A Qualitative Exploration of Choking in Elite Golf

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Abstract

This study explores the antecedents, mechanisms, influencing variables and consequences of choking in sport, and identifies interventions which may alleviate choking. Through the use of qualitative methods the experiences of six elite golfers who choked frequently under pressure were examined and compared with five elite golfers who excelled frequently under pressure. The perspectives of four coaches who had worked extensively with both elite golfers that had choked and excelled, were also considered. The study indicated that the participants choked as a result of distraction, which was caused by various stressors. Self-confidence, preparation and perfectionism were identified as key influencing variables of the participants' choking episodes, and the consequence of choking was a significant drop in performance which affected negatively their future performances. Process goals, cognitive restructuring, imagery, simulated training and a pre/post-shot routine were recognized as interventions which may prevent choking.

Key words: pressure, stress, paradoxical performance, distraction, self-focus.

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Choking under pressure has received increased attention within the sport psychology literature yet a lack of clarity remains with regards to its definition, antecedents (i.e., cause), mechanisms (i.e., process), influencing variables (i.e., moderators) and consequences (Hill, Hanton, Matthews, & Fleming, 2010). The number of evidence-based interventions designed specifically to prevent choking in sport therefore, continues to be limited (Mesagno, Marchant, & Morris, 2008). The purpose of this paper is to develop further an understanding of choking in sport in order to devise appropriate interventions.

Choking has been defined as, "performance decrements under pressure situations" (Baumester, 1984, p. 610) but a number of researchers have suggested that this may fail to reflect the *acute* drop in performance associated with the choking experience (e.g., Gucciardi & Dimmock, 2008; Wilson, Chattington, Marple-Horvat, & Smith, 2007). In response, alternative empirically informed definitions have been generated, including that of Hill, Hanton, Fleming, and Matthews (2009), who as a result of their study stated 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). It is accepted generally that choking occurs at a time when the athlete is highly motivated to succeed (Beilock & Gray, 2007), thus to experience performance failure at this time can threaten the athlete's ego (Baumeister, 1997), lower levels of enjoyment and increase their social anxiety (Wang, Marchant, Morris, & Gibbs, 2004a). As such, this is a subject which warrants further investigation.

The sport psychology literature has identified that choking in sport is caused by disrupted attention, but a debate exists regarding the exact mechanism (see Beilock & Gray, 2007). The mechanisms which have been proposed include the self-focus and distraction theories. The

dominant self-focus theories are the Explicit Monitoring Hypothesis (EMH; Beilock & Carr, 2001) and Consciousness Processing Hypothesis (CPH; Masters, 1992). Both maintain that pressure causes the athlete to experience high levels of self-consciousness, which in turn causes them to focus their attention inwardly (Baumeister, 1984). Such inward attention can cause the elite performer to 'reinvest' their well-learned skill, break it into its original explicit parts and process it consciously through their working memory. It is the action of attending to the explicit elements of the skill that is thought to lead to choking, as it disrupts automaticity, and the working memory is unable to manage any additional demands placed upon it (Masters & Maxwell, 2008). The EMH differs slightly from the CPH by suggesting that choking occurs when the athlete monitors the explicit components of the skill, whereas the CPH proposes that choking is a result of the athlete consciously controlling the components. It has also been suggested that it is the conscious monitoring *and* control of the skill which causes the choke (Jackson, Ashford, & Norsworthy, 2006).

Alternatively, distraction theories assert that choking is a consequence of pressure induced anxiety overwhelming working memory. The most established distraction theory is the Processing Efficiency Theory (Eysenck & Calvo, 1992), which states that the athlete will attempt to process anxiety-related thoughts (e.g., self-doubts, fear of failure and fears of being evaluated negatively) alongside information required for skill execution. As a result, task-relevant information is processed at a slower rate and choking is said to occur unless the athlete responds with increased 'effort' (Wilson, 2008; Wilson, Smith, & Holmes, 2007). However, high levels of anxiety and/or the completion of a cognitively demanding task under pressure are likely to overwhelm working memory, and create a level of processing inefficiency that can induce choking, regardless of effort (Williams, Vickers, & Rodrigues, 2002).

The clinical and social psychology literature has established self-focus attention as the primary cause of impaired performance across a range of pressurized situations, including public speaking (e.g., Daly, Vangelisti, & Lawrence, 1989; Woody, Chamblass, & Glass, 1997), academic testing (Beauchemin, Hutchins, & Patterson, 2008; Rich & Woolever, 1988), social settings (see Schultz & Heimberg, 2008), and within the workplace (Frone, Russell, & Cooper, 1995). However, this body of evidence regards self-focus as any internal attention (e.g., self-doubts and self-presentational concerns), whereas the choking in sport literature specifically refers to self-focus as inward attention that leads to the conscious monitoring and/or control of the skill (see Beilock & Gray, 2007; Hill et al., 2010). Subsequently, choking research has established that although the self-focus theories (i.e., EMH and CPH) offer the most likely explanation for choking in sport, distraction theories may explain some cases of choking, depending on the skill being performed (Beilock, Kulp, Holt, & Carr, 2004), and the ability of the performer (Beilock & Carr, 2001). Indeed, a range of variables have been identified which are thought to influence the probability of choking in sport, and determine whether it occurred though self-focus or distraction. These include: self-consciousness (Baumeister, 1984); dispositional reinvestment (Masters, Polman, & Hammond, 1993); trait anxiety (Baumeister & Showers, 1986); stereotype threat (Chalabaev, Sarrazin, Stone, & Cury, 2008); the presence of an audience (Wallace, Baumeister, & Vohs, 2005); self-confidence (Baumeister, Hamilton, & Tice, 1985); coping styles (Wang, Marchant, & Morris, 2004b); and public status (Jordet, 2009). However, further research is required to explore the precise impact each variable has on the likelihood and mechanism of choking in sport.

In order to develop theoretical understanding of choking in sport, and address the uncertainties surrounding its mechanism and influencing variables, there have been calls for a move away from the predominant experimental approach of current research, towards a more

qualitative and ecologically valid design (Gucciardi & Dimmock, 2008; Mesagno, Marchant, & Morris, 2009). In response, Hill et al. (2009) completed a qualitative examination of choking in sport which attempted to ascertain characteristics of the choking experience that could be used to identify 'chokers'. Their sample included sport psychologists with expertise in stress and performance, who perceived that the identifying characteristics of choking in sport included a significant/catastrophic decline in performance which occurred at a critical moment, and consisted of a stress response. They also noted that the athlete tended to lack mental toughness, self-confidence, functional thinking and sport / life perspective at the time of the choke, and that the experience of choking was likely to have a short and long term negative psychological consequence for the athlete. However, in order to gain further knowledge of choking in sport, they emphasized that future research needed to include athletes who have choked in real life setting.

Accordingly, this study will use the characteristics of choking in sport, as presented by Hill et al. (2009) to identify 'chokers' and through qualitative methods their choking experiences will be examined and compared to those who excelled under pressure. As an external viewpoint can facilitate a clearer understanding of a phenomenon (see Jones, Hanton, & Connaughton, 2007), the perspective of coaches who have worked at length with both chokers and those who excel under pressure will also be considered. Therefore, this approach aims to advance the choking literature by offering an exploration of the antecedents, mechanism, influencing variables and consequence of choking in sport. Furthermore, the study aims to consider the interventions used to prevent choking and encourage successful sporting performance under pressure.

Method

Participants

In order to address the aims of the study, purposive sampling was used to select three groups of information-rich participants. Group One consisted of six elite golfers (1 female & 5 males; aged 20-38 years) who were either professional or possessed a low single figure handicap (2, 4, & 5 respectively). The participants were selected from a group of elite golfers from the south west region of the UK who had volunteered for the study based on their belief that they often choked under pressure. Initial interviews were conducted to ensure that all participants had experienced choking, as characterized by Hill et al. (2009).

In order to compare the choking experience with successful performance under pressure, Group Two contained five elite golfers (3 females & 2 males; aged 20-30 years) who had excelled under pressure. Three of the participants were professional and the other two had handicaps of scratch (zero) and four respectively. A selection of golfers who had experienced recent success within national (UK) events, were invited to take part in the study. Of those who volunteered, participants were selected for the study if it was confirmed during a preliminary interview that they had excelled frequently under pressure.

Finally, Group Three included four professional golf coaches (all male, aged 35-52 yrs) who had worked extensively with elite golfers that had both excelled and choked under pressure. It was intended that the coaches would provide insights into the choking experience from a different perspective to those within Group One and Two. Particularly, it was intended that they could identify interventions that may be used to prevent choking and encourage optimal performance under pressure (cf., Jones et al., 2007). A number of UK-based coaches who had worked with elite (international and county standard) players were approached to take part in the study, but only those with experience of working with chokers *and* those that excelled under pressure were selected.

Procedure

Each participant completed an individual semi-structured interview which was considered to be an effective and sensitive method of constructing an in-depth understanding of a complex phenomenon (Mason, 2005). Group One (chokers) undertook their interviews first, followed by Group Two (excel under pressure) and finally, Group Three (coaches). This sequence ensured that any pertinent information from Group One informed the latter interviews, and enabled the direct comparison of the choking experience with successful performance under pressure.

Data Collection

The interview guide was similar for each group and consisted of five sections: i) antecedents (i.e., cause) of choking/excelling under pressure; ii) the mechanism (i.e., process) of choking/successful skill execution under pressure; iii) consequences of choking/excelling under pressure; iv) influencing variables (i.e., moderators) of choking/optimal performance under pressure, and; v) strategies used to prevent/minimize choking and encourage optimal performance. It was acknowledged that all participants within Group One had occasionally excelled under pressure, and most participants within Group Two had experienced isolated episodes of choking. Therefore, participants were encouraged to consider both choking and optimal performances under pressure, although the line of enquiry emphasized during the interview was dependent on their group.

In order to encourage recall, each participant received a preparation booklet prior to the interview which explained the purpose and structure of the interview and required them to record their recent experiences of choking and/or excelling under pressure. The interviews were designed and completed in line with Patton's (2002) recommendations by following a clear structure, allowing for flexibility when required and utilizing relevant probes for increased clarification. Each interview lasted between 80 and 150 minutes and was recorded digitally.

Data Analysis and Trustworthiness

The chosen method of data analysis reflected those employed within recent qualitative sport psychology research (e.g., Pummell, Harwood, & Lavallee, 2008; Harwood & Knight, 2009). The first author subjected the data to line-by-line coding in order to identify appropriate themes. A member of the research team verified independently that the themes were a true reflection of the data, and all participants agreed that such themes represented their experiences accurately. Trustworthiness was enhanced further by collecting and comparing data from three different participant sources (i.e., chokers, those who excelled under pressure and coaches) and by ensuring that all interviews were extensive and flexible (Patton, 2002).

Results

The results have been divided into five sections: i) antecedents of choking; ii) mechanisms of choking; iii) consequences of choking; iv) influencing variables of choking and; v) suggested interventions for the prevention of choking. In order to offer an overview of choking in sport and provide relevant comparison with optimal performance under pressure, each section will provide data from each group of participants.

Antecedents of Choking in Sport

The participants reported five main stressors as the antecedents to their choking episodes. *Event importance* emerged as the first stressor, as participants recognized that choking occurred within tournaments they perceived to be of critical importance. The chokers suggested that striving to achieve their outcome (e.g., winning and selection) or performance goals (e.g., reducing handicap) within such events would raise perceived pressure to a level that may cause choking. As stated by one choker, "You need to perform well…you think they are big, as these [critical] events come round once a year. It's the reward at the end that creates the pressure". Likewise, another participant who choked under pressure frequently explained that, "Every time I haven't won an important event…I get a little bit more pressure from it…'I have to win it this

year...it's going to be this year'. The pressure builds…and it's too much". Participants who excelled under pressure also perceived the desire to win an important event as a stressor, but adopted a task-orientated approach during such performances. As explained by one participant, "The pressure comes from me and wanting to win. But I just work on the processes of the game...that is all I think about". Indeed, all coaches within the study identified the importance of a task focused-approach during critical events, "You have to take away winning and the consequences of winning... and [just] focus on the processes".

The second stressor reported was *high expectations* as participants who choked under pressure stated that their level of self expectations and the expectations of others were key contributing factors. This was expanded upon by one participant who stated, "When I feel pressure it is mainly from the expectancy of myself. In one example [of choking], I unrealistically expected myself to win the event, when in reality, a top ten finish would have been brilliant". Another choker noted that, "People think that I should hit every green, or hit every fairway 300 yards down the middle, and sink every putt. It's a massive pressure. It's horrible". It was also revealed that the realization or fear of not being able to meet such high expectations increased the negative impact of this stressor further:

> I knew I could do it [win], everyone expects you to do it, but I was losing ground…I had dropped a few shots. I feel the pressure much more when I am making a few bogeys…and letting it get away.

The results also indicated that such high expectations often led the golfer to make continual technical changes to their swing during the season, which the coaches believed were, "Unnecessary" and ultimately, "Counter-productive". Those who excelled under pressure perceived that the reduction of expectations was critical for their success, "I used to expect much more of myself, but I have learnt to accept that you do make mistakes".

The third stressor identified as an antecedent to the participants choking was *evaluation apprehension* which was associated closely with high expectations. The chokers explained that when they felt unable to meet the high expectations of others, they feared subsequent negative evaluation. This raised levels of perceived pressure and ultimately encouraged the choke:

> I fear...making a fool out of myself...I am not thinking about my shot, I am not thinking about my swing. I am just thinking about what they are thinking. What are they going to say if I hit a bad shot...so I rush the shot, in order to get away from them.

Participants who excelled under pressure did experience evaluation apprehension, but to a lesser extent. They placed less importance on the opinion of others and during performances they attempted to focus solely on the task. For example:

> They [significant others] mean nothing to me on the course...I used to be scared of telling my dad that I failed, because he supported me so much. Now I say...that was his investment, his choice. I can't control what people say about me. So, I focus on the task, and what I work towards is for me…no one else.

It was suggested by one of the coaches that those who excel under pressure, normally perceived the evaluation of others as, "An opportunity to impress" rather than the possibility of negative appraisal.

Unfamiliarity was acknowledged as the penultimate stressor, as the participants noted that their choking could be induced by pressurized situations they had not experienced before, "It's the unexpectedness of the situation that floors you…expected pressure I can grind out, but then unexpected pressure is when I choke. If I have been in the situation before I know what to do I suppose". Those who excelled under pressure suggested that they often used simulated practice to prepare for unexpected situations during the competitive round. For example, "I put myself in

so many impossible situations... If I then put myself in that situation on the course by accident, I can say…watch me! I am going to get up and down from here".

The final stressor was identified as *overload* in which choking was caused by an accumulation of demands. One choker explained that, "It's…the importance of the day… the fact that I had already had bogeys…I was losing ground…everyone was expecting me to do well…on top of everything else. It was too much to deal with". Each of the participants who excelled under pressure attempted to reduce the number of stressors through consistent preparation and a task-orientated approach on the course. One participant explained that, "I have to have everything sorted, even down to my balls being marked...I haven't got anything to get stressed about. I will try and prepare as much as I can, to take the stress out of the day". This is in contrast to one of the chokers who described his preparation as, "Sometimes I have a late night, sometimes I don't. Sometimes I will use a trolley, and sometimes I will carry. Sometimes I will chip [during the warm up]...but there is no set routine".

Mechanisms of Choking in Sport

The participants reported six perceived mechanisms of choking in sport. The first was *distraction* and was acknowledged by all chokers as the primary mechanism of their choking experience. The data revealed that the sources of distraction varied but tended to include a fear of negative evaluation, a fear of failure, negative thoughts and previous poor shots. This was summarized by one choker who recalled that, "You can hardly swing, because you are thinking about the bad shot, or the bad shots you have played in the past. You think where the ball could go, rather than where it should go". All participants within the study acknowledged that their optimal performances were associated with maintained focus. However, the strategies used to achieve this differed between participant groups. The chokers tended to focus upon an abstract holistic swing thought such as, "Making sure I smother the ball, to get my weight through" and

"I have to extend my back and feel tension in my shoulder to get into the right position". Whereas, those who excelled under pressure normally focused on task-related external cues, such as the target or the intended shape of shot.

The second theme that emerged was *anxiety.* The chokers identified that their choking process was initiated by very high levels of cognitive and somatic anxiety, which they interpreted as negative and difficult to control. One of them admitted that, "I get so nervous...it's at the forefront of my mind...It makes me feel shaky and sick...and I can't do anything to make me less nervous. So I try and get off the tee as quickly as possible". Those who excelled under pressure also experienced competition anxiety, but two of the participants had learned to ignore it. One explained that, "I have learnt to putt when my hands are shaking...you just get on with it", and the other stated that, "I don't pay too much attention to it [anxiety]". The remaining participants who excelled, interpreted their anxiety as facilitative. For example, one commented that, "I enjoy first tee nerves, as I think of it as a positive thing. It makes me concentrate more. You want to do it even more, because you want to impress. I practice for those moments".

The third process to be identified was *perceived control* as the chokers felt that the mechanism of their choking was related to the inability to control themselves during pressurized periods of play. This was discussed by one choker who explained that, "I start to rush, and I can't stop it...I think my round is a piece of string, and I can't pull it tight, as it's loose and floppy! I have no control whatsoever". One participant who excelled described how he increased his perceived control in order perform well under pressure, "I identify things I can control...I know what my processes are to reach my goal. I just concentrate on what I can control, and forget about what I can't control. Simple". Similarly, another player who excelled under pressure explained how she enhanced her performance by increasing perceived control over her anxiety:

If I get butterflies, I visualize putting them into a tumble drier in my stomach. I pretend these butterflies are going round...then I try and turn it back the other way. So I slow them down, and turn them the other way.

The fourth perceived mechanism of choking that emerged was *inadequate coping*. Five of the six chokers within the study stated that they perceived themselves as being unable to cope with the demands of the situation during their choke. The sixth choker indicated that that she did not have the skills to cope with the demands, rather than being 'unable' to cope *per se*. The coaches also suggested that the chokers adopted inadequate coping strategies, but believed they could learn more effective approaches, "At the time [of the choke], the player is unable to cope with what's going on. But I don't believe that they can't be taught how to deal with the situation. They just go about it in the wrong way".

Self-focus emerged as the fifth process and was identified by three of the chokers as a contributing factor to their mechanism of choking. They acknowledged that during some of their choking episodes they were aware of incorrect technique, or would monitor their technique, "You get to the top [of the swing] and you are thinking, whether it is the right position...and you try and correct yourself on the downswing". However, it must be noted that choking via self-focus always occurred alongside distraction. Indeed, five of the chokers explained that although self-focus would often lead to an under-performance, it could help them maintain their score and avoid a choke. One participant who choked frequently expanded this point, "If I feel the game going, I try and play three good holes. I focus on the swing technique...which keeps it in play...I do not play well like this, but it gives me something to build on".

The final mechanism identified was *lowered expectations*. For example, one choker stated he would, "Hope for a good shot" and focus on, "Hitting the ball in the general direction of the target". Another explained that, "When I am playing well, I will get to a par 5 and think 'Okay,

rip this down the middle, and get up in two'. But then [when choking] it will be...right, 'just keep this in play". Those that excelled under pressure tended to have neutral expectations. For instance:

> Instead of saying right, I have to be positive here...I am definitely going to do this, you should have a more neutral way of thinking...I hit the putt on the right line, and at the right pace, and it doesn't go in. Why? Because there are things that happen out of my control. So positive doesn't work. Negative doesn't work. Neutral does. You focus on the skills, you complete the action.

Such a neutral approach was also identified by one of the coaches who explained that:

> I make an eagle…do I suppress that or ride the wave? The best bit of advice I got about that was…what are you talking about! It's too much thought. Neutral is the gear you should play the game in…one shot after the next and that's it.

Consequences of Choking in Sport

The results indicated that the four consequences of choking were a *significant drop in performance,* being *highly self-critical, lowered self-confidence,* and a *damaging effect on future performances*.

A significant drop in performance was considered by all participants within the study to be the consequence of choking in sport. It was described as, "Hacking...a complete dip in performance... a blow up" and, "A mess, the ball goes everywhere...I will be hitting it 60 yards right and 50 yards left". The standard of performance associated with choking was considered to differ from an under-performance. One choker elaborated this point further by explaining that, "When I am under-performing, there is still a chance it could be a good round, but shots leak away. Whereas a choke is more intense, I have nothing….I can't even think straight, so for example, I can't even remember how many shots I had taken".

A *highly self-critical* response was identified as a second consequence of choking in sport. One participant reviewed his reaction to a choke:

> I have set a benchmark that I should be able to reach. This is what I have been playing for all my life...and then I mess up…I have failed...I have been working hard for that long, and I still produce something like that...it isn't good enough.

The data illustrated that the participants who normally excelled under pressure responded positively to poor shots, including past choking experiences. For example, one participant commented that, "After I choked...I simply started working harder at my game". Another player explained that after a bad shot she used, "The four F's…**** (expletive) it. Fix it. Forget it. Focus. You just learn from your mistakes". The coaches also noted that the response to poor play differed between the choker and those that excelled. One coach clarified that, "From a coaching point of view it's…acceptance. The top golfers only hit forty percent of the shots they want to. The skill is…they accept that fact. They don't let the anger or frustrations build…it doesn't affect their next shot".

A consequence that each choker experienced from choking in sport was a *lowered self-confidence* as, "It really knocks you...you think you have failed...my confidence is so low now, that I expect to fail under pressure". The final consequence of choking was labeled a *damaging effect on future performance*. It was stated by most of the chokers that the choking experience often led to increased perceived pressure, further distraction, lowered self-confidence and a lack of enjoyment which affected detrimentally their future performances, and in both the short and long term. It was evident that when experienced regularly choking under pressure could lower levels of confidence and enjoyment to such an extent, that the participants' psychological well-being was being affected. As a result, two of the participants were considering withdrawing from the sport. One participant commented that:

> When I am playing well, I love golf and I am happy. Not just with golf but with everything in my life. [After choking] I hate golf, I hate being there…I hate myself. I want to quit, because it's so frustrating…it's becoming too hard".

Another choker explained that, "at that point in time [after repeatedly choking during a season] I was thinking that I am wasting my time. I have given up so much time for golf, and it's for nothing…I was very very miserable".

Influencing Variables of Choking in Sport

Six influencing variables of choking in sport were identified within the study, including: a) *self-confidence;* b) *preparation;* c) *perfectionism;* d) *mental toughness;* e) *self-consciousness*, and; f) *life / sport perspective*. The data illustrated that low *self-confidence* was highly related to the increased possibility of choking, which was summarized by one of the chokers, "[Choking] is when I go in thinking…'I am playing terrible, I have no chance'…My confidence is so low. When I am confident, I know I am going to make a good swing, and that is the key". Most of the chokers also required performance accomplishments during each game to replenish their confidence levels and avoid choking. This was clarified by one participant who explained that, "Regardless of my current form, I have to play the first three holes well. Then I know my game is alright, and I can move on from there".

The level of *preparation* also emerged as a particular important variable of the participants' choking. The following quote illustrates the meticulous level of preparation described by those that excelled:

> I have the best physio, personal trainer...coach. I do my stats after each game and don't just leave them in my bag. I compare them to those on the tour. Everything is to a timescale. I always work on something during my practice, I don't just hit balls...I practice until I can putt on the greens with my eyes shut. I do more than anyone else. Fact!

Such a thorough level of preparation was not adopted consistently by those participants that choked. For example, "I played the other day…and I didn't have good preparation. I drove down…just hit a few balls and went to the tee". Furthermore, one choker explained how he placed other priorities before preparation for events, "Every year, from school, college and then through University, I've pretty much stopped playing from Easter until the end of my exams. So you have a period of 8-10 weeks when I haven't picked up a club".

It also emerged that many of the participants within the study considered themselves to be perfectionists. However, those who choked were normally self-critical when they did not reach the high standards they had set for themselves. Whereas those who excelled tended to use their perfectionism to increase effort and learn from their mistakes. This point was demonstrated by one choker who explained that, "I am a perfectionist…and if I am not doing as well as I should be, it annoys me…then all sorts of things go through my head…I can't think rationally. One of the coaches encapsulated this theme by suggesting that, "Perfection is something we should all aim towards…but those that make it accept that perfect is impossible over 18 holes".

The data also indicated that participants who tended to choke appeared to have lower *mental toughness* and higher levels of *self-consciousness* than those that excelled, and on occasions failed to have a *balanced life/sport perspective*. The latter variable was identified by one choker who stated that, "If I am not playing well…after the game I can think rationally…that it's only a game…it's not the end of the world. But during performance I lack perspective, and end up beating myself up".

Suggested Interventions for the Prevention of Choking

The study revealed a range of interventions that were perceived by the participants to prevent their choking and encourage optimal performance under pressure. They included: a) a *pre and post-shot routine;* b) *cognitive restructuring;* c) the use of *imagery;* d) *simulated*

practice, and finally; e) an *abstract holistic swing 'feel'*. The interventions were used mainly to increase perceived control, concentration, confidence, and to manage anxiety. The coaches and those who excelled, identified the pre-shot routine (PSR) as a particularly important intervention. This was justified by one of the coaches:

> You give them a set routine, and they do the same all the time...your body has then been trained and you press the button and you hit the golf ball. Your mind is filled with it [the PSR]…if you keep doing that then it will block out all other things.

One of the players who excelled under pressure described how his PSR remained consistent regardless of the situation, "I have spent hours on the driving range trying to learn that [the PSR]…once you are in your PSR you forget about everything else…I always have a PSR, for every shot…regardless of the score". This is in contrast to the chokers who utilized a PSR intermittently whilst under pressure. For instance one noted that, "The PSR went out of the window in that sort of [pressurized] situation".

Participants who excelled under pressure also used a *post-shot routine* after good and bad shots. One participant described his routine:

> I use my glove as my kind of mechanism…if I hit a bad shot, then I think about it…I tap my club on the floor…and then I walk off. As soon as my Velcro comes off my glove, I forget about it…and I will always reward myself for a good shot. It is usually a tap on my leg…and I tap my putter head.

However, the use of a post-shot routine was less evident amongst the participants who choked under pressure.

The use of *cognitive restructuring* in order to frame the situation positively was used extensively by those who excelled. For example, one participant who excelled under pressure

explained how she used cognitive restructuring whilst in contention for her first professional tournament win:

> I had some negative thoughts…don't go there…um, nerves in my stomach, because the photographers had just arrived…but I said 'just enjoy this, I am good enough to be here, and hit this as far and straight as you can'…I birdied the hole. I get negative thoughts, but it's just how to turn them round into positives.

Participants who choked under pressure did not demonstrate such use of cognitive restructuring and therefore tended to remain negative during their pressurized performances, "I think more about the negatives. I would never think 'I am sure I can miss this tree and it can end up on the green'. I will be thinking, 'if it hits the tree, it could get me into more trouble".

Imagery was used by all participants within the study whilst performing well under pressure. For example, all players who excelled under pressure visualized the target and/or the shape of the shot during their PSR, and on occasions used imagery to rehearse feeling confident and in control of their performance. One player explained the perceived role of imagery within her successful performance under pressure:

> I think about the shape [of the shot]. I work on disassociation…I am just looking at the swing from a distance that would look nice, and that's really positive. I am not very good at hitting a draw, so I imagine my coach hitting a draw, and I would imagine myself being him…the body follows.

Those who choked tended to use imagery to rehearse the swing technique, but at critical moments were often unable to control the image and this would contribute to choking, "I went through my PSR, but I couldn't visualize the shot…I couldn't see myself hitting the good shot. I could only see a shot to the right on that hole".

Although all participants within the study performed optimally when they had an external task-focus (e.g., on the target), the results illustrated that those who are vulnerable to choking under pressure, perceived that the use of an *abstract holistic swing 'feel'* prevented their choke. For example, one of the chokers explained that to maintain his performance under pressure, "I make sure I focus on getting my weight through" and another choker noted how he, "Will just imagine the feeling of what the impact feels like. I won't try and see the shot, I will try and feel the movement…It stops me thinking negatively".

Finally, *simulated practice* was perceived by all of the coaches and those who excelled as a critical intervention for optimal performance under pressure. Conversely, it was not used by the participants who choked under pressure. One of the coaches summarized the role of simulated practice:

> The ones who are resilient are the ones that practice it [performing under pressure]…I actually create scenarios of pressure, and give them [the players] the tools to deal with them…then they come to that situation and it's…natural. In fact, the best actually enjoy it.

A participant who normally excelled under pressure described the impact of her simulated practice:

> When people say they were out chipping for 6 hours, I think good for you!..I can probably go out there for 15 minutes and get more out of it. I work my butt off to prepare myself for a [pressurized] situation…past experience of playing the same kind of shots in practice…means I know I can hit it close.

Discussion

The study has illustrated that the both chokers and those who excelled, experienced pressure from striving to achieve outcome or performance goals during events perceived as important. However, those participants who excelled under these conditions had adopted a task-orientated

approach (e.g., the use of process goals), whereas the chokers maintained an outcome focus (e.g., focusing on impressing others). A task-focused orientation has been associated with effective coping and an outcome-focused approach with maladaptive coping strategies such as venting and disengagement with the task (see Kristiansen, Roberts, & Abrahamsen, 2008), and therefore it is likely that this may have contributed to the subsequent choking episodes.

Evaluation apprehension also emerged as a key antecedent to the participants choking episodes. This finding contributes further to the clinical psychology literature which has provided evidence for the damaging impact of evaluation apprehension on human performance (see Gardner & Moore, 2006). In contrast however, this study has indicated that evaluation apprehension may have caused choking in sport through distraction rather than self-focus, as reported in the clinical literature. The evaluation apprehension experienced by the chokers may have been driven by social approval ego goals (see Harwood, Wilson, & Hardy, 2002), as they desired recognition of their ability from others, and wished to avoid negative judgment. Social approval goals have been associated within the adoption of outcome-focused goals (Wilson, Hardy, & Harwood, 2006) and as such, they may provide a possible explanation for why the chokers utilized outcome goals during their pressurized performance.

High expectations were also acknowledged as a key stressor that encouraged choking, yet the sport psychology literature has shown that for the most part, challenging goals can improve performance standards (see Kingston & Wilson, 2009). Critically however, the chokers within this study did not possess positive expectancies of achieving their goal, and were therefore likely to suffer detrimental performance effects (Bueno, Weinberg, Fernandez-Castro, & Capdevila, 2008). Those who excelled under pressure had learnt to lower their expectations to a level they were confident of attaining, which reinforces the need for elite performers to adopt appropriate goals (Burton & Naylor, 2002).

The chokers used predominantly avoidance strategies (e.g., rushing through shots) to cope with unfamiliar or an overload of stressors within their competitive environment, which was not the case for those that excelled, who tended to reduce or manage the stressors through problem-focused coping (e.g., process goals and preparation). These results support the recent work of Jordet (Jordet, 2009; Jordet & Hartman, 2008) who also found that an avoidance-approach often led to choking during highly pressurized soccer penalty shoot-outs. Although conversely, Wang et al. (2004b) found that an avoidance approach alleviated choking episodes and encouraged optimal performance under pressure. Such discrepancies may be explained through research conducted within clinical psychology, for it has been found that avoidance strategies may offer individuals emotion regulation, which in the short-term can encourage positive behavioral outcomes (e.g., Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Therefore, to fully appreciate the role of an avoidance-coping style within choking in sport, further research which is longitudinal in nature is required.

The participants reported very high levels of cognitive and somatic anxiety during their choking episodes, which confirms the role of intense anxiety within the choking mechanism (see Beilock & Gray 2007). The results also demonstrated that the chokers interpreted their anxiety negatively, which is likely to stem from the lack of perceived control they experienced during choking episodes. Such debilitative interpretation of their anxiety is likely to contribute to their performance failure (Hanton, Neil, & Mellalieu, 2008). Conversely, the participants who excelled under pressure generally experienced less anxiety, but were also able to control their anxiety symptoms and interpret them positively. This has clear implications for practitioners, as attempting to increase perceived control and encourage a facilitative appraisal of anxiety may alleviate choking.

The data indicated that the participants within this study have choked through distraction. Those who self-focused and therefore monitored or controlled their technique during skill execution, did experience an under-performance, but they did not choke unless this was accompanied by distraction. This finding is in contrast to the choking literature which has identified the self-focus theories (i.e., EMH and CPH) as the most plausible explanations of choking, especially amongst elite sports performers (e.g., Beilock, Carr, MacMahon, & Starkes, 2002; Beilock, Jellison, Rydel, McConnel, & Carr, 2006, Gray, 2004). A possible explanation for this finding is that a difference appears to exist between the underlying cognitive processes of the participants' choke compared to their under-performance. Hill et al. (2009) identified that many choking studies have examined 'small' performance decrements when their subject were exposed to pressure. Therefore, it can be tentatively suggested that such research may have been exploring an under-performance rather than a choke.

Another explanation is that the qualitative method used to collect data within this study was vulnerable to the biases of recall and 'expert induced amnesia' (see Beilock, Wierenga, & Carr, 2003). This remains a possibility, especially as precise recollection of complex cognitive processes associated with self-focus could prove problematic. However, memories of important life events (such as success and failure in important sporting events) are considered more resilient to time (Gould, Eklund, & Jackson, 1993) and expert induced amnesia tends to affect successful performances. Thus the participants' recollection of their choking experience may have remained unaffected.

In line with the proposal of Hill et al. (2009), the study has identified that the consequence of choking is a significant drop in performance, rather than *any* performance decrement. However, it is crucial that future research considers whether this 'significant' drop can be quantified and distinguished objectively from an under-performance. In addition, the choke is

likely to affect future performances detrimentally, both in the short and long term because of increased perceived pressure, further distraction, lowered self-confidence and a lack of enjoyment. The chokers responded to a choking episode with a high level of self-criticism, which is likely to have either compounded or caused the negative impact on future performances and their psychological well-being. Indeed, the clinical psychology literature has established that such negative post-event processing is often associated with raised anxiety about future performance, the increased potential of self-focused attention, lowered mood, and subsequent under-performance (Mor & Winquist, 2002). The participants who excelled under pressure were less self-critical after poor performances as they accepted mistakes and used negative experiences to improve their game. Reflecting positively on past negative experiences in this manner has been associated with positive anxiety interpretation (Hanton, Cropley, & Lee, 2009) and therefore, interventions that encourage the chokers to accept poor performances as an essential element of the learning process could prove beneficial to them and their performance.

The study also supports the findings of previous research (e.g., Baumeister 1984; Baumeister, et al., 1985; Hill et al., 2009) that low self-confidence, low mental toughness, high self-consciousness, and an imbalanced life/sport perspective are likely to encourage choking in sport. However, this is the first study to identify perfectionism and preparation as possible influencing variables. Perfectionism is considered to have adaptive and maladaptive characteristics (Frost, Marten, Lahart, & Rosenblate, 1990), depending on how imperfection is perceived by the individual. For instance, it has been suggested that athletes who are unable to accept mistakes or control their negative response to imperfection, tend to experience anxiety, lowered self-confidence (Stoeber, Otto, Pescheck, Becker, & Stoll, 2007) and adopt outcome orientated goals (Stoeber, Stoll, Pesheck, & Otto, 2008), which are all maladaptive responses demonstrated by the chokers within this study. There is also evidence within the clinical

psychology literature that perfectionism can influence enjoyment (e.g., Zinsser, Bunker, & Williams, 1998), anxiety (e.g., Flett, Hewitt, Endler, & Tassone, 1994), distraction (e.g., Magnusson, Nias, & White, 1996), self-focus (Flett, et al., 1994), self-confidence (e.g., Hewitt & Flett, 1996) and performance (Flett, Hewitt, Blankstein, & Mosher, 1991) within non-sporting settings and therefore, its role within the choking population warrants further consideration.

Preparation was also identified as a dominant variable of choking in sport, as those who excelled under pressure normally prepared meticulously for the events they considered to be important. Those who choked often felt unprepared for tournaments, despite (in many cases) having adequate time and opportunity to prepare. It is possible that this may indicate self-handicapping tendencies (see Prapavessis, Grove, & Eklund, 2004) in which the chokers were under-preparing in order to protect their ego, if they fail. Additional research is required to examine this suggestion further, for fear of failure, raised anxiety and high levels of self-consciousness have all been associated with increased self-handicapping behavior (Saboonchi & Lundh, 1997), and are all behaviors exhibited by the chokers within this study.

Various interventions were used by the participants within the study to enhance self-confidence, increase perceived control, improve focus and manage anxiety in order to achieve optimal performance. The PSR was perceived to be the most effective strategy, which tended to contain imagery and was used consistently throughout pressurized performances by those who excelled. Those who choked used an abstract holistic swing feel within their PSR to maintain their performance under pressure, although they used the PSR intermittently whilst under-performing and choking. A PSR and the use of an abstract holistic swing 'feel' have been demonstrated to have a beneficial impact on choking (Gucciardi & Dimmock, 2008; Mesagno et al., 2008), and therefore chokers should be encouraged to adopt a PSR with an abstract holistic swing feel throughout their pressurized performances. However, participants who excelled under

pressure exhibited an external task-focus (e.g., on the target) and did not posses any thoughts regarding the swing during their PSR. As an external task focused-approach is associated with optimal performance under pressure (e.g., Bell & Hardy, 2009), the chokers could be encouraged to use a PSR with an abstract holistic swing feel to prevent choking, but ultimately should aim to turn their attention externally, in order to enhance their performance further.

The study has identified that the choker could also benefit from using process or task goals during performance rather than outcome goals. Participants who excelled under pressure identified and focused on the processes required to achieve their goal (e.g., preparation, completion of a pre-shot routine, learning from mistakes), which encouraged neutral expectations, controlled their emotions, and increased their level of perceived control. The use of process goals to encourage an optimal psychological state and enhance golf performance under pressure has been identified elsewhere in the literature (e.g., Kingston & Hardy, 1997), and therefore provides a suggested intervention for the practitioner working with chokers.

Finally, the study has identified that psychological and physical skills required for successful performance under pressure should be practiced within simulated pressurized conditions. Participants who excelled under pressure acknowledged this strategy to be critical to their success, yet it was not utilized by any of the chokers within the study. As simulated practice has been associated with the development of mental toughness (Connaughton, Wadey, Hanton, & Jones, 2008) and enhanced concentration (see Moran, 2009), it is important that chokers consider implementing this intervention.

Limitations and future directions

This study has contributed to and challenged the extant choking in sport literature, yet it is essential that further research verifies and extends its findings. The information-rich participants examined within this study provided a thorough insight into their choking experience, but it

remains necessary to investigate the choking phenomenon through a larger sample and across a range of sports. To achieve this, it would be advantageous to provide a means of quantifying a choke, so that future research can efficiently and accurately identify the 'choker' and a choking episode. The adoption of mixed-method designs within choking research (see Mesagno et al., 2008; 2009) is also likely to be advantageous, for qualitative approaches can provide a detailed account of the choking process, whilst quantitative methods can substantiate the antecedents, mechanism, influencing variables and consequences of choking in sport, that have been identified. Quantitative approaches can also test the psychological strategies that have emerged from this study (e.g., process goals, simulated practice, pre-shot routine), and provide evidence for their precise impact on athletes who choke under pressure. Finally, such methods can avoid concerns associated with participant retrospective recall, on which qualitative approaches rely (see Beilock, et al., 2003).

Summary and conclusion

This study has offered an exploration of choking in sport, including its antecedents, mechanism, influencing variables and consequences. The findings have extended the choking literature and offer support for the characteristics of choking in sport (see Hill et al., 2009) that could be used to identify 'chokers'. As a result of this study, the experiences of those who choke under pressure may be explored further, and the impact of the suggested interventions on their performance and psychological well-being can be examined.

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