previously, this appeared to correlate with participants self-handicapping, therefore demonstrating that by having no expectations prior to the experiment gave the participants an excuse for poor performance. In addition, by having no expectations before the experiment implies that participants were mentally and physically unprepared when partaking in the putting exercise, thus negatively affecting their performance. In support of this Leary (1992) argues that the lack of expectation and of being unprepared in sport promotes a variety of negative images, therefore insinuating that there is relationship between expectations and self-presentation. Moreover, having no expectations previous to the experiment appeared to affect participants' self-concept, in

particular Tara appeared to suffer from a negative self-concept and low confidence. This lack of expectation meant that this caused participants to have low self- efficacy and esteem coming into the experiment resulting in a poor performance (Hams & Snyder, 1986, Snyder & Smith, 1982).

Both Vicky and Molly suggested that having an expectation to perform well was important to their self-concept and performance. This is supported by Wallace, Baumeister and Vohs (2005) who found that expectations that were regarded as important helped to increase a participants' motivation to perform well. This suggests that because all participants reportedly had no expectations prior to the experiment, and that they related importance to having an expectation perform well, the lack of preparation and expectations contributed to choking in the putting experiment. Expectations did not impact participants' performance solely, it could be argued that it influenced other factors such as ones' self-concept and motivation which in turn resulted in choking during the experiment. This is supported by researchers (Gucciardi et al, 2010; Hill et al, 2010; Mesgano, Harvey & Janelle, 2011) who have identified links between participant expectations and choking.

### **Shifts in attention**

Participants' repeatedly reported that they experienced over thinking and shifted attention inwards during the putting experiment, particularly when they felt performance pressures and anxiety were high. However, participants did not specifically state that they felt this is what caused their drop in performance. The shift of attention appeared to occur during the high pressure condition and caused participants to shift their attention inwards towards their technique in particular, thus affecting participants performance negatively (Gray, 2004; Pijpers, Oudejans & Bakker, 2005). This is supported by Mesagno, Harvey and Janelle (2012) who argue that pressure situation can cause attention shifts inwards toward self-monitoring techniques and can affect participants either voluntarily or

involuntarily. This, suggests that when participants in the experiment experienced an increase in performance pressures and anxiety, the shifts of attention, with the association of self-presentational concerns, have a role in the choking process, offering further support for the self-focus theories of choking.

In addition some participants' reported feeling that if the fluidity of their performance changed it had a negative impact on their performance. Ryannan particularly appeared to be confused as to what would help her performance however, she stated that stopping or slowing down helped her performance as this allowed her to start criticising herself, negatively impacting performance. However, researchers (Beilock & Carr, 2001; Guccairdi & Dimmock, 2008) have found that although in the case of experts it is better for performance to 'just get on with it', for novices, (which all four participants were) it can aid performance to go through a step by step method so participants can concentrate on the execution of the skill (Fitts & Posner, 1967; Masters, 1992; Pijpers, Oudejans & Bakker, 2005). According to previous literature this self-focus and monitoring of technique should have helped participants (Beilock & Carr, 2001; Mesgano, 2009). However, evidence from this investigation suggests that both self-focus and monitoring of techniques may have in fact caused the participants choking episode. This is an anomaly in the choking literature that should be further researched.

Overall, shifts in attention demonstrate concepts from both the distraction and self-focus models, however neither one appeared to be dominant throughout the research. This may be because participants were (a) novices and (b) participating in a new environment. Therefore, their senses towards cues internally and externally became overwhelming resulting in both the distraction and self-focus, this supporting the argument made by Beilock, Carr, McMahon and Starkes (2002). It is evident that the shifts in attention had a role in participants choking, particularly during this experiment. However, without the

presence of other factors such as self-presentation it would not have impacted participants enough to choke.

### **Role of self-presentational concerns**

Within this investigation there were three particular types of self-presentation that appeared to have an impact on participants' performances. These were (i) Appearance, (ii) Focus and (iii) Ability and technique.

#### **Appearance**

Although appearance as a self-presentational concern was discussed by participants it did not appear to be a vital component in causing performance decrements. This might be because participants that worried about their physical appearance would have made sure that they were comfortable and felt their best before going into the experiment suggesting they would not have worried as much during the experiment. This was demonstrated by Molly in particular who stated that she always wanted to look her best, therefore also suggesting this would be an important concept in everyday life for her. Prapavessis, Grove and Eklund (2004) argued that it is, in fact, because non self-presentational sport athletes (e.g., soccer, volleyball, netball) experience less sport physique anxiety than physique-salient sport athletes (e.g., swimmers, gymnasts) who experience a great amount due to the heightened focus on physical appearance. Furthermore, social physique anxiety increases when participants feel anxious about their physical appearance and has consistently demonstrated the strongest relationship with self-handicapping (Thatcher & Hagger, 2008). This was demonstrated by Molly as stated that she always wanted to look her best that later showed signs of fear of negative evaluation and reported self-handicapping tendencies. In addition participants that demonstrate the need to look good in front of others will not only worry in sporting contexts but likely during most social situations therefore resulting in

heightened awareness during high pressure situations. High public self-conscious individuals are likely to become aware of being observed when under pressure because social appearance and acceptability are important to them (Wang, 2002).

### **Focus**

Another of the self-presentational concerns that were reported to affect performance was that participants wanted to look focused during the experiment. Because of their conscious effort to be perceived as focused they shifted their attention away from the task in front of them to task irrelevant cues such as their thoughts and emotions. This shift of focus from the task is supported by Conway, Cowan and Bunting (2001) who suggested that choking constitutes a process whereby a task-irrelevant focus has the potential to cause performance decrements. As stated previously, a shift of attention from task-relevant cues (i.e., hitting a target) to task-irrelevant cues (e.g., worry, feelings about anxiety) may result in performance decrements. This was evident in Tara who reported that she wanted to be perceived as focused which resulted in her worrying about her putting and how focused she looked putting. Continuous attention to evaluation may result in concern over others' perceptions. Dandy, Brewer and Tottman (2001) suggested that people who are high in self-consciousness are often worried about others' expectations, which may use resources needed by other cognitive processes and cause performance disruptions. This suggests that the need to appear focused increased performance anxiety and caused participants to inwardly shift their attention resulting in their poor performance.

The need to appear focused may also be due to participants being novice in their sport and although they results to self-handicapping they still wanted to be perceived as skilled enough to par-take in the experiment. This self-presentation dimension of over compensating their focus or lacking necessary focus may lead to mistakes leading to

participants not performing to potential and choking under pressure (Thatcher & Hagger, 2008).

### **Ability and technique**

Similar to the other self-presentational concerns, wanting to appear athletically talented related to self-handicapping and concerns over making mistakes (Levesque, Lowe & Mendenhall 2001; Rhodewalt, Saltzman, & Wittmer, 1984). Ryannan was particularly worried about her technique and perceived ability when she was being video recorded in case a golfer specifically would be watching. She stated that this led her to become more anxious increasing the pressure surrounding the experiment and her anxiety, which, in turn, is likely to have led to poor performance. The self-presentational concern of wanting to be perceived as able and have the correct technique was found to be the dominant concern amongst all four participants in this discussion suggesting that it was an influential factor in their choking experience. In addition previous findings supported that ability was viewed as being less influential in determining outcomes for participants who used self-handicapping than those who did not (Tice, 1991). Similarly, Levesque, Lowe and Mendenhall (2001) found that the perception of low ability was less likely to occur following failure when unintended lack of effort provided a plausible explanation for the poor performance. This suggests that although the self-presentational concern of participants' ability was a main factor in this investigation, it was not the sole contributor or cause to choking in sport. There needs to be further research into the specific self-presentation concerns and the individual affects they can have on an athletes' performance.

### **The role of self-presentation during a choking episode**

From the preceding discussion it is evident that self-presentational concerns has a role in choking in sport, yet it is still unclear how much it does impact athletes performances.

In line with the self-presentation model of choking (Mesagno, Harvey & Janelle, 2011) it was found that participants turned to self-monitoring techniques (Baumeister, 1984; Beilock & Carr, 2001; Masters, 1992) or became distracted (Baumeister, 1984; Beilock & Carr, 2001) when either and/or both performance pressures and anxiety increased. Due to the self-presentational concerns it was evident that the camera placed in the laboratory created self-awareness and self-consciousness amongst the participants with Tara specifically stating that it created unwanted thoughts and feelings, inducing self-presentational concerns. In addition, and in support of the self-presentation model, all the participants reported signs of fear of being evaluated negatively and had the fear of failing particularly in the high pressure situation. Mesagno, Harvey and Janelle (2011) argue that athletes who have a predisposition towards fear of negative evaluation are more susceptible to choke. Although Ryannan, Molly, Tara and Vicky all exhibited signs and thoughts of fear of being negatively evaluated, this concern was only apparent when other factors such as their motivation to do well, the situation, expectations and their self-concept are present.

Therefore self-presentation is not directly an accurate explanation of choking under pressure. It is, however, plausible that in certain individuals with sensitive predispositions to self-presentational concerns it has a bigger impact on performance. However, the self-presentation model is an important contribution to choking in sport and it is likely it contributed alongside other factors to cause participants choking in this particular investigation. The qualitative results in this study provide some support for the self-

presentational model (Mesagno, Harvey & Janelle, 2011). However, the model is not a standalone model that is able to explain choking under pressure, but, instead is another antecedent alongside others that have been found in the literature such as fear of failing, expectations, self-focus and distraction.

### **Future research**

Within this discussion there have been suggestions of where future research is needed and where there is gaps' in the choking research that may be significant to understanding the phenomenon.

Firstly, throughout this experiment the expectations of participants themselves played a significant role in their choking experience. Although linked to self-handicapping, the participants' expectations appeared to correlate to how their performance was going suggestion that their expectations were changeable. In particular, all participants reported having no expectations before the experiment started however as the experiment went on their expectations changed. This lack of self-expectation most likely affect participants' motivation, self-concept and preparation all found to be contributing factors causing participants to choke. Individuals with high motivation and expectations to achieve a future performance outcome may prepare for their future performance task differently than individuals who feel little motivation and have low expectations to achieve a future performance outcome. These differences in preparation undoubtedly influence perceived performance pressure (Wallace, Baumeister, Vohs, 2005).

Secondly, as all four participants in this investigation participated in a team sport; netball, it is probable that being in a situation where they were participating individually would have affected their performance. Participants reported feeling uncomfortable performing individually because of the lack of support and security they usually felt whilst performing in a team sport. Future research should concentrate on the differences between

individual and team sports and to determine if there is a stand out factor between the two that may cause participants to choke under pressure.

Finally, there is still a lack of research that has explored that role that perceived self-control (Otten, 2009; Hill et al, 2011) has on performance and choking in sport. The participants in this investigation seemed oblivious to the start point of when their performance began to falter and how much it had faltered before they realised a drop in performance. Vicky stated she was outside of her comfort zone. This may suggest that athletes choke under pressure in new environments and/or situations where anxiety has increased, as they become unsure of their control and how to regain this control when it has been lost.

Future research into choking must include more qualitative research to gain detailed insights and experiences from participants to get a better understanding of the psychological concept. In addition, interviews should be taken before and after the experiment to see if there is a contrast in the participants' thoughts, feelings and experiences. This would allow the researcher to understand more of what has happened during the choking experience itself.

### **Methodological Considerations**

A strong point of the methodology adopted was the use of an IPA approach that allowed an in-depth exploration of participants' experiences. Each interview was analysed carefully as it was considered that this would improve the rigour of the study. This would help to ensure that each participants' experiences were captured, and to ensure an acceptable level of interpretative engagement with the text. The small sample size, which may be seen by some as a weakness, may also be concluded a strength in allowing time for a depth of analysis to take place and ensuring that the voices of all participants were heard, thus meeting the idiographic commitment of IPA (Smith, Flowers & Larkin, 2009). In

addition, another strength of this study was that the sample was composed of participants whom had experienced choking first hand. Although I was new to IPA, and to qualitative analysis generally, I endeavoured to ensure the quality of the research by reading about IPA, seeking supervision with an experienced IPA researcher.

One criticism of the methodology is that participants from the same previous experiment who had not choked were not interviewed. However, mainly due to time constraints and available participants this was not able to happen for this investigation but is something I would like to investigate further in the future. In addition, an improvement to the methodology if time constraints would allow in future investigations would be to interview participants prior to experiment and immediately after to see how their experiences alter when speaking retrospectively a few weeks later. It should be acknowledged that all participants during and after the interview process were happy with the investigation, the interview schedule and no problems occurred.

### **Limitations**

There were two main limitations with the experiment. Firstly, participants frequently referred to experiences from previous situations or related them back to their netball experiences rather than recalling from the experiment. Therefore, in future, participants should be sampled who already partake in individual sports. The difference between participating in a team sport and an individual sport may have been a reason why participants' performances dropped rather than them actually experiencing a choking episode.

Finally, the time between the experiment and when participants had to talk retrospectively of their experiences could be shorter. The time gap may have allowed participants to forget important details about their experience that would be beneficial to choking research. Although I was unable to decide this factor in this research as the first

experiment was performed previously, in future research this can be achieved by constructive preparation and a strict temporal plan carried out by the same investigator.

### **Implications for Practice**

The current research has highlighted the difficulties in explaining the cause, mechanisms and consequences of choking in sport. Furthermore, it has identified eight possible themes (see Table 1.) that contribute to athletes performance decrements. The study found that self-presentational concerns are present and contribute towards choking in sport. In addition the self-presentational model itself however cannot fully explain choking, although, from this research it is evident it has role. Therefore, the results may help coaches and researchers to understand their athletes and seek out which particular triggers towards choking they present highly in. The findings also provide evidence that many different types of self-presentational concerns can be present during an athlete's performance. By identifying these concerns a coach is then able to directly set up interventions to prevent these concerns affecting anxiety or performance pressures before resulting in choking. Although this study did not conclusively find a cause of choking in sport, its implications for coaches and athletes is still beneficial particularly for those suffering with low self-consciousness and with predispositions to self-presentational concerns. Finally, the findings have implications for new directions in choking research as they identify gaps in the choking literature that are still in disrepute and in need for intense research.

The following conclusion summarises the main findings of the thesis. Furthermore, it includes a series of personal reflections on the part of the researcher in order to identify the kinds of challenges involved in the completion of the study and how these were overcome.

# - Conclusion -

### **Conclusion**

The aim of this study has been to explore the causes and consequences of choking whilst, more specifically, considering the role of the self-presentation model as an explanation for choking in sport. Additionally, the aim of this investigation has been to produce valid and reliable results that will allow this study to be replicated and used in a beneficial way within a sporting context, in particular to: (a) to examine the role of ‘other’ moderators and their relationship with self-presentation, and (b) to explore the perceived role of self-presentational concerns within choking during a putting experiment and (c) to investigate the role of self-presentation within a choking episode. The use of interpretative phenomenological analysis allowed the in-depth and idiographic investigation of participants’ lived experiences. This was achieved through semi-structured interviews which allowed participants to explain in-depth their choking experience. The purposeful sampling of participants that had choked was preferred as it gained information rich results, thus, addressing concerns surrounding the fact that many previous choking studies have mistakenly examined an under performance rather than a choke.

The analysis resulted in two higher order themes: individual differences and social factors. These higher order themes were then broken down into eight super ordinate themes; motivation, the self-concept, positive affected states, expectation, self-presentation, shifts in attention, team vs. individual and the environment. These were presented in a master and summary table as well as in a written narrative which detailed participants’ experiences. The results were found to be consistent with existing literature in particular that self-presentation, self-focus and distraction theories all have a role in choking under pressure yet not one was shown to have a direct cause. In addition, the research demonstrated that the self-concept of participants’ has a major impact, not only on

their performance but their self-presentation too, and is considered to play a vital role in the choking process.

This research has established new directions for future research and identified gaps where previous literature is limited, such as, the need for more qualitative research in this area. This allows researchers to focus on how and why participants may choke through detailed analysis of their personal experiences, compared to quantitative methods which cannot explain and describe the feelings and thoughts of participants at the time. As this research area is dominated by quantitative studies the need for more qualitative research is vital to gain the information-rich data needed to expand the knowledge in choking research. Furthermore, the study has identified two main areas in need of further research. First, the need to investigate the difference in choking under pressure between individual and team sports to discover both the similarities and differences involved. Secondly, to investigate the role of perceived self-control and the relationship this has on choking under pressure.

Furthermore, this study found contradictory evidence that the self-presentational model is not an accurate representation of the choking experience, it is however an important factor contributing to choking in sport. In addition, this study suggests that the self-presentation is just another antecedent alongside others that have been found in the existing literature. Overall, this study aimed to provide an in-depth and idiographic approach whilst exploring and relationship between self-presentation and choking in sport. As qualitative studies in this area are few, particularly with participants who have first handily experienced the choking phenomenon, it is hoped that this study has contributed something new to the choking literature.

### **Personal Reflection on the Research Process**

Before I started the study I was excited to investigate the concept of choking, I do not believe that I have ever choked in sport or under pressure. However, I know this does not mean that I might not in the future. Due to the possibility of choking, I was eager to explore what participants who had been found to choke describe about the choking process. During the procedure of this research I was mindful of any issues that may arise during the interview process for either for myself or for the participants. As this was my first experience of conducting qualitative research I completed a practice pilot interview which allowed me to see how a semi-structured interview should flow. At first I struggled with pauses and stops in the interview where I felt the need to fill the silence, however with help from my practice participant and my supervisor I overcame this. In hindsight, I believe that this practice interview was the first stage where my confidence grew in my ability to conduct qualitative research. I was aware that the participants had previously taken part in an experiment where they were found to have choked, therefore, I approached the research with great sensitivity. I was keen to find out more about the participants' experiences of choking who had first handily experienced the phenomenon of choking, therefore I took extra time with the participants particularly with slow replies and cancellations.

One of the problems that I thought I might face was that in fact I knew all the participants from university, although, not very well I was worried this may in fact impact the interview process or that participants would feel more insecure about talking about their experience. Whereas to my delight I found that actually the participants felt quite at ease with knowing the interviewer and settled into talking openly during the interview process. On reflection I would have taken advantage of this during the interview process and allowed participants to talk longer and try to keep the interview flowing to gain as

much data as possible, however due to my time constraints and with this being my first qualitative investigation I found I did not let this happen to my full capability.

Thinking back I am happy with the way the interview process was conducted and with the data collection from these results, no problems occurred and participants were happy enough to be interviewed twice if needed. In hindsight, I believe that Tara specifically did not open up as much as the other participants during the interview process, personally knowing Tara I believe that this was due to the sensitivity of the research, therefore if I was to conduct this study in the future I would allow extra time for Tara to feel as comfortable as possible in the hope she'd be able to talk more freely. Although Tara did not open up as much as the other participants, I do not feel that this had a negative impact on the results as the data received from her transcripts were still rich in information.

During the second phase of the study where I was analysing the data I was apprehensive about developing themes as I was concerned that my own judgements may have impacted what I thought of the transcripts. I found that my tutor was very helpful for me at this stage and reassured me that my IPA allowed for my interpretations and would give a second opinion if needed. In addition my tutor gave me confidence in my own abilities to identify and interpret the themes and the participants' transcripts. I was aware of re-reading these themes to ensure they were unbiased and were from what the participants were describing. I am happy that my own experiences did not impact on the results as I have not experienced choking under pressure, however I do wonder if they would have if I had experienced the phenomenon. I am happy with the overall study and with the themes found, although there was no conclusive cause of choking found, I answered my research questions and found that this subject area is still in need of intensive research.

# **-References -**

### References

- Anderson, J. R. (1982). Acquisition of cognitive skills. *Psychological Review*, 89, 369-406.
- Anshel, M., & Anderson, D. (2002). Coping with acute stress in sport: Linking athletes' coping style, coping strategies, affect, and motor performance. *Anxiety, Stress & Coping*, 15(2), 193-209.
- Anshel, M. H., & Kaisdis, A. N. (1997). Coping style and situational appraisals as predictors of coping strategies following stressful events in sport as a function of gender and skill level. *British Journal of Psychology*, 88, 263-276.
- Anshel, M. H., & Weinberg, R. S. (1999). Re-examining coping among basketball referees following stressful events: Implications for coping interventions. *Journal of Sport Behaviour*, 22, 141-161.
- Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *The American Economic Review*, 99(1), 544-555.
- Arkin, R. M., & Baumgardner, A. H. (1985). Self-handicapping. In J. H. Harvey & G. W. Weary (Eds.), *Attribution: Basic issues and applications* (pp. 169–202). Orlando, FL: Academic Press.
- Aroni R., Goeman D., Stewart K., Sawyer S., Abramson M. & Thein F. (1999) Concepts of Rigour: When Methodological, Clinical and Ethical Issues Intersect, Vol. 2000. AQR. Available at [http:// www.latrobe.edu/www/aqr/offer/papers/RAoni.htm](http://www.latrobe.edu/www/aqr/offer/papers/RAoni.htm), last accessed January 2013.
- Baddeley, A. D., & Hitch, G. J. (1974). Working memory. *The psychology of learning and motivation*, 8, 47-89.

- Baumeister R.F. (1984). Choking under pressure: Self-consciousness and paradoxical effects of incentives on skilful performance, *Journal of Personality and Social Psychology*, 46 (3): 610-620.
- Baumeister, R. F., Hamilton, J. C. and Tice, D. M. (1985). Public versus private expectancy of success: Confidence booster or performance pressure? *Journal of Personality and Social Psychology*, 48: 1447–1457.
- Baumeister, R. F. and Showers, C. J. (1986). A review of paradoxical performance effects: Choking under pressure in sports and mental tests. *European Journal of Social Psychology*, 16: 361–383.
- Baumgardner, A. H., & Levy, P. E. (1988). Role of self-esteem in perceptions of ability and effort: Illogic or insight? *Personality and Social Psychology Bulletin*, 14, 429–438.
- Beilock S.L., Carr T.H. (2001). On the fragility of skilled performance: What governs choking under pressure, *Journal of Experimental Psychology*, 130 (4): 701-725.
- Beilock, S. L., Carr, T. H., MacMahon, C., & Starkes, J. L. (2002). When paying attention becomes counterproductive: impact of divided versus skill-focused attention on novice and experienced performance of sensorimotor skills. *Journal of Experimental Psychology: Applied*, 8(1), 6.
- Beilock, S. L., & Gonso, S. (2008). Putting in the mind versus putting on the green: expertise, performance time, and the linking of imagery and action. *The Quarterly Journal of experimental Psychology*, 61(6), 920-932.
- Beilock, S. L., Holt, L. E., Kulp, C. A. and Carr, T. H. (2004). More on the fragility of choking under pressure in mathematical problem solving. *Journal of Experimental Psychology*, 133: 584–600.

Candice Quilliam     A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

- Beilock, S. L., & Carr, T. H. (2005). When high-powered people fail: Working memory and "choking under pressure" in math. *Psychological Science*, 16, 101-105.
- Beilock, S. L., & DeCaro, M. S. (2007). From poor performance to success under stress: Working memory, strategy selection, and mathematical problem solving under pressure. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 33, 983-998.
- Beilock S.L., Gray R. (2007). Why do athletes choke under pressure, (in :) G. Tenenbaum and R.C. Eklund, Eds, *Handbook of Sport Psychology* (3rd Ed.). Champaign, Ill.: Human Kinetics, 19, 425-444, New Jersey: Wiley.
- Beilock, S. L. (2008). Choking under pressure. In R. Baumeister and K. Vohs (Eds.), *Encyclopaedia of social psychology*. Sage Publications.
- Bray, S.R., Martin, K.A., & Widmeyer, W.N. (2000). The relationship between evaluative concerns and sport competition state anxiety among youth skiers. *Journal of Sports Sciences*, 18, 353–361.
- Bryant, J., & Holt, A. M. (2006). A historical overview of sports and media in the United States. In A. A. Raney & J. Bryant (Eds.), *Handbook of Sports and Media* (pp. 21-43). Mahwah, NJ: Lawrence Erlbaum Associates.
- Brustad, R. (2002) A critical analysis of knowledge construction in sport psychology. *Advances in sport psychology* pp. 21-37. (2nd ed.), Human Kinetics, Champaign, IL.
- Calvo, M. G. (1985). Effort, aversive representations and performance in test anxiety. *Personality and Individual Differences*, 6, 563–571.
- Calvo, M. G., Alamo, L., & Ramos, P. M. (1990). Test anxiety, motor performance and learning: Attentional and somatic interference. *Personality and Individual Differences*, 11, 29-38.

Candice Quilliam     A QUALITATIVE EXPLORATION OF CHOKING DURING A  
GOLF PUTTING EXPERIMENT

- Calvo, M. G., Eysenck, M. W., & Castillo, M. D. (1997). Interpretation bias in test anxiety: The time course of predictive inferences. *Cognitive and Emotion*, 11, 43-63.
- Cao, Z., Price, J., & Stone, D. F. (2011). Performance under Pressure in the NBA. *Journal of Sports Economics*, 12(3), 231-252
- Carver, C. S., & Scheier, M. E (1981). Attention and self-regulation: A control-theory approach to human behaviour. New York: Springer-Verlang.
- Carver, C. S., Antoni, M., & Scheier, M. F. (1985). Self-consciousness and self-assessment. *Journal of Personality and Social Psychology*, 48, 117-124.
- Chapman, E., & Smith, J. A. (2002). Interpretative phenomenological analysis and the new genetics. *Journal of Health Psychology*, 7(2), 125-130.
- Cohen, L., Mannion, L., & Morrison, K. (2002) *Research methods in Education*. London. Route ledge Falmer.
- Conroy, D. E., Poczwardowski, A., & Henschen, K. P. (2001). Evaluative criteria and consequences associated with failure and success for elite athletes and performing artists. *Journal of Applied Sport Psychology*, 13, 300-322.
- Corbetta, M., & Shulman, G. L. (2002). Control of goal-directed and stimulus-driven attention in the brain. *Nature reviews neuroscience*, 3(3), 201-215.
- Cottrell, N. B. (1972). Social facilitation. In C. G. McClintock (Ed.), *Experimental Social psychology*. New York: Holt, Rinehart & Winston.
- Conway, A. R., Cowan, N., & Bunting, M. F. (2001). The cocktail party phenomenon revisited: The importance of working memory capacity. *Psychonomic Bulletin & Review*, 8(2), 331-335.
- Crocker, P., & Graham, T. R. (1995). Coping by competitive athletes with performance stress: Gender differences and relationship with affect. *The Sport Psychologist*, 9, 325-338.

Candice Quilliam     A QUALITATIVE EXPLORATION OF CHOKING DURING A  
GOLF PUTTING EXPERIMENT

- Csikszentmihalyi, M. (1990). *Flow: The Psychology of optimal experience*. New York: Harper & Row.
- Dale, G. A. (1996). Existential phenomenology: Emphasizing the experience of the athlete in sport psychology research. *Sport psychologist, 10*(4), 307-321.
- Daly, J. A., Vangelisti, A. L., & Lawrence, S. G. (1989). Self-focused attention and public speaking anxiety. *Personality and Individual Difference, 10*, 903-913.
- Dandy, J., Brewer, N., & Tottman, R. (2001). Self-consciousness and performance decrements within a sporting context. *The Journal of social psychology, 141*(1), 150-152.
- Daniel, M. (1981.). The choke and what you can do about it. *Scholastic Coach, 13*, 75-79.
- Davis, K. (2007) Reclaiming women's bodies: Colonialist trope or critical epistemology? *The sociological review, 55*, 1.
- DeCaro, M. S., Thomas, R. D., Albert, N. B., & Beilock, S. L. (2011). Choking under pressure: Multiple routes to skill failure. *Journal of Experimental Psychology-General, 140*(3), 390.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational psychologist, 34*(3), 169-189.
- Elliot, A. J., & Church, M. A. (2003). A motivational analysis of defensive pessimism and self-handicapping. *Journal of Personality, 71*(3), 369-396.
- Endler, N. S. & Parker, J. D. A. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology, 58*, 844-954.
- Eysenck, M. W. (1997). *Anxiety and cognition: A unified theory*. Psychology Pr.
- Eysenck, M.W., & Calvo, M.G. (1992). Anxiety and performance: The processing efficiency theory. *Cognition and Emotion, 6*, 409-43.

Candice Quilliam     A QUALITATIVE EXPLORATION OF CHOKING DURING A  
GOLF PUTTING EXPERIMENT

- Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: attentional control theory. *Emotion, 7*(2), 336.
- Eysenck, M. W., Payne, S., & Derakshan, N. (2005). Trait anxiety, visuospatial processing, and working memory. *Cognition and Emotion, 19*, 1214 –1228.
- Fenigstein, A. (1984). Self-consciousness and the overperception of the self as a target. *Journal of Personality and Social Psychology, 47*, 860-870.
- Fenigstein, A., Scheier, M. E., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology, 43*, 522-52.
- Fitts, P. M., & Posner, M. I. (1967). Human performance. Belmont, CA: Brooks/Cole
- Furlong, P & Marsh, D (2010). 'A Skin Not a Sweater: Ontology and Epistemology in Political Science', in David Marsh and Gerry Stoker (ed.), *Theory and methods in Political Science (3rd Ed)*, Palgrave Macmillan Ltd, UK, pp. 184-211
- Gammage, K. L., Hall, C. R., & Martin-Ginis, K. A. (2004). Self-presentation in exercise contexts: Differences between high and low frequency exercisers. *Journal of Applied Social Psychology, 34*, 1638-1651.
- Geukes, K., Mesagno, C., Hanrahan, S. J., & Kellmann, M. (2012). Testing an interactionist perspective on the relationship between personality traits and performance under public pressure. *Psychology of Sport and Exercise, 13*(3), 243-250.
- Gibson, B., Sachau, D., Doll, B., & Shumate, R. (2002). Sandbagging in competition: Responding to the pressure of being the favourite. *Personality and Social Psychology Bulletin, 28*, 1119 – 1130.
- Gimming D, Huguet P, Caverni, J, P, Cury, F (2006). Choking under pressure and working memory capacity: when performance pressures reduces fluid intelligence. *Psychonomic Bulletin & Review, 13*, 1005-1010.

Candice Quilliam A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT

- Gladwell, M. (2000, August 21). The art of failure: Why some people choke and others panic. *The New Yorker*, p. 84-93.
- Gratton, C. & Jones, I. (2004). *Research methods for sport studies*. New York: Routledge.
- Gray, R. (2004). Attending to the execution of a complex sensorimotor skill: Expertise differences, choking, and slumps. *Journal of Experimental Psychology: Applied*, 10, 42–54.
- Grix, J. (2010). *The foundations of research*. Palgrave Macmillan.
- Guba, E. G. (Ed.). (1990). *the paradigm dialog*. SAGE Publications, Incorporated.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: Sage.
- Gucciardi, D. F., & Dimmock, J. A. (2008). Choking under pressure in sensorimotor skills: Conscious processing or depleted attentional resources? *Psychology of Sport and Exercise*, 9, 45-5.
- Gucciardi, D.F., Longbottom, J.L., Jackson, B., & Dimmock, J.A. (2010). Experienced golfers' perspectives on choking under pressure. *Journal of Sport & Exercise Psychology*, 32, 61-83.
- Hanin, Y. L. (1980). A study of anxiety in sports. In W. F. Straub (Ed.), *Sport psychology: An analysis of athlete behaviour* (pp. 236–249). Ithaca, NY: Movement.
- Hanin, Y. L. (1997). Emotions and athletic performance: Individual Zones of Optimal Functioning model. *European Yearbook of Sport Psychology*, 1, 29–72.
- Harris, R. N., & Snyder, C. R. (1986). The role of uncertain self-esteem in self-handicapping. *Journal of Personality and Social Psychology*, 51, 451–458.
- Hay, C. (2002). *Political analysis: a critical introduction* (Vol. 45). Basingstoke: Palgrave.

Candice Quilliam     A QUALITATIVE EXPLORATION OF CHOKING DURING A  
GOLF PUTTING EXPERIMENT

- Heaton, A. W., & Sigall, H. (1991). Self-consciousness, self-presentation, and performance under pressure: Who chokes, and when? *Journal of Applied Social Psychology*, 21, 175 – 188.
- Hill, D.M., Hanton, S., Matthews, N., & Fleming, S. (2010a). Choking in sport: A review. *International Review of Sport and Exercise Psychology*, 3, 24-39.
- Hill, D.M., Hanton, S., Matthews, N., & Fleming, S. (2010b). A qualitative exploration of choking in elite sport. *Journal of Clinical Sport Psychology*, 4, 221-240.
- Hill, D. M., Hanton, S., Fleming, S., & Matthews, N. (2009). A re-examination of choking in sport. *European Journal of Sport Science*, 9, 203-212.
- Hill, D. M., Hanton, N., Matthews, S., & Fleming, S. (2011). Alleviation of choking under pressure in elite golf: an action research study. *The Sport Psychologist*, 25 (2011), pp. 465–488.
- Hill, D. M., & Shaw, G. (2012). A Qualitative Examination of Choking under Pressure in Team Sport. *Psychology of Sport and Exercise*.
- Hudson, J., & Williams, M. (2001). Associations between self-presentation and competitive A-trait: A preliminary investigation. *Social Behaviour and Personality*, 29, 1–10.
- Hull, J. G., Reilly, N. P., & Ennis, L. C. (1990). Self-consciousness, role discrepancy, and depressive affect. *Anxiety Research*, 2(3), 197-210.
- Jackson, S. A., & Csikszentmihalyi, M. (1999). *Flow in sports*. Human Kinetics 1.
- James, B. & Collins, D. (1997). Self-presentational sources of competitive stress during performance. *Journal of Sport and Exercise Psychology*, 19, 17-35.
- Jerusalem, M. (1990). Temporal patterns of stress appraisals for high- and low-anxious Individuals. *Anxiety Research*, 3, 113-129.

- Jones, E. E., & Pittman, T. S. (1982). Toward a general theory of strategic self-presentation. In J. Suls (Ed.), *Psychological Perspectives on the Self*, 1, 231-262. Hillsdale, NJ: Erlbaum.
- Jordet, G. (2009). When superstars flop: public status and choking under pressure in international soccer penalty shootouts. *Journal of applied sport psychology*, 21, 125-130.
- Jordet, G., & Hartman. (2008). Avoidance motivation and choking under pressure in soccer penalty shootouts. *Journal of sport and exercise psychology*, 30, 450-457.
- Katare, B. J. (2013) Role of Sports Psychologist for Team Performance in Sports. *S. No Names of the Articles Page. No*, 104.
- Katz, L., & Epstein, S. (1991). Constructive thinking and coping with laboratory-induced stress. *Journal of Personality and Social Psychology*, 61, 789- 800.
- Kivimaki, M. (1995). Test anxiety, below-capacity performance, and poor test performance: Intra-subject approach with violin students. *Personality and Individual Differences*, 18, 47-55.
- Krohne, H. W. (1993). Vigilance and cognitive avoidance as concepts in coping research. In H. W. Krohne (Ed.), *Attention and avoidance: Strategies in aversiveness* (pp. 19-50). Seattle, WA: Hogrefe & Huber.
- Kurosawa, K., & Harackiewicz, J. M (1995). Test anxiety, self-awareness, and cognitive interference: A process analysis. *Journal of Personality*, 63, 932-951.
- Lavallee, D., & Robinson, H. K. (2007). In pursuit of an identity: A qualitative exploration of retirement from women's artistic gymnastics. *Psychology of Sport and Exercise*, 8, 119-141.
- Leary, M. R. & Kowalski, R, M. (1990), Impression management: a literature review and two-component model. *Psychology Bulletin*, 10(7), 34-47.

- Leary, M. R. (1992). Self-presentation processes in exercise and sport. *Journal of sport and exercise psychology*, 14, 339-351.
- Levesque, M. J., Lowe, C. A., & Mendenhall, C. (2001). Self-handicapping as a method of self-presentation: An analysis of costs and benefits. *Current Research in Social Psychology*, 6(15), 221-236.
- Lewis, B., & Linder, D. (1997). Thinking about choking? Attentional processes and paradoxical performance. *Personality and Social Psychology Bulletin*, 23, 937-944.
- Lincoln, Y. S., & Guba, E. G. (1985). Establishing trustworthiness. *Naturalistic inquiry*, 289-331.
- Logan, G. D. (1988). Toward an instance theory of automatization. *Psychological Review*, 95, 492-527.
- Lorimer, R. (2006). The relationship between self-presentational concerns and competitive anxiety: The influence of gender. *International Journal of Sport and Exercise Psychology*, 37, 317-329.
- Lundqvist, C. (2006). Competing under pressure: state anxiety, sports performance and assessment. Department of Psychology, Stockholm University, 77.
- Martin-Ginis, K. & Leary, M. (2004). Self-presentational processes in health-damaging behaviour. *Journal of Applied Sport Psychology*, 16, 59-74.
- Masters, R. S. W. (1992). Knowledge, nerves and know-how: The role of explicit versus implicit knowledge in the breakdown of a complex motor skill under pressure. *British Journal of Psychology*, 83, 343-358.
- Masters, R. S. W., Polman, R. C. J., & Hammond, N. V. (1993). "Reinvestment": A dimension of personality implicated in skill breakdown under pressure. *Personality and Individual Differences*, 14, 655-666.

- McGregor, H. A., & Elliot, A. J. (2005). The shame of failure: Examining the link between fear of failure and shame. *Personality and Social Psychology Bulletin*, 31, 218-231.
- Mesagno, C (in press). The Self Presentation model of choking under pressure: A preliminary account. *Journal of Sport and Exercise Psychology*.
- Mesagno, C., & Hill, D, M. (in press). Definition of choking in sport: Re-conceptualization and debate. *International journal of sport psychology*.
- Mesagno, C. (2006). Investigating the use of choking interventions strategies with “choking-susceptible” athletes. Unpublished doctoral dissertation, Victoria University, Melbourne, Australia.
- Mesagno, C., & Marchant, D. (2013). Characteristics of Polar Opposites: An Exploratory Investigation of Choking-Resistant and Choking-Susceptible Athletes. *Journal of Applied Sport Psychology*, 25(1), 72-91.
- Mesagno C, Marchant D, Morris T. (2009). Alleviating choking: The sounds of distraction. *Journal of Applied Sport Psychology*. 2 (1).
- Mesagno, C., & Mullane-Grant, T. (2010). A comparison of different pre-performance routines as possible choking interventions. *Journal of Applied Sport Psychology*, 22, 343-360.
- Mesagno, C., Harvey, J, T., & Janelle (2011). Self-presentation origins of choking: evidence from separate pressure manipulation. *Journal of sport and exercise psychology*, 33(3), 441-59.
- Mesagno, C., Harvey, J, T., & Janelle (2012). Choking under pressure: the role of fear of negative evaluation. *Journal of sport and exercise psychology*, 13(1), 60-68.
- Mills, C.W. (1959). *The sociological imagination*. Oxford: Oxford University Press.
- Miyake, A., Friedman, N.P., Emerson, M.J., Witzki, A.H., Howerter, A., & Wager, T.D. (2000). The unity and diversity of executive functions and their contributions to

- complex “frontal lobe” tasks: A latent variable analysis. *Cognitive Psychology*, 41, 49–100.
- Morse, J.M. (1991) Approaches to qualitative-quantitative methodological triangulation. *Nursing Research*, 40, 120123.
- Morse J.M., Barrett M., Mayan M., Olson K. & Spiers J. (2002) Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods* 1(2) 1–19.
- Murphy, R. (1994). The sociological construction of science without nature. *Sociology*, 28(4), 957-974.
- Murray, N. P., & Janelle, C. M. (2003). Anxiety and performance: a visual search examination of the processing efficiency theory. *Journal of Sport & Exercise Psychology*, 25(2), 171-187.
- Nicholls, A. R. (2007). A longitudinal phenomenological analysis of coping effectiveness among Scottish international adolescent golfers. *European Journal of Sport Sciences*, 7(3), 169-178.
- Nideffer, R. M. (1992). *Psyched to win*. Leisure Press.
- Otten, M. (2009). Choking vs. clutch. A study of sport performance under pressure. *Journal of sport and exercise psychology*, 31, 583-601.
- Pijpers, J. R., Oudejans, R. R., & Bakker, F. C. (2005). Anxiety-induced changes in movement behaviour during the execution of a complex whole-body task. *The Quarterly Journal of Experimental Psychology Section A*, 58(3), 421-445.
- Prapavessis, H., Grove, J. R., & Eklund. (2004). Self-presentational issues in competition and sport. *Journal of Applied Sport Psychology*, 16, 19-40.
- Ranney, D. (2007). Choking under pressure: environmental and personality variables. Phd-Thesis, Trinity University of San Antonio (USA).

- Reber, A. S. (1985). Dictionary of psychology. London, UK: Penguin.
- Reid, K., Flowers, P., & Larkin, M. (2005). Exploring lived experiences. *The Psychologist*, 8, 20-23.
- Reimer, B. (1996). Qualitative research and the post-positivist mind. *Bulletin of the Council for Research in Music Education*, (130), 123-126.
- Rhodewalt, F., Saltzman, A. T., & Wittmer, J. (1984). Self-handicapping among competitive athletes: The role of practice in self-esteem protection. *Basic and Applied Social Psychology*, 5, 197-210.
- Russell, K. M. (2004). On versus off the pitch: The transiency of body satisfaction among female rugby players, cricketers, and netballers. *Sex Roles*, 51(9), 561-574.
- Saboonchi, F., & Lundh, L. G. (1997). Perfectionism, self-consciousness and anxiety. *Personality and Individual Differences*, 22, 921-928.
- Sampras, (2000, July 11). Historic win for Sampras, *The Advertiser*, p. 68.
- Saunders, N.K. Thornhill, A. & Lewis, P. (2009) *Research Methods for Business Students* (5th Ed.) London: Prentice Hall.
- Scheier, M.F., & Carver, C.S. (1985). The self-consciousness scale: A revised version for use with general populations. *Journal of Applied Social Psychology*, 15, 687-699.
- Schlenker, B. R (1980). *Impression management: The self-concept, social identity, and interpersonal relations*. Monterey, Calif: Brooks/Cole.
- Schlenker, B. & Leary, M. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin*, 92, 641-669.
- Shaw, R. (2001). Why use interpretative phenomenological analysis in health psychology? *Health Psychology Update*, 10(4), 48-52.

- Smith, J. A. (1995). Semi-structured interviewing and qualitative analysis. In J. A. Smith, R. Harre & L. van Langenhove (Eds.), *rethinking methods in psychology*. London: Sage.
- Smith, J.A. (1996) 'beyond the divide between cognition and discourse: using interpretative phenomenological analysis in health psychology'. *Journal of Psychology and Health*, 11: 261–7.
- Smith, J. A. (2004). Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative Research in Psychology*, 1, 39-54.
- Smith, J.A. (2010). Interpretative phenomenological analysis. *Existential Analysis*, 21(2).
- Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research*. SAGE Publications Limited.
- Smith, J. A., Flowers, P., & Osborn, M. (1997). Interpretative phenomenological analysis and the psychology of health and illness. In L. Yardley (Ed.), *Material discourses of health and illness*. London: Routledge.
- Smith, J. A., Harré, R., & Van Langenhove, L. (1995). *Rethinking methods in psychology*. SAGE Publications Limited.
- Smith, J. A., Jarman, M., & Osborn, M. (1999). Doing interpretative phenomenological analysis. In M. Murray & K. Chamberlain (Eds.), *Qualitative health psychology: Theories and methods* (pp. 218-240). London, England: Sage.
- Smith, J. A., & Osborn, M. (2003). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative Psychology: A Practical Guide to Methods*. London: Sage.
- Smith, T. W., Snyder, C. R., & Handelsman, M. M. (1982). On the self-serving function of an academic wooden leg: test anxiety as a self-handicapping strategy. *Journal of personality and social psychology*, 42(2), 314.

- Thatcher, J., & Hagger, M. S. (2008). Psychological predictors of self-presentation concerns in sport. *Revista Brasileira de Psicologia do Esporte*, 2, 1-26.
- Tice, D. M (1991). Esteem protection or enhancement? Self-handicapping motives differ by trait self-esteem. *Journal of Personality and Social Psychology* 60:711-725.
- Van Manen, M. (1997). From meaning to method. *Qualitative health research*, 7(3), 345-369.
- Vickers, J. N., & Williams, A. M. (2007). Performing under pressure: the effects of physiological arousal, cognitive anxiety, and gaze control in biathlon. *Journal of Motivational Behaviour*, 39.
- Wang, J. (2002). *Developing and testing an integrated model of choking in sport* (Doctoral dissertation, Victoria University).
- Wang, J., Marchant, D., Morris, T., & Gibbs, P. (2004). Self-consciousness and trait anxiety as predictors of choking in sport. *Journal of Science and Medicine in Sport*, 7(2), 174-185.
- Watson, P. J., & Biderman, M. D. (1993). Narcissistic personality inventory factors, splitting, and self-consciousness. *Journal of Personality Assessment*, 61, 41-57.
- Weinberg, R. S., & Gould, D. (1995). Arousal, stress, and anxiety. In R. S. Weinberg & D. Gould (Eds.), *Foundations of sport and exercise psychology*.
- Weinberg, R. S., & Gould, D. (2003). *Foundations of sport and exercise psychology*, (3<sup>rd</sup> Ed.). Champaign, IL: Human Kinetics.
- Williams, A.M. and Elliott, D. (1999). Anxiety, expertise and visual search in karate. *Journal of Sport and Exercise Psychology*, 21, 362- 375.
- Williams, A. M., Vickers, J., & Rodrigues, S. (2002). The effects of anxiety on visual search, movement kinematics, and performance in table tennis: A test of Eysenck

- and Calvo's processing efficiency theory. *Journal of Sport & Exercise Psychology*, 24(4), 438-455.
- Willig, C. (2001). Interpretative phenomenology. *Introducing Qualitative Research in Psychology: Adventures in Theory and Method*, pp. 65–69. Milton Keynes, Bucks: Open University Press.
- Wilson, M. (2008). From processing efficiency to attentional control: a mechanistic account of the anxiety–performance relationship. *International Review of Sport and Exercise Psychology*, 1(2), 184-201.
- Wilson, M., Chattington, M., Marple-Horvat, D. E. and Smith, C. N. (2007). A comparison of self-focus versus attentional explanations of choking. *Journal of Sport and Exercise Psychology*, 29: 439–456.
- Wilson, P., & Eklund, R. C. (1998). The relationship between competitive anxiety and selfpresentational concerns. *Journal of Sport and Exercise Psychology*, 20, 81-97.
- Wilson, M., Smith, N. C., & Holmes, P. S. (2007). The role of effort in influencing the effect of anxiety on performance: Testing the conflicting predictions of processing efficiency theory and the conscious processing hypothesis. *British Journal of Psychology*, 98(3), 411-428
- Wine, J. D. (1971). Test anxiety and the direction of attention. *Psychological Bulletin*, 76, 92-10.
- Woody, S. R. (1996). Effects of focus of attention on anxiety levels and social performance of individuals with social phobia. *Journal of Abnormal Psychology*, 105(1), 61.
- Wulf, G., Shea, C., & Park, J. H. (2001). Attention and motor performance: Preferences for and advantages of an external focus. *Research Quarterly for Exercise and Sport*, 72(4), 335-344.

# **-Appendix -**

## **Appendix**

**Appendix A** – Information sheet

**Appendix B** – Informed consent

**Appendix C** – Previous experiment outline

**Appendix D** – Interview Schedule

**Appendix E** – RD1

**Appendix F** – Participants Transcripts

**Appendix G** – Participants Brief Bio

**Appendix H** – Previous study – Full Paper

## **Appendix A**

### **A QUALITATIVE EXPLORATION OF CHOKING DURING A GOLF PUTTING EXPERIMENT**

#### **Information sheet**

#### **Dear participant**

Thank you for showing an interest in taking part in this study. This sheet will explain to you a little more about the study and the procedure. Please read it carefully.

#### **What is the study about?**

For this study I would like to explore the incidences of choking during a novel task such as a putting experiment.

It is intended that the information from the study will be used to generate an extended understanding of the causes, mechanisms, and consequences of choking in sport.

Moreover, it will hopefully be used to extend sport psychology literature on the choking phenomenon.

#### **Who is taking part in the study?**

There were 4 participants that were identified to have choked in a previous experiment. All participants are from the University of Gloucestershire.

#### **What will I be asked to do?**

If you accept to take part in this study, you will be asked to complete an informed consent form; this will take approximately 3 minutes. You will then be asked to take part in a semi-structured interview to talk through your experience during the previous experiment. This process will take roughly an hour. You may be asked to be interviewed more than once if needed.

Please note that you may stop the interview at any point. Any information gathered in the study will remain confidential and your participation within the study will not be revealed.

#### **When will I do it?**

You can complete the interview at an appropriate time that suits you within a certain time period. The interview will take place in the interview room at the University of Gloucestershire, Oxstalls campus.

#### **Do I have to take part?**

No, taking part in this study is entirely your choice. Moreover, if you do choose to take part in the study, you still remain free to withdraw from it at any point and any data collected will not be used within the study.

### **What will you do with the information?**

All the information will be collected and securely stored. The recordings will be listened and transcribed by the interviewer (myself). The transcripts will not be analysed and interoperated by the interviewer. If needed some of the results will be looked through and discussed with the supervisory tutor. Any data that may reveal your identify will not be used in the final article.

### **What if I have questions?**

If you have any questions then please feel free to ask at any point before, during or after the study. Thank you for your time.

### **Experimenter contact details**

**Candice Quilliam**

**Email – [s0802605@connect.glos.ac.uk](mailto:s0802605@connect.glos.ac.uk)**

## Appendix B

### Informed consent

I have been informed that Candice Quilliam, a master's student and the University of Gloucestershire is completing a study that explores the incidences of choking during a novel task such as a golf putting.

As a student who took part in a previous experiment and has been identified as a participant that is a suitable sample for the current study, Candice has requested my involvement in the study.

I understand that I will need to complete a semi-structured interview and if needed I might need to be interviewed more than once. During the interview process I will be asked to talk about my experience during the previous study I took part in.

I understand that the results from the interview will be kept confidential and that my involvement in the study will not be revealed to anyone beyond Candice and the research team.

I have been informed that any questions regarding this study will be answered by Candice at [s0802605@connect.glos.ac.uk](mailto:s0802605@connect.glos.ac.uk)

I have read the above information and understand in full the nature of the study and my role within it. I therefore, sign this consent form knowing that I still may be able to withdraw from the study at any point.

**Participant Signature:**

**Date**

## Appendix C

### Outline of previous study

**1. Name (Lead Researcher):** Dr Denise Hill

**2. Name(s) of other research team members:** Dr Christopher Potter

**3. Title of proposed research:**

An investigation of choking under pressure and the moderating effects of physiological stress.

**4. Summary of proposed research**

The primary aim of the study is to examine the mechanism and cause of choking under pressure. In addition, the study will offer an *original* contribution to the extant literature by using a mixed method design to explore the moderating impact of physiological demands on the psychological process of choking.

**5. Research questions:**

- 1) What is the mechanism and cause of choking under pressure?
- 2) How does an increase in physiological stress moderate the process of choking under pressure?

**6. Project rationale**

Choking in sport is defined as a significant decline in performance under pressure (Hill, Hanton, Fleming, & Matthews, 2009), caused by self-focus and / or distraction (see Hill, Hanton, Matthews, & Fleming, 2010a, for a review). A recent upsurge of both quantitative and qualitative studies (e.g., Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Hill, Hanton, Matthews, & Fleming, 2010b) has enabled a more detailed understanding of the choking phenomenon to be gained. However, most of these studies have investigated choking through sports and motor skills that are not physiologically demanding (e.g., golf, basketball free throws, ten pin bowling, baseball hit). Indeed to date, there is only one empirical study (i.e., Vickers & Williams, 2007) that has investigated choking under pressure whilst their participants were performing a physically stressful task. This is a significant limitation of the literature when many sports have intense physiological and psychological demands.

In their study, Vickers and Williams (2007) measured the performance scores (shooting to a target) and the gaze control of ten elite biathletes under low and high pressure conditions. Each test was completed after the participants exercised at 55%, 70%, 85% and then 100% of their maximum oxygen uptake. Results indicated that a number of participants choked, but only when they performed under high pressure conditions after they had exercised at 100% VO<sub>2</sub> max. This was deemed to have occurred as a result of disrupted attention, for the participants had not maintained their gaze on the target during their failed performances. However, due to the experimental nature of the study, it is unclear *how* and

*why* the combination of physiological and psychological demands affected the attention of certain athletes, and caused them to choke. In addition, the use of fixed percentages of VO<sub>2</sub>max is an inappropriate means of matching exercise intensity (Gaesser & Poole, 1996), as exercise intensity ought to be prescribed in relation to lactate threshold (LT) as well as VO<sub>2</sub>max (Gaesser and Poole, 1996).

Therefore, this study aims to extend the work of Vickers and Williams (2007) by using a mixed method approach to explore the moderating impact of an appropriately prescribed physiological stress on the psychological process of choking under pressure.

### **7. Research methods (design, procedures, analysis):**

By following closely the protocol adopted by Vickers and Williams (2007), the participants (n=approx 40; members of the University of Gloucestershire sports teams) will be exposed to a 5 minute exercise task on a cycle ergometer. The work load will be set at 80% LT, 50% of the difference between LT and VO<sub>2</sub>max and 100% of the participants VO<sub>2</sub> max. Following each exercise session, the participant will complete a skilled motor task (golf putting) under low pressure conditions. After a rest period, the procedure will be repeated under high pressure conditions<sup>1</sup>. Order of exposure will be counterbalanced. The level of anxiety will be measured by the CSAI II (Burton, 1988) to ensure the pressure manipulation has been effective.

A performance decline of >40% under high pressure conditions will be considered a choke. All participants who choke, and a sample of those who have maintain their performance under the pressure, will be interviewed to gain an understanding of their thoughts, feelings and behaviours during the pressurised tasks.

The quantitative data (performance scores, and heart rate) will be compared in the high/low pressure situations using separate two-way (work load x pressure) repeated measures ANOVAs. It is intended that the qualitative data will be analysed through inductive and deductive content analysis.

---

## Appendix D

### Plan of interview schedule

- Introductions
- Format- the aim of each interview is to investigate the perceived relationship between self-presentation concerns and how this perception influences the experience of choking in sport.

#### Antecedents of Choking

- What do you consider to be a pressure situation?
- Have you ever played in a pressure situation before? When?
- How did/ do you feel about the prospect of playing in pressure situations? [thrive/enjoy/dislike]
- What is the main thing you think of when playing in a pressure situation?
- How do you feel about your surrounding environment during high pressure situations?
- Explain what you believe failure is?
- Do you think you have ever failed to achieve a goal in a competition?
- When? How did you know you had failed?
- How did this mentally make you feel?
- How did this physically make you feel?
- Do you think this failure affected future performances? [positively/negatively]
- How?
- What is the most important factor to ensure you perform your best in a competition?
- Why? How does this help you?

#### Build up to the game

- On the morning of a competition how do you feel mentally?
- Do you mentally prepare yourself at this stage? Does this help? How?
- On the morning of a competition how do you feel physically?
- Do you physically prepare yourself at this stage? Does this help? How?
- Are there any certain types of competitions/high pressure situations which tend to encourage your choking episodes in particular?
- Do you think or worry about the competition day prior to the event?
- Why? What do you think?
- How does this affect your performance do you think? [positively/negatively]
- What do you think about most? [yourself/coach/team mates/performance/supporters]
- What is it about these particular competitions/high pressure situations that encourage your choke?
- How do these events make you mentally feel?
- How do these events make you physically feel?
- How do your thoughts about these events differ from events where you do not choke?
- Do you worry about your uniform?
- If yes; why?
- Do you think this has an effect on your performance?
- Do you prefer a particular uniform to perform in?
- Why?
- Do you feel other people judge your physical appearance in a competition?
- How? Why?
- How does this make you feel?
- How does this affect your performance?
- Do you focus on your performance before the competition?
- How does this affect your performance?
- Do you mentally prepare before a competition?
- How?
- Does it work? How?
- Do you physically prepare before a competition?
- How?
- Does it work? How?
- Do you think a lot about your appearance before a competition?
- Why?
- What do you think others' expectations are of you prior to the competition?
- Who are these people?

- How do these expectations make you feel?
- Do you worry about not achieving these expectations?
- Why? How does it make you feel?
- What are your expectations of yourself and your performance prior to competition?
- Do these expectations affect your thinking prior to competition?
- Why? How?
- Before competitions do you think about your ability to perform?
- Do you think about how successful you will be at the competition?
- Do you worry about your performance with other people watching?
- Why?
- How does this affect your performance?

*Please summarise what you think / feel both mentally and physically before the competition and how this affects your performance and what your main concerns are at this time.*

### On game day

- Do your thoughts or feelings change at all as the competition approaches?
- What do you begin to think about on the day of the competition?
- How do you mentally feel on the competition day?
- How do you physically feel on the competition day?
- What impact do these feelings have on you? [positive/negative/helpful/unhelpful]
- Are these feelings more intense than those experienced over the previous days?
- Do you mentally prepare yourself at this stage?
- If yes; what do you do? Does it work?
- If no; why not? Do you think it could help you?
- Do you physically prepare yourself at this stage?
- If yes; what do you do? Does it work?
- If no; why not? Do you think it could help you?
- Is there a difference in your preparation before events you have gone onto choke compared to events in which you did not?
- Is there a difference in your thoughts or feelings before an event you have gone onto choke compared to events in which you did not?
- How did these differ?
- Are you happy with your competition uniform?
- Why?
- How does this make you feel?
- Do you think this has an impact on your performance?
- Are there any external/internal factors which influence your mental state at this stage?
- How do you think these affect your performance?
- Are there any external/internal factors which influence your physical state at this stage?
- How do you think these affect your performance?
- Do you think about the people who will be at the competition at this stage?
- Why?
- How does this make you feel?
- Do you think this has an impact on your performance? Why?
- Does your focus change in competitions where you do not choke compare to competitions where you have gone on to choke?
- How does it change?
- How does this affect your performance?
- Do you plan your day ahead of the competition?
- Why?
- Does this help?
- Do you worry about others expectations of you on a competition day?
- Are these worries more intense compared to other events?
- Does it bother you if someone makes a comment about your performance?
- Why?
- How does this affect your performance?
- Does it worry you if people are wearing uniform very similar or very different to you?
- Why?
- Does this have an effect on your performance? How?
- Do you believe you have the right skill and ability to be in the competition and to do well?

- Why?
- How does this make you feel?
- How important do you think this performance is?
- Is appearance on competition day important to you?
- Why?
- Do you worry about making a bad appearance?
- How does this make you feel?

*Please summarise what you think / feel both mentally and physically on the competition and how this affects your performance and what your main concerns are at this time.*

### Mechanism / the choke

- What exactly happens to you, as you choke?
- What are you thinking?
- How does your body react?
- Do you worry about the way you look when you choked?
- Do you think it is obvious to others?
- Does this worry you?
- What emotions are you feeling? [Are you feeling pressurised / stressful / unable to cope? For example]
- What are your achievement expectations at this point?
- What do you think others achievement expectations are you at this point?
- Do worry whether people will think differently of you after this point?
- What precisely happens to your performance?
- Do you still feel the same about your ability at the stage?
- If yes; why?
- If no; how does this make you feel?
- Do you think this will have an impact on future competitions?
- Do you have any self doubts at this stage?
- If yes; what are they?
- How do they make you feel?
- Do you feel under skilled or untalented compared to the athletes around you?
- How does this make you feel?
- Do you think this is obvious to others around you?
- Do these [thoughts / feeling / emotions] vary between choking episodes or is there a set pattern?
- If so; how?
- How do the above thoughts / emotions / processes compare to how you normally think / feel when you are playing well?
- Do you worry how you physically appear when you know you have choked?
- Do you think more about your physical appearance now? Why?
- Do you worry how you mentally appear when you know you have choked?
- If you have a particularly pressurised shot, how do you tend to feel?
- What thoughts if any, do you have before the shot?
- How do you normally respond [thoughts / feelings] if you have hit this shot particularly well?
- How do you normally respond if you have hit this shot particularly poorly?
- How do you think your focus is when you hit a shot particularly well?
- How does this focus compare to when you hit a shot particularly badly?
- Do you think it is obvious to others when you lose focus?
- How does this make you feel?
- How do you attempt to gain focus again?
- Do you think about your appearance now at this point?
- Is your appearance important to you at this point?
- How does this make you feel?
- Do / how you tend to control over your emotions during an important game?
- When you are playing, are you aware that you are building up to a choke?
- How / why?

*Please summarise what you think / feel both mentally and physically on the competition and how this affects your performance and what your main concerns are at this time.*

### Consequences of the choke

- How do you feel immediately after a choke?
- What are your thoughts?
- What are your emotions?
- How do you think you look to others?
- How does this make you feel?
- Do you think about what other people are thinking about you at this stage?
- How does this make you feel?
- Do you think this will have an effect on future performances?
- Why/ How?
- How does your body tend to feel?
- Do you think you have lost composure?
- Is this important to you?
- Does the choke affect your subsequent mental state?
- If so; how?
- Is this effect long or short lasting?
- Is this effect negative / can it be positive?
- Does the choke affect your subsequent physical state?
- If so; how?
- Is this effect long or short lasting?
- Is this effect negative/ can it be positive?
- Does the choke affect the rest of your performance on the day?
- How?
- Has a choking episode affected a future event?
- If so; how?
- Has choking affected your motivation / ambition / goals / expectations?
- Explain how / when?
- Is it obvious to you when you have choked?
- How / why?
- Do you think it is obvious to others when you have choked?
- If yes; does this concern you?
- How do you think others will interrupt your choke?
- Does this worry you?
- Do you think others have contributed to your choke?
- If yes; how? How does this make you feel?
- Do you think your environment affected your choking episode?
- If yes; how? How does this make you feel?
- Does this affect you / your future performances?

# Appendix E

## FORM RD1

### RESEARCH ADMINISTRATION

#### APPLICATION TO REGISTER FOR A RESEARCH DEGREE

#### MASTER OF RESEARCH

This form must be typewritten, and applicants should read carefully the attached Notes of Guidance. The pagination must not be altered. Once signed, the completed form and any attachments should be forwarded to the appropriate Faculty Research Director/Research Degrees Tutor/Director of Studies (Research Degrees).

- 1      **SURNAME** Quilliam                      **TITLE** Miss                                      **FIRST NAME(S)** Candice
- ADDRESS**                      39 Beechmount Close  
    Weston-super-Mare  
    BS24 9EX
- Telephone**                      07786498226
- Email address**                      candicequilliam@connect.glos.ac.uk
- 2      **SOURCE OF FEES** Self-funded
- 3      **QUALIFICATIONS** (higher education only)

Institution	Title of course (eg BA Sociology)	Main subject(s)	Classification (eg 2i)	Date of Award	Awarding Body
University of Gloucestershire	BSc. (Hons)	Sport and Exercise Science	2:1	June 2011	University of Gloucestershire

- 4      **PRESENT OCCUPATION AND PLACE OF WORK** (if any)
- N/A
- 5      **PREVIOUS EMPLOYMENT, TRAINING OR EXPERIENCE** (please give details relevant to this application, including brief details of any research or other relevant publications)
- N/A
- 6      **COLLABORATING ESTABLISHMENT** (if any; see Note 1)
- N/A
- 7      **FACILITIES** (see Note 2. Please give details of **special** facilities available for the research, e.g. laboratory, database, specialist equipment etc)
- Psychology laboratory at the Oxstalls campus
- Interview room at the Oxstalls campus
- Photocopying facilities
- 8      **TRAINING IN RESEARCH METHODS** (please specify which courses will/have be taken, or indicate if exemption has been approved by the Faculty Research Director and the grounds for this)

MR401: Philosophy and Approaches to Research Y/N  
 MR402: Methodologies and Methods (Y)N  
 MR403: Reading for Research Y/N  
 MR404: Independent Study Y/N  
 Other (please state): SEP401: Postgraduate Enquiry

Exemption (please give details):

**9 REGISTRATION** (see Note 3):

**Date of first enrolment:** 01/10/2011

(This will be used to calculate your maximum period of registration and can include the period taken for taught modules)

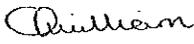
**Mode of study:** Full Time

**Hours per week** on average allowed for the programme: 37 hours

**Expected duration** of programme (in years): 1 year

**10 RESEARCH ETHICS** (see Note 4):

1. I have read and understood the University of Gloucestershire's *Research Ethics: A Handbook of Principles and Procedures*

Signed: 

2. My research will be conducted under the guidelines of (please tick):

- The University of Gloucestershire's Handbook of Research Ethics
- The University of Gloucestershire's exercise physiology laboratory procedures document
- The NHS Research Governance Framework
- The British Sociological Association
- The British Psychological Society Code of Conduct
- The British Educational Research Association
- The Market Research Society
- The Oral History Association
- Other (please state and attach copy).....

3. Does this proposal contain elements that make reference to RESC mandatory? (Y)N

(Please see *Research Ethics: A Handbook of Principles and Procedures*, Part I, section 6, and Guidelines for Working with Children and Young People: <http://resources.glos.ac.uk/currentstudents/research/ethics/index.cfm>)

4. Any specific issues concerning the ethics of this research that require particular comment are detailed in section 14 on page ..... [please enter page number]

**11 TITLE OF PROPOSED PROGRAMME OF RESEARCH**

The Perceived Relationship between Self-Presentational Concerns and Choking in Sport

**12 RESEARCH QUESTIONS**

- What is the perceived relationship between self-presentational concerns and choking in sport?
- How are self-presentational concerns perceived to influence the experience of choking in sport?

**13 RESEARCH OBJECTIVES**

- To explore the perceived relationship between self-presentational concerns and the experience of choking in sport.
- To examine how self-presentational concerns moderate choking in sport.
- To consider which type of self-presentational concerns influence choking in sport.
- To investigate the applicability of the self-presentational model of choking (Mesagno, Harvey & Janelle, 2011).

**14 PROPOSED PLAN OF WORK**

This study will examine the perceived relationship between self-presentational concerns and choking in sport and specifically, the proposed self-presentation model of choking (Mesagno, Harvey, & Janelle, 2011).

Choking in sport is familiar to many athletes, although it is perceived differently in different sports (Seyeden, Parvaneh & Abdolkazem, 2010). Baumeister (1984, p. 610) defines pressure as “any factor or combination of factors that increases the importance of performing well on a particular occasion”. Whereas, choking in sport is defined as a significant decline in performance under pressure (Hill, Hanton, Fleming & Matthews, 2009), and is thought to be caused by the attentional disturbances of self-focus and/or distraction (Hill, Hanton, Matthews & Fleming, 2010a). The dominant self-focus theories (Baumeister, 1984) include the conscious processing hypothesis (CPH; Masters, 1992), and the explicit monitoring hypothesis (EMH; Beilock & Carr, 2001). These theories state that performance deteriorates as a consequence of an athlete reinvesting explicit technical information and consciously monitoring and/or controlling a skill that normally would be performed automatically. Whereas, distraction theories (Carver & Scheier, 1981) such as the processing efficiency theory (PET; Eysenck & Calvo, 1992) maintain that under stressful conditions, the athlete will attempt to process anxiety related thoughts (self-doubt, fear of failure and fear of being negatively evaluated) alongside task relevant information. As a result, the athlete’s attentional capacity will be overloaded by task-irrelevant information, and choking may occur. Both the self-focus theories and distraction theories propose that anxiety must be present for choking to take place, so it is not surprising that in recent sport psychology literature (Beilock & Carr, 2001; Hill et al., 2009; Mesagno, Marchant & Morris, 2009) choking is regarded as an anxiety-based attentional difficulty, rather than primarily a personality-based problem; as was previously believed. This distinction is important because it suggests that the tendency to choke is not just a character flaw but a cognitive problem arising from the interaction between anxiety and attention (Mesagno et al., 2009).

Research (see Beilock & Gray, 2007) has established that the self-focus theories (e.g., EMH & CPH) offer the most likely explanation for choking in sport; although most support has arisen from experimental studies. Recent literature which has adopted more ecologically valid qualitative methods to explore the choking phenomenon, have found increasing support for the distraction theories (e.g., Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Hill, Hanton, Matthews & Fleming, 2010b; Hill, Hanton, Matthews & Fleming, 2011).

Through both qualitative and quantitative research, a range of variables have been associated consistently with an increased susceptibility to choke under pressure in sport. These variables include: self-consciousness (Baumeister, 1984), trait anxiety (Baumeister & Showers, 1986), low self-confidence (Baumeister, Hamilton & Tice, 1985), perfectionism (Gucciardi et al., 2010), negative fear of failing, evaluation apprehension and coping behaviours (Mesagno et al., 2011). However, it is the variable of self-presentational concerns which has been identified recently as the most important and central moderating factor of choking (Mesagno, Harvey & Janelle, 2011) and informs the Self-Presentation Model of choking (Mesagno et al., 2011).

The construct of self-presentation refers to behaviours aimed at conveying a positive image of the self to others (Schlenker, 1980), and has received sporadic research attention (Mesagno Harvey & Janelle, 2011). By being perceived positively, athletes maintain their self-esteem and athletic identity (Leary & Kowalski, 1990). Schlenker (1980) suggested that others’ impressions of the individual are constructed and defined by the individuals’ goals and self-beliefs in a particular situation. If an athlete is placed in a situation whereby these goals become threatened or they are not achieved, the athlete will experience self-presentational concerns (Leary, 1992). Thus, presenting the self to others in a socially desirable and constructive manner will help to minimise anxiety. According to Leary (1992), this is central to maintaining positive self-presentation; for anxiety increases when a performer perceives that presentation of the self has been threatened. A social situation such as a sporting performance will provide abundant opportunities for self-presentation concerns, in which the potential to be perceived negatively by others increases significantly. This in turn will increase social anxiety, the perceptions of threat, and being evaluated negatively (Schlenker, 1980).

To date, there has been only one study that has investigated directly self-presentational concerns as a moderating factor of choking in sport. In his study, Mesagno et al. (2011) found that the critical trigger of his participants’ choking episode were derived from self-presentational concerns. Whereby public self-consciousness (the concerns of performance and self-presentation) led to debilitating anxiety, distraction / self-focus and ultimately, choking. Recent qualitative studies have also inferred that cognitions associated with self-presentation concerns such as; evaluation apprehension, (Gucciardi et al., 2010, Hill et al., 2010b; Hill et al., 2011; Mesagno, Harvey & Janelle, 2012), fear of being negatively evaluated (Mesagno et al., 2011), are associated with choking, for they appear to heighten anxiety and increase the likelihood of a choking episode through either self-focus or distraction. However, as a result of his 2009 and 2011 study, Mesagno and colleagues (Mesagno et al., 2009; Mesagno et al., 2011) have developed a model which represents the first attempts to bring together the associated moderators of choking under pressure, with self-presentation at its core.

Mesagno’s *et al.* (2009; 2011) self-presentation model of choking is based on qualitative evidence of individuals who were likely to experience choking. Analysis of the participants’ interviews indicated a link between perceived self-presentation and choking, explained through public self-consciousness and fear of being evaluated negatively. Thus, the suggestion is that individuals who experience public self-consciousness are more likely to become aware of being observed, will be concerned about the audience’s judgments, and may feel they are the object of others’ attention. In turn, the athlete will attempt to convey a positive self-presentation to others through their performance outcome, which may lead them to “self-monitor” their techniques (i.e., self-focus) or become distracted by their self-presentation concerns. Both responses will lead to choking. Furthermore, it is argued within the model that athletes who have a predisposition towards fear of negative evaluation are far more susceptible to choke through self-presentational concerns, self-focus and / or distraction (Mesagno et al., 2011).

Thus, there is a need to examine the accuracy of the self-presentational model and its applicability to a range of pressurised contexts (Mesagno Harvey & Janelle, 2012). Moreover, they suggest that a qualitative exploration is needed to gain an insight into the factors associated with choking, and explore the relationship between self-presentation and choking in more detail. Therefore, this study will explore whether perceived self-presentational concerns are associated with choking under pressure through a qualitative method

### **Methodology**

Previous choking research has been dominated by experimental methodology (see Hill et al., 2010a for a review). However, more recent studies have adopted qualitative methods in an attempt to offer a greater insight into the antecedents, mechanisms, moderators and

consequences of choking under pressure (e.g., Gucciardi et al., 2010; Hill et al., 2010). Thus, to address the research question this study will adopt the qualitative methodology of interpretative phenomenological analysis (IPA). A study employing IPA is considered to enrich the literature of an area previously studied quantitatively (Smith, 1996). It involves trying to understand the experiences an individual has in life, how they make sense of those experiences, and what meanings those experiences hold (Smith, 2010). IPA is a relatively recent qualitative approach developed specifically within psychology and has been used widely in health, clinical and social psychology. It is becoming increasingly popular within sport psychology for researchers wish to explore in detail a psychology phenomenon (Smith, 1996). The approach is considered suitable in sport psychology research and particularly this study, as it allows information-rich participants to discuss in detail their experiences of choking in sport from their own viewpoint, whilst also explaining their perceptions regarding the role of self-presentation within their choking episodes. Additionally, Shaw (2001) argues that one of the greatest assets of IPA is the ability to reveal unanticipated phenomena. As this study is concerned with how self-presentational concerns are perceived to influence the experience of choking in sport and to examine whether self-presentational concerns moderate the susceptibility of choking in sport, the research aims and questions fall within the underlying principles of IPA. Moreover, IPA uses a "double hermeneutic" approach, in that the researcher is interpreting the participant interpretation of their choking experiences. It is this emphasis of the double hermeneutic approach that advances the researcher from simply describing the individuals experience towards a conceptual and interpretive understanding of the phenomenon

The use of a semi-structured interviews' are considered the most suitable data collection method for IPA research (Smith & Osborn, 2003). The advantages include allowing more in-depth and rich information to be collected through open ended questions and a relationship is formed between the researcher and participant (Smith, 1996). Semi-structured interviews also enable the researcher and participant to engage in mutual dialogue that allows for the conversation to flow in various directions to gain significant and unexpected information from the participant. In addition, throughout a semi-structured interview process, the researcher can somewhat control the interview environment allowing for a comfortable and relaxed atmosphere for the participant to ensure they feel at ease talking about their experiences. There are limitations of using semi-structured interviews, in that the interview process in itself is a skill that has to be acquired by the researcher to ensure the interview runs smoothly. In order to overcome this, a pilot interview should be completed. Furthermore, when interviewing participants about something personal such as their experience of choking in sport, the researcher has to empathise and understand that this may be a sensitive experience and therefore participants may find it hard to express their feelings accurately.

The initial aim of the semi-structured interviews will be to explore the relationship between self-presentational concerns and choking in sport, and to examine whether these concerns may moderate the choking experience.

(See Appendix A for an indicative interview schedule).

### ***Participants***

The participants will be recruited for this study via convenience sampling, and will involve both male (n=20) and female (n=20) students from the University of Gloucestershire (ages between 18-24). All participants will be novice golfers with no formal playing experience.

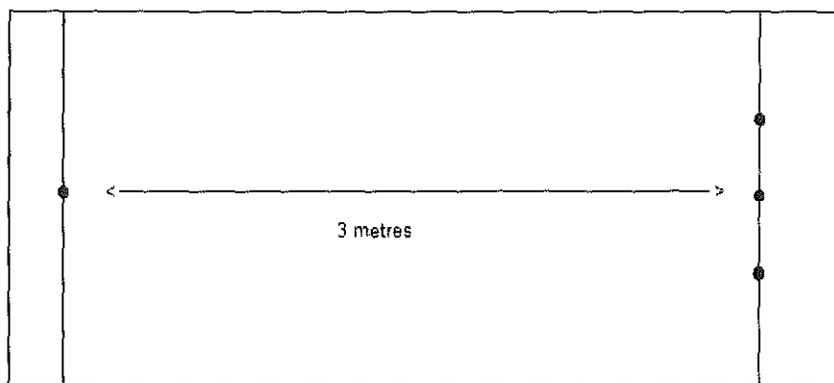
Through the experiment (see procedure) participants will be selected to be interviewed for the study if they experienced choking under pressure (>40% drop in performance score under high pressure). Choking under pressure has been investigated predominantly through the examination of any inferior performance under pressure (Hill, Hanton, Matthews & Fleming, 2010). Vickers and Williams (2007) propose that >40% drop in performance will be a choke as it demonstrates a significant reduction in performance under pressure. This process is designed to recruit information rich participants who will have experienced the phenomenon of choking.

### ***Procedure***

Convenience sampling will be used to recruit participants for the initial experimental stage of the study. Requests for participants through social networking sites will be used to recruit 40 students of the University of Gloucestershire who will have no previous golfing experience. Those participants will be given an information sheet explaining the study at hand, the protocol will be further explained and the participant will be free to ask any questions they may have. The participants will then volunteer their informed consent.

Participants will be asked to complete the golf putting task, at both high and low pressure. The order of which pressure condition the participant will be exposed to will be counterbalanced. Before each test, the participants will be given a CSAI-2 questionnaire to complete to ensure that perceived pressure had increased from low to high pressure and that the participants experienced heightened anxiety during the high pressure situations and whilst choking. It is important that anxiety is present during the high pressure situations as any performance decrement observed without anxiety cannot be due to choking (Beilock & Carr, 2001; Eysenck & Calvo, 1992; Mesagno et al., 2012).

Golf putting is a complex sensorimotor skill that is automated or "over-learned" with practice and is a potentially a pressure sensitive skill. Therefore, participants will be given the chance to putt nine shots; three to each target that are shown on the putting mat to practice their putting and to get familiarised with the procedure and equipment. The putting mat, golf putter and golf balls that will be used will be standard and therefore easy to utilize. The three targets will be set across the width of the mat; one central, with the other two targets set approximately 50cm either side, the centre target will be measure 3m from where participants will take the shot. During each test condition (High and Low pressure) participants will take a total of 15 shots. They will be asked to putt in a specific order: 1) to the left target, 2) to the centre target and 3) to right target, and to repeat this process five times. The distance from the target and where the golf ball stops will be measured (mm) using a standard tape measure then recorded. Absolute errors core (i.e., total distance from the hole) will be calculated.



**Figure 1. Example of the putting mat that will be used for the study, demonstrating where the participant will putt from and the positions of the three designated targets.**

#### *Low Pressure*

Firstly participants will be given the CSAI-2 questionnaire to complete. The low pressure phases will be similar to the familiarization phase, as participants will be told what is required of them will putt their 15 shots. During this phase only the researcher will be present and the environment will be made as comfortable as possible with the researcher adding comforting and reassuring comments.

#### *High Pressure*

Prior to the putting in the high pressure phase, specific instructions explaining the manipulations that have been made will be given to the participant,. The manipulations used for this study are as follows: participants will consistently be reminded by the researcher the importance of performing well. Furthermore, the researcher will use two video cameras; a manipulation which is argued to heighten perceived pressure, anxiety and self-consciousness (Mesagno et al., 2011), one of the cameras will be directly facing towards the participant at the opposite end of the putting mat and the second video camera will be situated in line with the participant, again facing towards them. Participants will be told that they are being recorded and the footage of their performance will be used and analysed by students in biomechanics lectures. The participants will then be given the CSAI-2 questionnaire to complete, and will be asked to complete the task (i.e., 15 putts). Absolute errors score will be calculated as normal.

For the second stage of the study, participants will be recruited via purposeful sampling. Based on previous literature (i.e., Vickers & Williams, 2007) those participants who have experienced a 40% drop in putting performance from low to under high pressure of >40%, whilst experiencing heightened anxiety will be considered to have choked. Any participants within the current study who has experienced a choke will be asked to take part in an interview. During the interview they will be asked to explore their choking experience and the potential role that self-presentational concerns have played in their choking episode. This strict inclusion criterion is to ensure that the study includes information-rich participants; which is consistent with the IPA approach (Smith 2010), and addresses the concern of Hill et al. (2010) who claim that many choking studies have mistakenly examined an underperformance rather than a choke.

Please note that stage one of the protocol will continue until the researcher gets a minimum of 5 participants who have 'choked'.

Once the participant has agreed to take part in the interview they will be given an information sheet and a consent form to complete before being asked to meet in an interview room at the University of Gloucestershire at a time and date that is convenient for both the participant and researcher. Participants will be informed that if at any point before, during and after the interview process they feel uncomfortable or uneasy they are able to withdraw from the study.

The researcher will make summery notes which will review the atmosphere surrounding the interview, including the participants' body language and the general aspects of the interview that will not be identified from the transcripts. Finally, the researcher will also keep self-reflective notes throughout the research and interview.

#### **Methods of data collection**

Firstly the participants performance scores will be collected and inputted into an excel spread sheet (Microsoft Office Excel, 2007). The 15 scores in each pressure condition will then be totalled together and inputted into another final spread sheet to identify the absolute errors score.

Both somatic and cognitive anxiety and self-confidence under both high and low pressure situations will be measured by using the CSAI-2 – competitive state anxiety inventory (Martens, Burton, Vealey, Bump & Smith, 1982). The CSAI-2 is a 27 item self-report questionnaire designed to measure three components of state anxiety (A-state); cognitive A state, Somatic A state and self-confidence. For this particular study the modified version of the CSAI-2 developed by Jones and Swain (1992) will be used. The modified version includes a direction of anxiety scale in addition to the traditional intensity of anxiety. Each participant will rate the degree to which they perceive their anxiety and whether it is facilitative (have a positive impact) or debilitative (have a negative impact) to their performance.

Those participants who meet the inclusion criteria and choked under pressure will be asked to complete semi structure interview. The use of semi-structured interviews allows the researcher to make sense of the participants' experiences and to understand the participants' point of view rather than generalise (Spinelli, 2005), this is fitting in this study as a choking episode is particularly individual and different in each athlete. This form of interviewing is the most effective way to collect data and allows the researcher and participants to engage in a discussion whereby the open style questions are adapted as a result of the participants' responses; the researcher is able to probe any interesting and important areas that may arise throughout the interview (Smith, 2010). The researcher will have a set of questions on an interview schedule to guide the interview allowing the participant to talk freely and the interview to flow in many directions. The benefit of a semi-structured interview is that it allows the interviewee to talk in depth about their opinions, with minimal direction from the researcher. However, the researcher will have a general area of interest and questions that they will pursue meanwhile trying to enter both the psychological and social world of the participants to gain and understand their interpretations (Smith, 2010). The interview questions will generally be open-ended questions as Smith and Osborn (2003) suggest that, movement away from the schedule may be valuable to and enlighten the investigation, the researcher must be in control of how much movement away from the schedule is allowed. The primary focus of the interview will be to understand and determine the perceived relationship between self-presentational concerns and choking in sport.

### ***Data Analysis***

Firstly, the descriptive performance data will be analysed to determine which participants have choked. All performance scores from both pressurised situations will be added together. Participants who have a 40% drop in performance scores from the low to the high pressure condition, and have experienced heightened anxiety across from the low to the high pressure conditions, will be classified as chokers. These 'chokers' will be the participants who will be invited to take part in the interview process.

With regards to the interview; the assumption in IPA is that the analyst is interested in learning something about the psychological world of the participant. This involves the researcher engaging in an interpretative relationship with the transcripts with the aim to understand the participants own perception of the choking phenomena and the role of self-presentation concerns. This however, is dependent on the researchers own personnel perception of choking through the process of interpretative study (Smith, 2010). Furthermore, the researcher is attempting to capture and do justice to the participants' perceived experiences in the phenomena in question (Fade, 2004) to learn about their mental and social world, participants' perceptions and experiences are not transparently available; they must be obtained through a sustained engagement with the text and a process of interpretation (Smith, 2010). Therefore, a double hermeneutic approach is involved; whereby the researcher understands her own experience, of the participants' experience.

Analysing data from a study adopting an IPA method follows a cyclical process through several stages (Smith, 2010). Firstly the researcher has the preliminary encounter with the transcripts from the semi-structured interviews from the participants who have choked. These transcripts will be re-read several times, during this process any interesting or significant that the participant said will be annotated and recorded. The second stage consists of the researcher identifying emergent themes from the text (Willig, 2001), these themes will be listed and the researcher can start to look for connections between them. Stage three involves the researcher grouping the themes together in clusters, while other themes may be a super-ordinate notion. This process is a theoretical ordering as the researcher attempts to understand the connection between themes that have and are currently emerging. All themes will consistently be checked against the transcripts to ensure they match the words of each participant. Finally, patterns that are established from the themes of the 'chokers' will be recorded and inputted into a summery table. The themes will then be ordered as to which captured most strongly the participants concerns (Smith, 2010). The researchers will then review and audit the themes, to ensure they are a true representation of the original transcript. Finally, the themes from the master table will be transformed into a narrative account (Smith, 2010).

### ***Ethics***

Ethical issues had to be considered before the investigation could begin. Prior to the investigation, all volunteers will be given an informed consent form to fill in and will be given the option to withdraw from the investigation at anytime. he participants will also be assured of confidentiality and anonymity. Anonymity will be ensured by completing interviews in private interview rooms and participants names will be kept confidential. Confidentially will be assured as participant data will be recorded and stored on a secure computer, with only the researcher and supervisor will have access to this information. Any data that may reveal the identity of the participants will not be used.

### ***Temporal plan***

Task	December	January	February	March	April	May	June	July	August	Septen
<b>Project Proposal</b>										
<b>RDI completed and Ethical Clearance</b>										
<b>Lit review Completed</b>										
<b>Methodology Completed</b>										
<b>Methodology Completed</b>										
<b>Data Collection</b>										
<b>Data Analysis</b>										
<b>Results completed</b>										
<b>Discussion completed</b>										
<b>Conclusion completed</b>										
<b>Introduction completed</b>										
<b>Reference list completed</b>										
<b>Appendices completed</b>										
<b>Abstract completed</b>										
<b>Final Draft completed</b>										

#### Facilities, Equipment, & Budget

- Interview room at the University of Gloucestershire
- Physiology laboratory at the University of Gloucestershire
- Photocopying facilities (to print consent forms and information sheets)
- Writing equipment (pen to sign consent form)
- Putting matt
- Tape measure
- Video Recorder
- Cycle ergometre
- Digital voice recorder

The budget for this study will be around £40.

## Appendix G

	<b>“Vicky”</b>	<b>“Molly”</b>	<b>“Ryannan”</b>	<b>“Tara”</b>
<b>AGE</b>	20	19	19	20
<b>COURSE STUDYING AT UNIVERSITY(FULL TIME)</b>	Sport Education	Sport Science	Sport Education	Sport and Exercise Science
<b>YEAR AT UNIVERSITY</b>	Final year	Second Year	Second Year	Final Year
<b>MAIN SPORT</b>	Netball	Netball	Netball	Netball
<b>POSITION PLAYED</b>	Goal Attack	Wing Attack	Wing Attack	Wing Attack
	Goal Shooter	Centre	Centre	Centre
			Wing Defence	Wing Defence
<b>EXPERIENCE OF GOLF</b>	None	None	None	None

2  
3 An Investigation of Choking in Sport and the Moderating  
4 Influence of Physiological Stress  
5

6  
7  
8 Denise M Hill

9 University of Gloucestershire, Gloucester, United Kingdom

10 Christopher R Potter

11 University of Gloucestershire, Gloucester, United Kingdom

12 Candice Quilliam

13 University of Gloucestershire, Gloucester, United Kingdom  
14  
15  
16  
17

18 Date of submission:  
19  
20

21 Author note:

22 Correspondence concerning this article should be addressed to Denise Hill, Faculty of Applied  
23 Sciences, University of Gloucestershire, Gloucester, GL2 9HW, United Kingdom. Tel: 00-44-  
24 (0)1242-715157. E-mail: [dhill@glos.ac.uk](mailto:dhill@glos.ac.uk).  
25  
26

27 Key words: Paradoxical performance, fatigue, attention, anxiety.

**Abstract**

1  
2 The aim of the study was to explore choking in sport and examine the moderating influence of  
3 physiological stress. Through a pragmatic mixed-methods approach, 40 novice golfers  
4 completed a low intensity (LI; 90% gas exchange threshold) and high intensity (HI; 100%  
5 V'O<sub>2</sub>max) exercise task, followed by a golf putting task under high (HP) and low pressure (LP).  
6 Performance scores were investigated using a two-way (2 x 2) pressure by intensity repeated  
7 measures ANOVA, and the difference between LP and HP performance scores of each  
8 participant (after LI and HI) was calculated to identify individuals who had choked. Six  
9 participants choked under pressure, and they each completed a semi-structured interview which  
10 explored their choking event and the perceived role of physiological stress. The study provided  
11 a further insight into the antecedents, mechanisms, consequences and moderators of choking, and  
12 found that the influence of physiological stress on choking in sport was insignificant.  
13

## Introduction

Choking in sport is a significant drop in performance standard that occurs under conditions of high perceived pressure and elevated anxiety (Hill, Hanton, Fleming, & Matthews, 2009; Mesagno & Mullane-Grant, 2010). It is caused by attentional disturbances, which are the result of self-focus and / or distraction (see Beilock & Gray, 2007; Hill, Hanton, Matthews, & Fleming, 2010a for a review). With regards to self-focus (i.e., Explicit Monitoring Hypothesis, Beilock & Carr, 2001; Consciousness Processing Hypothesis, Masters, 1992), raised anxiety levels will cause some athletes to direct their attention inwardly and reinvest their well-learned procedural motor skill. Thus, rather than process the skill automatically, the athlete consciously monitors and / or controls its explicit, technical aspects (Masters, 1992). As this places high demands on working memory, the skill is processed less efficiently and choking may occur as a result (see Jackson, Ashford, & Norsworthy, 2006). Conversely, choking through distraction is the consequence of the athlete processing task irrelevant anxiety-related thoughts (e.g., worries, fear and self-doubt) alongside task-relevant information required for performance (Eysenck & Calvo, 1992). Such dual-processing overloads working memory and the athlete can experience choking unless they respond with increased effort (Wilson, Smith, & Holmes, 2007).

Although self-focus is presented within the literature as the most likely explanation of choking, much of its supporting evidence has emerged from experimental studies in which conditions were manipulated to encourage the participant to self-focus (see Hill et al., 2010a). Indeed, more recent ecologically valid research has indicated that few athletes 'naturally' self-focus when exposed to competitive pressure (Oudejans, Kuijpers, Kooijman, & Bakker, 2011), and that distraction appears to be the most common mechanism of choking (e.g., Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Hill, Hanton, Matthews, & Fleming, 2010b, Hill & Shaw, in press). However, it has been identified that a range of personal and situational variables may encourage an athlete's susceptibility to choke and influence the mechanism through which it occurs. These include: skill level (Beilock & Carr, 2001); public self-

1 consciousness; narcissism (Geukes, Mesagno, Hanrahan, & Kellman, 2012); trait reinvestment  
2 (Masters, Polman, & Hammond, 1993); fear of negative evaluation (Mesagno, Harvey, &  
3 Janelle, 2011); coping style (Wang, Marchant, & Morris, 2004); perfectionism (Gucciardi et al.,  
4 2010); task complexity (Williams, Vickers, & Rodrigues, 2002); team cohesion (Hill & Shaw, in  
5 press); and team status / history (Jordet, 2009; Jordet, Hartman, & Vuijk, 2012).

6 To date, the choking phenomenon has been explored almost exclusively through motor tasks  
7 or sports which place modest physiological stress on the athlete (e.g., golf, soccer penalty kick,  
8 basketball free throws, ten pin bowling, and baseball batting). This is a surprising limitation to  
9 the literature, when most competitive sports are psychologically and physiologically demanding.  
10 In their recent review, Knicker, Renshaw, Oldham and Cairns (2011) concluded that  
11 physiological stress and fatigue can influence athletic performance negatively through decreased  
12 muscle functioning. However, psychological processes such as decision making are often  
13 maintained or improved when the athlete is fatigued, due to compensatory mechanisms such as  
14 increased arousal. Nevertheless, it remains unclear whether physiological stress and fatigue can  
15 influence specifically the process of choking in sport.

16 Only Vickers and Williams (2007) have explored directly the influence of physiological stress  
17 on choking. They examined the shooting performances of ten elite biathletes under low and high  
18 pressure, after they had exercised at 55%, 70%, 85% and 100% of their maximum oxygen  
19 uptake. To ensure that choking episodes were identified correctly, participants were deemed to  
20 have choked if their performance deteriorated significantly under pressure (i.e., >40% in  
21 comparison to their low pressure score). The results indicated that a number of participants  
22 choked after exercising at 100% of their maximum oxygen uptake, which through the  
23 measurement of gaze (Quiet Eye, QE) was considered to be the result of failing to maintain focus  
24 on the target. It was inferred by the authors that the physiological demands of the exercise task  
25 had distracted the participants from the task, although this assumption was not verified through  
26 follow-up testing or interviews.

1 More recently, Hill and Shaw (in press) used a qualitative approach to explore the choking  
2 experiences of athletes who competed in team sports (i.e., soccer, rugby union, hockey and  
3 cricket). Whilst they had not intended to explore the impact of physiological stress on choking,  
4 their participants identified that the physical demands of their sport and their associated fatigue,  
5 had caused distraction and increased their vulnerability to choke. Although such findings offer  
6 support for Vickers and Williams (2007), Hill and Shaw relied on the participants' retrospective  
7 recall of the choking event, and perceptions of physiological stress and fatigue. Thus, without  
8 objective data it is unclear whether a choking episode rather than other forms of performance  
9 failure (e.g., underperformance, injury, and the opponents' good play) was being recalled.  
10 Moreover, it is difficult to ascertain the intensity and extent of the physiological demands  
11 experienced by the participants during their performance failure.

12 It appears that physiological stress may have the potential to influence choking in sport,  
13 although further exploration of this relationship is warranted. However, such research would  
14 benefit from employing objective methods to ensure that the choking episode is identified  
15 correctly, and that the intensity of physiological stress placed on the athlete is established  
16 accurately. Thereafter, it would be advantageous to adopt idiographic approaches to enable a  
17 detailed examination of the choking phenomenon, including the perceived impact of  
18 physiological stress.

19 Accordingly, this study will adopt a mixed-method research design to address the research  
20 aims. Objective measures will be employed to expose participants to set physiological  
21 workloads, and to identify participants who subsequently choke under pressure whilst  
22 completing a motor skill. Thereafter, qualitative methods will be utilized to explore fully the  
23 experiences of those who choked, and reflect on the moderating impact of physiological stress.

## 24 **Method**

### 25 **Methodology**

1 The study adopts a broadly pragmatic philosophy (Pierce, 1984), for it aims to provide  
2 practical solutions to applied research questions (Rorty, 1990). That is, it aims to explore the  
3 experience of choking in sport and determine the moderating impact of physiological stress in  
4 order to provide relevant information for practitioners working with athletes. The research  
5 question is the focal point of a pragmatic study and so the methods chosen are those which can  
6 answer the research question most effectively (Creswell, 2003). Accordingly, a mixed-methods  
7 design was employed within the current study, in which qualitative and quantitative data are  
8 valued, and both contribute to the study (Taskakori & Teddlie, 1998).

### 9 **Participants**

10 40 students (23 male and 17 female) from a university in the South West region of the United  
11 Kingdom were recruited for the study. All participants were aged between 19 and 22 years of  
12 age and played a range of team sports (soccer, rugby union, netball and hockey) regularly  
13 (trained > twice a week; > one competitive game during the season) at a competitive level for the  
14 university and / or local club. All participants were novice golfers.

### 15 **Procedure**

16 An email which provided the aim, purpose and nature of the study was sent to all students  
17 enrolled on a sport-related degree programme at the selected University. A student wishing to  
18 take part in the study, and who was a novice golfer, was recruited to the study.

19 An equivalent status mixed-method approach (see Giacobbi, Poczwadowski, & Hager, 2005)  
20 was adopted to address the research aims. That is, experimental quantitative approaches were  
21 used initially to expose participants to physiological and psychological stress, in order to identify  
22 choking episodes and establish whether a relationship between physiological stress and choking  
23 in sport existed. Thereafter, qualitative methods were employed to explore in detail the  
24 experience of participants who had choked, and determine the perceived moderating influence of  
25 physiological stress. As such, the study was divided into two distinct stages.

1     **Stage one: physiological stress.** Participants received an information sheet explaining the  
2 nature of the study and details of the experimental procedures. Once informed consent was  
3 obtained, participants' health status was assessed using a questionnaire aligned closely with Olds  
4 and Norton's (1999) interpretation of the American College of Sport Medicine's Guidelines for  
5 Exercise Testing and Prescription (ACSM, 1995). Based on the information provided,  
6 participants who were free from disease and regularly active were recruited for the study.  
7 Ethical approval for the health questionnaire and the experimental protocol was granted by the  
8 University's Research Ethics Committee.

9     The procedure followed that of Vickers and Williams (2007), in which participants were  
10 required to complete a task (golf putting) in low and high pressure conditions following either  
11 low intensity (LI) or high intensity (HI) exercise. However, rather than prescribing work rates  
12 relative to  $\dot{V}O_{2max}$  alone, as was the case in Vickers and Williams (2007), the current study  
13 prescribed work rate relative to both the gas exchange threshold (GET) and  $\dot{V}O_{2max}$ . This  
14 approach is due to the overwhelming evidence that GET is a fundamental marker of exercise  
15 intensity, and that merely prescribing intensity according to  $\dot{V}O_{2max}$  is inappropriate (e.g.,  
16 Meyer, Gabriel, & Kindermann, 1999; Meyer, Lucia, Earnest, & Kindermann, 2005). As such,  
17 LI exercise was set at 90% GET, and HI was set at 100%  $\dot{V}O_{2max}$ . (GET was estimated using the  
18 V-slope technique, Beaver, Wasserman, & Whipp, 1986). A ramp test to exhaustion (with ramp  
19 rate set at  $30W \cdot min^{-1}$ ) was used to determine GET and  $\dot{V}O_{2max}$ . The subsequent exercise task  
20 was performed on an electromagnetically-braked cycle ergometer (Excalibur Sport, Lode,  
21 Groningen, the Netherlands) set in cadence independent mode, with respiratory data measured  
22 using an Oxycon Pro (Carefusion, Houten, the Netherlands).

23     **Stage one: motor skill task:** Participants exercised at either LI or HI for 5 minutes and were  
24 immediately required to complete a putting task under low (LP) and high (HP) pressure  
25 conditions. The task consisted of putting to three targets that were three meters away, and 30  
26 centimeters apart from each other. The participants completed two familiarization putts to each

1 target, and then puttied once to each target in turn, until they had completed thirty putts. The  
2 distance from target of each putt was measured, and the total absolute error score (of the 30  
3 putts) was calculated. The exercise and pressure conditions were counterbalanced and there was  
4 a minimum of one day's rest between trials.

5 **Stage one: motor task pressure manipulation.** During the LP condition, participants  
6 completed the putting task with one member of the research team present, who recorded the  
7 performance scores. Conversely, the HP condition was created in accordance with Mesagno,  
8 Harvey and Janelle (2011), who demonstrated that perceived pressure elevates when participants  
9 experience self-presentational concerns (i.e., the desire to convey a positive image to others and  
10 avoid negative evaluation, Leary, 1992). Thus, putting performance was video recorded, and  
11 participants were informed that the footage would be shown to other students at the university  
12 for the purpose of performance analysis. In addition, as perceived pressure is also increased  
13 through motivational monetary rewards (Beilock & Carr, 2001; Masters, 1992), participants  
14 were notified that the individual with the lowest absolute error score would receive £200.

15 To ascertain whether the pressure manipulation had been successful, participants completed  
16 the modified Competitive State Anxiety Inventory-2 (Jones & Swain, 1992) prior to both set of  
17 putts, which measures intensity and interpretation of cognitive anxiety, somatic anxiety and self-  
18 confidence. It was only necessary to utilize the intensity subscale during the present study  
19 however, in order to establish whether the participants' anxiety levels had risen from the LP to  
20 the HP condition. The intensity subscale consists of 27 items (9 for each subscale) and is rated  
21 on a four-point Likert scale that ranges from 1 (*not at all*) to 4 (*very much so*). Cognitive and  
22 somatic intensity were analyzed using separate two-way (2 x 2) pressure by intensity analyses of  
23 variance (ANOVA).

24 **Stage one: analysis of performance scores.** The putting performance scores were  
25 investigated using a two-way (2 x 2) pressure by intensity repeated measures ANOVA.  
26 Furthermore, the difference between the LP and HP performance scores of each participant (after

1 both LI and HI) was calculated to identify whether any individual had choked under pressure. In  
2 accordance with Vickers and Williams (2007) and the recent work of Hill and colleagues (Hill et  
3 al., 2009; Hill, et al., 2010ab; Hill & Shaw, in press), a performance that declined significantly  
4 under pressure (i.e., >40%) was considered a choke. The performance data from individuals  
5 who choked under pressure were also analyzed using a two-way pressure by intensity repeated  
6 measures ANOVA. Alpha was set at the 0.05 level.

7 **Stage two: choking and the perceived influence of physiological stress.** All participants  
8 who experienced choking under pressure during stage one of the study (after LI and / or HI),  
9 completed a semi-structured interview which lasted approximately 30 minutes. Following the  
10 procedure identified by Teddlie and Tashakkori (2009), the qualitative semi-structured  
11 interviews began with unstructured and informal questions to build rapport with the interviewee.  
12 Thereafter, the questions became directed increasingly towards addressing the research aims of  
13 the study, yet remained open ended and broad. This section of the interview examined the  
14 participants' perceived antecedents, mechanisms, consequences and moderators of their choking  
15 event. The interview concluded with highly structured questions that focused on the perceived  
16 influence of physiological stress on the choking process. As such, a holistic and detailed  
17 exploration of the choking experience was gained, whilst establishing specifically the perceived  
18 influence of physiological stress.

19 **Stage two: analysis of qualitative data.** The interview data were analyzed through content  
20 analysis, in which the meaning of data was revealed through a systematic classification process  
21 of identifying themes and patterns (Kondracki & Wellman, 2002; Krippendorff, 1980). More  
22 specifically, directed content analysis (see Potter & Levine-Donnerstein, 1999) was employed,  
23 which aims to extend the conceptual understanding of a phenomenon, whilst identifying and / or  
24 verifying relationships between pre-determined variables or concepts (Mayring, 2000). Such  
25 analytical processes were therefore used to provide a further understanding of the choking

1 experience, whilst also exploring the perceived relationship between physiological stress and  
2 choking.

3 The digitally recorded interviews were transcribed *verbatim* and the transcripts read several  
4 times by the lead author to ensure familiarity. Any relevant text was highlighted and grouped  
5 within the pre-determined overarching codes of: antecedents of choking; mechanisms of  
6 choking; consequence of choking; moderator of choking; and impact of physiological stress on  
7 choking. Subsequently, the text within each overarching code was organized and collated further  
8 into sub-categories, in order to construct an increasingly explicit representation of the choking  
9 experience.

## 10 Results

### 11 Pressure Manipulation

12 There was no significant interaction for somatic or cognitive anxiety ( $p > 0.05$ ). There were  
13 significant pressure main effects for cognitive ( $p < 0.01$ ,  $F = 42.24$ ,  $df = 1$ ) and somatic ( $p <$   
14  $0.01$ ,  $F = 33.41$ ,  $df = 1$ ) anxiety. No intensity main effect for cognitive anxiety ( $p > 0.05$ ) was  
15 found, although there was a significant intensity main effect for somatic anxiety ( $p < 0.01$ ,  $F =$   
16  $31.61$ ,  $df = 1$ ). Therefore the pressure manipulation for the HP condition was effective (see  
17 Table 1 for summary data).

18 *<Insert Table 1>*

### 19 Interactive Influence of Physiological Stress and Psychological Pressure

20 There was no significant pressure by intensity performance interaction ( $p > 0.05$ ), nor main  
21 effect for pressure ( $p > 0.05$ ), or intensity ( $p > 0.05$ ). Similarly, for the six participants deemed  
22 to have choked under pressure (>40% drop in performance), there was no significant pressure by  
23 intensity performance interaction ( $p > 0.05$ ) or main effect for intensity ( $p > 0.05$ ). There was a  
24 significant pressure main effect ( $p < 0.01$ ,  $F = 23.76$ ,  $df = 1$ ) with worse performance during the  
25 high pressure condition. Thus, physiological stress had no impact on the putting performance

1 (under LP and HP conditions) of the non-chokers and chokers, and as expected, the performance  
2 of 'chokers' was significantly lower under HP (see Table 2 for summary data).

3 <Insert Table 2>

#### 4 **Perceived Antecedents, Mechanism, Consequences and Moderators of choking in sport**

5 A summary of findings which emerged from the interviews are summarized in Table 3.

6 <Insert Table 3>

7 **Perceived antecedents of choking in sport:** All six of the interviewed participants  
8 identified *self-presentation concerns* as the primary antecedent of their choking episodes. In  
9 each case, they noted that the presence of a video camera created concerns regarding how they  
10 would be perceived by others. In turn this led to high levels of perceived pressure and anxiety  
11 which encouraged their choking. For example, Debbie suggested, "the video camera put a lot of  
12 pressure on me. I was aware that people would be watching me and looking at the way I was  
13 standing...I didn't like the thought of being critiqued. Similarly, Anna explained:

14 I was thinking... 'people will be watching this. I'm no good when people are viewing me'...I  
15 wanted to give up, because I was worried about making myself look stupid...I was  
16 embarrassed to be evaluated...I was fine when I wasn't being filmed.

17 Five of the 'chokers' identified that the *unfamiliarity* of the first testing day (regardless of  
18 whether it included the LI or HI exercise task) acted as a precursor to their choking episode, for  
19 it increased perceived pressure, cognitive anxiety (i.e., self-doubts and worry), and reduced the  
20 opportunity to prepare mentally for the pressurized situation. Sasha suggested:

21 I didn't know what it [the testing] was going to be like, so I was worried I might not be able to  
22 do it. The second time...I knew what to expect...I knew what frame of mind I needed to be  
23 in...I practiced in my head what I was going to do...so I was calmer and performed better.

24 In addition, four of the participants stated that exposure to an *individual task* had been an  
25 antecedent to their choking episode. They explained that as they competed normally within team  
26 sport, they were less able to cope with a task that exposed them to observation and evaluation.

1 Betty explained, "I am a team player, and I enjoy playing with my team under pressure... But, I  
2 am not used to being singled out and looked at... and being watched so closely".

3 Finally, three participants perceived *negative psychological momentum* as an antecedent to  
4 their choking episode. That is, they began each high pressure putting task with positive  
5 expectations, yet once performance standards began to decline, and they realized their  
6 performance goal may not be achieved (e.g., winning the prize or improving on previous  
7 performance), they experienced intense negative cognitions and affect. Consequently  
8 performance declined further and the participants choked. Carol clarified this point further, "I  
9 was expecting to do well... to improve. But when I realized it was going badly, I panicked. I  
10 got more nervous, and more stressed... I then didn't feel I could do anything about it... It all got  
11 away from me".

12 **The perceived mechanism of choking in sport:** The six participants interviewed recognized  
13 their choking episodes were associated with intense *debilitative cognitive and somatic anxiety*.  
14 With regards to cognitive anxiety, Sasha suggested, "I was worried that I wasn't going to  
15 perform well enough, and I worried how I would perform compared to other people. I was so  
16 nervous that I couldn't do anything". Likewise, Edith noted, "I was really nervous because I was  
17 being filmed and there was prize money riding on this... I doubted myself and my thoughts  
18 became negative and more intense... I ended thinking I can't do this". Similarly, Anna explained  
19 how somatic anxiety had affected her performance, "I was shaky and nervous... the palms of my  
20 hands were sweating... my body was tense... so I was hitting it [golf ball] everywhere".

21 Moreover, all six participants perceived *distraction* to be the principal mechanism of choking.  
22 In one instance, the participant focused on the potential of failure and not achieving the intended  
23 outcome. However, for the most part, the distraction consisted of self-presentational concerns.  
24 Debbie suggested, "I was thinking about the camera and being watched. I was thinking about  
25 being watched more than I was on the task". Betty reflected, "I couldn't maintain my focus. I

1 thought about letting myself down in front of people...so I was focusing on that". Conversely,  
2 Edith identified that her self presentation concerns may have led to choking through *self-focus*:

3 The anxiety made me worry about how I looked to others. I was concerned that they would  
4 be analyzing my stance and technique...so then I started to think about my stance and  
5 technique and how I was hitting the ball...all it did was cause me to massively over-shoot the  
6 putt.

7 The final mechanism of choking revealed by the interviews was *low perceived control*. Five  
8 participants indicated they felt unable to control their emotions or the execution of the skill  
9 during their choke. Debbie explored this finding further:

10 I was anxious...I was struggling to get to grip...I couldn't regain control over myself...I was  
11 hitting the balls all over the place...I lost control of the task...and it just got worse...My  
12 performance was better [during the second test] simply because I managed to control myself.

13 **Perceived consequences of choking in sport:** One participant perceived the choking  
14 experience was likely to have a *positive influence* on their future sporting performance, "well,  
15 now I know that focusing on the technique makes me choke, I will learn from this, and it will  
16 help me cope with pressure in the future". However, five of the participants interviewed were  
17 concerned the choking episode may have a *negative impact*. For instance, Betty stated that, "If I  
18 find myself in another unfamiliar situation, then I do wonder if will cope after this experience [of  
19 choking]". Likewise Anna stated, "I do think it [the choke] could affect my future performances  
20 under pressure, as if this has happened once it could happen again. I will relate back to this, and  
21 think the same will happen again". The six participants interviewed, recognized they  
22 experienced intense *negative affects* as a consequence of choking. This predominantly included  
23 disappointment, anger, frustration and unhappiness, but was mainly short-lived.

24 **Perceived moderator of choking in sport:** The first moderator noted by four of the  
25 interviewed participants was *self-confidence*. They indicated that if they were confident before  
26 the putting task began, or were able to develop confidence by starting the task successfully, they

1 were able to maintain performance under high pressure. Conversely, if they experienced low  
2 confidence before or during the pressurized task, then the likelihood of choking increased. The  
3 second perceived moderator identified was *mental skills*. More specifically, approach-coping  
4 strategies that included imagery were considered to facilitate successful performance under  
5 pressure. Debbie stated:

6 After I messed up in the first test, I practiced in my head what I was going to do...I imagined  
7 myself in the situation, coping with it, and putting better...I also tried to imagine how I felt  
8 under pressure in my normal sport and how I coped with that situation...to make me feel  
9 more comfortable. It worked well.

10 Whereas, avoidance-coping strategies (e.g., rushing through the task) were identified by three of  
11 the participants, as ineffective attempts to manage the perceived pressure and were suggested to  
12 encourage choking.

13 The final perceived moderator of choking was the *prospect of choking*. Although this was  
14 identified by only one participant, they argued it had a significant impact. Anna explained that  
15 her awareness of high profile cases of choking within golf had increased her vulnerability to  
16 choke, "golf is always in the news about choking...I was thinking to myself, 'I am doing this test  
17 in golf. If professionals choke, then so will I'. I know it sounds weird, but that influenced me  
18 massively...it was all I thinking about".

### 19 **Perceived Influence of Physiological Stress on Choking in Sport**

20 The qualitative data revealed a mixed picture with regards to the perceived impact of  
21 physiological stress on the participants choking episodes. Anna experienced choking after  
22 exercising at HI, and did recognize that high levels of arousal experienced post-exercise made it  
23 more difficult to focus on the putting task under pressure. Yet she perceived this had not  
24 impacted her performance or caused the choke. Betty also choked after completing the HI  
25 exercise condition but interestingly, suggested she had found it was easier to focus on the high  
26 pressure putting task afterwards:

1 Maybe because there was more blood flowing through my body or something...I just felt  
2 things were easier. This impacted on me positively...In the end, I wasn't getting stressed  
3 because of the exercise or my fatigued. I choked because I was not winning and had that  
4 video camera pointing at me.

5 Similarly, Debbie choked under pressure after exercising at LI and HI, with Sasha choking after  
6 exercising at LI only. Thus, both perceived that the physiological stress and associated fatigue  
7 had not influenced their choking episodes.

8 As such, the remaining two 'chokers' were the only participants within the study to perceive  
9 that physiological stress had moderated their choking episodes. In both cases, it was through  
10 distraction from the task. Firstly, Carol noted that, "I was thinking...I had just done a high  
11 intensity cycle and I am tired...and so I found it harder to focus on what I should have. For me,  
12 it did encourage the choke". Likewise Edith reflected:

13 The high intensity workout influenced my performance, as my heart was racing faster, my  
14 hands were clammy and I was more out of breath...I could hear my heart pounding in my  
15 ears. So I couldn't get control of myself. It was much harder to concentrate. This made it  
16 really hard for me to perform.

## 17 Discussion

18 The aim of the study was to explore the choking experience in detail, and examine  
19 specifically the moderating influence of physiological stress. Six participants choked whilst  
20 executing the motor skill under experimental HP conditions and through qualitative interviews  
21 identified a range of perceived antecedents, mechanisms, consequences and moderators to their  
22 choking event.

23 As expected, the introduction of the video camera and the potential of evaluation from  
24 significant others, increased the participants' self-presentational concerns. All participants  
25 identified that such concerns acted as the primary antecedent to their choking episode(s).  
26 Accordingly, this study offers further support for the self-presentation model of choking

1 (Mesagno, 2009), which proposes that certain athletes are highly motivated to portray a positive  
2 image of themselves to others and / or avoid negative evaluation. As this process can increase  
3 cognitive and somatic anxiety, it often leads to choking through self-monitoring techniques (i.e.,  
4 self-focus) or distraction. Although self-presentation was manipulated artificially within the  
5 current study, the 'real life' sporting context has considerably more potential for exposing  
6 athletes to evaluation and judgment from others (Leary, 1992). Therefore, as the participants  
7 suffered self-presentation distress within the experimental condition, it is likely they would also  
8 experience similar concerns within the natural competitive sport environment.

9 Several 'chokers' noted that a precursor to their choking episode was the unfamiliarity of the  
10 first testing condition. In their study of elite golfers, Hill et al. (2010b) also identified that  
11 choking occurred when athletes are uncertain whether they can cope with an unfamiliar situation.  
12 Nevertheless, it would be advantageous for future experimental choking research to ensure  
13 participants are adequately familiarized with the testing environment, so that the psychological  
14 demands of consecutive testing stages are consistent.

15 The participants interviewed were all involved with competitive team sport, and so it was  
16 unsurprising that the execution of an individual task was found to impact their choking. The  
17 current study therefore, concurs with Hill and Shaw (in press), who established that team sport  
18 players were more likely to choke when performing an individual skill (e.g., penalty kick), as  
19 they are exposed to the attention and evaluation of 'others'. This will raise anxiety and increase  
20 the potential of choking through self-focus and / or distraction. Thus, with self-presentational  
21 concerns continuing to appear as a critical contributor to the choking process, it is advisable to  
22 ensure that athletes (particularly of team sport) learn mental skills that manage evaluation  
23 apprehension and encourage task-related focus (see Toering, Elferink-Gemser, Jordet, Jorna,  
24 Pepping, & Visscher, 2011).

25 An interesting recent development within the literature is the suggested relationship between  
26 psychological momentum (PM) and choking (see Hill & Shaw, in press). PM is defined as the

1 athlete's perception of progressing towards his / her goal (Vallerand, Colavecchio, & Pelletier,  
2 1988) although to date, the literature remains equivocal with regards to its impact on athletic  
3 performance (e.g., Jones & Harwood, 2008). It is acknowledged however, that PM can alter  
4 cognitions, emotions and behaviors, depending on whether the individual is progressing towards  
5 (positive PM) or away (negative PM) from their goal (see Gernigon, Briki, & Eykens, 2010).  
6 Participants within the current study 'appeared' to experience negative PM prior to their choke.  
7 That is, they realized they were beginning to fail in their attempts to achieve their goal (e.g.,  
8 performing well or winning the reward), were moving further away from their goal, and then  
9 experienced negative cognitions and emotions which were perceived to encourage choking.  
10 Thus, further research which examines the impact of negative PM on choking in sport is  
11 warranted.

12 The current study revealed that the participants' perceived mechanisms of choking were  
13 consistent with the extant literature (see Hill et al., 2010a for a review). Firstly, the choking  
14 episodes of all participants were associated with intense somatic and cognitive anxiety, and  
15 therefore the need for athletes to manage, control or re-appraise their anxiety remains a priority  
16 for those vulnerable to choking.

17 Secondly, the majority of participants choked through distraction. As novice golfers at the  
18 early stage of learning (Fitts & Posner, 1967), the participants were likely to have processed the  
19 explicit, technical aspects of the putting skill through working memory. Consequently, they  
20 would have less attentional capacity to process anxiety or self-presentation-related thoughts, and  
21 were therefore vulnerable to choke through distraction (e.g., Beilock & Carr, 2001; Beilock,  
22 Carr, MacMahon, & Starkes, 2002; Gray, 2004). However, one participant indicated they may  
23 have choked through self-focus by becoming increasingly self-aware of their technique. It is  
24 probable that the individual in question was more skilled than admitted, as their LP performance  
25 was amongst the best in the study. Therefore, as a skilled performer she may have processed the  
26 putting task-related information implicitly, becoming susceptible to self-focus (Gucciardi &

1 Dimmock, 2008; Jackson et al., 2006). It does remain a possibility however, that the individual  
2 possessed personality characteristics such as private self-consciousness (Wang, Marchant,  
3 Morris, & Gibbs, 2004) or dispositional reinvestment (Jackson, Ashford, & Norsworthy, 2006)  
4 which encouraged performance failure through an internal focus when performing under  
5 pressure. Such an interactive perspective in which sporting behaviors are predicted as a result of  
6 situational determinants and their activation of personality traits, has gained increased research  
7 attention recently. For example Geukes et al. (2012) indicated that a situation with high  
8 perceived pressure, can activate the trait of high narcissism, and may reduce the potential of  
9 choking behavior. This approach appears to have scope within choking research, as it would be  
10 advantageous to establish the situational factors and personality traits that interact to increase an  
11 athlete's susceptibility to choking, and determine the mechanism through which it occurs.

12 Thirdly, this study offers further evidence for the pivotal role of perceived control within the  
13 choking experience (Hill et al., 2010b; Otten, 2009), as most participants felt unable to control  
14 their emotions and / or the outcome of the task during the choke.

15 The study has reinforced the suggestion that choking events can have a negative effect on the  
16 performer (see Hill et al., 2010b; Hill, Hanton, Matthews, & Fleming, 2011). The participants  
17 experienced negative affect (e.g., frustration, unhappiness, disappointment), although it was  
18 mainly short-lived. Most of the participants were also concerned that their future pressurized  
19 sporting performances could be affected detrimentally as a result of this choking event. It has  
20 been demonstrated that individuals who reflect on their choking experienced negatively,  
21 continue to choke with increased regularity due to lowered self-confidence and reduced  
22 perceived control (Hill et al., 2010b; Hill et al., 2011). Whereas athletes who use the experience  
23 constructively to inform future performance, appear to maintain or even improve future  
24 performances under pressure (e.g., Gucciardi et al., 2010). Thus, it would be advantageous to  
25 ascertain whether certain athletes are predisposed to perceive choking events negatively and

1 therefore remain susceptible to the phenomenon. Additionally, it would be beneficial to examine  
2 further the role of reflective practice within the alleviation of choking in sport.

3 The participant's perceived that self-confidence and the use of mental skills moderated their  
4 choking experience. Both of which have been found to influence choking within previous  
5 choking studies (e.g., Baumeister et al., 1985; Hill et al., 2011). One participant identified that  
6 her awareness of high profile golfers who had choked under pressure, increased her likelihood of  
7 choking. It is difficult to explain why the knowledge of others choking affected her own self-  
8 belief system. Although it is clear that it led to expectations of failure which inevitably  
9 encouraged a performance decrement under pressure (e.g., McKay, Lewthwaite, & Wulf, 2010)  
10 and choking (Hill et al., 201b).

11 As an aside, all six participants who choked were female, and therefore almost one third of  
12 the female sample experienced choking under pressure. Although the literature has  
13 demonstrated that male athletes choke under pressure (e.g., Mesagno et al., 2012; Hill et al.,  
14 2011), this study is the first to indicate that gender may moderate the likelihood of choking.

15 Finally, this study found little support for the moderating impact of physiological stress on  
16 choking in sport. The quantitative data found no interactive effect of physiological work load  
17 and performance under pressure for both the non-chokers and chokers. This supports the  
18 suggestion that psychological processes are often maintained or even improved when the athlete  
19 is fatigued after exposure to physiological stress (Brisswalter, Collardeau, & René, 2002). This  
20 may be due to exercise-induced arousal or increased motivation and self-efficacy after exercise  
21 (see Knicker et al., 2011) which can enhance task-related attention. Indeed, several participants  
22 within the current study recognized it had been easier to focus on the pressurized task after  
23 exercising intensively due to raised arousal levels.

24 However, this was not the case for all, with two participants suggesting that physiological  
25 stress had encouraged their choking episode as a result of distraction. This finding demonstrates  
26 the advantages of using a mixed-methods design, for the study was able to evidence that

1 physiological stress did not affect the majority. Yet it was able to identify that it may influence  
2 the choking process of a small number of participants. It is necessary to understand the general  
3 cognitive, emotional and behavioral patterns which underpin optimal and failed sporting  
4 performance. However, it is also necessary for applied researchers to adopt approaches that  
5 remain sensitive to individual differences, so that practitioners can be provided with the  
6 necessary information to intervene appropriately with their athletes. Thus, this study  
7 demonstrates that physiological stress is unlikely to affect pressurized motor performance or  
8 choking in sport. Whilst it also affords the awareness that for a small number of athletes, the  
9 physiological demands of their sport may become distracting. Hence, such athletes may benefit  
10 from psychological interventions such as biofeedback, which enhance focus through the  
11 perceived control over their heart rate and breathing frequency (see Moss & Wilson, 2012).

#### 12 **Conclusion and Summary**

13 The study utilized a mixed-method design to provide further insight into the antecedents,  
14 mechanisms, consequences and moderators of choking in sport. Moreover, it has provided  
15 evidence that physiological stress does not have a significant impact on choking in sport, but  
16 may have the potential to encourage choking through distraction in a minority of cases. The  
17 study has utilized quantitative methods to enable an objective measurement of physiological  
18 stress on performance under pressure, and identify accurately participants who had choked.  
19 Thereafter, qualitative interviews were used to gain the detailed understanding of choking in  
20 sport and the perceived role of physiological stress.

21 However, the study possesses a number of limitations which require consideration. Firstly,  
22 the sample size was small, particularly for those who experienced choking. However, as found  
23 within other studies, choking in sport is infrequent and appears to be experienced by the few. It  
24 is necessary therefore, to develop quantitative methods that identify choking susceptible athletes  
25 efficiently and effectively, in order for researchers to explore the phenomenon through larger  
26 samples.

1 Secondly, participants within this study were novice golfers, and therefore the findings cannot  
2 be used to explain choking within skilled athletes for the process differs (see Beilock et al.,  
3 2002). In addition, it could be argued that the observed choke was merely a fluctuation in  
4 performance standard associated with novice athletes. However, during the interviews there was  
5 a clear indication that the psychological processes experienced by all participants during their  
6 performance failure, were consistent with choking under pressure (e.g., debilitating anxiety, low  
7 perceived control, low self-confidence, attentional disturbances). Therefore we are confident  
8 that the choking events were identified accurately.

9 Thirdly, the protocol utilized during the study to induce physiological stress was not sport-  
10 specific. Royal et al. (2006) has suggested that running or cycling protocols might create  
11 sensory states that differ to those experienced during 'real life' sporting performance. This may  
12 explain why the current study fails to offer support for Hill and Shaw (in press), who found that  
13 the physiological demands associated with playing team sport, had impacted choking. It would  
14 be appropriate therefore, to extend the current study by adopting more 'realistic' exercise tasks.  
15 Finally, as noted previously, the familiarization protocol adopted within the study appeared  
16 insufficient. Consequently, the perceived moderating role of unfamiliarity within choking in  
17 sport may be overstated, and related primarily to the experience of the participants within this  
18 study.

19 In summary, the study extends the choking literature by advancing our understanding of the  
20 choking phenomenon, and providing evidence that the impact of physiological stress on choking  
21 in sport is marginal.

22

**References**

- 1  
2 ACSM (1995). *Guidelines for exercise testing and prescription* (5<sup>th</sup> ed.), London: Williams &  
3 Wilkins.
- 4 Beaver, W.L., Wasserman, K., & Whipp, B.J. (1986). A new method for detecting anaerobic  
5 threshold by gas exchange. *Journal of Applied Physiology*, 60, 2020-2027.
- 6 Beilock, S.L., & Carr, T.H. (2001). On the fragility of skilled performance: What governs  
7 choking under pressure. *Journal of Experimental Psychology*, 130, 701-725.  
8 doi:10.1037/0096-3445.130.4.701.
- 9 Beilock, S.L., Carr, T.H., MacMahon, C., & Starkes, J.L. (2002). When paying attention  
10 becomes counter-productive: Impact of divided versus skill-focused attention on novice  
11 and experienced performance of sensorimotor skills. *Journal of Experimental Psychology:*  
12 *Applied*, 8, 6-16. doi: 10.1037/1076-898X.8.1.6.
- 13 Beilock, S.L., & Gray, R. (2007). Why do athletes choke under pressure? In G. Tenenbaum &  
14 R.C. Eklund (Eds.), *Handbook of sport psychology* (3rd ed.), (pp. 425-444). Hoboken,  
15 New Jersey: Wiley & Sons.
- 16 Brisswalter, J., Collardeau, M., & René, A. (2002). Effects of acute physical exercise  
17 characteristics on cognitive performance. *Sports Medicine*, 32, 556-656.
- 18 Creswell, J.W. (2003). *Research design: Qualitative, quantitative, and mixed method*  
19 *approaches* (2<sup>nd</sup> ed.), Thousand Oaks, California, Sage Publications.
- 20 Edmonds, W.A., & Tenenbaum, E. (2012). *Case studies in applied psychophysiology:*  
21 *Neurofeedback and biofeedback treatments for advances in human performance*.  
22 Chichester, West Sussex, UK: John Wiley and Sons.
- 23 Eysenck, M.W., & Calvo, M.G. (1992). Anxiety and performance: The Processing Efficiency  
24 Theory. *Cognition and Emotion*, 6, 409-434. doi:10.1080/02699939208409696.
- 25 Fitts, P.M., & Posner, M.T. (1967). *Human Performance*. Belmont: CA, Brooks / Cole.

- 1 Gernigon, C., Briki, W., & Eykens, K. (2010). The dynamics of psychological momentum in  
2 sport: The role of ongoing history of performance patterns. *Journal of Sport and Exercise*  
3 *Psychology, 32*, 377-400.
- 4 Geukes, K., Mesagno, C., Hanrahan, S., & Kellman, M. (2012). Testing an interactionist  
5 perspective on the relationship between personality traits and performance under public  
6 pressure. *Psychology of Sport and Exercise, 13*, 243-250.  
7 doi: 10.1016/j.psychsport.2011.12.004.
- 8 Giacobbi, P.R., Poczwadowski, A., & Hager, P. (2005). A pragmatic research philosophy for  
9 applied sport psychology. *The Sport Psychologist, 19*, 18-31.
- 10 Gucciardi, D.F., & Dimmock, J.A. (2008). Choking under pressure in sensorimotor skills:  
11 Conscious processing or depleted attentional resources? *Psychology of Sport and*  
12 *Exercise, 9*, 45-59. doi:10.1016/j.psychsport.2006.10.007.
- 13 Gucciardi, D.F., Longbottom, J.L., Jackson, B., & Dimmock, J.A. (2010). Experienced golfers'  
14 perspectives on choking under pressure. *Journal of Sport and Exercise Psychology, 32*,  
15 61-83.
- 16 Hill, D.M., Hanton, S., Fleming, S., & Matthews, N. (2009). A re-examination of choking under  
17 pressure. *European Journal of Sports Science, 9*, 203-212.  
18 doi:10.1080/17461390902818278.
- 19 Hill, D.M., Hanton, S., Matthews, N., & Fleming, S. (2010a). Choking in sport: A review.  
20 *International Review of Sport and Exercise Psychology, 3*, 24-39.  
21 doi:10.1080/17509840903301199.
- 22 Hill, D.M., Hanton, S., Matthews, N., & Fleming, S. (2010b). A qualitative exploration of  
23 choking in elite golf. *Journal of Clinical Sport Psychology, 4*, 221-240.
- 24 Hill, D.M., & Shaw, G. (in press). A qualitative examination of choking under pressure in team  
25 sport, *Psychology of Sport and Exercise*.

- 1 Hill, D.M., Hanton, S., Matthews, N., & Fleming, S. (2011). Alleviation of choking under  
2 pressure in elite golf: An action research study. *The Sport Psychologist*, 25, 465-488.
- 3 Jackson, R.C., Ashford, J.J., & Norsworthy, G. (2006). Attentional focus, dispositional  
4 reinvestment and skilled performance under pressure. *Journal of Sport and Exercise*  
5 *Psychology*, 28, 49-68.
- 6 Jones, M.I., & Harwood, C. (2008). Psychological momentum in competitive soccer: Players'  
7 perspective. *Journal of Applied Sport Psychology*, 20, 57-72.  
8 doi:10.1080/10413200701784841.
- 9 Jordet, G. (2009). Why do English players fail in soccer penalty shootouts? A study of team  
10 status, self-regulation, and choking under pressure. *Journal of Sports Sciences*, 2, 97-107.
- 11 Jordet, G., Hartman, E., & Vuuijk, P.J. (2012). Team history and choking under pressure in  
12 major soccer shootouts. *British Journal of Psychology, General*, 2, 268-283.  
13 doi: 10.1111/j.2044-8295.2011.02071.
- 14 Knicker, A.J., Renshaw, I., Oldham, A.R.H., & Cairns, S.P. (2011). Interactive processes link the  
15 multiple symptoms of fatigue in sport competition. *Sport Medicine*, 41, 307-328.
- 16 Kondrack, N.L., & Wellman, N.S. (2002). Content analysis: Review of methods and their  
17 applications in nutrition education. *Journal of Nutrition Education and Behavior*, 34,  
18 224-230. doi: [http://dx.doi.org/10.1016/S1499-4046\(06\)60097-3](http://dx.doi.org/10.1016/S1499-4046(06)60097-3).
- 19 Krippendorff, K. (1980). *Content analysis. An introduction to its methodology*. Beverly Hills,  
20 Sage Publishers.
- 21 Leary, M.R. (1992). Self-presentational processes in exercise and sport. *Journal of Sport and*  
22 *Exercise psychology*, 14, 339-352.
- 23 Masters, R.S.W. (1992). Knowledge, knerves and know how: The role of explicit versus implicit  
24 knowledge in the breakdown of a complex sporting motor skill under pressure. *British*  
25 *Journal of Psychology*, 83, 343-358. doi:10.1111/j.2044-8295.1992.tb02446.x.

- 1 Masters, R.S.W., Polman, R.C.J., & Hammond, N.V. (1993). Reinvestment: A dimension of  
2 personality implicated in skill breakdown under pressure. *Personality and Individual*  
3 *Differences, 14*, 655-666. doi:10.1016/0191-8869(93)90113-H.
- 4 McKay, B., Lewthwaite., R., & Wulf, G. (2012). Enhanced expectancies improve performance  
5 under pressure. *Frontiers in Psychology, 3*, 8. doi: 10.3389/fpsyg.2012.00008.
- 6 Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Research, 1* (2). Retrieved  
7 from <http://www.qualitative-research.net/fqs-texte/2-00/02-00mayring-e.htm>.
- 8 Mesagno, C. (2009, June). *Choking under pressure: Toward a self-presentation explanation of*  
9 *why athletes use self-monitoring techniques*. Paper presented at the 12th World Congress  
10 of Sport Psychology, Marrakesh, Morocco.
- 11 Mesagno, C., Harvey, J.T., & Janelle, C.M. (2011). Fear of negative evaluation and choking.  
12 *Psychology of Sport and Exercise, 13*, 60-68. doi:org/10.1016/j.psychsport.2011.07.007.
- 13 Mesagno, C., & Mullane-Grant, T. (2010). A comparison of different pre-performance routines  
14 as possible choking interventions. *Journal of Applied Sport Psychology, 22*, 343-360.  
15 doi:10.1080/10413200.2010.491780.
- 16 Mesagno, C. (2009, June). *Choking under pressure: Towards a self-presentation explanation of*  
17 *why athlete use self-monitoring techniques*. Paper presented at the 12<sup>th</sup> World Congress  
18 of Sport Psychology, Marrakesh, Morocco.
- 19 Meyer, T., Gabriel, H.H.W., & Kindermann, W. (1999). Is determination of exercise intensities  
20 as percentages of V'O<sub>2</sub>max or HR max adequate? *Medicine and Science in Sports and*  
21 *Exercise, 31*, 1342-1345.
- 22 Meyer, T., Lucia, A., Earnest CP., & Kindermann W. (2005). A conceptual framework for  
23 performance diagnosis and training prescription from submaximal gas exchange  
24 parameters: Theory and application. *International Journal of Sports Medicine, 26*, S38-  
25 S48.
- 26 Olds, T.S., & Norton, K.I. (1999). *Pre-exercise health screening guide*. Leeds: Human Kinetics.

- 1 Otton, M. (2009). Choking vs. Clutch performance: A study of sport performance under  
2 pressure. *Journal of Sport and Exercise Psychology*, 31, 583-601.
- 3 Oudejans, R.D., Kuijpers, W., Koolman, C.C., & Bakker, F.C. (2011). Thoughts and attention of  
4 athletes under pressure: Skill-focus or performance worries? *Anxiety, Stress and Coping*,  
5 14, 59-73. doi: org./10.1080/10615806.2010.481331.
- 6 Pierce, C.S. (1984). Review of Nichols' A treatise on cosmology. In H.S. Thayer (Ed.), *Meaning*  
7 *in action: A critical history of pragmatism* (pp. 493-495). Indianapolis, IN: Hackett.
- 8 Potter, W.L., & Levine-Donnerstein, D. (1999). Rethinking validity and reliability in content  
9 analysis. *Journal of Applied Communication Research*, 27, 258-284.
- 10 Rorty, R. (1990), "Pragmatism as anti-representationalism", in Murphy, J.P. (Ed.), *Pragmatism:*  
11 *from Peirce to Davidson*, (pp. 1-6), Westview Press, Boulder, CO.
- 12 Royal, KA. Farrow D. Mujika I., Halson, S.L., Pyne, D., & Abernethy, B. (2006). The effects of  
13 fatigue on decision making and shooting skill performance in water polo players. *Journal*  
14 *of Sports Science*, 24, 807-815.
- 15 Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating*  
16 *quantitative and qualitative approaches in the social and behavioral sciences*. Thousand  
17 Oaks, California, Sage Publications.
- 18 Toering, T., Elferink-Gemser, M., Jordet, G., Jorna, C., Pepping, G.T., & Visscher, C. (2011).  
19 Self-regulation of practice behavior among elite youth soccer players: An exploratory  
20 observation study. *Journal of Applied Sport Psychology*, 23,110-128.
- 21 Vallerand, R. J., Colavecchio, P. G., & Pelletier, L. G. (1988). Psychological momentum and  
22 performance inferences: A preliminary test of the antecedents-consequences  
23 psychological momentum model. *Journal of Sport and Exercise Psychology*, 10, 92-108.  
24 doi:10.1080/10413200.2010.534544.

- 1 Vickers, J., & Williams, M. (2007). Performing under pressure: The effects of physiological  
2 arousal, cognitive anxiety and gaze control in biathlon. *Journal of Motor Behavior*, 39,  
3 381-394.
- 4 Wang, J., Marchant, D., & Gibbs. (2004). Self-consciousness and trait anxiety as predictors of  
5 choking in sport. *Journal of Science and Medicine in Sport*, 7, 174-185.  
6 doi.org/10.1016/S1440-2440(04)80007-0.
- 7 Wang, J., Marchant, D., & Morris, T. (2004). Coping style and susceptibility to choking. *Journal*  
8 *of Sport Behavior*, 27, 75-92.
- 9 Williams, A.M., Vickers, J., & Rodrigues, S. (2002). The effects of anxiety on visual search,  
10 movement kinematics, and performance in table tennis: A test of Eysenck and Calvo's  
11 processing efficiency theory. *Journal of Sport & Exercise Psychology*, 24, 438-455
- 12 Wilson, M., Smith, N.C., & Holmes, P.S. (2007). The role of effort in influencing the effect of  
13 anxiety on performance: Testing the conflicting predictions of Processing Efficiency  
14 Theory and the Conscious Processing Hypothesis. *British Journal of Psychology*, 98,  
15 411-428.
- 16  
17